EXPRESS TERMS - SAPA No.: 03-E-0188SA19

The Commission is considering whether to adopt, modify, or reject, in whole or in part, potential modifications to the Renewable Portfolio Standard (RPS) program, including base forecast, goals, tier allocations, annual targets and schedule of collections. The base forecast of electricity usage in New York State against which the RPS goals are applied is currently the forecast contained in the 2002 New York State Energy Plan. The Commission is considering updating the base forecast using a 2007 forecast of electricity usage in New York State developed in Case 07-M-0548, the Energy Efficiency Portfolio Standard (EEPS) proceeding. The Commission is also considering updating the base forecast using a post-EEPS forecast of electricity usage in New York State, also developed in the EEPS proceeding, incorporating successful deployment of the targeted levels of energy efficiency planned in the EEPS case into the forecast. The current goal of the RPS program is to increase New York's usage of renewable resources to generate electricity to 25% by 2013. The Commission is considering whether to increase the goal to 30% by 2015 or to otherwise adjust the goal. The RPS program targets are currently divided into tiers. If the Commission modifies the base forecast or the goal, the Commission will consider whether the targets by tier should be adjusted proportionally or on some other basis. The Commission is also considering whether the annual targets should be modified to account for such changes to the RPS program. The Commission is also considering whether the schedule of collections should be modified to account for such changes to the RPS program, to specify collection levels beyond 2013 necessary to fund contracts extending beyond 2013, and to fund maintenance resources and administrative costs not yet accounted for in the current schedule of collections.

Attached are some background documents, analyses and sensitivities that the Commission will consider it its deliberations:

1. Executive Summary, New York Renewable Portfolio Standard Cost Study Update (21 pages).

2. New York Renewable Portfolio Standard Cost Study Update, Main Tier Target and Resources (55 pages).

3. Total Collections by Utility (one page).

4. Budget Sensitivities (3 pages).

5. Main Tier Targets and Results (10 pages).

6. Main Tier Clearing Prices and Resources Reached on Supply Curve (12 pages).

7. Main Tier Supply Curve Assumptions (7 pages).

8. Renewable Energy Task Force Report, February 2008 (50 pages)

Attachment 1

EXECUTIVE SUMMARY
NEW YORK RENEWABLE PORTFOLIO STANDARD COST STUDY UPDATE
(21 pages)

Executive Summary

New York Renewable Portfolio Standard

Cost Study Update

I. Background

The comprehensive RPS cost study conducted in 2003 estimated the overall costs of achieving the Main Tier and Customer-Sited Tier RPS goals as upwards of $1.5 billion. In its September 24, 2004 Order (2004 Order), the Commission included an initial, escalating annual schedule, which provides for collections totaling approximately $741.3 million through 2013[1]. Recognizing that, under the Main Tier, NYSERDA would be entering into long-term contracts requiring administrative support and contract payments beyond 2013, in December of 2005 the Commission approved post-2013 collections, but deferred specifying the amounts of those collections until the program was underway and actual program costs became better known.[2]

Of the $741.3 million of scheduled collections, approximately $674.9 million has been committed or allocated, leaving a total of $69 million available.[3] Current commitments include approximately $561 million for contracts payments to projects awarded under the first, second, and third Main Tier solicitations, $45 million allocated to the Customer-Sited Tier under the Commission's June, 2006 Order,[4] $33.9 million for Maintenance Tier contracts, $25.6 million for NYSERDA administration, and $9.1 million for NYS fees. A detailed accounting of authorized funding and funding commitments as of the first quarter of 2008 is presented in attached Figure 1.

NYSERDA engaged the services of Sustainable Energy Advantage and LaCapra to estimate the costs to achieve the balance program targets. The scope of the study was established through consultation with the Department of Public Service. This assessment forms the basis upon which the PSC will authorize funding and associated rate collections necessary to meet RPS program goals.

II. Approach

In reviewing the future costs of the New York RPS, NYSERDA asked Sustainable Energy Advantage (SEA) and La Capra Associates to update the 2004 Cost Study Report II, Volume A (2004 Report).[5] Comprehensive documentation of assumptions, methodology and results associated with the update are contained in the Main Tier and Customer Sited Tier Cost Study Update Reports.

