Recognizing the Value of Existing Renewable Generation in New York

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I. Introduction and Summary

When New York adopted a renewable portfolio standard (RPS) in 2004, the Public Service Commission articulated seven objectives. Those objectives are summarized in the order of priority below:

1. Increase renewable generation to promote the ultimate development of a viable, self-sustaining competitive renewable generation market
2. Promote a diverse resource mix to enhance security and independence while maintaining reliability
3. Stimulate economic activity as a result of renewable energy investment and operation
4. Reduce the environmental impact of electric generation
5. Design a mechanism that is economically efficient, minimizes energy cost, equitably allocates costs and affords the opportunity to recover investment
6. Establish regulations that are administratively transparent, efficient and verifiable
7. Develop an RPS compatible with competitive energy markets

These objectives recognize that renewable energy creates significant environmental value to society that is not fully recognized in the market economy and that the market by itself will not likely to produce renewable energy in the amount that reflects the value that New York places on it.

New York's RPS policy framework reflected a unique approach to increasing renewable generation. When the policy was first developed, it focused primarily on providing incentives for new investment in renewable energy resources. However, the current New York approach does not reflect a sustainable approach to achieving the renewable goals over the long run. In particular, subsidizing the operation of new renewables in its initial years while providing no ongoing support for the baseline resources is unlikely to prove a sustainable or efficient construct as market conditions evolve. Thus, as the market evolves, the existing policy can be improved to increase the efficiency of achieving the above goals.

This report is commissioned by Brookfield Renewable Energy Group to examine implications of the existing RPS policy and the associated implementation process on existing renewable

generation facilities and to develop potential improvements to the existing policy. Our primary conclusions are as follows:

1. The retention of existing renewables contributes as much to the goals of the program as promoting new renewables. The current RPS policy structure does not compensate existing renewable generation in a manner commensurate with its value in helping to meet the target for renewable energy. Lacking such compensation, the program will likely increase cost over the long term. In particular, the focus on providing ratepayer support only for new renewable facilities over their first 10 years of operation is likely to lead to increasing exports of renewable energy and attributes in the long run, which would undermine the attainment of New York's renewable energy goals and necessitate further ratepayer support for additional renewable energy in the future.
2. The Maintenance Resource process is overly burdensome and may deter existing renewables from seeking the needed support when faced with challenging market conditions that may lead to premature retirement of beneficial generating resources. Retirements of such renewable resources would erode the baseline resource contribution to attaining renewable energy goals, which in turn can necessitate the procurement of additional renewable resources at higher costs.
3. The implementation of the RPS in New York currently does not yet establish a market that provides transparent market prices for verifiable renewable attributes. Creating such a market that increases the competitive efforts of suppliers could provide a lower-cost mechanism to attain the goals of the program over the long run.
4. Market-based support mechanisms that recognize the contributions of both new and existing renewable facilities would improve the long-run efficiency and effectiveness of the RPS program to deliver on its goals.
5. A variety of policy reforms could help the state to move toward a more efficient market-based system for attaining New York's renewable energy goals, ranging from fundamental structural reforms to more targeted changes that focus on support for existing renewables.

II. Competitive Markets for Valued Attributes

Most U.S. states have recognized that renewable energy has valuable environmental and economic development attributes that are not fully reflected in competitive electricity markets, and therefore requires policy support to realize these benefits. Accordingly, these states have pursued RPS policies to increase the contribution of renewable energy beyond what the competitive or regulated electricity markets would provide.

The theoretically efficient ideal for an RPS system is straightforward: a) set a production goal for the desired renewable technologies; b) establish a market trading system to freely transact the attributes in order to create a transparent price and to enable competition among all existing and new renewable generators to meet the objective with lowest long-run resource cost, and fund the system over the broadest base of affected retail customers. The current New York policy does not yet accomplish the main goals of this model.

The value of existing renewable resources that contribute to the attainment of an overall target should be recognized in a market context if the existing renewables provides an identical service in terms of producing the desired attributes. This occurs in other energy and centralized capacity markets (even those constructed under a regulatory mandate), because discrimination between existing and new sources providing identical products and services introduces inefficient outcomes, which raise the long-run costs of providing the product.

Centralized capacity markets established to enforce a reliability-based installed capacity requirement provide a relevant analogy.[1] The need for centralized capacity markets are initiated with the fear that fully competitive energy-only markets may not, in general, provide a level of resource adequacy and energy prices that electricity customers are willing to tolerate, because an energy-only market does not provide sufficient compensation for building the excess supply capacity needed to attain that level of reliability. This is sometimes referred to as the "missing money" problem. The solution to this problem is to recognize that all capacity – whether frequently utilized or not – provides a separate reliability service or attribute. This service can be obtained and providers can be compensated for supplying that service by establishing an enforceable market-wide requirement or goal. In turn, all operable capacity (suitably adjusted to reflect reliable operation during peak demand periods) contributes to the goal, and accordingly receives a uniform market payment for providing the service. In these cases, existing capacity competes with new capacity, and the payments provide incentive to continue operating when they might otherwise retire and imperil the cost-effective attainment of the goal.

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[1] See Kathleen Spees, Johannes Pfeifenberger and Sam Newell, "Capacity Markets: Lessons Learned from the First Decade" *Economics of Energy and Environmental Policy*, Volume 2, Number 2, Fall 2013.

