STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

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In the Matter of		
Proceeding on Motion of the	:	
Commission Regarding a		Case 03-E-0188
Retail Renewable Portfolio	:	
Standard		

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BACKGROUND

On March 20, 2001, the New York State Office of the Attorney General ("OAG") issued an *Action Plan for a Balanced Electric Power Policy in New York State*,[1] in which the OAG called upon New York to expand renewable generation resources by an additional ten percent of statewide consumption (existing renewable resources account now for approximately 17% of current statewide consumption) and to adopt a statewide renewable portfolio standard ("RPS") that "would require retailers of electricity to include in their portfolio of supply an increasing percentage of renewable generation . . . [and] increase demand for renewables such as wind and solar, that would, in turn, create a competitive market for supplies of renewable generation."[2]

The 2002 New York State Energy Plan[3] directed the New York State Energy Research and Development Authority ("NYSERDA") to examine the feasibility of establishing an RPS for New York. NYSERDA's February 14, 2003 preliminary report found "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 . . . [and] could improve energy security, complement the State's current environmental disclosure program, and help diversify New York's electricity generation mix."[4] On February 19, 2003, the Public Service Commission

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[1] Http://www.oag.state.ny.us/press/reports/power_policy.pdf.

[2] *Ibid*, pp. 38-39.

[3] The State Energy Plan is prepared by the New York State Energy Planning Board with the assistance of the Public Service Commission, Department of Economic Development, NYSERDA, Department of Environmental Conservation, Department of Transportation, and Office of Public Security.

[4] NYSERDA, *Preliminary Investigation into establishing a Renewable Portfolio Standard in New York*, February 14, 2003, p. 1 of 7.

("PSC" or "Commission") announced that it was commencing this proceeding to develop and implement an RPS "that will ensure, within 10 years, [that] at least 25% of the electricity purchased in New York is generated from renewable resources" (from the current level of approximately 17%).[5] In response to Administrative Law Judge ("ALJ") Eleanor Stein's invitation, the OAG and numerous other parties submitted on March 28, 2003 preliminary comments on the threshold issues identified by the PSC and other issues and concerns. Since that time, the parties have held numerous collaborative and working group meetings, providing a forum for the parties to express their concerns and reach consensus wherever possible. Parties wishing to do so submitted cost-benefit analyses of a New York State RPS on July 28, 2003.[6]

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[5] PSC February 19, 2003 release, *PSC Moves Forward With Renewable Energy Initiative: Achieving Goal of 25% Renewable Energy by 2013 Will Be a Priority,* http://www.dps.state. ny.us/fileroom/doc12878.pdf; *see also* Case 03-E-0188 - *Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, Order Instituting Proceeding*, issued and effective February 19, 2003.

[6] Three party groups submitted cost-benefit analyses on July 28, 2003. The New York State Department of Public Service ("DPS") Staff and NYSERDA, with consultants Sustainable Energy Advantage, LLC, and La Capra Associates filed *New York Renewable Portfolio Standard Cost Study Report"* ("DPS Cost Study"). Joint Utilities (which include Central Hudson Gas & Electric Corporation, Rochester Gas & Electric Corporation, New York State Electric & Gas Corporation, and Niagara Mohawk Power Corporation) with ICF Consulting filed *Report of Initial Analysis of Proposed New York RPS* ("Joint Utilities' Cost Study"). Renewable Energy Technology and Environmental Coalition ("RETEC") with consultant Synapse Energy Economics filed *Cleaner Air, Fuel Diversity and High-Quality Jobs: Reviewing Selected Potential Benefits of an RPS in New York State* ("RETEC RPS Benefits Study"). RETEC members are environmental advocacy and renewable resource technology parties, including American Lung Association of New York, American Wind Energy Association, Citizen's Advisory Panel, Community Energy, Hudson River Sloop Clearwater, Natural Resources Defense Council, New York Lawyers for the Public Interest, New York Public Interest Research Group, New York Renewable Energy Coalition, New York Solar Energy Industries Association, Pace Energy Project, Plug Power, Riverkeeper, Safe Alternatives for Energy Long Island, Scenic Hudson, Sierra Club Atlantic Chapter, Solar Energy Industries Association, and Union of Concerned Scientists.

The ALJ invited the parties to submit by September 26, 2003 comments on a list of specific issues.[7] The OAG has organized these comments to follow the issue outline prescribed by the Administrative Law Judge.

INTEREST OF THE ATTORNEY GENERAL

The OAG is charged with enforcement of federal and state environmental, consumer and antitrust laws throughout New York State and is a party in numerous PSC regulatory proceedings advocating on behalf of residential and small business consumers and the State of New York. The OAG seeks to protect and improve New York State's environment, preserve public health, prevent ecological degradation, and enhance sound economic development. Increased renewable electricity generation is important to ensure that adequate electricity will be available to meet the needs of businesses and consumers, not only without aggravating air pollution or imposing unreasonable burdens on densely populated communities, but in fact furthering the State's goal of achieving clean air and a balanced, independent energy supply. Adopting an RPS will help the State achieve this goal, but it must be designed to be compatible with recently established electricity markets and to minimize financial burdens on electricity consumers.

The OAG has taken a number of actions to reduce air pollution from the electric generation sector, and to protect and improve the nation's clean air laws. Since 1999, the OAG, working with the U.S. Environmental Protection Agency, the New York Department of Environmental Conservation and other states, has brought enforcement actions against dozens of coal-fired power plants in New York, Indiana, Kentucky, Ohio, Virginia and West Virginia that

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[7] *See* Case 03-E-0188 - *Ruling Establishing Comment Procedures*, issued June 19, 2003, and subsequent rulings to amend the comment schedule.

violated the New Source Review provisions of the Clean Air Act.[8] In addition, the OAG is suing the federal government over its attempts to weaken the Clean Air Act,[9] and is involved in a legal action against the EPA over its failure to regulate emissions of carbon dioxide ("CO_2") from the nation's power plants.[10]

I. Summary of Comments

The OAG strongly supports the creation and implementation of an RPS that would increase the portion of renewable resource electricity used in New York State from approximately 17% to 25%. Without an RPS policy, the State will likely not develop substantial new renewable energy resources, despite the environmental and economic benefits these resources would provide.

While the Commission must address the concern of many parties that the RPS could increase electricity costs, it is important not to overlook the RPS benefits that, in our view, outweigh any possible burdens. Traditional sources of electricity have taken a tremendous toll on the environment and public health. The economic cost of the health injuries alone exceed

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[8] *See United States, et al. v. Cinergy Corp., et al.* (No. IP99-C-1693-M/S, S.D Ind.), *United States, et al. v. American Elec. Power Service Corp., et al.* (No. C2-99-1182, S.D. Ohio), *United States, et al. v. Ohio Edison, et al.* (No. 2:99-CV-1181, S.D. Ohio), *State of New York, et al. v. Niagara Mohawk Power Corp.* (No. 1:02-CV-00024).

[9] *See State of New York, et al. v. EPA* (No. 02-1387, D.C. Cir.).

[10] *See Our Children's Earth Foundation, et al. v. EPA* (No. C03-0770CW, N.D. Cal). *See also* Letter from Eliot Spitzer, *et al.* to EPA Administrator Christine Todd Whitman providing notice of intent to sue, February 20, 2003. Available at http://www.oag.state.ny.us/press/2003/feb/whitman_letter.pdf.

$100 billion nationally each year.[11] Our reliance on fossil fuels has been a leading cause of acid rain, smog, mercury contamination in fish, and global warming; radioactive waste from nuclear power plants will be a public health risk for thousands of years. It is essential to create policies such as the RPS that will begin a transition away from these traditional electricity sources and toward a cleaner, healthier environment.

Among the many RPS design issues discussed by the parties throughout the proceeding, perhaps the two most fundamental are: (1) which renewable resources should be supported by the RPS, and (2) what entity(ies) should be responsible for implementing the RPS. Consistent with the RPS working objectives as set forth by Administrative Law Judge Stein's June 19, 2003 *Ruling Establishing Comment Procedures*,[12] the OAG supports the following major components for the New York RPS.

First, the RPS must only support renewable resources that provide clear environmental benefits to the State, while also meeting the other working objectives of the RPS. By allowing many different renewable resources to participate in the RPS, the State will ensure the RPS will diversify the electricity supply, minimize the costs of implementation, encourage economic development, and improve system reliability. At the same time, setting eligibility standards will ensure that eligible resources benefit the state's environment. Renewable resources that can meet these working objectives include low-impact hydropower, sustainably managed biomass, fuel cells, solar, tidal, and wind. Garbage incineration and nuclear generators should not be eligible

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[11] *See* Abt Associates, *Death, Disease and Dirty Power: Mortality and Health Damage Due to Air Pollution from Power Plants*, 2000.

[12] Case 03-E-0188 - *Ruling Establishing Comment Procedures*, issued June 19, 2003.

for RPS participation. The OAG supports a set-aside fund within the RPS proceeding to provide incentives for renewable resources that are more costly than others to develop and are connected on the customer side of the meter (*i.e.*, solar photovoltaic, fuel cells, and small wind). To participate in New York's RPS, eligible renewable resources from outside New York should demonstrate that electricity generated through their use was delivered to New York.

Second, the State should adopt the RPS model that is most likely to achieve the goal that 25% of the electricity purchased in New York in 2013 will be generated from renewable sources. Two models were considered by the parties in this proceeding: a centralized model whereby a single entity would be charged with procuring the renewable electricity, and an individual compliance model whereby each load serving entity[13] ("LSE") would be required to procure the renewable electricity. While the OAG does not oppose either approach, we believe the central procurement model would be more likely to achieve the 25% goal, and would also be more cost and administratively efficient than the individual compliance model. The New York Independent System Operator ("NYISO") is best situated to fairly implement the RPS and create a market for renewable electricity. The NYISO already operates multiple markets and collects tariffs from all LSEs in New York. The NYISO could operate an RPS renewable energy credit trading market, and collect costs associated with renewable electricity purchases from LSEs. This would ensure that the costs of the RPS would be widely distributed to all ratepayers in the State. Alternatively, if the NYISO is not available to perform this function, the Commission should identify a more suitable state agency to perform centralized procurement.

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[13] LSEs include regulated distribution utilities and competitive energy service companies ("ESCOs").

The individual compliance model could also meet the objectives of the RPS. Under this approach, each LSE would be required to procure a percentage of its load from eligible renewable generators. All LSEs should participate in such a model so that the costs of implementing the program are distributed as widely as possible. An RPS credit generation and tracking system should be developed to monitor and verify sales of renewable credits.[14] An Alternative Compliance Mechanism is needed to allow an LSE to pay into a fund if it fails to meet its RPS quota, and can serve both as a cost cap to protect ratepayers from exorbitant renewable energy prices, as well as an option of last resort for LSEs to meet their RPS obligation should there be an insufficient supply of eligible renewable resources.

II. Comment on the Revised Working Objectives

A. Working Target

The ALJ's June 19, 2003 *Ruling Establishing Comment Procedures* proposes that the objective for this proceeding be: "By the year 2013, at least 25% of the electricity retailed in New York will be derived from renewable resources."[15]

The OAG strongly supports this proposed Commission target, which is consistent with the OAG's *Action Plan for a Balanced Electric Power Policy in New York State.*[16] Reliance solely on market forces has not introduced significant new renewable resources or increased resource diversity or energy security in New York or any other state. Instead, New York's

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[14] "Credits" refer to a unit of renewable electricity that was generated and delivered to the grid (usually one mWh).

[15] *Ruling Establishing Comment Procedures, supra*, p. 3.

[16] *Http://www.oag.state.ny.us/press/reports/power_policy.pdf*, issued March 20, 2001, pp. 37-42.

electricity industry has become more concentrated and dependent upon fossil fueled generation, despite the serious environmental and financial consequences of this trend. With few exceptions, most new generation built (or proposed) in and near New York is fueled by natural gas. While these power plants emit many fewer pollutants than older coal and oil-fueled units, new gas-fueled generators still release large amounts of carbon dioxide, adding to greenhouse gas problems.[17] In addition, natural gas supply is subject to significant price volatility, and constitutes an economic drain on New York's economy.

The objectives of the RPS, as discussed below, are intended to address these deficiencies in New York's current electricity supply mix and effect significant changes in the way New York's electricity is produced. By significantly expanding the state's reliance upon clean renewable energy, such as wind power, the expanding electricity needs of consumers and businesses can be met without degrading air quality, and some polluting generation may be displaced. Avoiding the import of fossil fuel from out-of-state or foreign nations will lessen the financial drain on New York's economy caused by electric generation. Even though some new renewable generators may initially cost more than conventional fossil-fueled generators (although comparisons of peak load prices show the costs to be very close), the improvements in public health and energy security provided by renewable electricity generation are worth the cost. Indeed, it is possible that without expansion of renewable resources, continued reliance on additional natural gas-fired generators could cause electricity prices to exceed renewable resource price forecasts. Moreover, the implementation of an RPS in New York incrementally encourages other states to do the same; when an RPS is more widespread, the benefits multiply rapidly and

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[17] See discussion in Point II.B.1 below.

the costs decrease. Thus, achievement of the RPS makes sound economic and environmental policy.

B. Revised Working Objectives

The ALJ has distilled the parties' collaborative discussions about the goals and priorities of the RPS, and proposed six "working objectives" for comment by the parties.[18] The OAG supports each of the proposed RPS objectives, for the reasons set forth below.

1. New York's Environment

The first proposed RPS objective is: "Improve New York's environment, by reducing air emissions, including greenhouse gas emissions, and other adverse environmental impacts on New York State of electricity generation."[19]

The OAG supports this objective as the first and most important goal for New York's RPS. Existing electricity generation in the United States produces: one-quarter of the nitrous oxide emissions that cause urban smog, acid rain and fine particle pollution;[20] two-thirds of the sulfur dioxide emissions that cause acid rain and fine particle pollution;[21] one-third of the mercury emissions that poison fish and wildlife and endanger public health;[22] and 40 percent of energy-related greenhouse gas emissions that are responsible for warming the planet with

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[18] *Ruling Establishing Comment Procedures*, *supra*, pp. 3 - 4.

[19] *Ruling Establishing Comment Procedures, supra*, p. 3.