For the assessment of Main Tier program costs, several changes have been made to the RPS targets, the supply curve methodology employed to derive costs associated with the Main Tier program component, import potential, resource potential and renewable energy cost assumptions. These include:

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[1] Case 03-E-0188 Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard, "Order Regarding Retail Renewable Portfolio Standard," at Appendix E.
[2] Order Regarding Petitions for Clarification and Reconsideration, at p. 5.
[3] As is shown on Table 1, interest earnings of approximately $1.55 million and $854,363 in contract security funds retained by reason of contract defaults have been added to the overall funding amount.
[4] "Order on Customer-Sited Tier Implementation," at pp. 9-11.
[5] Retail Renewable Portfolio Standard — Case 03-E-0188, "Cost Study Report II, Volume A" February 27,2004 http://www.dps.state.ny.us/03e0188_CostStudy_II.htm.

- RPS annual MWh target changes are a result of updated load forecasts and anticipated increases in new energy efficiency programs that New York is planning – specifically, implementation of the Governor's 15 x 15 plan (15% reduction in load by 2015). Three scenarios were evaluated: (1) 25% Reference; (2) 25% Reduced Load (by 2013); (3) 30% Reduced Load (by 2015).
- The modeling approach was modified to better reflect the approach to evaluation and contracting ultimately adopted by NYSERDA subsequent to the 2004 Report.
- The available import potential from Canadian provinces and Pennsylvania-Jersey Maryland (PJM) have been greatly reduced due to both expansive new renewable energy directives and RPS in these regions, and to the costs and risks associated with ultimate requirements placed upon generators importing energy into the New York Control Area.
- The resource potential for certain resources was modified to reflect updated information or a change in methodology/assumptions.
- With increasing demand for renewable energy across the country and internationally, high material and fuel costs, and the weakened US dollar, the installed cost of renewable generation capacity has increased by 50% or more relative to the 2004 Report; fossil fuel cost increases and increased demand has also driven the cost of biomass fuel higher since 2004.

In the assessment of CST program costs, a supply curve analysis of the type employed to estimate program costs for the Main Tier component of the program was not used. Instead, annual resource budgets were developed using NYSERDA projections of funding for individual projects and the maximum annual potential of developing each resource type. The resources examined are the same as those proposed in the Operating Plan.

- Anaerobic Digester Biogas (farm-based and water treatment facilities)[6]
- Small wind
- Solar photovoltaics (PV)
- Fuel cells (small and large)

The approach used in estimating future costs of the program is also based on the existing CST Operating Plan Allocations, as established by the PSC.[7] This method allocated funding between resources proportional to the allocation developed in the Operating Plan, while achieving the intermediate annual targets for CST resources.

In addition, the cost of achieving an overlapping 100 MW solar photovoltaic (PV) goal resulting from the recommendations of the Renewable Energy Task Force convened by Governor Paterson was also calculated. The proposed plan would require the state to achieve 100 MW of solar PV installations over the next four years (2009 to 2012). Since a portion of the CST resources developed to meet the RPS CST targets would already consist of solar PV, the calculation of additional solar related costs are based on the incremental PV needed to achieve a total of 100 MW of solar PV. Below is a summary of estimated CST targets under three RPS scenarios and the associated costs of meeting the targets, with and without an expanded PV program.

III. Load Forecasts Examined

Three different types of forecasts are used in the derivation of incremental program costs. The first is the state load forecast, which is the underlying basis for estimating the amount of renewable energy needed to

[6] Within the anaerobic digester group, resources located within the NYPA service territory have been included.
[7] Retail Renewable Portfolio Standard — Case 03-E-0188, " Order on Customer-Sited Tier Implementation

meet the RPS target. Second, a description of the methodology used in estimating the amount of Main Tier and Customer-Sited Tier resources that NYSERDA is responsible in procuring is presented. NYSERDA's obligation is then incorporated into a third set of forecasts that represent the New York renewable energy market as a whole, where multiple demands compete for the same pool of resources each year.