Centralized capacity markets have efficiently delivered resource adequacy in deregulated electricity markets even as some have questioned the need to compensate existing capacity at the same levels needed to attract new entry to maintain the target reliability levels. However, attempts to limit capacity revenues to only new entrants introduce severe distortions and inefficiencies. This is seen in California, where new resources receive much higher capacity payments through a procurement process than existing resources because the procurement process is not available to existing resources. As a result, the California market risks procuring new resources to offset retirements at a higher price and at a greater overall cost than would prevail under a uniform-price capacity market.[2]

The same principles are applicable to renewable goals and associated market mechanisms used to attain those goals, particularly as RPS programs evolve from their original inception. In the case of renewable energy resources, both existing and new generation contribute to the overall renewable energy resource goals, particularly as formulated in New York which includes a substantial level of "baseline resources" in their construction. Drawing on the capacity market example, an efficient method of meeting the overall renewable generation goal would be to compensate existing and new renewables with the same level of support, insofar as they provide the same environmental attributes and contribute identically to attaining the overall RPS goal. While not all state RPS policies have evolved in this direction as quickly as centralized capacity markets have, some RPS policies do provide equal support for existing renewable resources in the recognition that their continued operation provides equal value that merits equal compensation.

III. New York RPS Structure and Long-Run Performance

New York adopted a unique approach to expanding renewables, opting for a centralized procurement strategy for the environmental attributes associated with new renewable generation rather than placing an obligation on retail load-serving entities to procure a required percentage of renewable attributes.[3] New York's renewable energy procurement takes the form of (up to) 10-year contracts for renewable attributes from new (post-2002) eligible projects. The price paid is awarded based on the price levels that suppliers offer in the periodic solicitations. The target

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[2] See Johannes Pfeifenberger, Kathleen Spees and Sam Newell, The Brattle Group, *Resource Adequacy in California: Options for Improving Efficiency and Effectiveness*, October 2012.

[3] This report does not address the Customer Sited Tier aspect of the NY RPS.

volumes for the renewable procurement are based on the amount of incremental renewable attributes needed to attain overall renewable generation targets. The current targets include a significant amount of renewable generation that existed prior to the implementation of the policy, roughly 20% of New York electricity consumption. In this central procurement process, existing (pre-2003) renewable resources receive no direct financial support for contributing to attainment of the overall goal even as they produce renewable attributes identical to those produced by new projects awarded contracts.

The New York renewable procurement policy currently does not rely on a market mechanism that yields a single "price" that reflects the incremental value of renewable energy. The "as-bid" awards for new renewables result in multiple levels of financial support for renewable attributes in a given solicitation.[4] The only price transparency applies to existing (pre-2003) renewable projects because the current policy provides zero value to those renewable resources.

If an existing resource qualifies as a "Maintenance Resource" after petitioning the NYPSC to initiate a contestable administrative proceeding, the owners of the existing resource must submit a significant amount of private financial and operating data to demonstrate that it needs financial support to remain viable. If the owner adequately demonstrates the need, then the resource can be awarded the support deemed sufficient to continue operation. This review and award process effectively provides a cost-of-service contract, but only if such support is determined to be competitive with (i.e., below) the most recent weighted average support price provided to Main Tier projects.

There are two primary sources of potential inefficiencies in the current policy: (1) Main Tier projects, once their contracts expire, would become existing baseline resources and therefor would find it advantageous to sell their energy and renewable attributes into other jurisdictions, such as neighboring states that would qualify these resources under their RPS programs (in which case they no longer should be considered to contribute to the attainment of New York's renewable energy goal); and (2) if currently depressed energy market conditions persist, some

[4] Because the results are reported publicly as a (MWh) weighted average support price, there is no way of knowing the amount of bid price variation or the incremental (highest) price paid to attain the goal. Maintenance Resource support for individual projects is disclosed in applicable NYPSC orders.

existing renewable resources will face potential economic retirement, which either would erode the baseline resources that forms the foundational component of meeting the renewable energy goal or would burden the State with administering the Maintenance Resource process. Both the export of the renewable attributes and potential capacity attrition would undermine the efficient attainment of the New York RPS goals; and both could be addressed with policy reforms that provide ongoing financial support for existing renewable projects to complement the support currently given for new Main Tier projects. Below we explain in more detail the two inefficiencies that New York faces with the current approach.

A. Exports of Renewable Attributes

Renewable energy facilities in New York presently export some attributes in the form of renewable energy credits (RECs) into nearby states, supplying both voluntary markets and compliance markets when eligible and can economically meet the energy deliverability requirements. New York currently limits such exports from resources that obtained Main Tier contracts, at least for those attributes purchased under the contracts. The total volume of attributes currently exported out of New York is not readily visible (in part because New York lacks a viable REC tracking mechanism),[5] but any such increases from the 2002 estimated level of exports do not appear to be deducted from the overall 30% goal.[6] Consistent with the stated environmental objectives of the RPS program, exported renewable energy attributes should not count as contributing toward a goal of 30% of the electricity consumed within the State since those attributes are purchased by others who: a) are willing to compensate New York suppliers according to their states' market prices and b) are using the attributes as a means of meeting their own compliance or voluntary targets. Any implicit double-counting of the renewable attributes would be better managed once New York implementing a renewable energy production tracking system that keeps track of the amount exported to other regions from the amount used by New York.