[20] *Acid Rain: Emissions Trends and Effects in the Eastern United States,* 2000. U.S. General Accounting Office. p. 9.

[21] *Ibid.* p. 8.

[22] 65 Federal Register 79825 (December 20, 2000).

potentially devastating climatic shifts, increased severe storms, coastal flooding from higher sea levels, and other negative impacts.[23] These health and environmental consequences of electricity generation are taking a toll on New York and its residents. Pollution from traditional sources of electricity has caused premature deaths, contributed to high asthma rates and other respiratory illness,[24] and has made 20 percent of Adirondack lakes too acidic to support aquatic life.[25]

Expanding the use of renewable energy resources in New York State will reduce carbon and other greenhouse gas emissions. Reducing carbon emissions in New York State will have a global impact. New York makes up 0.3% of the world's population, but emits 0.9% of the world's carbon emissions.[26]

New York has a strong interest in reducing the impact of global warming. Some effects that have been or likely soon to be experienced in New York State include storm surges and coastal flooding, beach erosion, loss of coastal wetland habitat, change in tree species (largely eliminating the classic fall foliage), altered supply of drinking water, increased air pollution as higher temperatures increase the concentration of ground-level ozone, and increased temperature of surface waters.

By increasing the state's use of clean renewable electricity from the current 17% to at

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[23] Energy Information Administration, Office of Integrated Analysis and Forecasting, *Emissions of Greenhouse Gases in the United States 2001*, December 2002, p. 24.

[24] *See* Abt Associates, *Death, Disease and Dirty Power: Mortality and Health Damage Due to Air Pollution from Power Plants,* 2000.

[25] National Acid Precipitation and Assessment Program*, NAPAP Biennial Report to Congress: An Integrated Assessment,* 1998.

[26] New York Greenhouse Gas Task Force Report, *Recommendations to Governor Pataki for Reducing New York State Greenhouse Gas Emissions*, April 2003, p. 9.

least 25%, the RPS will ensure that much of the new electricity generation brought online over the next decade to meet demand growth and replace old power plants will be from clean renewable sources, helping to alleviate the negative impact of the electricity industry on public health, and New York's economy and environment. New York's RPS would contribute to efforts elsewhere in the United States and other nations to improve global climate stability.

2. Generation Diversity

The second proposed RPS objective is: "Diversify New York State's electricity generation mix and improve energy security and reliability."[27]

The OAG supports this reason to establish an RPS for New York. Our dependence upon fossil fuels for much of our electricity subjects New York businesses and consumers to significant electricity price volatility whenever fossil fuel commodity prices climb, which has occurred far too frequently of late.[28] Fossil-fueled generating plants produced over half of the electricity used in New York State in 2000, with one-quarter of the state's total electricity comes from natural gas alone.[29] Since nearly all of the coal, oil and natural gas that is currently used to generate the electricity used in New York is imported from other states or foreign nations, electricity generation accounts for a huge economic drain for New York. In 2001, New York

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[27] *Ruling Establishing Comment Procedures, supra*, p. 3.

[28] *See e.g.*, RETEC RPS Benefits Study, pp. 10-14.

[29] *2002 New York State Energy Plan,* p. 3-105.

spent $38 billion on energy, comprising 4.75% of the $799.2 billion gross state product. Of this total 2001 energy expenditure, 42% was for electricity, a total of $16.3 billion.[30]

New York's continued reliance upon fossil-fueled electricity generation subjects our economy to significant risks resulting from global political instability, price manipulation by foreign cartels or domestic companies, and the finite limits of gas and oil exploration and production. New York and the nation as a whole are currently facing potential severe natural gas supply shortages in the coming winter heating season, which, because of our dependence upon natural gas for much of our electric generation, could have crippling economic consequences. Unlike the global oil market, natural gas consumed in North America today is largely produced in the United States and Canada, and until liquified natural gas shipping facilities are expanded, the supply for New Yorkers is restricted by pipeline and storage capacity, which was depleted by the severe winter last year and has not yet been replenished.[31] Furthermore, use of liquified natural gas tankers involves significant security risks. However, "[a]lmost all of the new generation proposed to be built in New York State is to be fired with natural gas."[32]

An RPS which shifts a significant portion of our electricity away from fossil fuel dependence will protect New York's economy from these serious hazards. Greater use of wind, hydroelectric, tidal, solar energy, sustainable biomass, and fuel cells to produce New York's

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[30] NYSERDA, *Patterns and Trends; New York State Energy Profiles 1987-2001*, Figure 4-1 http://www.nyserda.org/trends2002.pdf.

[31] *See* Federal Reserve Board Chairman Alan Greenspan's July 10, 2003 testimony before the U.S. Senate Committee on Energy and Natural Resources, http://www.federalreserve.gov/boarddocs/testimony/2003/20030710/default.htm.

[32] *2002 New York State Energy Plan, supra*, p. 3-104.

electricity would decrease this drain of cash from New York and keep the investment in these new renewable generation resources largely within the state.[33] One advantage of renewable resources is that they are less likely than fossil fuel sources to be affected by external economic or political instability or commodity price volatility. Stable electricity supply is essential not only to New York's economic survival, but is required for the health and safety of all its residents.

Increasing generation diversity will also lessen the risk to New York that electricity reliability might be impaired by fossil fuel supply shortages. Distributed generation investment in fuel cells and solar photovoltaics can strengthen electric system security as well as improve reliability -- particularly solar which generates electricity at times of peak demand. At the same time, greater use of intermittent resources such as wind and solar power could raise reserve requirements if these new facilities become too concentrated in specific parts of New York.[34] Careful attention to the location of intermittent renewable resources is needed to ensure that greater dependence upon intermittent renewable resources does not lessen overall system reliability.

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[33] While some of the renewable electricity attracted by the RPS will likely be generated outside the state's borders, it is expected that the majority will come from within New York.

[34] The DPS Cost Study projects that by 2013 as much as 49% of the new renewable resources to be derived through the RPS would come from wind projects of various sizes and locations. Table 5B-1, p. 10. As this would comprise approximately 5% of the state's total electricity supply, and includes off shore and land-based wind farms and wind clusters, overall reliability should not be affected adversely unless too many intermittent facilities are located in the same transmission zone or sub-zone.

3. Economic Benefits

The third proposed RPS objective is: "Develop renewable resources and advance renewable resource technologies in, and attract renewable resource generators, manufacturers, and installers to New York State."[35]

The OAG agrees that implementation of a New York RPS should benefit the state economically through development of locally based new renewable resource industries and technologies. While not all of the jobs and investment stimulated by the RPS will directly benefit New York communities, it is likely that a significant portion will. Construction of new renewable generation facilities like wind farms or solar panels will provide added employment to various regions of the state during a period of economic distress. After these facilities are completed, there will be new permanent jobs created to maintain the renewable generation resources. In addition, leasing of under-productive land for use by wind or solar developers can provide valuable added income to support farmers and other commercial operations in economically distressed rural parts of New York.[36]

Because of New York's size and the scope of our planned RPS, there is also a potential for locating new renewable generation research and manufacturing facilities in New York which would benefit the state as the RPS effort catches on in other states in the region and nationally. It is important that New York strive to capitalize on this potential synergistic economic benefit through its existing academic and research institutions. In 1999, renewable electricity capacity

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[35] *Ruling Establishing Comment Procedures, supra*, p. 4.

[36] RETEC RPS Benefits Study, p. 27.

totaled 88,590 mW in the U.S.[37] World-wide, investment in renewable resources is growing rapidly, especially in use of wind generation, with a five-fold increase in the share of non-U.S. installed capacity between the 1970s and 1997.[38] New York-based manufacturers can capitalize on this important industry trend.

By reducing New York's use of oil and natural gas to produce electricity, the RPS can also relieve demand pressures on these commodities and thus lower energy costs for all economic sectors that use these fuels, including electric generation, transportation, domestic heating and other industries.[39]

4. Equity and Economic Efficiency

The fourth proposed RPS objective is: "Develop an economically efficient RPS requirement that minimizes adverse impact on energy costs, allocates costs equitably among ratepayers, and affords opportunities for recovery of utility investment."[40]

The OAG believes that, in designing the RPS, the PSC should take all necessary measures to ensure that the RPS is as cost efficient as possible, and treats all affected parties

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[37] U.S. Department of Energy, Energy Information Agency, *Renewable Electric Power Sector Net Summer Capacity by Source and State, 1999*, *http://www.eia.doe.gov/cneaf/solar.renewables/page/rea_data/tablec7.html*.

[38] Non-U.S. wind generation capacity grew from 5% to 25% in this period. U.S. Department of Energy, Energy Information Agency, *Wind Energy Developments: Incentives in Selected Countries*, Louise Guey-Lee, *http://www.eia.doe.gov/cneaf/solar.renewables/rea_issues/windart.html*.

[39] DPS Staff Cost Study, p. 19.

[40] *Ruling Establishing Comment Procedures, supra*, p. 4.

fairly and equitably. Experience with New York's infamous "6¢" law[41] counsels that caution and care is required so that similar pitfalls do not undermine the intended benefits of the RPS. The 6¢ law was well intended in seeking to stimulate competition in the generation of electricity by requiring that utilities enter into purchase agreements with independent power plant developers. However, unanticipated changes in market forces resulted in too many long term agreements to buy power at above-market prices, seriously harming consumers, industrial customers and some utilities for many years. As New York ratepayers pay some of the highest prices for their electricity in the country, it is essential that they not be burdened by the economic effects of the RPS any more than is necessary.

For the public to support and accept the RPS, it is essential that the design adopted by the Commission treat all parties equitably, especially with regard to the burdens imposed upon consumers. All New York residents and businesses stand to share in the benefits that the RPS is intended to bring, so all should share in supporting its costs. No exemptions from participation should be permitted, as this would serve only to shift costs to others not exempted from participation.

The RPS can also redress historical imbalances in siting of polluting power plants in communities that result in unfairly burdening low income and minority residents. To the degree that continued electricity demand growth requires construction of new generation facilities, shifting a substantial portion of such construction to clean, renewable resources such as wind, hydro and solar power will lessen the burden and impacts such new power plants will have on the communities where the new facilities are located.

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[41] Public Service Law § 66-c (repealed as to generators built from 1992 on).

5. Competitive Neutrality

The fifth proposed RPS objective is: "Develop an RPS compatible with competition in energy markets in New York State."[42]

Competition in electricity generation and supply is a relatively new and still evolving development in New York and elsewhere in the United States. While most generation has been divested from utility control, the NYISO operation of wholesale electricity markets is not quite four years old. Due largely to capital market anxieties about electricity deregulation following the Enron scandal and the California electricity supply crisis, New York has yet to experience the degree of new generation development the Commission anticipated when it adopted the wholesale deregulation program. Care must be taken to ensure that an unintended consequence of the RPS not be a negative impact on the further maturation of the competitive wholesale markets. Developers seeking to bring new renewable resources to serve New York's electricity needs through the RPS should be competitively chosen to ensure cost efficiency and market neutrality, consistent with the goals of the RPS.

6. Administrative Fairness and Efficiency

The sixth proposed RPS objective is: "Develop an RPS that is administratively transparent, efficient, and verifiable."[43]

Because the concept of the RPS is new to most of the public, and its myriad technical details are potentially complex and difficult to understand, it is incumbent upon the Commission to explain the goals, process and outcome of the RPS to the public in clear and meaningful terms.

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[42] *Ruling Establishing Comment Procedures, supra*, p. 4.

[43] *Ruling Establishing Comment Procedures, supra*, p. 4.

To ensure public acceptance, and the long-term success of the RPS, it should keep administrative costs to an absolute minimum, consistent with the necessity to ensure honest dealings among all parties involved. All RPS transactions should meet the highest ethical standards, and be subject to appropriate auditing controls.

III. The Renewable Technology and Environmental Coalition Straw Proposals

On June 24, 2003, RETEC submitted to the parties a straw proposal for individual LSE procurement. The OAG supports many elements of this straw proposal, with some exceptions as noted below. Specifically, the OAG supports RETEC's proposed list of eligible resources (*i.e.*, wind, solar electric technologies, fuel cells, sustainably managed biomass, low-impact hydropower, and tidal). The OAG also agrees with RETEC that the RPS should apply to all LSEs and must be equitably applied to all customer classes.

The OAG also agrees with RETEC that a certificate-based accounting system is needed to track individual compliance. However, the OAG does not agree with RETEC that all environmental attributes of renewable energy must remain bundled with the RPS credit. The renewable credit certificate system that is developed (by government or private entities) should allow various environmental attributes of renewable energy credits to be sold separately. In the OAG's view, to qualify for a New York RPS certificate, a generator need only document that it has delivered to New York load a specified amount of electricity produced by an eligible resource. By allowing renewable generators to pursue supplemental revenues that may become available for other attributes, such as greenhouse gas emission reductions, the cost of RPS certificates may be lowered. This, in turn, would lower the RPS's costs paid by ratepayers (see section VI on credit trading). Furthermore, by unbundling the environmental attributes that may

be derived from renewable generation, those renewable resources which are most beneficial (in terms of pollution reduction and public health improvements) will be more competitive than others in the attribute trading market(s) that develop. This market approach will maximize the benefits New Yorkers receive from the RPS at the least cost.

The RETEC proposal to allow out-of-state renewable generators to participate in the New York RPS without delivering electricity into the State is problematic. In order to be eligible for RPS credit, eligible renewable resources from outside the State should demonstrate that the electricity from these resources are delivered into New York State.[44] Since delivery into New York's power grid will displace traditional sources of electricity, this will ensure New York ratepayers who pay for the RPS will benefit from the out-of-state resources that qualify for New York RPS certificates (see discussion of deliverability in section VI.B).