The load forecast used in the 2004 Report was updated using more current data. The analysis employs a summary of utility sales forecasts that was assembled by a working group under the Efficiency Portfolio Standard (EPS) proceeding[8]. The sales forecast was then grossed up to reflect generation (supply) level requirements. This forecast is referred herein as the New Load Forecast (used for the Reference Scenario). The revised load growth is slower than originally anticipated in the "As-ordered" Load Forecast from the September 24, 2004 PSC order[9] ("Order", see Table 1). The PSC is considering implementing additional energy efficiency initiatives that would achieve about 15% reductions in projected load by 2015. Various efficiency initiatives have been estimated and impacts (reductions to forecast) were presented in a straw man proposal dated February 11, 2008, that has been put before the parties to the EPS proceeding. Load and energy reductions described in the technical appendices to this straw man proposal were used to derive alternate, "Post-EPS" forecasts for the purpose of deriving new RPS program Targets.

Table 1: New York State Load Forecasts

(MWh)	New York State Load		
Year	As-ordered* Load Forecast	New Load Forecast **	Post-EPS Load
2005	165,280,000	167,208,000	167,208,000
2006	167,490,000	162,237,000	162,237,000
2007	169,977,000	164,666,379	164,666,379
2008	172,404,000	166,373,133	166,373,133
2009	174,658,000	167,993,151	164,393,298
2010	176,910,000	169,730,054	162,455,908
2011	179,031,000	171,888,546	160,838,568
2012	180,907,000	174,042,888	159,124,926
2013	182,866,999	176,081,053	157,215,226
2014		178,191,391	155,281,070
2015		180,364,930	153,310,190

** From PSC 9/24 order, App. D, Table 1*
***Actual historical State load for 2003-2006, forecast before adjustments from EPS proceeding for 2007-2015*

The Order adopting an RPS called for increasing the proportion of renewable energy used by New York consumers from the then current 19.3% to at least 25% by the end of 2013. The PSC in the Order expected that voluntary purchases of green power by retail customers would contribute at least 1% of the 25% target. The assumption that voluntary purchases would contribute 1% of the RPS program target remains unchanged throughout the analyses described herein.

Three Annual RPS Target Scenarios were developed, including two scenarios reflecting reductions to load anticipated as a result of the EPS proceeding:

[8] Case 07-M-0548, Proceeding on Motion of the Commission Regarding an Energy Efficiency Portfolio Standard
[9] Order Regarding Retail Renewable Portfolio Standard, Case 03-E-0188.

a. **25% New Load** Uses 2007 forecast of load developed by the EPS and assumes an RPS which contributes to achieving a 25% renewable energy goal by 2013.
b. **25% Post-EPS Load**: Given that DPS is developing targets for a more expansive energy efficiency program to meet the proposed EPS, a reduced NY load forecast is used. This scenario assumes meeting the 25% renewable energy goal by 2013 also, though the absolute MWh target is lower due to lower load
c. **30% Post-EPS Load:** This scenario assumes that, as a result of an EPS-driven lower load, the renewable energy target can be increased on a percentage basis to 30% by 2015, through the implementation of more aggressive RPS procurement targets.

IV. Derivation of Program Targets

Several steps were needed to develop the RPS Main Tier and Customer-Sited Tier (CST) targets for NYSERDA's procurement of renewable attributes.

1. Prior to the RPS, New York already had a baseline of about 19% renewable energy (~31,500 MWh/yr), primarily from large-scale hydroelectric projects. This "baseline" amount was deducted from the overall RPS energy target.
2. In addition, Executive Order 111(EO 111) targets for state facilities, and voluntary green market purchases (growing to 1% of load by 2015) would also contribute to the 25% target. These were also deducted from the overall target.
3. NYSERDA's energy procurement obligations under the program are derived by subtracting the following from the overall target of 25%: (a) baseline or historical renewable generation, (b) energy procurement targets associated with compliance with EO 111, and (c) anticipated voluntary green market purchases.
4. NYSERDA's total procurement obligations are then divided into two components. The Customer Sited Tier component is set at 2% of the total NYSERDA obligation calculated in step 3 and the balance of obligations are assigned to the Main Tier program component.
5. Because LIPA is not under the jurisdiction of the PSC and has no obligation to meet RPS requirements, the NYSERDA obligations for both program components are further adjusted downward to reflect LIPA load requirements expressed as a share of statewide load requirements.
6. Finally, targets for future procurements netted out prior contractual commitments resulting from NYSERDA's first two RPS procurements, as well as the anticipated contracts to result from the third procurement (whose bids are currently under review). For the purposes of this assessment, it was assumed that the third procurement for Main-Tier resources for 2009 procurement resulted in about 837,000 MWh per year. This is reflected in the total shown in "Contracted Renewables" in Table 2 below.