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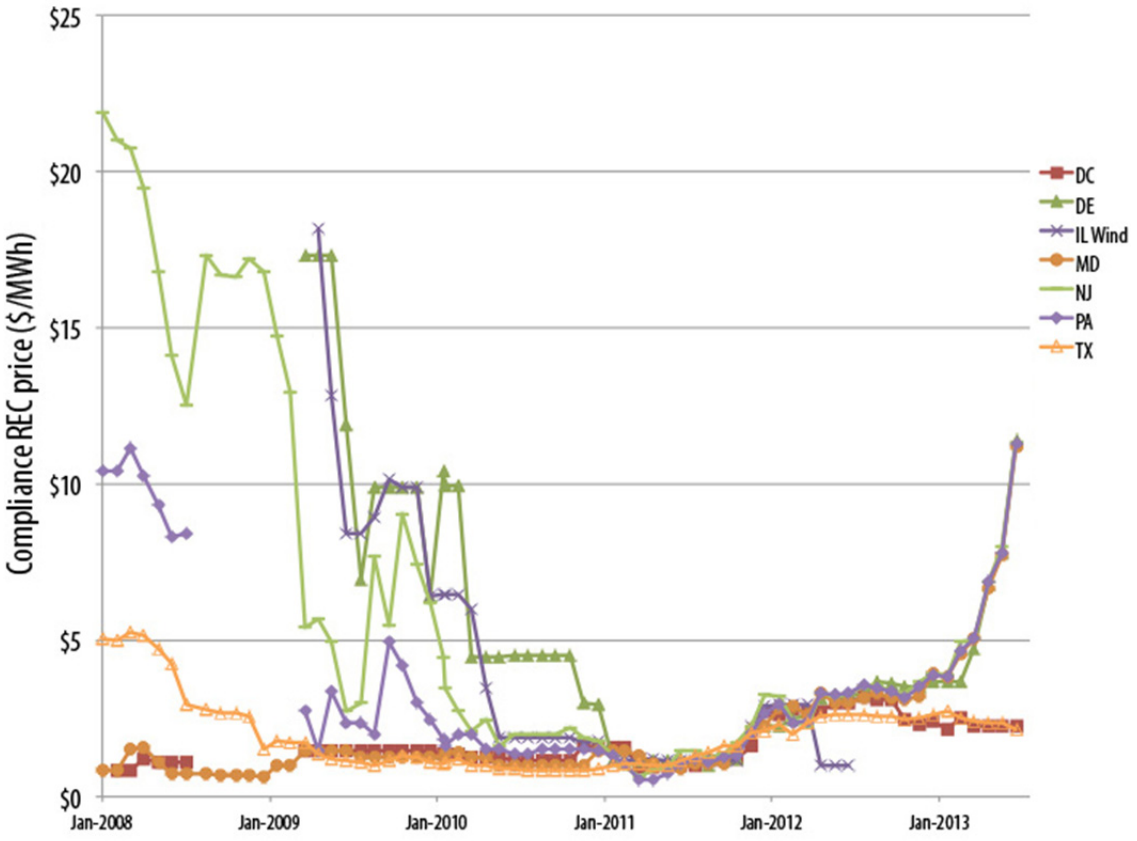
[5] We understand that New York is currently developing a Generation Attribute Tracking System (GATS).

[6] For example, compliance RECs from New York are recorded in Connecticut and Massachusetts program registries Sustainable Energy Advantage, "Appendix II Eligibility Issues and Options Connecticut Class I RPS", April 23, 2013.

Currently, some existing New York-based (non-Main Tier) renewable resources already qualify for compliance RECs in other states (with qualifications based on technology and vintage) and many more are able to qualify for various voluntary renewable credit markets. The qualification for "Class I renewable energy resources" in several neighboring states include an energy deliverability criterion that generally requires that the associated energy be delivered into the relevant regional market, e.g., the ISO-New England or PJM. That means that once the Main Tier contracts expire, the renewable generation along with the associated renewable attributes once purchased by NYSERDA will almost certainly be marketed outside of New York, where such attributes command REC prices and payments. At that time, if both the energy and RECs were exported, the attributes that initially "counted" toward the attainment of New York renewable goals will effectively leave New York. Thus, to continue to meet New York's RPS goals, the state would need to replace those exported resources' renewable attributes by procuring even more new resources and thereby raising the cost to New York electric consumers. Thus, as "new" resources become "existing" resources over time, the lack of in-state support for existing resources could frustrate the attainment of the RPS goals. Without mechanisms for sustainable support of existing renewables, New York could become an exporter of renewable attributes (after Main Tier contract expiration), not attain its own goal of 30% of consumption supplied with in-state renewables, and New York ratepayers will have spent substantial sums of money supporting the development of resources that ultimately are used to comply with other states' renewable policy objectives.