The OAG agrees with RETEC that emerging technologies, such as small wind, solar PV, and fuel cells will not be able to compete in the RPS market because they are at an earlier stage of development which results in costs higher than other more mature technologies. Renewable resources are developing at different rates. Some technologies, like wind and hydropower, are more mature, and, as a result, are less expensive. Other technologies, particularly customer-sited technologies like fuel cells, solar photovoltaics, and small wind, are still emerging and presently cost more. These emerging technologies offer many environmental and reliability benefits by producing smaller-scale electricity where it is used, reducing transmission and distribution

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[44] While the physical movement of electrons from the generator to the load cannot be traced due to the physics of power flows, delivery is used in this context to mean that the supplier has a contract with an LSE or end user in New York and that the NYISO and adjoining system operator document such imports.

requirements and avoiding adverse impacts from siting major generators. New York should support the development of these emerging renewable technologies. However, rather than requiring procurement of a specified percentage of the annual RPS quota from these resources as proposed by RETEC, the OAG recommends that the PSC develop a dedicated fund within the RPS, modeled after the System Benefits Charge program. These RPS set-aside funds would support project-specific grants for the development of emerging renewable generation technologies (see discussion in section IV.D).

DPS Staff's cost study estimates that it would require $74 million in set-aside funding over eight years to build new fuel cells, small wind and solar photovoltaics facilities capable of generating 167,551 annual mWh by 2013 (about one percent of Staff's projected incremental RPS target in 2013).[45] The OAG views this as the minimum appropriate funding to develop these emerging technologies. As part of the RPS, the PSC should set aside emerging technology funding from amounts collected from all New York electricity users. This set-aside fund for emerging technologies should be administered by NYSERDA since it already has the experience and expertise necessary to distribute the funding.

The RPS should also support the development of eligible renewable resources in "high value" areas, which is defined by RETEC[46] as load pockets and areas of the state in severe non-attainment of National Ambient Air Quality Standards ("NAAQS") for ozone, PM_{10} or $PM_{2.5}$.[47]

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[45] DPS Staff RPS Cost Study, at Table 5C-1.

[46] June 24, 2003 RETEC NY RPS Discussion Proposal: Individual Procurement/Compliance Method, p. 5.

[47] Under the Clean Air Act National Ambient Air Quality Standards, PM_{10} is particulate matter with a diameter of 10 microns or less, and $PM_{2.5}$ is particulate matter with a diameter of

However, the three-fold credit multiplier incentive proposed by RETEC, whereby renewable energy credits obtained from a generator in a high value location is worth three times the credit, is not needed to achieve this goal, especially if a set-aside fund is created. The higher wholesale electricity location-based marginal prices ("LBMP") that prevail in load pockets will help attract renewable developers to these locations. In addition, NYSERDA should be directed to give a preference to projects applying for set-aside funds that are located in high-value locations.

On July 24, 2003, RETEC submitted to the parties a hybrid central procurement/individual compliance straw proposal whereby a central public entity would be responsible for procurement of half of the incremental RPS target, with the remainder allocated among the LSEs. The OAG is concerned that this approach negates the benefits that a pure central procurement model would provide (see section V.C).

IV. Eligibility

A. The Baseline

On March 17, 2003, DPS Staff presented a baseline estimate of existing renewable resources. A baseline is designed to provide a consistent standard by which the amount of new renewable electricity can be measured. Specifically, DPS Staff proposed:

> For the purposes of setting an incremental target to reach the 25% goal, it will be assumed that the incremental target is 25% of projected statewide electricity usage in New York State in 2013, minus a baseline of 28,896,189 MWh. The collaborative will not make attribution as to the specific sources that make up the baseline. Any future adjustments to targets will be made in the context of

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2.5 microns or less.

designated 'eligible' resources without attribution back to the effect, if any, on the makeup of the baseline.[48]

The OAG supports the DPS Staff baseline proposal. DPS Staff's baseline is a reasonable estimate of how much pre-RPS renewable generation will be online in 2013. By holding the baseline fixed, there will be more market certainty for new renewables since the increment will only be adjusted according to changes in total electricity demand. Furthermore, it simplifies the RPS and maximizes its benefit by applying the eligibility standards only to new resources.[49] The PSC should conduct periodic reviews of the pre-RPS hydropower units' annual power production to determine whether output decreases significantly from base year levels. In such event, the PSC should amend the baseline figure accordingly thereby increasing the new renewable resources required to meet the 2013 25% RPS goal.

B. Target Levels

1. Forecast

It is necessary to forecast future electricity demand in order to set interim renewable output targets and make procurement decisions for new renewable resource construction. Such forecasts as have been employed in preparing the New York State Energy Plan, which incorporates historic trends with a variety of economic, demographic, and other data, would be necessary to determine the expected New York load during the years up to 2013. Once these

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[48] *See Summary of Working Group Discussions*, June 25, 2003 letter from ALJ Stein, p. 1. This figure is an approximation of recent annual electricity used in New York from a number of renewable resources, including NYPA's two major hydro projects, but not including resources added since January 1, 2000.

[49] The AG recommends that eligible renewable resources recently constructed (since January 1, 2000), but not counted toward the baseline, be eligible to participate in the RPS so that their electric production help achieve the New York RPS goal.

estimates are made, the amount of new renewable resources can be computed by subtracting the baseline amount.

However, all forecasts are estimates, and previous State Energy Plan predictions of future electricity usage levels have not always been accurate at anticipating load growth. Therefore, it is necessary that the Commission's forecasting effort be performed annually, with true-ups for actual results and adjustments as new data is received or new trends develop. These annual forecast corrections would be used in determining the amounts of new renewable electricity needed to meet the interim targets (discussed below).

2. Start Date

Work to begin implementation of the RPS should commence as soon as feasible after the Commission makes its decision on the various eligibility and design issues presented in the parties' comments. Based upon the current schedule, the earliest that the next stage of design and implementation of the RPS can likely begin is early 2004, assuming that final determination by the Commission is not delayed and that litigation challenges to the Commission's Order do not slow the implementation process. However, despite the significant progress made by the workgroups over the past six months since this proceeding began, once a decision is reached on the overall design issues, a period of six-to-twelve months more will most likely be needed to effect the Commission's decision. For example, whether the Commission adopts a central procurement or individual procurement approach, there remain substantial amounts of effort to work out the specifics of either option before the RPS can effectively begin.

3. Interim Targets

It is necessary and prudent to set interim renewable electricity procurement targets at intervals between when the RPS commences (as discussed above), and when the 25% target is slated to be met in 2013. These interim targets should serve to guide procurement decisions as new renewable resources are brought on line and to monitor the progress to date and any course adjustments needed to correct for unforseen developments.

Because of the multi-year lag period that takes place while new renewable generation facilities secure funding, site approvals, interconnection agreements with transmission owners, and complete construction, it is appropriate that the initial interim RPS target be set for three to four years following commencement of the program. Thereafter, interim targets should be set two to three years apart. So long as the PSC adopts targets which are timed in a manner roughly consistent with these parameters, we are flexible as to the specific dates for each interim target chosen by the Commission. The OAG does not oppose the specific interim target proposals from RETEC[50] or DPS Staff.[51]

As each interim target approaches, the progress to date in increasing the amount of renewable electricity should be evaluated, both quantitatively and qualitatively. First, the amount of electricity being used in New York that comes from new eligible renewable resources procured through the RPS should be measured and compared with the current period's target (as

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[50] The RETEC coalition proposed on July 23, 2003 annual increments beginning in 2005 at 0.5% - 1.5% with a two-year lag period to allow for construction (*e.g.*, the 2007 target would be set in 2005).

[51] The DPS Staff Cost Study, at pp. 5-6, describes annual interim targets with equal increments of 0.94% of New York's annual load.

a percentage of total electricity used in the state). Any deficiency in new renewable production should be added to the subsequent period's target calculation. Forecasts of demand growth over the next interim period, adjusted for actual load data available since prior forecasts were made, would then be used to determine the interim period's target. If the individual LSE procurement approach is adopted (see discussion in section V.B), then the status of banked/borrowed quotas would also need to be taken into consideration in determining each LSE's new interim target.

In addition, successes and difficulties encountered in the intervening target period should be evaluated to determine what modifications would make the next procurement round more successful and efficient. This ongoing evaluation and improvement process is likely to be necessary in light of the newness of the RPS, the limited experience with similar (but not identical) RPS programs in other states, and the uncertainties that will be encountered while working out the kinks of the RPS. Design decisions made in neighboring states which adopt their own RPS programs, as well as FERC regulatory policy determinations concerning bulk power transmission between New York and adjoining regional power systems, might put specific aspects of the New York RPS in a different light. Where appropriate, such changed circumstances may counsel modifications to New York's RPS design, such as where reciprocal arrangements are reached between New York and its neighbors. In addition, uncertainties in development of new conventional generation within the recently formed wholesale electricity competitive markets could necessitate some modifications to the RPS to ensure that both the RPS and the competitive wholesale markets function properly.

However, this ongoing PSC review effort must be limited to fixing identified obstacles that arise and making improvements to the successful accomplishment of the RPS. For the RPS

developers to attract the capital necessary to bring new renewable resources to New York, the future existence of the RPS must always remain completely clear and certain. If, for example, the PSC finds that interim targets are consistently not being met, then necessary adjustments to improve the RPS success may become apparent that were not anticipated in 2003.

C. Target Resource Eligibility

Perhaps the most important issue to be resolved by the PSC in this proceeding is determining what resources will be eligible to participate in the RPS. All eligible resources should be consistent with the six working objectives described above. In order for the RPS to be consistent with the first working objective to improve the environment, stringent environmental and public health standards for eligible renewable resources must be adopted. The OAG supports the inclusion of a suite of newly constructed or expanded renewable resources in the RPS that can provide clear environmental benefits, while also offering many additional benefits that are consistent with all of the working objectives. These resources include solar, wind, fuel cells, tidal and wave, sustainable biomass, and low-impact hydropower developed after January 1, 2000. The OAG submits the following comment on the resources listed in the Judge's June 19, 2003 *Ruling Establishing Comment Procedures*.

1. Hydro

Despite the positive impact of hydropower with respect to air quality and climate change, significant environmental problems can be caused by this resource. The NYSERDA Technology Assessment identified the following potential adverse environmental impacts of hydropower: fish mortality, obstacles to the passage of migratory fish, reduced water quality associated with reduced dissolved oxygen concentrations, riparian habitat impacts, impacts on endangered plant

and/or animal species, visual and scenic impacts, recreational impacts, and historical or archeological impacts.[52] Standards must be adopted by the PSC to ensure that RPS credits do not encourage the development of new hydropower resources that will harm the environment, rare or endangered species, or cultural or recreational resources.

For the DPS Staff Cost Study, it was assumed that eligible hydropower would include new facilities of up to 30 MW that are run-of-river with no storage impoundment, as well as incremental generation from upgraded existing facilities so long as no new impoundments are created.[53] While this is a good starting point, this standard is not fully protective of the environment, as it does not consider potential site-specific impacts of a project.

An additional criterion for eligibility should be imposed to require the new facility or upgrade to be licensed by the Federal Energy Regulatory Commission ("FERC") or, in the event that the project is not subject to FERC licensing, that it meet the same criteria as a new FERC-licensed project.[54] Most new hydropower projects in the U.S. will be subject to approval by FERC and will be required to obtain a FERC license. During the licensing process, FERC is required to consider impacts on the environment, recreation, fish and wildlife. The process provides procedures for those issues to be addressed and for interested parties to intervene in the licensing process. As a result, new licenses typically reflect agreements reached between the

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[52] New York State Energy Research and Development Authority, *Energy Efficiency and Renewable Supply Potential in New York State and Five Load Zones; Volume Four: Renewable Supply Technical Report.* August 28, 2003. p. 4-79. Posted at *http://www.dps.state.ny.us/03e0188.htm.*

[53] DPS Staff Cost Study, p. 5.

[54] *See* FERC licensing workflow diagrams at http://www.ferc.gov/industries/hydropower/gen-info/workflow.pdf

operator and interested parties (*e.g.*, environmental and fishing groups). Thus, the FERC licensing process for new hydropower projects provides a mechanism to identify and mitigate environmental impacts of specific hydropower projects. But not all new projects, most notably those in Canada, will be subject to FERC's licensing process. The PSC should use the FERC licensing process as a model when adopting its own hydropower standard for the New York RPS that can be applied consistently to all projects applying for RPS credit, regardless of their location.

2. Solid Waste

The OAG opposes the inclusion of municipal solid waste ("MSW") incineration as an eligible renewable resource for the following reasons:

- MSW incineration is not sufficiently "clean" to fall within the RPS.
- MSW incineration is not a renewable resource under other State policies.
- Providing incentives for MSW incineration would be inconsistent with the State's Solid Waste Management Policy.
- MSW incineration generates less energy than the amount of energy consumed to make new products from virgin materials.

a. MSW incineration is not sufficiently "clean" to fall within the RPS.

The most fundamental goal of the RPS is to improve the environment by displacing emissions from traditional fossil fuel power plants in the State. Despite recent advances in air pollution control technology, however, MSW incinerators still emit significant air pollution. In fact, MSW incinerators emit significantly more heavy metals and other toxic pollutants per mWh

than even the dirtiest fossil fuel plants and emit much more of virtually every major pollutant than a "clean" fossil fuel plant.

The OAG retained the Resource Systems Group, an energy consulting firm, to compare the emissions rates for various pollutants of New York's incinerators to two fossil plants in New York – the Huntley coal plant in western New York,[55] and the Sithe Independence combined cycle natural gas plant in Oswego. The Huntley plant is one of the dirtiest, and the Sithe plant is one of the cleanest, fossil fuel plants in the State. The Resource Systems Group compiled best available emissions data for the seven large MSW incinerators in New York State, the Huntley coal plant, and the Sithe Independence plant, and prepared a comparison of emissions.[56] The following emissions were included in their analysis: (1) nitrogen oxides ("NOx"), (2) sulfur dioxide ("SO_2"), (3) carbon dioxide ("CO_2"), (3) mercury, (4) lead, (5) cadmium, (6) particulate matter, and (7) dioxin. The raw comparisons were presented. In addition, because the level of

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[55] The Huntley coal plant is the subject of a lawsuit brought by the OAG and the DEC (*see State of New York, et al. v. Niagara Mohawk Power Corp.* (No. 1:02-CV-00024)). The suit alleges that the Huntley plant underwent major modifications without installing the necessary pollution controls required by the New Source Review provision of the Clean Air Act (*see* 42 U.S.C. §§ 7470-79). If this action is successful, Huntley will be required to install new pollution controls. Modern pollution controls generally reduce SO_2 emissions by 95% or more and NOx emissions by 90% or more, as well as achieve additional mercury and particulate matter removal.