Table 2. Existing, Committed and Planned Resource Contributions to Targets

	Baseline Resources	EO 111	NYSERDA Contracted Renewables	Green Market %	% LIPA
2003	31,210,710	0			
2004	31,468,717	0			
2005	31,486,189	251,065		0.0%	
2006	31,503,661	282,812	865,582	0.1%	15.76%
2007	31,509,370	314,579	865,582	0.3%	15.80%
2008	31,515,079	346,366	2,665,730	0.4%	15.83%
2009	31,520,788	378,174	***3,502,673***	0.5%	15.83%
2010	31,526,497	410,002		0.6%	15.88%
2011	31,532,206	391,857		0.8%	15.89%
2012	31,537,915	373,712		0.9%	15.98%
2013	31,543,624	355,568		1.0%	16.01%

It is important to keep in mind that New York's RPS has a defined goal of 25% by 2013. The annual incremental targets or "glide paths" presented below in Table 3 were developed only to estimate intermediate years' procurements and are not "hard" targets that must be satisfied at any cost. Actual procurements have and will likely deviate from the "glide paths" presented. In the scenario for 25% RPS Target with Post-EPS Load, minimal incremental renewable attribute purchases are needed after the 2009 procurement. Thus, fewer future procurements were modeled and the 25% target was achieved sooner (by 2011).

The As-Ordered Main Tier target of 25% of load established in 2004 for program year 2013 was approx. 9.9 million MWH. This target drops by 1.6 million MWh to 8.3 million MWh in 2013 when the new 2007 State wide load forecast is used. Only in the case where the target percentage of load requirement satisfied by renewable generation grows to 30% does the target increase to 10.1 million MWh, or nearly equivalent to the original, As-Ordered target quantity. However, this occurs in year 2015 coinciding with the terminal year of the EPS initative.

Table 3. Derived Main Tier Cumulative and Incremental Annual Targets

(MWh)	As-Ordered Main Tier	Cumulative Main Tier			Incremental Main Tier		
Year		New Load (25% Goal)	Post-EPS Load (25% Goal)	Post-EPS Load (30% Goal)	New Load (25% Goal)	Post-EPS Load (25% Goal)	Post-EPS Load (30% Goal)
2006	1,121,247	***865,582***	***865,582***	***865,582***			
2007	2,326,171	***865,582***	***865,582***	***865,582***			
2008	3,549,026	***2,665,730***	***2,665,730***	***2,665,730***			
2009	4,767,994	***3,502,673***	***3,502,673***	***3,502,673***			
2010	6,012,179	4,632,702	4,025,881	4,586,531	1,130,029	523,208	1,083,858
2011	7,297,746	5,836,353	4,570,699	5,865,682	1,203,651	544,817	1,279,150
2012	8,556,710	7,047,592	4,570,699	6,993,365	1,211,239	0	1,127,684
2013	**9,854,038**	**8,319,625**	**4,570,699**	8,113,074	1,272,033	0	1,119,709
2014				9,134,256			1,021,183
2015				**10,123,157**			988,901

*****Incremental Main Tier includes contracted procurements through three rounds of NYSERDA procurements (2006-2009).*

Pursuant to the order adopting the RPS program, Customer-Sited Tier (CST) resources must make up 2% of the calculated incremental targets.[1] In February 2007, NYSERDA and Department of Public Service

staff released a plan for implementing the CST program for the period of 2006-2009.[10] Budgets were developed for individual resources with anticipated expenditures totaling $45 million; a level less than half the level of funding originally predicted by the 2003 cost study as necessary to achieve the As-Ordered 2% target. In developing the Customer-Sited Tier Targets, it is assumed that all programs proposed in the Operating Plan are achieved resulting in 52,878 MWh by the end of 2009. The Operating Plan target for 2009 is a function of authorized funding appropriation and allocation by resource and is far less than 2 % of incremental NYSERDA obligation by 2009. The updated cost analysis establishes future costs of the program after 2009 based on the load scenarios and derived targets described by Table 4. For comparison purposes, Table 4 also exhibits the As-Ordered CST targets.