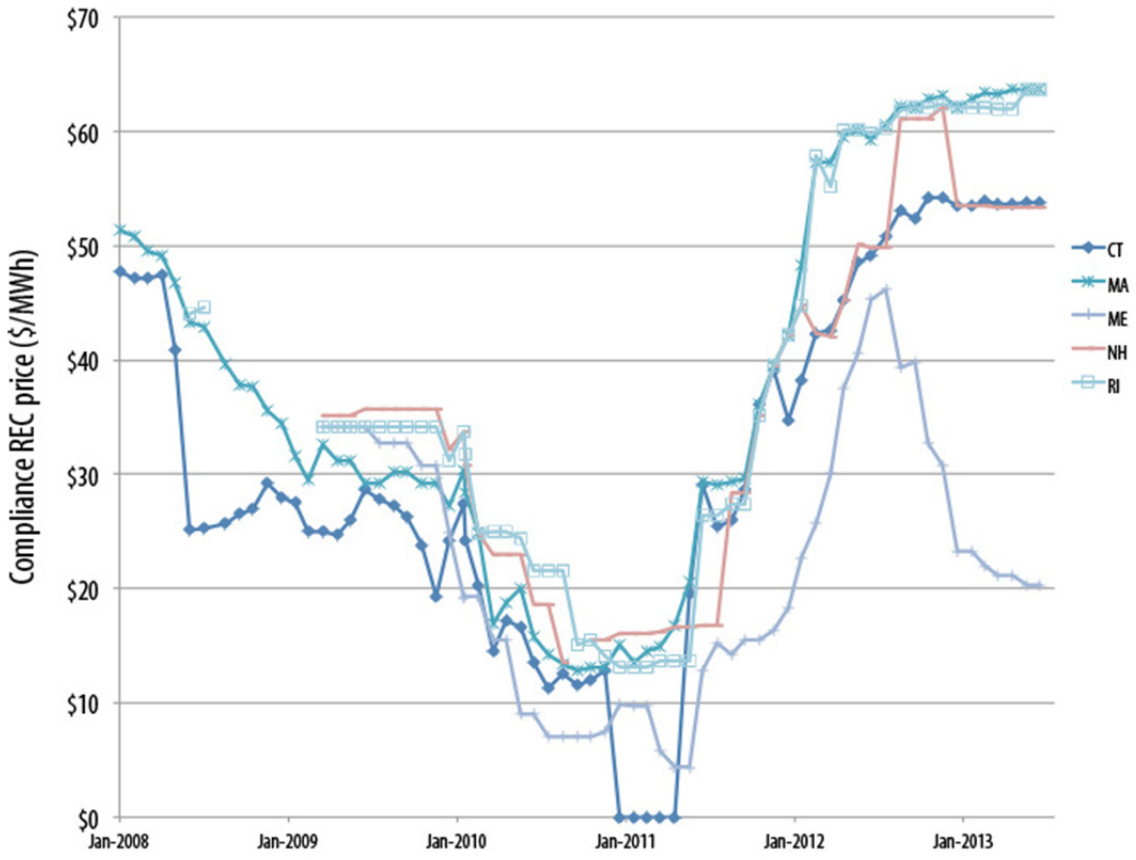
Currently, Class I REC prices in most of the New England states are at record highs, at or near alternative compliance payment levels of $55 to $65/MWh, and many analysts expect current REC deficits to continue for some time. Although Class I REC prices in PJM remain below those observed in New England, they have recently increased in Pennsylvania, Maryland and New Jersey and Delaware to over $10/MWh. This compares to New York's Main Tier support levels in the earlier solicitations that averaged between $28.70/MWh in the recent solicitation and $14.75/MWh in 2007, but whose support will drop to zero once the contracts expire. We anticipate that as the initial tranches of Main Tier contracts expire, former Main Tier projects will likely find neighboring REC markets quite attractive as a means of accessing ongoing support and recognition of their value in attaining the renewable goals of other states. Figures 1 and 2 below show recent REC market prices in various states.

Figure 1
Primary Tier Compliance Market REC prices[7]



[7] http://apps3.eere.energy.gov/greenpower/markets/certificates.shtml?page=5

Figure 2
New England Compliance Market (Class I) REC prices[8]



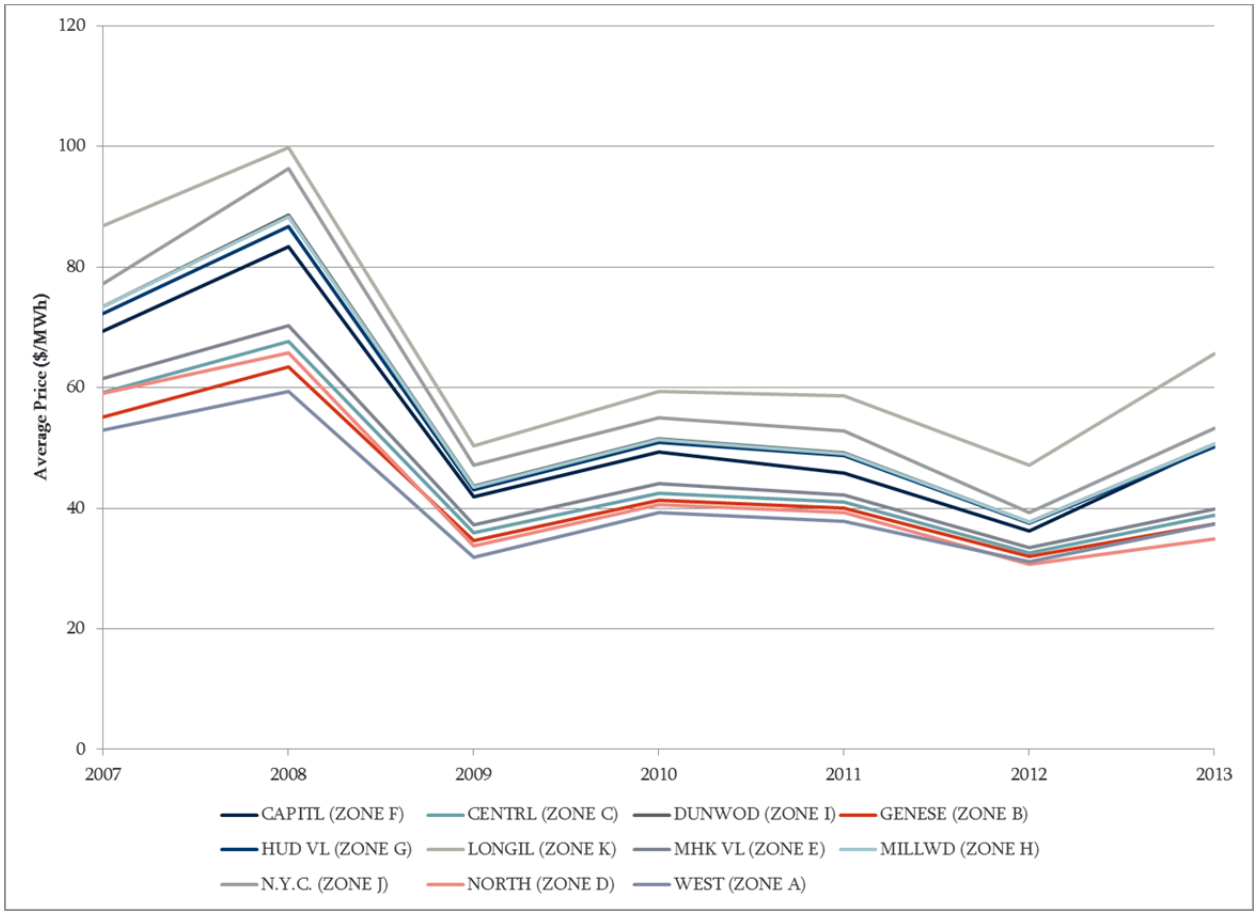
B. Potential Attrition and the Maintenance Resource Process