[56] The best available data from the U.S. Environmental Protection Agency is for year 2000. On September 23, 2003, Integrated Waste Services Association ("IWSA") submitted to active parties mercury and NOx emissions data for years 2001 and 2002 for its member incinerators in New York State. The IWSA submission included data for six of the seven large MSW incinerators analyzed by Resource Systems Group (the Adirondack RRF is not a member of IWSA). The average emission rate reported by IWSA for the six large incinerators in 2002 is 0.00025 lbs/mWh. While this rate is less than the average rate used in the Resource Systems Group analysis (0.00047 lbs/mWh), it is greater than the mercury emission rate at the Huntley coal plant (0.0001 lbs/mWh). IWSA did not present NOx emission rates in lbs/mWh.

toxicity is different for each pollutant, weighting methods were also used to provide a more accurate environmental comparison. The entire report is attached to these comments.

The report showed that MSW incinerators on average emit more mercury, lead, cadmium, and dioxin per mWh than even the uncontrolled Huntley plant -- a plant that the OAG believes is emitting far more pollution than it should -- and emit much more of every pollutant analyzed, with the exception of CO_2, than the Independence combined cycle natural gas plant. *See* Table 1.

While CO_2 emission rates are presented, Resource Systems Group did not analyze the climate impact of MSW incinerators. Other studies that have quantified the climate impact of MSW incineration have found that waste reduction and recycling are the waste management options with the least climate impact.[57]

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[57] *See Solid Waste Management and Greenhouse Gases: A Lifecycle Assessment of Emissions and Sinks,* U.S. Environmental Protection Agency 530-R-02-006, May 2002.

Table 1.[58]

Pollutant Name	New York MSW Incinerators[59] Average Emissions lbs./mWh	Huntley Coal Plant lbs./mWh	Sithe Independence Combined Cycle Natural Gas Plant lbs./mWh
NOx	5.3	5.7	0.108
SO_2	0.35	27.17	0.025
CO_2	731.7	2106.9	827.7
Mercury	0.00047	0.0001	n/a
Lead	0.0003	0.00006	n/a
Cadmium	0.00002	0.00001	n/a
PM	0.030	0.682	n/a
Dioxin (CDD/CDF)	0.00000015	0.00000012	n/a

When standardizing the emissions to a common unit based on the toxicity of pollutants, the report showed that MSW incinerators are more damaging to public health per mWh than traditional fossil fuel electricity sources.[60] *See* Table 2.

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[58] *See A Comparison of Emissions in New York: Seven Municipal Waste to Energy Plants, Huntley Generating Station, and Sithe Independence Power Plant*, September 15, 2003. Prepared by Resource Systems Group. Full report attached.

[59] The data set used for this analysis is the U.S. EPA MACT Compliance database. Three MSW incinerators in New York State (Dutchess County RRF, Oswego County, and Islip RRF) are not subject to the MACT requirements due to their smaller size and are therefore not included in the MACT compliance database, and were not included in the analysis.

[60] Toxicity weighting factors were used in the analysis that are proportional to the pollutant's toxicity to human health. The toxicity weighting factor is based on toxicities determined by EPA and the use of the CalTOX model to estimate exposure (see citations for toxicity weighting factors in Appendix).

Table 2. [61]

Pollutant Name	Toxicity Weighting Factor	New York MSW Incinerators[62] Average Emissions toxicity units/mWh	Huntley Coal Plant toxicity units/mWh	Sithe Independence Combined Cycle Natural Gas Plant toxicity units/mWh
NOx	4	22.9	24.4	0.5
SO_2	6	2.1	163.0	0.2
CO_2	-	-	-	-
Mercury	46,000,000	21,795.2	2,516.2	-
Lead	1,100,000	278.9	64.6	-
Cadmium	3,700,000	77.9	35.1	-
PM	2.9	0.1	2.0	-
Dioxin (CDD/CDF)	1,700,000,000,000	246,707.8	202,534.5	-
Total Toxicity		**268,884.9**	**205,339.8**	**0.61**

Emissions of NOx contribute to fine particulate matter pollution and ground-level ozone, both of which are linked to increased respiratory illness, increased asthma attacks and increased health care costs.

Emissions of SO_2 contribute to fine particulate matter pollution and acid rain.

Mercury is a potent neurotoxin which poses particular risks to infants and children. It can also impair brain function and kidney function. Airborne mercury that is deposited in lakes and waterways accumulates in fish, and presents a potential exposure risk to subsistence anglers and

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[61] *See Appendix: A Comparison of Emissions in New York: Seven Municipal Waste to Energy Plants, Huntley Generating Station, and Sithe Independence Power Plant*, September 15, 2003. Prepared by Resource Systems Group.

[62] The data set used for this analysis is the U.S. EPA MACT Compliance database. Three MSW incinerators are not subject to the MACT requirements due to their smaller size and are therefore not included in the MACT compliance database, and were not included in the analysis. These MWTE plants are: Dutchess County RRF, Oswego County, and Islip RRF.

their families. In New York State, virtually every major water body, including New York City's drinking water reservoirs, is subject to the State Health Department's fish consumption advisories, largely because of mercury contamination.

Lead exposure can cause diminished intelligence, and behavioral and learning problems. Lead is especially harmful to the developing brain and the nervous system of small children, who retain significantly more of the lead to which they are exposed than do adults.

Exposure to low levels of cadmium over a long period of time can cause severe and irreversible damage to the kidneys and can damage the lungs.

Particulate matter emissions, both secondary particulate matter that forms from SO_2 and NO_x emissions and primary particulate matter emitted directly into the air, cause pulmonary disease, decreased lung function, asthma attacks, and have been linked to premature death.

Dioxin is created when chlorinated compounds in the waste stream are burned. It is an unintentional environmental contaminant which is present in both incinerator air emissions and incinerator ash. Dioxin is a human carcinogen, and damages the immune system, nervous system, reproductive system and endocrine system even at very low levels.

b. MSW incineration is not a renewable resource under other State policies.

Existing New York State regulations exclude incineration as a renewable resource. Governor Pataki's Executive Order 111, which was issued June 10, 2001 to encourage a greater use of clean renewable energy resources at state facilities, omits garbage incineration as an eligible renewable resource. Similarly, existing DEC regulations exclude incineration as a renewable resource; DEC Parts 237 and 238, DEC Part 204, Section 204.1 (b) (67) states:

"Renewable energy project: a power generation technology that produces electricity from wind energy, solar thermal energy, photovoltaic, methane waste, or sustainably managed biomass; but not the combustion or pyrolysis of solid waste."

In State Energy Law, one definition of renewable generation includes "wastes."[63] However, this definition should not be interpreted to include mixed municipal solid waste, particularly for the State RPS. The State actions to create an RPS are being undertaken largely to improve New York's environment. MSW incineration cannot meet this objective because, as set forth above, it is not sufficiently clean. That said, some wastes can be used to generate electricity without the same negative impacts caused by MSW incineration (*see* biomass section).

The integrity of the RPS would be jeopardized if garbage incineration were included as a type of renewable energy, even if it comprises only a small portion of the RPS. Given the controversies caused by incinerator proposals, it is clear that the inclusion of garbage burning as a renewable resource would make the public suspicious about the overall integrity and effectiveness of the program, particularly as ratepayers are asked to pay the costs to implement the RPS.

c. Providing incentives for MSW incineration would be inconsistent with the State's Solid Waste Management Policy.

The State's Solid Waste Management Policy establishes that "in the interest of public health, safety and welfare and in order to conserve energy and natural resources," waste

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[63] The definition in New York State Energy Law §1-103(12) states the following: "Renewable energy resources shall include sources which are capable of being continuously restored by natural or other means or are so large as to be useable for centuries without significant depletion and include but are not limited to solar, wind, plant and forest products, wastes, tidal, hydro, geothermal, deuterium, and hydrogen."

prevention and recycling are to be pursued before burning and burying waste.[64] Much of the waste stream that is used for energy production – plastics, paper and biomass – are also readily recyclable and profitable if removed from the waste stream. Thus, designing the New York State RPS to support incineration runs contrary to the State's established Solid Waste Management Policy.

d. MSW incineration generates less energy than the amount of energy consumed to make new products from virgin materials.

More energy is saved from reducing the use of or recycling metal, glass, plastics and paper products than is generated by burning them.[65] This is because extracting and processing the materials used in modern manufacturing require more energy and natural resources than if these same products were made from recycled material or reused, even when accounting for the energy required to transport and process the recyclable materials.[66] Therefore, the small amount of energy produced by incinerating these recyclable materials is less than the energy required to manufacture new products.

This point is supported by an Environmental Protection Agency analysis of climate impacts of waste disposal options. The analysis showed that source reduction and recycling

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[64] Environmental Conservation Law §27-0106.

[65] *See Recycling Versus Incineration: An Energy Conservation Analysis,* Sound Resource Management, September 1992. *See also Wasting and Recycling in the United States 2000*, Institute for Local Self-Reliance, 2000.

[66] *Ibid.*

reduce greenhouse gas emissions, while incineration and landfilling are net contributors to global warming.[67]

3. Biomass

With the appropriate environmental and public health standards discussed below, biomass represents an important renewable resource that can reduce the amount and intensity of greenhouse gases, and should be eligible for RPS credit. Standards are required to ensure the biomass feedstock is clean and harvested in a sustainable manner, and to ensure that the conversion process (*i.e.,* combustion of biomass to generate electricity) does not degrade air quality.

Biomass will be an important energy source that will help reduce greenhouse gases. For example, energy crops (wood grown for the express purpose of generating electricity) will provide a fuel with little to no climate impacts. By continually growing trees destined for combustion generators, the carbon emitted equals that removed from the air during the growing phase, yielding a closed carbon cycle with no net impact on greenhouse gasses.[68]

Similarly, when methane from animal waste at farming operations and landfills is captured and burned to generate electricity, methane gas, a potent greenhouse gas that would otherwise have been released into the atmosphere, is destroyed.[69] Furthermore, electricity

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[67] *See Solid Waste Management and Greenhouse Gases: A Lifecycle Assessment of Emissions and Sinks,* U.S. Environmental Protection Agency 530-R-02-006, May 2002.

[68] Energy crops could also new economic development possibilities in agricultural parts of the State.

[69] The greenhouse gas impact of methane is many times greater than for the carbon dioxide generated from burning methane. *See Greenhouse Gases and Global Warming Potential Values*, U.S. Environmental Protection Agency, U.S. Greenhouse Gas Inventory Program, 2002

generated by biomass can replace coal or other fossil fuel generation, and thus reduce the climate impact from these resources.

The Biomass Working Group has made progress in defining biomass standards, as described in the consensus agreement sent to parties on August 18, 2003. The consensus agreement provides a roadmap that can be used to ensure the RPS is consistent with the objective to improve New York's environment. The OAG supports the following components of the consensus agreement:

- criteria to require a sustainable, clean feedstock of biomass materials;
- NO_x emissions standards that become more stringent over time (NO_x standard for biomass facilities by 2009 = 2.25 lbs/mWh; NO_x standard for landfill gas facilities by 2009 = 2.63 lb/mWh; NO_x standard for biomass facilities in severe non-attainment areas by 2009 = 0.3 lb/mWh)[70]; and
- criteria to ensure that eligible farms or Concentrated Animal Feeding Operations ("CAFOs") are operating in compliance with environmental and CAFO laws and regulations.

The OAG noted in the consensus agreement our concern that including "extracted biomass" from construction and demolition ("C&D") waste in the RPS would require substantial oversight and monitoring, as well as measures necessary to prevent cross-contamination of the biomass portion of mixed wastes by the non-biomass portion. This would likely increase the

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at: http://yosemite.epa.gov/oar/globalwarming.nsf/UniqueKeyLookup/SHSU5BUM9T/$File/ghg_gwp.pdf.

[70] A less stringent standard was proposed by members of the Working Group for existing biomass facilities. The OAG supports only new facilities in the RPS, and therefore opposes the proposed standard in the consensus agreement for existing biomass facilities. Consensus was not reached on the proposed emission standard for severe non-attainment areas.

administrative costs of the RPS, and their effectiveness and feasibility are unclear. Using biomass from C&D or MSW is too risky and expensive to warrant eligibility for the RPS.

The OAG also noted in the consensus agreement that co-firing biomass with nonrenewable generation may result in RPS credits indirectly supporting nonrenewable generation. However, the potential benefits of co-firing may ultimately outweigh this concern. Just as natural gas is initially needed to encourage the development of hydrogen fuel cells (*see* fuel cells discussion in Section IV.C.4.), using existing fossil furnaces to encourage the development of new biomass resources that are currently more expensive than others to develop (*e.g.,* energy crops) may also be required. Co-firing eligible biomass feedstock at coal facilities has the potential to directly reduce greenhouse gases and sulfur dioxide emissions, without exacerbating any of the negative environmental impacts of the fossil fuel facility. A co-firing project will directly displace the use of dirtier coal resources, and is therefore consistent with the notion that eligible resources should displace the need for traditional sources of electricity that pollute more. However, because co-firing projects utilize the same combustion facility to burn renewable biomass and nonrenewable resources, these projects should meet stringent criteria, including:

a. For co-firing projects where coal is the primary fuel, the project must support an energy crop (as discussed in the August 18, 2003 Biomass Working Group consensus agreement) to be allowed to participate in the RPS. Energy crops require substantial investment and are unlikely to develop if investors must also fund a combustion technology. Using existing furnaces for energy crops will increase the likelihood that this resource will develop.

b. RPS credit must be given only to the electricity generation from the biomass portion of the fuel (by prorating the BTU's derived from biomass versus nonrenewable fuel used in the boiler to produce electricity), and the measurement of the biomass portion of the fuel must be verified by a third party.

c. Prior to receiving RPS credit, the DEC must determine that criteria air pollutants and air toxics do not increase as a result of the co-firing project.[71]

d. The biomass portion of the co-firing project must meet the same NO_x standard as other new biomass resources as described in the Biomass Working Group agreement.

e. The nonrenewable facility must be fully controlled (*i.e.*, must meet Best Available Control Technology ("BACT") or, in severe nonattainment areas, Lowest Achievable Emission Rate ("LAER") standards).[72]

4. Fuel Cells

Fuel cells use a non-combustive, chemical process that can use a variety of fuels. Presently, fuel cells rely upon a supply of natural gas, which is a fossil fuel and results in carbon dioxide emissions, a greenhouse gas pollutant. However, natural gas-powered fuel cells should be considered a transitional technology that is expected to change over to hydrogen fuel in the near future. Once the technology and infrastructure advancements are available to switch to

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[71] Under the Clean Air Act, EPA is required to regulate emissions of 188 listed toxic air pollutants and six criteria air pollutants subject to National Ambient Air Quality Standards (carbon monoxide, nitrogen dioxide, sulfur dioxide, ozone, lead, particulate matter equal to or less than 10 microns in diameter.