Electricity markets in New York have not evolved in a manner consistent with the expectations that informed RPS policy development a decade ago. Current NYISO power prices are far lower than suggested in those forecasts, primarily due to the shale gas boom in the U.S. that has made gas-fired capacity and generation far more economic than previously anticipated. Under these conditions, support for new renewables has become much more expensive, as the average Main Tier weighted-bid-prices have nearly doubled since 2007, from $14.75/MWh to $28.70/MWh in the last completed solicitation.

[8] http://apps3.eere.energy.gov/greenpower/markets/certificates.shtml?page=5

Energy market prices over roughly the same time period have fallen by about half, which has been welcome news for consumers but which has dramatically eroded margins from existing renewable generators that rely on market revenues to cover their operation and maintenance costs, which have not decreased over time. Renewable resources are mostly located outside of the southeast regions of New York. There, in upstate New York,the annual average energy prices have been below $40/MWh in recent years. Likewise, capacity prices in upstate New York have declined to roughly $20/kW-year. Because of the recent trends in market conditions, the Main Tier renewable resources have required greater financial support and these payments to the Main Tier renewable resources have widened the difference between the support provided to new Main Tier projects (approaching $30/MWh) and that provided to existing renewable resources ($0/MWh) during a period that many existing projects face significant economic challenges.

Figure 3
New York Annual Average Day-Ahead Prices by Zone



To the extent that existing resources may not earn their going-forward costs in the energy, capacity and ancillary service markets, the NYPSC may face additional administrative burdens imposed by new Maintenance Resource petitions. However, as it is structured today, the focus on economic viability in the review process may create a disincentive for an owner of existing resources to pursue ongoing, proactive capital reinvestment in the facility under the assumption that only severely depleted assets facing dire repair needs would qualify for support as a Maintenance Resource. Alternatively, the administrative burdens imposed on prospective petitioners (particularly those with smaller projects) may deter owners from undergoing the process and may induce owners to simply retire renewable generating capacity.

Potential Maintenance Tier resources undergo a cumbersome case-by-case examination that involves substantial costs and time for the petitioner and the NYPSC. The recent Azure Mountain Power Company order outlined some of the milestones in the process:[9]

- Azure submitted its application to the Office of Energy Efficiency and the Environment (OEEE) on February 20, 2012, which was approved for Commission evaluation "after extensive staff review" almost a year later on February 6, 2013.
- The Notice of Proposed Rulemaking was published on March 20, 2013 and the comment period ended on May 6, 2013 with no comments received.
- PSC staff analysis included "extensive review of Azure's February 20, 2012 application, supporting records/documentation and updated work papers" and required staff "untangling the ownership and finances" and "reallocations and adjustments" of various cost elements. Conclusions were reached "upon Staff's detailed review" and the Order for NYSERDA to enter into a contract with Azure was issued on June 20, 2013.

This administrative process consumed 16 months, unknown resources and resulted in an offer to provide $20/MWh for 10 years, with a maximum annual payment of $50,000. Other small owners could be deterred by the resource intensity of the process with the uncertain and best-case outcome a cost-of-service contract barely sufficient to maintain operation. Smaller facilities at risk of retirement in current market conditions may not believe it is worth the effort, expense and required financial disclosures, in which case market attrition could occur solely as a result of the administrative burden.

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9 Case 03-E-0188 *Order Approving Request for Funding as a Maintenance Resource*, June 20, 2013.