[72] *See* 42 U.S.C. §§7470-79 and 42 U.S.C. §§7501-15.

hydrogen use, fuel cells will operate without significant air pollution (oxidation of hydrogen produces water as a byproduct).[73]

It should be recognized that the use of hydrogen-fueled fuel cells does not provide a net gain in energy, as it takes more energy to free hydrogen (from seawater or other sources) than is produced by the fuel cell. However, if hydrogen is produced during off-peak hours and used in fuel cells to produce electricity during peak hours, peak load and installed capacity requirements can be lowered. Furthermore, this technology has substantial potential to address electricity needs in load pockets and urban areas, where distributed generation can improve system reliability, and substitute for more destructive conventional centralized large scale power plants. By installing fuel cells within or on top of new or existing buildings, scarce land resources in New York City and other congested urban areas need not be taken up by major conventional generating plants, avoiding their serious negative health and community impacts. Fuel cells may also alleviate the need to add to existing distribution and transmission facilities, and improve power supply flow problems in localized areas. Also, distributed generation that is installed on the customer side of the meter is better able to maintain electric service in the event of a general power failure.

For these reasons, the OAG recommends that the RPS include provisions for fuel cell technology through a specific annual allowance of funds set aside and administered on a direct project grant basis similar to the manner that NYSERDA currently facilitates the SBC fund

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[73] New York State Energy Research and Development Authority, *Energy Efficiency and Renewable Supply Potential in New York State and Five Load Zones; Volume Four: Renewable Supply Technical Report.* August 28, 2003. p. 4-47. Posted at *http://www.dps.state.ny.us/03e0188.htm.*

(referred to by DPS Staff as the "SBC-like tier"[74]). (*See* discussion of set-aside funds in sections III and IV.D). While fuel cells are currently more costly than wind or hydro on a per kWh basis, costs may decline as the technology matures. While the electricity produced by fuel cells (as well as solar photovoltaics and other customer-sited technologies) would not be measured directly towards meeting the New York RPS 25% goal, by displacing some of the load these customers would otherwise purchase from the NYISO power system, fuel cells and other emerging technologies will lower the increment of new renewable resources procured through the RPS.

5. Solar

Solar energy is a renewable resource that meets the stated working objectives of the RPS. Photovoltaic ("PV") systems, by converting sunlight directly into electricity, are renewable, reliable, and non-polluting sources of electricity. Most PV systems are sited on rooftops, greatly reducing potential aesthetic impacts and siting hurdles, and reducing the need for new distribution/transmission capacity. PV systems also produce the most electricity during seasons and times of the day when demand is greatest, thus reducing the need for peaking power plants, which are often expensive and highly polluting.

While the cost to develop solar generation systems has steadily declined over the past 25 years, it is still one of the most expensive renewable resources on the market. For example, according to the DPS Staff Cost Study, the 2013 cost premium for residential solar PV systems is expected to be as much as $0.24 per kWh, compared to about $0.016 per kWh for New York wind farms.[75] As such, without some form of additional incentive beyond the RPS, it is clear that

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[74] *See* DPS Cost Study, p. 5.

[75] *See* DPS Staff Cost Study, Table 5O-2, p. 34.

solar PVs will not be able to compete with more mature technologies in the RPS market. Given the tremendous potential environmental, energy diversity, and grid reliability benefits that PV systems can provide, the OAG supports the inclusion of PV systems in the RPS in a set-aside fund (*see* Sections III and IV.D for discussion of set-aside fund).

In a similar vein, the OAG is directing $2,100,000 that was obtained through a Clean Air Act enforcement action against Dominion Virginia Power to the NYSERDA to fund the installation of PV systems on municipal buildings.

6. Tidal/Wave

The OAG supports RPS eligibility for tidal and wave generation projects that minimize and mitigate potential environmental and economic impacts. Although these technologies offer the benefits of tapping renewable ocean energy without any water emissions or air contamination impacts, care is needed in selecting environmentally suitable sites and designs.[76]

7. Wind

Electricity from wind is renewable and meets the stated working objectives of the RPS. Wind generation is the lowest cost renewable resources (next to hydropower) and has far greater potential for development within New York than other renewable resources. Of the various renewable resources likely to be developed through the New York RPS, wind is anticipated by DPS Staff to make up nearly half of the new renewable generation output by 2013. Large scale wind has already been successfully developed in Europe, especially in Germany, the Netherlands and Spain. Recently, the United Kingdom announced plans to install large scale wind generating

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[76] *See Ocean Energy Conversion,* Pontes, T. and Falcao, A., 2001, pp. 182, 188.

facilities as a major portion of its goal to increase renewable resources to 10% of the nation's electricity needs by 2010.[77]

DPS Staff estimates that wind resources can potentially provide 49% of the 2013 RPS increment goal of 18 million mWh.[78] This estimate is based on energy from off-shore wind projected at 9.4%, energy from wind farms at 36.9% and energy from wind clusters at 3.2% (groups of 2-4 wind turbines). NYSERDA estimates the technical potential for electricity from wind to increase from 2.3 million to 48.4 million mWh/yr from 2007 to 2022, noting that offshore installations offer the greatest potential, followed by wind farms and smaller installations.[79] New York has excellent wind power potential along the south shore of Long Island, Lake Ontario,[80] the Tug Hill plateau, and areas in the southern tier.[81]

Wind power would contribute significantly to the diversification of electric power in the state and, as an emerging technology, has the potential to provide economic benefits by attracting wind generators, manufacturers and installers to the state. Installation of wind generation in rural

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[77] The United Kingdom announced on July 14, 2003 plans to increase existing off-shore wind generation by ten-fold (6,000 mW), adding the equivalent output of six nuclear plants. http://news.bbc.co.uk/1/hi/uk/3063433.stm; http://news.bbc.co.uk/1/hi/sci/tech/3065419.stm.

[78] *See* DPS Staff Cost Study, Table 5B-1, p. 10.

[79] *See* New York State Energy Research and Development Authority, *Energy Efficiency and Renewable Supply Potential in New York State and Five Load Zones; Volume Four: Renewable Supply Technical Report.* August 28, 2003. p. 4-219. Posted at *http://www.dps.state.ny.us/03e0188.htm.*.

[80] Successful development of this off-shore resource requires yet uncertain engineering solutions to the hazards posed by ice formation and movement during winter.

[81] *See New York State Wind Resource Map*, at *http://truewind.teamcamelot.com/NY/.*

parts of New York would provide substantial economic support to distressed farm communities through land lease payments and local tax revenues.[82]

Windmills provide an important environmental benefit of emitting zero air pollutants, thus they would displace greenhouse gas and acid rain producing fossil fuel power generators that would otherwise be used. However, wind mills have some potential adverse impacts, particularly on bird populations and scenic views. Siting of wind facilities must take into account significant bird migration routes and other design criteria so as to minimize the avian and visual impacts, as is required by the State Environmental Quality Review Act ("SEQRA").[83] Careful design and siting modifications can significantly reduce the avian and visual impacts, and any issues affecting fishing, boating and marine life related to offshore projects.

Because wind power is intermittent, and weather forecasting is not completely accurate, wind generators cannot be scheduled a day ahead with as much specificity as conventional generators. Instead, they are expected to bid zero into the NYISO markets and be price takers for whatever they produce. The NYISO has thus far developed processes that enable interconnection of the Madison and Fenner wind farms without adversely impacting system reliability. However, as more wind generation is built, care is needed to address the potential of large concentrations of wind generation within a single zone or sub-zone from causing system imbalance problems caused by sudden wind fluctuations.

This reliability issue should not be overstated, as modern facilities involving many separate wind mills enable operators to maintain relatively consistent generation output as

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[82] *See* RETEC RPS Benefits Study, pp. 25-31.

[83] Environmental Conservation Law, Article 8.

individual turbines are affected by wind shifts in a gradual manner. The European successful experience with wind generation demonstrates that it is feasible to integrate substantial wind power into our electricity networks. The NYISO is studying what technical requirements are needed to accommodate greater wind generation, including possible adjustments to system reserves. Any cost impacts of such reliability protection measures would be offset by the benefits that wind power provide through diversification of non-fossil fuel dependent resources.

Other states have successfully devised means for integrating intermittent renewable generation into their power system grid operations. The Electric Reliability Council Of Texas ("ERCOT," Texas' independent system operator) requires intermittent renewable generators to bid their generation into the day ahead market and holds them liable for missing their commitments. However, intermittent generators can adjust their offering amounts until one hour before the schedule period.[84] This bid and scheduling requirement has not prevented wind generators from supplying power to the Texas grid. In 2002, Texas had approximately 1,058 mW of installed wind capacity which produced 2,451,484.12 mWh of electricity. In the future, the Texas RPS is slated to add approximately 1,800 mW of new renewable generator capacity (which is expected to be mostly from wind power).[85] The California Independent System Operator ("CAISO") recently established a Participating Intermittent Resources Program ("PIRP") that permits intermittent renewable generators (*e.g.*, solar or wind) to schedule energy in the forward market without incurring imbalance charges when the delivered energy differs

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[84] *September 1, 2003 ERCOT Protocols, § 4: Scheduling.*

[85] *ERCOT 2002 Annual Report On The Texas Renewable Energy Credit Trading Program*, and *Annual Renewable Energy Generation in Texas by Technology Type*, *http://www.texasrenewables.com/publicReports/rpt8.asp.*

from the scheduled amount.[86] The PIRP requires that intermittent generators use a high-quality forecasting service selected by CAISO to determine their expected output. The CAISO nets generator deviations from the scheduled amounts over a month's time, minimizing reserve and imbalance costs. A total of 500 mW of wind generation is expected to participate in the PIRP by the end of 2003 (for example, one participating wind generator operates 81 turbines having a combined capacity of 162 mW).[87] California already has 1800 mW of installed wind generation and the state is encouraging an additional 2000 to 3000 mW.[88]

8. Other

In their March 27, 2003 comments, Niagara Mohawk suggested that nuclear energy should be eligible for RPS credit.[89] Renewable energy is traditionally thought of as energy from a source that is not depleted when used, such as water, wind, or solar. Therefore nuclear energy, which is fueled by uranium, a finite natural resource, is not by any common definition of the word, "renewable." More importantly, nuclear energy fails to meet the working objectives set forth in this RPS proceeding, because of its environmental impacts, health risks, radioactive waste, and the widespread environmental harm and economic loss in the event of accidental or

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[86] *See http://www.caiso.com/docs/2003/07/03/2003070315191117648.pdf. See also CAISO Tariff, Eligible Intermittent Resource Protocol § 2.2.*

[87] Miura, Lauren, *Greenwire: California Changes Rules For Intermittent Sources,* September 23, 2003 (describing FPL Energy's High Winds Energy Center in Solano County, CA).

[88] Abernathy, Randy, *Wind Energy in the California Market*, *http://caiso.com/aboutus/contactus/WindEnergy.pdf.*

[89] March 27, 2003 *Comments of Niagara Mohawk Power Corporation,* p. 8.

inadequate operation. These impacts are vastly out of proportion to the more traditional renewable resources.

After decades of operating experience, it is clear that nuclear power is very expensive. Any fair accounting must include the currently externalized costs of uranium mining and fuel fabrication, federal liability insurance, fuel and wastes transportation and short and long term management of nuclear waste and fuel.[90] The RPS rate payer premium should not be used to pay these industry expenses.

Furthermore, there are financial and health risks of long-term closure of large areas of land and damage to natural resources in the event of a severe release of radioactive contamination.[91] Finally, nuclear power visits other impacts on the environment, such as thermal water pollution, and loss of aquatic wildlife, and requires establishment of a permanent repository for the radioactive waste, spent fuel and decommissioning waste. For all these reasons, the OAG opposes including nuclear energy as an eligible energy source in the RPS program.

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[90] *See* The Atomic Energy Act y 1954, 42 U.S.C. §2210 (2003)(the Price Anderson Act limits liability of nuclear operators); *See also* Gardner, Gary, Chris Bright, Christopher Flavin, Mia MacDonald, Anne Platt McGinn, Danielle Nierenberg, Payal Sampat, Janet Sawin, Molly O'Meara Sheehan, Howard Youth, and Linda Starke, eds. *State of the World: A Worldwatch Institute Report on Progress Toward a Sustainable Society,* 2003. pp. 87-89.

[91] *See* Collins, T.E; Hubbard G., *Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants*. NUREG-1738, Appendix 4. Nuclear Regulatory Commission, Washington D.C.: U.S, 2001. *See also A Safety and Regulatory Assessment of Generic BWR and PWR Permanently Shutdown Nuclear Power Plants*, prepared by Brookhaven National Lab for the Nuclear Regulatory Commission, 1997.

9. Customer-sited renewable resources

The OAG supports the development of customer-sited, clean renewable energy. Customer-owned solar PVs, or fuel cells on premises can reduce demand in load pockets, offset air pollution emissions and contribute to diversification of the energy base. Therefore the RPS should be designed to accommodate and encourage this decentralized power generation resource. As explained in sections III and IV.D, herein, the OAG supports use of specified set-aside funds for these emerging technologies to be administered in a manner similar to the SBC on a project-specific grant process.

Significant challenges need to be overcome for customer-sited generation to participate in the RPS credit trading market. To meet RPS credit trading criteria, multiple customers at multiple sites would need to be aggregated so as to amass sufficient scale. In addition, administrative costs would be increased since the RPS-implementing agency would have to verify the generation output from numerous behind the meter sources and verifiable means of quantifying production from each installation would be needed. These myriad issues and expenses are avoided by using a set-aside fund, rather than the RPS credit market, to develop emerging technologies.