IV. Existing Renewables Meaningfully Contribute to the Goals of the RPS

The retention of existing renewables in current market circumstances contributes as much to the goals of the program as promoting new renewables, and recognizing the value of existing renewables would enhance the overall efficiency of the policy and its compatibility with competitive energy markets. In this section, we describe the goals and provide an overview of the renewable resources in New York.

A. New York's RPS Goals as Set Out in the State Policies

Each of the seven goals adopted in the September 2004 PSC Order are also served by having appropriate incentives in place to retain existing capacity, or moving toward a policy construct that does not discriminate, or as a minimum discriminates less, between new and existing renewable projects:

> *Renewable Resources: institute an RPS to increase New York State's supply of renewable resources with the ultimate aim of establishing a viable, self-sustaining competitive renewable generation market.*

All renewable generation counts equally toward the attainment of the overall New York renewable resource targets as initially constructed, and existing resources are part of a viable self-sustaining competitive market. Accordingly, any attrition can be thought of as negative expansion – and most of the benefits ascribed to expansion would be costs of attrition. Over the long term the distinction between existing and new sources blurs, making discrimination between them less viable in terms of developing a robust, sustainable market.

> *Generation Diversity for Security and Independence: diversify the generation resource mix of energy retailed in New York State to improve energy security and independence, while ensuring protection of system reliability.*

Historic diversity in New York's energy supply has proven valuable during times of energy market shifts, largely as a result of the mix of existing resources. Maintaining existing renewable resources in New York – primarily hydro and biomass – helps to ensure the diversity of renewable supply sources beyond intermittent generation, thus improving security and independence.

> *Economic Benefits: develop renewable resources and advance renewable resource technologies in, and attract renewable resource generators, manufacturers, and installers to New York State.*

This goal is met with investment and operating expenditures made both at new and existing facilities, and encouraging a robust renewable equipment and service sector requires ongoing demands from multiple customers. Equivalent economic benefits arise from continued expenditures made by existing resources for operation and maintenance that can be just as important for local economies, as underscored by the most recent PSC order for Boralex (modifying its previous RPS Maintenance Tier order) and the Lyonsdale order.[10] Such expenditures provide the same economic benefits as expenditures made on new capacity, for example those that are recognized in the NYSERDA cost/benefit methodology. Furthermore, existing renewable facilities are mostly located in rural areas of the state, where less robust economic conditions mean that local communities disproportionately benefit from the direct jobs and spending multiplier effects, as well as the tax revenues that the facilities provide.

> *New York's Environment: improve New York's environment by reducing air emissions, including greenhouse gas emissions, and other adverse environmental impacts on New York State, including upon underserved communities, of electricity generation.*

Existing renewable resources provide ongoing environmental benefits, and their assured retention in the State's energy supply portfolio avoids replacement by fossil-fuel generation. The likelihood for fossil-fuel replacement is higher in the event of attrition of existing biomass and hydroelectric generation that provides reliable capacity during peak periods, since gas-fired combustion turbines would be the most likely replacement capacity.[11] The NYSERDA cost/benefit studies calculated the environmental benefits from new renewables as they displace fossil fuel generation. The flip side of this coin, of course, is that any loss of existing renewable capacity would have similar environmental costs, compared to a case where existing renewable capacity remains operating.

> *Equity and Economic Efficiency: develop an economically efficient RPS requirement that minimizes adverse impact on energy costs, allocates costs*

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[10] See (Boralex) Case 03-E-0188 and Case 11-E-0706 *Order Approving Request for Modification of Funding as a Maintenance Resource*, April 20, 2012 and (Lyonsdale) Case 03-E-0188 *Order Approving Request for RPS Program Funding as a Maintenance Resource*, August 31, 2005,

[11] The New York Independent System Operator assumes that natural gas-fired combustion turbines are the likeliest new entry to provide reliable capacity. In contrast, adding wind capacity can actually increase the need for new fossil peaking plant in order to maintain reliability.

equitably among ratepayers, and affords opportunities for recovery of utility investment.

The discrimination between existing and new renewables is not economically efficient, and the distortions grow over time, particularly as formerly "new" Main Tier facilities become "existing" projects that contribute to the renewable energy goals without compensation, or more likely, contribute to other States' goals as they seek compensation outside of New York. If exported renewable generation and attributes are properly accounted for, and no longer contribute to meeting the renewable generation goal, then maintaining the renewable generation goal over time through successive solicitations involving ratepayer support for new project development could prove very costly and ultimately futile.

Administrative Fairness and Efficiency: develop an RPS that is administratively transparent, efficient and verifiable.

Compared to more market-based RPS systems, the New York system is relatively non-transparent, not particularly efficient and only partly verifiable in terms of meeting stated targets. As explained before, even those projects selected in the Main Tier receive as-bid support on a project-specific basis, which is far less transparent than a single clearing price REC market in terms of valuing renewable attributes. The process of evaluating and awarding individual bids probably is more administratively costly than verifying eligibility of RECs for trade. RECs also provide a straightforward mechanism for tracking compliance with goals in addition to providing a transparent value to renewables that contribute to attaining the goal. Progress toward attaining renewable percentage goals and potential out-of-state leakage of renewable energy and attributes are much more difficult to track without a REC market that has verifiable volumes, although this can be achieved through a robust tracking system. Finally, the cumbersome administrative process for evaluating potential Maintenance Resources is not an efficient or transparent mechanism to deliver support, nor does a contract award provide a transparent market signal to other market participants regarding the value of renewable energy.

Competitive Neutrality: develop an RPS compatible with competition in energy markets in New York State.

Regarding compatibility, it is worth pointing out the energy, capacity and ancillary service markets operated by the New York Independent System Operator do not discriminate among new or existing generation, which (aside from regional or locational variations) are rewarded equally for providing the same valuable services. Markets that cross jurisdictional boundaries (i.e., adjacent ISOs for electricity and nearby states for renewable attributes) require transparent

prices to provide goods and services at the lowest competitive cost. When prices are high in one location, signaling more value, supplies rise to capture this value and such supplies frequently come from other locations. Thus, energy markets in New York State are not the only competitive markets relevant to gauge the efficiency and effectiveness of RPS policy.

B. Renewable Energy Capacity and Generation in New York

Before outlining some possible paths to reform, a snapshot of the renewable resource base in New York will enable some perspective on the relationship between existing and new resources. Below is capacity data and annual generation as reported in the New York ISO "Gold Book" partitioned into projects with in-service dates before and after January 1, 2003, the eligibility cutoff for Main Tier resources.

Figure 4
Renewable Resources in New York

	Name Plate Capacity (MW)			2012 Net Generation (GWh)		
Plant Type	Total	Pre - Jan 1, 2003	Post - Jan 1, 2003	Total	Pre - Jan 1, 2003	Post - Jan 1, 2003
Solar	32	0	32	53	0	53
Wind	1,634	48	1,586	3,060	90	2,970
Bio Gas	126	48	78	736	246	490
Biomass - Wood	126	126	0	311	311	0
Conventional Hydro	5,273	5,260	13	24,572	24,503	69
Total	7,190	5,482	1,708	28,733	25,150	3,583

In 2012 renewable generation accounted for 28,733 GWh (20.7%) of the total generation in New York. Renewable generation units in operation before January 1, 2003 accounted for 25,150 GWh (88%) of the renewable generation with hydro units in operation before January 1, 2003 accounting for 24,503 GWh (85%) of total renewable generation. Renewable generation which began operation after January 1, 2003 accounted for 3,583 GWh (12%) of total renewable generation of which 2,970 GWh (10%) was produced by new wind turbines.

Of the renewable generation that commenced operation before January 1, 2003 hydro accounted for 86% of the generation and 73% of the capacity. Generation owned by the New York Power Authority ("NYPA") accounts for a majority share of this hydro capacity.

Figure 5
Existing Hydroelectric Generation in New York as of January 1, 2003

	Name Plate Capacity		2012 Net Generation	
Owner Type	MW	Share	GWh	Share
NYPA/Public	4,031	77%	19,967	81%
Private	1,230	23%	4,536	19%
Total	5,260	100%	24,503	100%

In considering potential policy reforms regarding the treatment of renewable resources installed before January 1, 2003, it is appropriate to exclude generation owned by NYPA since NYPA is an instrumentality of the State of New York as the sale of its hydroelectric power is governed by Federal and State law and international treaty obligations. Further, NYPA's resources have been fully regulated and NYPA has received regulated payments to cover the costs associated with those resources and therefore providing additional incentives for NYPA resources seems to be placing an additional market payment on top of regulated cost of service regulation. Of the remaining generation, privately owned hydro accounted for 88% of non-NPYA generation in 2012 and 85% of the non-NYPA capacity.

Figure 6
Existing Private Renewable Electric Facilities in New York as of January 1, 2003

Plant Type	Capacity (MW)	Generation (GWh)
Solar	0	0
Wind	48	90
Bio Gas	41	241
Biomass - Wood	126	311
Conventional Hydro	1,230	4,536
Total	1,445	5,179

V. Other States' RPS Treatment of Existing Renewables

Although RPS policies in other states were also focused on growing the contribution of renewables in electricity supply, most states afforded existing renewables some level of market-based support. Many RPS policies consist of multiple Tiers or Classes of renewables, with

specific eligible technologies and overall percentage targets for each Class. Class I is normally reserved for new renewables, typically with a vintage requirement near the time of initial enactment. However, existing renewable projects can qualify for subsidiary Class eligibility in most states and Class I eligibility in a few states. For example:

Connecticut requires that 3% of its retail load is served by either Class I or Class II resources, in addition to the separate requirement for Class I renewables. Some existing renewables are eligible for Class II, including small run-of-river hydropower facilities, built before July 1, 2003 (facilities built after that date can qualify for Class I eligibility) as well as trash-to-energy facilities and some biomass generation. The 3% Class II requirement remains constant at 3% of retail sales through 2020. Class II RECs have been trading at $0.50 - $1.00 per MWh.[12]

Maine established a 30% renewables requirement in 1999. In 2008 the RPS was amended creating a Class I requirement for new renewables while maintaining the 30% requirement for existing renewables, now Class II. Both Class I (new) and Class II (existing) RECs are eligible for a credit trading scheme.

Massachusetts allows renewable facilities built before December 31, 1997 to qualify for the Class II renewable tier. Retail electricity suppliers are required to provide 3.5% of sales from these existing Class II renewables or make an alternative compliance payment ("ACP"). Class II RECs cost around $20/MWh in 2012.[13]

New Hampshire allows existing renewable facilities to qualify for Class III (biomass and methane) and Class IV (small hydro) RECs. Class III and Class IV renewable resources must account for 6.5% and 1% of electricity sales in 2013 respectively.