Other incentives to encourage customer-sited generation should be continued. The Commission should require distribution utilities to cooperate with distributed generation developers, to lower barriers to interconnection while maintaining system safety, and to permit net metering of retail electricity bills.

D. Tiers

The OAG has concerns[92] about any multi-tier design which would distinguish between different renewable technologies (*e.g.*, clean vs. dirty, existing vs. new, mature vs. emerging, and distributed vs. central generation) or ensure renewable resources are developed in specific locations. Tiers would unnecessarily make the RPS more complicated, less transparent, and more difficult to administer. However, the issues that various tier proposals seek to address are important and must be addressed as part of the overall RPS package; however, they can better be addressed through other RPS design features and non-RPS incentives.

Tiers should not be used to allow less desirable resources to participate in the RPS by providing less credit to "dirty" renewables and more credit to "clean" renewables. Tiers should not be used to settle the controversy of what renewable technologies should be eligible under the RPS. All RPS technologies must provide clear environmental and public health benefits to the State, and should meet the standards described in section IV.C above.

A maintenance tier for existing renewable resources is also unnecessary, since the majority of existing renewable resources in New York State is large-scale hydropower that is unlikely to go offline in the foreseeable future. A maintenance tier could also reduce demand for new renewables. With such a tier, there is a possibility that retailers could game the RPS credit market by buying more imported large-scale hydropower (or other "existing" resources in other states) to increase the baseline, thereby decreasing the incremental new resources they would otherwise be required to procure. This could decrease demand for new renewables and result in fewer renewable facilities developed in New York.

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[92] *See* AG's April 25, 2003 submission to parties on tiers issues.

The OAG does not support a tier design for emerging technologies and customer-sited resources, such as small wind, fuel cells, and solar PV. However, to ensure these resources are developed, the OAG supports a set-aside fund to provide incentives to developers of emerging technologies (*see* discussion of set-aside fund in sections III and IV.D).

V. Overall RPS Structure

A. Central Procurement Is The Preferred Structure

The OAG's March 28, 2003 responses to the threshold issues raised by this proceeding recommended that the Commission consider two alternative RPS structural models: individual procurement and centralized procurement. The collaborative workgroups devoted considerable effort to evaluating the pros and cons of each option, as well as considering how each approach could be effected.

The choice of which structural model is preferable should be based on an assessment of several criteria. The Commission should choose the structure which is most likely to accomplish the RPS objectives, is most administratively efficient, and is most likely to survive any legal challenges that opponents may raise.

The OAG does not oppose either structural model. We prefer the centralized approach because it is more likely to achieve the 25% renewable generation target by 2013. The individual accountability of assigning a specific entity to take responsibility for creating a successful RPS is more likely to produce positive results. This is demonstrated by the successes to date that NYSERDA has had in implementing the Systems Benefits Charge program that the Commission adopted with goals similar to the RPS. In comparison, the alternative individual compliance approach would rely upon the cooperation of LSEs to implement the RPS. As these parties have

not been enthusiastic supporters of the creation of the RPS, the individual compliance option would make the RPS vulnerable to possible resistance by the LSEs. Indeed, the lack of meaningful support by the LSEs for analogous Commission efforts to encourage demand side management, distributed generation, and electronic data interfaces for retail competition has hampered the effectiveness of such programs. Since the Commission wants the RPS to succeed, it should not rely on unsympathetic LSEs for implementation, but instead should turn to an entity that is committed to strive for its success.

Another reason for preferring the central procurement option is that it is likely to be the most cost-efficient means of effecting the RPS. A single entity charged with soliciting developers, evaluating auction bids, negotiating long term contract terms and monitoring compliance is likely to reap economies of scale that would not be enjoyed if such functions were to be duplicated at each of the six distribution utilities. Moreover, the centralized approach would eliminate any need to establish processes for LSEs to bank or borrow renewable credits from year to year, as well as any need to monitor LSE compliance and enforce collection of non-compliance payments. The administrative burdens involved in accounting for individual LSEs' procurement actions, and the periodic auditing thereof, would be avoided under the centralized approach.[93] Although establishment of a renewable credit trading system is not necessary for the centralized procurement approach to meet the goals of the RPS, such a market process would not be precluded by the central procurement option either. Thus, to the degree that regional trading

[93] Although some accounting of electricity produced by the renewable generators would be required in either alternative model, this data is readily retrievable from the NYISO dispatch records.

of renewable credits meets the needs of the renewable developers, such a market system could exist with either the central or individual procurement model.

Because the OAG might be called upon to represent the state in the event that legal challenges might be made to the Commission's adoption of an RPS, it is not appropriate to state our views on jurisdictional questions of law in this context.

B. Individual Compliance

Although the centralized approach is preferable, the individual compliance model can also meet the objectives of the RPS. Working Group Two reached consensus on a number of issues related to individual compliance. Drawing from this consensus, DPS Staff drafted a straw proposal for individual compliance.[94] The following comments are limited to the consensus issues and the individual compliance straw proposal.

1. Participating Entities

In order to meet the objective of procuring 25% of the State's electricity demand (as measured by sales of electricity) from renewable resources, the PSC should first measure the total load in the State served by delivery companies, cooperatives, municipal electric companies, LIPA, NYPA and ESCOs. The OAG supports the DPS Staff straw proposal that all of these entities (and their customers) should participate in the RPS, since this is the most equitable way to achieve the aggressive RPS goal, and all of these entities will share in the projected benefits, either directly or indirectly.

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[94] *See* May 15, 2003 DPS Staff Straw Proposal.

Small scale ESCOs may face difficulty contracting for their annual incremental proportional percentage of power with renewable generators in a manner consistent with business realities. For example, if tradable credits require a minimum sized unit of energy, such as one mWh, an ESCO serving a small load might be competitively disadvantaged by having to purchase renewable energy credits in whole units of a scale that exceeded their annual RPS target percentage. A system for trading renewable energy credits should be designed to alleviate this scale problem.[95]

2. Adjustment of Target Levels

Because the PSC does not have jurisdiction over NYPA and LIPA, these authorities would not be bound by a PSC order adopting the RPS. If NYPA or LIPA choose not to participate in the RPS, however, the 25% goal would not be met unless their load is allocated to the remaining entities. For all New York electricity users to share equitably in the benefits and costs of the RPS, it is important that NYPA and LIPA not be exempted from participation. Therefore, the OAG recommends that the PSC and the Governor's Office strongly encourage NYPA and LIPA to participate in the RPS.

3. Determination of Individual Entity Target Levels

The OAG supports the consensus of Working Group Two that targets should track actual loads by entity, so that each LSE's annual RPS quota would be set according to its most recently available load data as a proportion of the state's total electricity requirements. The OAG also supports the consensus proposals for use of credit trading and banking with a true-up period to

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[95] Design options include valuing renewable credits in kWh units rather than mWh units, or a mechanism to allow multiple ESCOs to aggregate their load.

demonstrate compliance with meeting the targets (*see* discussion in section VI.C). Trading of renewable credits or certificates would permit smaller LSEs to meet their RPS quotas without sacrificing economies of scope and scale. Banking of credits is necessary to permit some flexibility in the timing of renewable generation production.

4. Alternative Compliance Mechanism

The OAG supports an Alternative Compliance Mechanism ("ACM") that would be triggered when sufficient quantities of renewable resources are not procured by an LSE to satisfy its target. Should insufficient renewable resources be procured, LSEs could meet their obligation by paying the lesser of $50 per mWh or 150% of the state-wide average renewable energy credit market price. For example, if an LSE fails to meet its year's RPS quota by 1,000 mWhs and the average market price for certificates is $30 per mWh, the LSE would be required to contribute $45,000 to the ACM.[96] This, in effect, sets a $50.00 per mWh cap on the maximum premium that might be paid for renewable electricity through the RPS, as LSEs would likely pay the $50/mWh into the ACM fund rather than buy renewable credits at a higher price.

The PSC should retain flexibility in adjusting this cap prospectively to take into account future developments in the RPS and New York's wholesale power generation markets.[97] This ability to adjust the cap would ameliorate some of the problems previously experienced with PSL § 66-c (commonly referred to as "the 6¢ law").

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[96] Since 150% of the $30/mWh average credit price equals $45, the $50 cap would not be used to compute the ACM contribution in this example. If the average price of credits rose to $40/mwh, then the ACM payment would be $50/mWh (the lesser of $50 and 150% of $40).

[97] Adjustments to the cap should not affect long-term commitments already made between renewable generators and the LSE or central procurement agency.

The moneys collected through the ACM should be directed to a dedicated fund for renewable energy development projects administered by NYSERDA. These funds should supplement the set-aside fund for emerging technologies (*see* sections III and IV.D).

5. Enforcement Mechanism

The ACM will be a sufficient enforcement mechanism, so long as LSEs cannot recoup all of the ACM costs. The OAG recommends that LSEs that use the ACM be allowed to recoup from ratepayers only 100% of the market value of the RPS credits not procured from renewable resource generators. Since meeting the RPS quota without defaulting to the ACM would have cost this hypothetical LSE $30,000, the extra $15,000 ACM expense that cannot be recovered from customers will provide further incentive to LSEs to be active participants in the RPS.

6. Cost Recovery for Delivery Utility Compliance

The PSC must reserve the right to review the prudence of utility RPS procurement decisions to ensure they take maximum advantage of potentially available renewable resources. Prudently obtained RPS credits should be allowed as a recoverable expense of rate-regulated LSEs. However, as noted above, any portion of a regulated utility's ACM contribution that exceeds the average credit price should be deemed imprudent and not recoverable in rates.

C. Central Procurement

The RPS collaborative working group analyzed two alternatives for effecting a central procurement model. One would be to amend the NYISO open access transmission tariff ("OATT") to authorize this private not-for-profit entity to establish a New York State Renewable Portfolio Board that would create a market for renewable generation contracts and distribute the resulting costs and premiums among all customers that receive electricity dispatched by the

NYISO.[98] The other alternative would be to charge an appropriately authorized state agency with the tasks of soliciting new renewable facility bids, entering long term production contracts with the successful developers, and then distributing the costs and premiums among participating LSEs to be ultimately paid by their retail customers.[99]

The NYISO proposal is attractive for several reasons. As the NYISO already operates multiple markets (including Installed Capacity, Ancillary Services, Day Ahead Energy and Hour Ahead Energy) and has established an effective Market Monitoring Unit that polices market participants to protect against market manipulation, it is uniquely situated to establish an analogous market for renewable energy credits. Also, the tariff collection process already exists and could readily facilitate collection of the costs involved in operating the RPS. Because all LSEs in New York are subject to the OATT, this approach would assure that all New York electricity users would share in the costs, as well as benefit from the RPS.[100] This would be the most equitable process as well as keep the per-customer costs as low as possible.

However, the chief drawback to the NYISO proposal is that body's governance procedures which require a 58% vote by the market participants in favor of amending the OATT and taking on the responsibility for running the RPS (at the Business Issues Committee and the

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[98] A detailed description of this proposal is set forth in the Work Group Three Final Report: *Centralized Procurement of Renewable Supply Utilizing a Newly Defined Supply Group with Participant Funding via the NYISO OATT*.

[99] A detailed description of this proposal is set forth in the Work Group Three Final Report: *State Agency Procurement Model.*

[100] The state agency alternative would not cover customers served by NYPA, LIPA and the municipal utilities unless these entities voluntarily choose to participate or decide to operate similar parallel renewable electricity programs of their own.

Management Committee), as well as approval by the NYISO Board of Governors and the FERC.[101] Internal committee processes necessary to effect this option could add considerable delay as well as alter various RPS design elements that were already addressed in the Commission's Order adopting an RPS.

The OAG recommends that the Commission first pursue the NYISO proposal, but if NYISO approval is not completed within six months, the state agency alternative be employed instead.

Whichever version of central procurement proves most practical, the contracts should provide for payments to renewable generators that are net of the wholesale LBMP market price where the generator is located. Thus, if two wind power developers offered to build similar-costing projects, one on Long Island and the other in Western New York, the differing average zonal prices for wholesale power between these regions would result in a lower RPS premium for the Long Island project. The developer is indifferent to the fact that the portion of its revenues from RPS premiums varies inversely with changes in the zonal wholesale LBMP, so long as it is assured that the two payments together will cover its expenses plus an adequate profit. However, for the customers who must pay these state-wide RPS premiums, the incremental RPS cost of the hypothetical Long Island renewable project would be less than the alternative in Western New York, even if both developers have identical expenses. Thus, to the degree that wind power, hydropower, or other renewable resources can be developed in regions paying higher electricity prices, these new RPS generators will likely be the earlier projects to be

[101] It is also possible for the Board of Governors to adopt a proposal not supported by 58% of the participants, but this in turn would require a more formal FERC review and approval procedure.

funded. By using competitive selection of renewable resource proposals, the least cost projects will be developed first. As a result, market forces will minimize ratepayer costs and help to alleviate capacity shortages by first building where new generation is needed most.

VI. Credit Trading

A. Consensus Issues

Working Group Four reached consensus on a number of issues related to the establishment of a New York trading system that would allow the trading of renewable credits separate and apart from energy contracts or transactions.

The OAG agrees with the consensus of Working Group Four that a trading system should be developed in New York that is compatible with neighboring systems, and that it need not wait until a regional trading system is developed. The OAG also agrees that the trading system should be designed to ensure generators do not sell the same mWhs to obtain RPS credits to two different states, thereby double-counting the same electricity. Thus, for interstate RPS credit trading to have legitimacy, there must be adequate monitoring, auditing and disclosure of information by participants both within and outside New York.

In addition, electricity produced to meet the RPS quota should not be marketed as environmentally beneficial power, since it does no more than meet the PSC minimum targets. To do otherwise would be a deceptive trade practice in violation of New York General Business Law Article 22-A. If the individual procurement model is adopted, the RPS design must ensure that any "green power" marketing claims that LSEs make to consumers are limited to that renewable power purchased above the mandatory RPS quota. Under a central procurement approach, green power marketers would not be permitted to offer to retail consumers generation

already committed to meeting the RPS requirement, but they would be able to market surplus renewable resource outputs to customers to support greater development of renewable generation than the RPS target.

Should there also develop alternate environmental attribute credit markets (such as for greenhouse gas emission reduction), renewable generators participating in the New York RPS should also be permitted to earn these alternate credits. The PSC need not set criteria in the RPS concerning how such external markets would account for renewable generation participating in New York's RPS. By supplementing the existing renewable generator revenue streams (which include the wholesale electricity market price, ICAP[102] payment, renewable resource tax credits and the RPS premium) with such new funding sources, the cost of New York's RPS subsidy can be reduced, to the benefit of all consumers (*see* discussion in section III). Furthermore, supplemental attribute trading could also lower the above-market premium that green power marketers charge their retail customers and increase the number of customers willing to support production of renewable power in excess of the 25% RPS target.

B. The Deliverability Requirement

The OAG supports an RPS deliverability requirement, so that to receive the RPS credit, the energy must be delivered to the New York State power grid for load in New York. A generator that meets the eligibility requirements must also arrange to transmit the power to the state. This will ensure that, as far as possible, imported eligible renewable resources will actually

[102] The NYISO allows all in-state generators to auction their installed capacity in semi-annual seasonal markets that are based on the maximum output potential of their plants, not the hourly generation produced. The NYISO's ICAP and Ancillary Services markets are used to meet the 18% excess reserve requirement that supports system reliability in the event that a generator or transmission line is suddenly unable to supply customers.

provide environmental and economic benefits to New York's ratepayers by displacing existing generation in New York State. A delivery requirement will better ensure that pollution from existing generation is displaced, and may also act to reduce wholesale electricity prices in the State. According to the DPS Cost Study, without a delivery requirement and associated wholesale price reductions, the 2013 costs to implement the RPS would increase by 11% or approximately $26.9 million (from $242.8 million).[103] Since New York customers will pay the costs of the RPS, they should be assured that the state uses the premium cost power they pay for.

Opponents to the delivery requirement argue that because of the intermittent nature of many renewable resources, it is difficult to schedule the delivery of power, and the costs to do so would be greater than any support they could expect to receive through the RPS. The OAG agrees that a delivery requirement based on an hourly match would be too burdensome for some out-of-state renewable generators. However, a longer match period would ease this burden. A monthly match similar to DPS conversion transactions would require an out-of-state eligible generator to document that it generated electricity over the course of one month for a buyer in New York State. By adopting a monthly match requirement, the PSC will ensure New York ratepayers benefit from out-of-state resources, while providing flexibility to the generators in delivering their electricity to the State.

Finally, requiring generators to document that their renewable electricity production represented by RPS credits was delivered to serve New York load will assist in performing audits and discourage potential fraudulent trading practices.

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[103] DPS Cost Study at pp. 12, 42.

C. Other Open Issues

1. Banking & Borrowing

If an individual compliance model is adopted, it is likely that LSEs will need some flexibility in meeting their periodic procurement targets because of various contingencies. These include delays by developers in obtaining site approvals or completing construction and interconnections with the transmission system, weather variations which alter the amount of electricity produced during annual accounting periods, etc. Also, certain economies of scale might make development of a new renewable generation facility more efficient if it were built to produce more electricity than the current interim incremental RPS target requires.

So as to allow LSEs to maximize efficiency in meeting their RPS targets, LSEs should be permitted to shift ahead or back a reasonable portion of their renewable electricity quotas by borrowing from the following procurement period or banking surpluses to be applied prospectively. In our view, RETEC's proposal to limit the shifting of annual compliance requirements six months forward or backward is too limited a time period. Given the timing issues involved in bringing new renewable facilities online (*e.g.*, construction delays, etc.), LSEs will likely require greater flexibility, with at least a full year's leeway to carry forward renewable credit surpluses or make up shortfalls. To ensure that this flexibility is not abused, clear mandatory monetary non-compliance penalties will be necessary, and reported production should be audited.

2. Compatibility with Other Jurisdictions

The development and growth of renewable energy resources may be enhanced by establishing an RPS that is compatible with neighboring jurisdictions. For instance RPS credits

that are tradable in neighboring states and provinces may have more value than those that are not. Flexibility in the design of the New York credit system to allow trading of credits may enhance the RPS credit market. Reciprocal arrangements with nearby states or provinces that adopt substantially similar RPS programs should be facilitated. However, as recent disclosures of Enron and other power marketers' irregularities have demonstrated, care is needed to assure that electricity trading processes are legitimate sales of power, not illusory sham transactions. Thus, cooperation with jurisdictions and power pools outside New York will be necessary to ensure accountability for interstate RPS trading.

VII. Contracting Standards

A. The Role of Long Term Contracts

It appears that, in today's capital market, little if any new renewable generation can be built without commitments of substantial duration. However, if one were to have considered this question in 1999, before the recession, Enron accounting scandal, and California electricity supply crisis, a very different answer might result. Since the RPS is looking ahead ten years and more, the potential for unforseen shifts in capital conditions over the coming decade or so make it impossible to predict with any accuracy what terms renewable developers will require a few years hence. Therefore, rather than set any specific contract term now, the Commission should adopt a flexible approach which adjusts to changing capital availability conditions and prudent business practices. The procuring entity (either centralized or individual LSE) should tailor each request for bids taking into account then current capital market conditions. Thus, if the contract term initially offered is too short to attract qualified bidders, a new offer for a longer term would become necessary. This lack of preordained conditions is the fundamental nature of market-

based business arrangements, and, within predetermined price cap limits (*i.e.*, the ACM), should be emphasized in developing a New York RPS.

VIII. Cost and Benefit Considerations

We appreciate efforts by DPS Staff,[104] RETEC[105] and the Joint Utilities[106] to build a record quantifying the anticipated costs and benefits of the RPS. However, differences between the assumptions made[107] and models used make it difficult to reconcile the different results these analyses produced. Thus, it is not feasible in the time available to examine each cost analysis and test the accuracy of each quantitative result derived therefrom.[108] Indeed, the Joint Utilities deemed DPS Staff's proposal to reconcile their two analyses with a consistent set of assumptions

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[104] DPS Staff used the MAPS computer model to project RPS costs through 2013 with a number of sensitivity tests for alternate design options.

[105] RETEC presented a qualitative analysis focusing on the environmental and public health benefits from reduced air emissions, the RPS's potential to reduce natural gas (and thereby fossil fuel generation) prices, and the economic benefits to New York State in the form of employment, taxes, land leasing, etc. likely to result from the RPS

[106] Joint Utilities presented a cost analysis based upon an Integrated Planning Model program.

[107] For example, Scenario 1 examined by the Joint Utilities assumed that 5% of the incremental renewable resources would be reserved for solar photovoltaic generation and 5% more for fuel cells. However, DPS Staff's eligibility assumptions did not use this tiered approach, but instead assumed a reservation of specific funds each year through 2013 to be used for direct grants to establish limited projects using these technologies. The Joint Utilities' Scenario 2 also does not mirror the assumptions employed in DPS Staff's analysis. Furthermore, the two computer models employed differ in design and do not permit an even comparison.

[108] At a forum held on August 13, 2003, presentations were made by each of the parties who filed cost analyses. Oral questions from the parties identified numerous differences between these studies and numerous written requests that followed remain outstanding as these comments are being prepared.

too difficult with the current comment schedule.[109] Nevertheless, the Commission need not determine to a mathematical certainty which of DPS Staffs, RETEC's and the Joint Utilities' predictions and calculations is most accurate. Ample evidence has been introduced to demonstrate that the overall benefits of the RPS as proposed outweighs and justifies the costs.

The OAG is confident that the combined benefits offered by the RPS justifies the costs of the program, as estimated by both DPS Staff and the Joint Utilities. While monetary quantification of the improvements to human health and the environment from reduced air emissions of toxic metals, greenhouse gases, nitrogen and sulfur oxides is difficult to estimate, there should be no doubt that these benefits are real and substantial. Each MWh produced by a non-polluting renewable generation resource that is added through the RPS will offset the emissions that would otherwise be produced by fossil fuel conventional generation. This will reduce New York's electricity generation dependence upon natural gas, with its worsening price volatility and potential shortages from political events and infrastructure deficiencies. While the addition of 8 - 10% new renewable electricity may cost more than conventionally generated electricity market prices, the offsetting effect of the RPS on the much larger conventional generation through hedging against spikes in natural gas prices will mitigate the RPS premium.[110] Although New York's RPS target of 25% is not likely to influence the price of natural gas by itself, we are not the only state that has adopted or is considering the adoption of a similar RPS

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[109] *See* September 8, 2003 letter by Robert Glasser, *et al.* to DPS Counsel Paul Agresta.

[110] *See* DPS Staff Cost Study at 19.

program.[111] In addition, federal proposals to establish a national RPS[112] target demonstrate that broad-based expansion of renewable resources may well have a positive impact on natural gas prices, and thereby lower the price of conventional generation. New York's economy will benefit from reducing the outflow of New York dollars to purchase fossil fuels for 25% of the state's electricity generation. In addition, the temporary and long-term jobs created by construction and maintenance of new renewable resources exceed the economic boost that would result if this electricity were supplied by conventional generation.[113]

Moreover, considering the ten-year period that the RPS is to take to achieve the 25% renewable resources goal, it may not be feasible to make any solid cost predictions over such an extended period. Without criticizing the excellent efforts made in each of these presentations, we doubt that anyone possesses sufficient knowledge of future developments in this complex field sufficient to make accurate predictions of this sort. All one need do is look back ten years and recall the prevailing assumptions that were accepted by industry experts at the time to see that the reality which has since occurred differs significantly from what was expected then. Most likely, the next ten years will also bring unanticipated changes in many of the inputs and assumptions

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[111] The following states have adopted an RPS: Arizona, Connecticut, Iowa, Maine, Massachusetts, Minnesota, Nevada, New Jersey, New Mexico, Pennsylvania, Texas, and Wisconsin. Many other states are considering adopting an RPS.

[112] *See e.g.*, March 27, 2003 testimony of FERC Commissioner William L. Massey before Senate Committee On Energy And Natural Resources, p. 8, "I support a national policy of promoting renewable resources, so I would recommend that the Committee consider other effective ways to achieve such a goal in the absence of PURPA. A reasonable renewable resource portfolio standard is worthy of serious consideration." *http://www.ferc.gov/press-room /ct-current/03-27-03-massey.pdf.*

[113] *See* RETEC RPS Benefits Study, pp. 24-30.

used in each of these analyses, including, *inter alia*, future natural gas prices, changes in government emissions regulatory policies, demand trends caused by the direction of the state and national economies, geopolitical events affecting the electricity sector, and technology advances.

IX. Conclusions

The PSC has undertaken a vital task in conducting this RPS design effort. Numerous parties from all sectors, representing the interests of renewable generators, distribution utilities, ESCOs, customers, unions, environmental advocacy groups, market operators and state agencies have made a major effort to work together in this effort. The parties have devoted substantial time evaluating various alternatives, considering the implications of the RPS on competing interests, and striven to forge a number of consensus proposals to aid the Commission's task.

Now that so much of the groundwork has been laid through this major cooperative effort, the record establishes sufficient basis for the PSC to adopt the key design elements that can best accomplish the goals of the RPS. The OAG urges the Commission to proceed with its determination as soon as practical. The PSC's prompt adoption of a New York RPS will provide residents and businesses the public health, environmental, system reliability and economic benefits that result from increasing our use of renewable resources to generate at least one-fourth of the state's electricity needs.

Dated: New York, New York
September 26, 2003

Respectfully submitted,
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APPENDIX

Resources Systems Group, Inc.
analysis for
New York State Attorney General's Office

A COMPARISON OF EMISSIONS IN NEW YORK:

Seven Municipal Waste To Energy Plants,

Huntley Coal-Burning Generating Station, and

Sithe Combined Cycle Natural Gas Independence Power Plant.

September 15, 2003

A COMPARISON OF EMISSIONS IN NEW YORK:

SEVEN MUNICIPAL WASTE TO ENERGY PLANTS, HUNTLEY GENERATING STATION, AND SITHE INDEPENDENCE POWER PLANT.

INTRODUCTION

This report presents comparative emissions for seven municipal waste to energy (MWTE) plants in New York State. The data set used for this analysis is the U.S. EPA MACT Compliance Database. Three MWTE plants are not subject to the MACT requirements due to their smaller size and are therefore not included in the MACT Compliance Database. These MWTE plants are: Dutchess County RRF, Oswego County, and Islip RRF. The individual and average emissions data are compared with the Huntley coal-fired power plant and the Sithe Independence natural gas-fired power plant.

ANALYSIS

Data were gathered from the U.S Environmental Protection Agency (EPA). Total annual emissions were derived from continuous emissions monitors (CEM) and EPA AP-42 Emission Factors found in EPA's E-Grids (Version 2002) database coupled with MACT Compliance Database for MWTE power plants.

The results are shown in Table 1. In interpreting the results, it important to note the very large variation between MWTE plants, especially with respect to SO2, mercury, lead, cadmium, and dioxins (CDD/CDF). Plants may differ from the average by a very large margin, which suggests that any decision concerning the RPS status of MWTE plants should take that variability in to consideration. Furthermore, MWTE plants can exhibit very large temporal variability depending on load and combustion conditions so the performance of an individual plant may also be highly variable. Our analysis indicates that the variability in emissions is mainly due to combustion or control characteristics rather than the heat rate. The range of variability for many pollutants is much greater for MWTE than coal, oil or gas.

Table 1: Facility Emissions Expressed in lbs / MWh for Selected Pollutants.