California requires that 20% of retail sales be sourced from renewables, rising to 25% by December 31, 2016 and 33% by 2020. These requirements include both existing and new sources of renewable energy.

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[12] The Connecticut Department of Energy and Environmental Protection, "Restructuring Connecticut's Renewable Portfolio Standard", April 26, 2013

[13] Evaluation of The Massachusetts RPS Class II Program pg. 11

Maryland operates a REC trading system for Tier I and Tier II renewables. In both tiers existing and new sources of renewable energy are eligible for RECs.

Other states made different choices when considering new vs. existing renewables, but there is ample precedent from other states for supplying some market-based support for existing renewables in RPS systems.

VI. Potential Reforms to Support Existing Renewable Capacity

We raise several important issues with respect to new and existing renewable projects contributing to the objectives of the New York RPS that warrant policy consideration:

- Main Tier new project support cost has risen to nearly $30/MWh on average, which may threaten the attainment of the 30% goal under existing funding levels.[14]
- Many pre-2003 existing resources face challenging market conditions that could encourage them to sell energy and renewable attributes outside of New York which in turn may erode the "baseline resources" that count toward New York's renewable target, or else retire if market revenues from energy and exported attributes fail to cover their going-forward costs.
- Some of these potential retirements might be avoided through approvals for Maintenance Tier status, however that process involves significant administrative burden on applicants and public authorities and the focus on costs of service may create an incentive for project owners to underinvest in asset maintenance
- Currently active Main Tier projects will face significant incentives to sell energy and renewable attributes into other States' RPS systems upon expiration of their contracts which would in turn remove their contribution toward attaining New York's 30% renewable target.

A transition toward a more market-based system involving single price auction for RECs could help address these shortcomings. In addition, effective, efficient market-based support for existing capacity could provide a gradient of near-term solutions toward long-term sustainable mechanisms for support that would be more consistent with the RPS program goals.

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[14] *Renewable Portfolio Standard Main Tier 2013 Program Review Final Report*, NYSERDA, September 5, 2013, pp. S-7

A. Policy Options

There are many policy options for providing support for existing renewable generation consistent with evolving toward a more efficient RPS, ranging from complete structural redesign to more targeted approaches within the current policy construct. Presented below are potential solutions that could help accelerate the progress toward long-term sustainable mechanisms consistent with the RPS program goals.

1. Structural Solutions

Long-term sustainability and efficiency of the RPS requires predictable and sustained revenue streams for existing resources. One way of approaching this is reform toward a single-price RPS market that includes new and existing renewables in a single tier. In such a regime, all applicants could bid for support to establish a uniform market price for existing and new renewables.

Alternatively, one could retain the solicitation mechanism for new projects, but establish an RPS target and REC market for existing projects (a "Retention Tier"), adjusting the target upwards when Main Tier contracts expire and that associated capacity becomes eligible for the Retention Tier. The Retention Tier would have the following characteristics:

- An initial target set at an average expected generation levels of existing resources.
- These resources could offer to sell RECs to NYSERDA or to other markets, but could not sell to both. Any exported RECs will tend to raise the price of the Retention Tier RECs, which would presumably attract RECs back to New York (and maintain the integrity of the target of retaining baseline resources).
- The Retention Tier target would incorporate (previously) new projects after the 10-year contract expiration and adjust the target according to the level of MWh under the expired Main Tier contract.
- Retention Tier REC prices would rise/fall depending on going-forward value of retaining the marginal resource for energy and RECs in New York.
- Over the long term, this policy could evolve into a single Tier.

This high-level description would require numerous details to implement. Thus articulating the role (if any) of REC imports, market monitoring to ensure competitive outcomes, rules for banking and borrowing RECs, and other details will require more thoughts around the details of the design. However, the central idea is to create a market-based value for the retention of baseline resource renewable attributes in New

York, consistent with potential, legitimate competition for those resources within as well as outside of the state.

2. Transitional Solutions

Transitional solutions could include reforms that are consistent with long-term objectives, but more interim and less structural in nature. They can also be merged with the structural solutions described above as they are implemented over time. These could include:

- Annual support for existing renewable generation, based on percentage of current- or recent-year Main Tier contract prices, applied to actual or expected annual output (or some fraction thereof). Support would be conditional on foregoing selling attributes to other entities. While this approach would not derive REC prices from the interplay of supply and demand within a Tier, prices would be influenced by the amount of support given to recent Main Tier projects.
- Standardized long-term support contracts offered to existing renewable resources, which could adjust or expire with market shifts or regulatory events that raise energy market revenues. For example, such contracts might be part of a carbon price hedging strategy, encouraging the retention of renewable resources until such time that a significant carbon price policy is in place, and contracts could expire upon such an event. This would help New York hedge market exposure to climate policy by providing support for these facilities to ensure that they will remain in the market. These contracts could also be contingent on keeping renewable attributes within New York.

3. Targeted Solutions

Targeted approaches retain the current structure while adding focused support mechanisms to particularly vulnerable or especially valuable existing renewables. These could be considered as a substitute for the cumbersome case-by-case administration of Maintenance Resource petitions, and could be available to all existing resources. Examples of such policies might include:

- Provisions to opt-in to the Main Tier support level for a short length of time in the event of a verifiable one-time reinvestment in the facility.
- Standard support levels contingent on various commitments such as continued operation for long periods of time or foregoing alternative REC market revenues.
- Provide support specifically for specific resources while developing a longer-term solution.

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