Pollutant Name	Municipal Waste to Energy Facilities[1]								Coal[2]	Gas[3]
	Adirondack RRF	Babylon RRF	Hempstead	Huntington RRF	Niagara Falls	Onondaga Co. RRF	Wheelabrator Westchester, L.P.	**Average MWTE**	**Huntley**	**Sithe Independence**
	lbs. / MWh	*lbs. / MWh*	*lbs. / MWh*	*lbs. / MWh*	*lbs. / MWh*	*lbs. / MWh*	*lbs. / MWh*	*lbs. / MWh*	*lbs. / MWh*	*lbs. / MWh*
NOx	6.7	5.8	5.2	4.9	5.3	4.5	5.0	**5.3**	**5.7**	**0.108**
SO 2	0.08	0.03	0.64	0.18	0.41	0.12	0.98	**0.35**	**27.17**	**0.025**
CO 2	900.3	498.6	802.4	896.9	387.0	824.4	812.6	**731.7**	**2106.9**	**827.7**
Mercury	0.001	0.0004	0.00009	0.00006	0.001	0.00002	0.0006	**0.00047**	**0.0001**	**N / A**
Lead	0.001	0.00003	0.00004	0.0002	0.0001	0.0002	0.0001	**0.0003**	**0.00006**	**N / A**
Cadmium	0.00009	0.000004	0.00001	0.00002	0.00001	0.00001	0.00001	**0.00002**	**0.00001**	**N / A**
PM 4	0.031	0.021	0.023	0.059	0.033	0.023	0.022	**0.030**	**0.682**	**N / A**
CDD / CDF 5	0.000001	0.00000001	0.0000001	0.00000001	0.0000002	0.00000001	0.00000004	**0.00000015**	**0.00000012**	**N / A**

1. Source: U.S Environmental Protection Agency MACT Compliance Database 2001 (2000 Waste Combustion Data) ; CO2 from EGRID 2002

2. Sources: NOx, SO2, and Mercury from E.P.A. EGRID 2002; Lead, Cadmium, PM, CDD data estimated using E.P.A. AP-42 Emission Factors.

3. Sources: NOx from CEM, SO2 and CO2 from E.P.A. EGRID 2002. All other pollutants are not applicable (N/A) to Natural Gas Combustion.

4. PM = Particulate Matter

5. CDD / CDF = Polychlorinated Dibenzo-P-Dioxins / Polychlorinated Dibeznofurans

It is useful to compare emissions that have been standardized to a common unit. This is done by weighting the individual emissions for each source by a toxicity weighting factor, which is proportional to the pollutants toxicity to human health. Toxicity weighted emission units can then be summed so that plants can be compared. The values for toxicity weighting factor values given in Table 2 are used to derive the emissions expressed in toxicity units in Table 3.

In interpreting the emissions expressed in toxicity units, it is important to note not only the variability in pollution rate, but also the very large toxicity factor which applies to dioxins (CDD/CDF) and some of the toxic metals. The result is that the emissions expressed in toxicity units are very sensitive to small differences in the emission rate of pollutants such as dioxins, which have high toxicity weighting factors. The results given in Table 3 should be taken as an approximate indicator of human health risk. Small difference between plants or fuel types may not be significant.

Table 2: Toxicity Weighting Factors

Pollutant Name	Toxcity Weighting Factor
NOx	4
SO_2	6
CO_2	-
Mercury	46,000,000
Lead	1,100,000
Cadmium	3,700,000
PM	2.9
CDD / CDF	1,700,000,000,000

Source: The toxicity weighting factor is based on toxicities determined by EPA and the use of the CalTOX model to estimate exposure. The methodology is described in Hertwich, Edgar. G., et al, Human Toxicity Potential for Life Cycle Assessment and Toxics Release Inventory Risk Screening, Environmental Toxicology and Chemistry 20(4), 2001. This is also the weighting method used by Environmental Defense in its Toxics Scorecard web site and in the EPIndex™ database of the Environmental Performance of the Electric Power Industry produced by Resource Systems Group Inc.

Table 3: Facility Emissions Expressed in Toxicity Units / MWh

Pollutant Name	Municipal Waste to Energy Facilities								Coal	Gas
	Adirondack RRF	Babylon RRF	Hempstead	Huntington RRF	Niagara Falls	Onondaga Co. RRF	Wheelabrator Westchester, L.P.	**Average MWTE**	**Huntley**	**Sithe Independence**
	Toxicity Unis / MWh	*Toxicity Unis / MWh*	*Toxicity Unis / MWh*	*Toxicity Unis / MWh*	*Toxicity Unis / MWh*	*Toxicity Unis / MWh*	*Toxicity Unis / MWh*	*Toxicity Unis / MWh*	*Toxicity Unis / MWh*	*Toxicity Unis / MWh*
NOx	28.6	24.8	22.5	20.9	22.8	19.3	21.3	**22.9**	**24.4**	**0.5**
SO_2	0.5	0.2	3.8	1.1	2.5	0.7	5.9	**2.1**	**163.0**	**0.2**
CO_2 [6]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**-**	**-**	**-**
Mercury	54,626.8	18,590.6	4,012.5	2,603.0	44,745.4	1,142.4	26,845.9	**21,795.2**	**2,516.2**	**-**
Lead	1,179.4	32.3	46.3	236.9	121.5	228.3	107.7	**278.9**	**64.6**	**-**
Cadmium	329.4	14.0	24.5	74.4	31.6	50.8	20.9	**77.9**	**35.1**	**-**
PM	0.1	0.1	0.1	0.2	0.1	0.1	0.1	**0.1**	**2.0**	**-**
CDD / CDF	1,215,763.7	18,402.5	153,037.6	12,525.6	256,397.4	8,530.1	62,297.5	**246,707.8**	**202,534.5**	**-**
Total Toxicty	1,271,928.5	37,064.5	157,147.3	15,462.2	301,321.2	9,971.6	89,299.2	**268,884.9**	**205,339.8**	**0.61**

6. No toxicity weighting factor is assigned for CO2 because CO2 is not a toxic air pollutant. CO2 is a greenhouse gas but no greenhouse gas weighting analysis was performed for this report.

LITERATURE CITED

Hertwich, Edgar G., Mateles, Sarah F., Pease, William S., McKone, Thomas E. Human Toxicity Potentials for life-cycle assessment and toxics releases inventory risk screening. *Environmental Toxicology and Chemistry* 2001 20: 928-939

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Education

B.S. and Ph.D. Earth Sciences, University of Bristol, England
Graduate and post-doctoral course work in meteorology, air pollution, air pollution modeling, and computer programming.

Professional Experience

Dr. High has thirty years experience in environmental research teaching and consulting. As Principal in Charge of environmental assessments, Dr. High has supervised or worked directly on a wide range of projects in the environmental field.

1986 -Present	Vice President and Co-Founder Resource Systems Group Inc.;
1987- 1994	Research Professor of Environmental Science Dartmouth College (Part time)
1977 - 1987	Research Associate Professor of Engineering and Environmental Studies, Thayer School of Engineering, Dartmouth College
1973 -1977	Assistant Professor of Geography and Environmental Science, Columbia University
1972 -1973	Assistant Professor of Engineering Science, Department of Environmental Engineering University of Florida
1968 -1972	Lecturer in Meteorology and Hydrology, University of Ibadan, Nigeria

Project Responsibilities (Partial List)

Air Impacts of the Reconstruction of the Boston Central Artery(I 93) —conducted an analysis of the air quality impacts of part of the largest highway project in the U.S. This included mobile and stationary source air quality modeling of criteria and hazardous pollutants from traffic, construction equipment and trucks in the Charles River area of Boston. The analysis provided support for litigation and intervenor opposition to a Massachusetts environmental impact statement. Client Massachusetts General Hospital.

Air Impacts of a Warehouse for C&S Wholesale Grocers—oversaw mobile and stationary source air quality modeling of criteria and hazardous pollutants from diesel trucks at the facility in Brattleboro, Vermont. The analyses provided support of an application for a mobile source air quality permit and Act 250 land use permit. Designed and coordinated an air quality monitoring program for CO, NOx, and PM10.

University of Vermont Air Quality Operating Permit Application— prepared the technical analysis for the air quality operating permit application for twenty boilers, a pathological waste incinerator and other emissions sources at the University of Vermont, Burlington Campus.

Middlebury College Air Quality Operating Permits Applications— prepared the air quality operating permit application and compliance review for all the emissions sources at the Middlebury College Campus, Middlebury Vermont.

Air quality Permit Review of a 250 MW Coal-Fired Cogeneration Plant—conducted a detailed independent review of the permit for a coal-fired cogeneration power plant in Jacksonville, Florida, on behalf of the City of Jacksonville and the Florida Chapter of the Sierra Club. Tasks included major stationary source interactive air dispersion modeling, BACT analysis, and source inventory development. The study resulted in an out-of-court settlement between the parties.

Air Quality Impacts of a 50 MW Electric Power Plant—supervised a three-person team that prepared the air quality impact assessment needed for a Federal EIS on a DOE-supported demonstration project for co-firing wood, municipal solid waste, coal, residual oil, and tires in Westbrook, Maine. This project included the use of the EPA models required for a major industrial source air quality permit.

Air Quality Impact of the Halfmoon Coal-Fired Cogeneration Plant—conducted a detailed independent review of the air quality permit application for a 210 MW fluidized bed coal-fired power plant in Halfmoon, New York. Provided expert testimony on behalf of the Commonwealth of Massachusetts and the Sierra Club.

Air Permit Application for a Wood-Fired Gasifier/Boiler at the Vermont Tubbs Factory in Brandon Vermont— provided air modeling and odor analysis for an air quality permit application. Expert testimony was provided in a Vermont Act 250 hearing.

Air Quality and Shade Analysis of the Effects of a Cineplex Theater on the Habitat of the Endangered Karner Blue Butterfly in Guilderland New York—provided an analysis of the effects of shade from the cineplex building and an analysis of the traffic induced air pollution on the habitat at the Karner Blue Butterfly Reserve adjoining the Crossgates Mall in Guilderland New York.. Provided expert testimony at public hearing on a land use permit.

Comparison of Air Quality Impacts of Alternatives to the Basin Mills Hydroelectric Project— Provided air quality analysis and expert testimony before the Maine Department of Environmental Protection on air pollution from fossil fueled alternatives to the Basin Mills Hydroelectric Project in Maine.

Acid Deposition and Ozone Monitoring Program—designed and managed a five-year program for monitoring long distance sulfate transport, ozone levels, and cloud and precipitation chemistry in the White Mountains, New Hampshire. The monitoring program was funded by the EPA and met EPA quality control procedures. Data were submitted to the national data base on acid precipitation prepared for use in the National Acid Precipitation Assessment Program.

Seabrook Nuclear Power Plant Evacuation Plan Review—provided an in-depth review of the evacuation plan for the Seabrook Nuclear Power Plant in southern New Hampshire. Provided testimony before the Nuclear Regulatory Commission on behalf of the Commonwealth of Massachusetts.

Brattleboro Vermont Landfill Gas Recovery Air Quality Analysis—oversaw modeling and air toxics analyses necessary for an air quality permit application. Prepared expert testimony for the Public

Service Board consideration of the air quality impacts of five landfill gas-fueled electric generators.

Burlington Intervale Landfill Gas Recovery Electric Generators—prepared expert testimony based on refined modeling of the air quality impacts of two landfill gas-fueled electric generators. The testimony was filed for the Vermont Public Service Board environmental review proceedings.

Brattleboro Retreat—oversaw modeling, risk analyses, and BACT analyses for air toxics impacts from an oil-fired heating system at the Brattleboro Retreat hospital in Brattleboro, Vermont. The project was unable to comply with Vermont Hazardous Air Contaminants Rules. Provided quantitative risk analysis of the hazardous air pollutants and expert testimony to the Vermont Air Quality Variance Board which resulted in a variance being granted.

CPM Paper Company Air Quality Analysis—oversaw modeling of the air quality interactions between the CPM Paper Company residual oil fired boiler and a new electric power plant nearby. The analysis determined the optimal stack and plant control systems to meet the SO_2 standards for this major SO_2 source when combined with the power plant.

Evaluation of Long-term Environmental Trends and Emerging Problems—interviewed and surveyed expert opinions on future environmental problems in New England. Contract with the U.S. EPA.

Britton Lumber Company Diesel Generators and Wood-Fired Boiler Permit—performed the air quality modeling and prepared an air quality permit application for the sawmill in Ely, Vermont.

Barre Granite Association of Vermont—conducted an analysis of the air emissions from fifteen granite manufacturing plants to determine the applicability of the operating permit rules under Title V of the 1990 Clean Air Act Amendments. Advised the association on technical options for permit applications and compliance.

Environmental Externalities Review for Electric Power Production—provided a review of the environmental externalities associated with a wide range of renewable and fossil fueled power sources used by an investor owned utility. This included an evaluation of measurement and costing options for environmental externalities which might be used in regulatory proceedings. Confidential Utility Client.

Environmental Impact of the Department of Energy Biomass Energy Program—co-author of a generic environmental impact assessment for the full range of biomass energy options under consideration by the Department of Energy. Impact assessment included air, water, ecosystem and socio-economic impacts. Funded by the DOE.

Evaluation of Problem and Special Waste Management Options for the Northwest Vermont Solid Waste Management District—developed a set of recommendations on planning for the long-term collection and disposal of special wastes in a rural area of northern Vermont.

Publications (Partial List)

An Air Toxics Emissions Inventory for Vermont and its Use in Establishing Risk Reduction Priorities, in *Comparative Risk Analysis and Priority Setting for Air Pollution Issues, Proceedings of An International Symposium*, Air and Waste Management Association, Pittsburgh PA 1995 (with L. Gibson)

A Method for the Assessment of Site Specific Economic Impacts of Commercial and Industrial Biomass Energy Facilities: A Handbook and Computer Model, Tennessee Valley Authority Environmental Research Center, Muscle Shoals, Alabama, 1994.

Current and Projected Wood Energy Use in the United States
Proceedings of the Institute for Gas Technology Conference on Biomass Energy, New Orleans, February, 1989 (with K. Skog).

Region 1: Assessment of Environmental Trends and Emerging Problems in the New England Region, U.S. Environmental Protection Agency, Boston, MA, 1986.

Economic Impact of Wood Energy Use in the Northeastern States Coalition of Northeastern Governors Policy Research Center, Washington, DC, 1986 (with R. Chamberlain).

Environmental Assessment of the Department of Energy Biomass Energy Program, U.S. Department of Energy, Washington, DC, 1982. (with W. Lockeretz)

Wood Energy in the United States, Annual Review of Energy, Vol. 6, 1981. (with C. Hewett et. al.)

Environmental Report on an Advanced System Demonstration for the Utilization of Biomass for Energy in Westbrook Maine, U.S. Department of Energy, Washington, DC, 1980.

Environmental Assessment of Biomass Energy Systems for Northern New England, Northeast Solar Energy Center, Boston, MA, 1979.

Professional and Public Service Activities

Former Trustee of the Montshire Museum of Science, Vermont

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