Table 4. Derived Customer-Sited Tier Cumulative and Incremental Annual Targets

(MWh)	As-Ordered Customer-Sited Tier	Cumulative Customer-Sited Tier			Incremental Customer-Sited Tier		
Year		New Load (25% Goal)	Post-EPS Load (25% Goal)	Post-EPS Load (30% Goal)	New Load (25% Goal)	Post-EPS Load (25% Goal)	Post-EPS Load (30% Goal)
2006	25,259	0	0	0			
2007	50,488	17,626	17,626	17,626			
2008	75,685	35,252	35,252	35,252			
2009	100,855	52,878	52,878	52,878			
2010	125,988	92,687	82,182	93,638	39,809	29,304	40,760
2011	151,081	119,131	93,280	119,736	26,445	11,097	26,098
2012	176,123	143,840	93,280	142,743	24,708	0	23,007
2013	201,130	169,788	93,280	165,587	25,949	0	22,844
2014				186,420			20,834
2015				206,595			20,175

V. Main Tier Costs Results

Below is a summary of the expected costs to satisfy RPS Main Tier procurement targets for the post-2009 period under the three scenarios analyzed. In the scenario with 25% RPS Target with Post-EPS Load, very little incremental renewable energy is needed after the 2009 procurement. For the 30% RPS Target with Post-EPS Load, the expected incremental program costs are almost 50% higher than in the New Load Reference scenario, but may achieve only an increase of about 20% in additional total renewable energy relative to the New Load Reference scenario (101 TWh versus 8.3 TWh).

The annual contract payments shown below in Table 5 represent commitments for future solicitations, excluding payments under contracts entered into as a result of the 1st, 2nd and 3rd main tier solicitations. In the Post-EPS 25% (Reduced Load 15x15) Scenario, there are no incremental procurements needed after 2011.

[10] February 12, 2007C

Table 5 Projected Annual RPS Contract Payments

	New Load (25% Goal)	Post-EPS Load (25% Goal)	Post-EPS Load (30% Goal)
2010	$22,239,617	$10,302,902	$21,334,354
2011	$45,028,839	$20,602,943	$45,557,306
2012	$71,768,113	$20,602,943	$64,521,205
2013	$100,094,963	$20,602,943	$81,479,496
2014	$100,094,963	$20,602,943	$110,529,444
2015	$100,094,963	$20,602,943	$141,838,153
2016	$100,094,963	$20,602,943	$141,838,153
2017	$100,094,963	$20,602,943	$141,838,153
2018	$100,094,963	$20,602,943	$141,838,153
2019	$100,094,963	$20,602,943	$141,838,153
2020	$77,855,346	$10,300,041	$120,503,800
2021	$55,066,124	$0	$96,280,847
2022	$28,326,850	$0	$77,316,948
2023	$0	$0	$60,358,657
2024	$0	$0	$31,308,709
Total	$1,000,949,631	$206,029,435	$1,418,381,533

VI. Customer Sited Tier Cost Results

The total additional costs for the three RPS target scenarios evaluated are detailed in the table below. These costs DO NOT include the costs associated with the programs in the Operating Plan. Including the 100 MW PV Plan for CST renewable energy would increase the cost of the CST program by over $300 million under each scenario. Without the 100 MW PV plan, the CST program is estimated to cost in the range of $38 million to $141 million, depending on the RPS Scenario. The costs presented by Table 6 are the sum of annual costs.

Table 6. CST Costs* by RPS Scenario Examined

	With 100 MW PV Plan	Without 100 MW PV Plan	Difference in Cost
25% New Load	$393,787,000	$104,119,00	$289,668,000
25% Post-EPS Load	$351,871,000	$35,923,000	$315,948,000
30% Post-EPS Load	$423,091,000	$135,208,000	$287,883,000

**** does not include cost associated with monitoring and verification and program administrative costs***

VII. Total Program Cost Results

Table 7 below presents the costs as-modeled and described above on a total program basis.

Table 7. As-Modeled Incremental Program Costs *

(all costs in $ millions)	25% New Load	25% EPS Load	30% EPS Load
MAIN-TIER PROGRAM			
Energy Target (GWh)	8,320	4,571	10,123
Cost	$1,000.9	$206.0	$1,418.4
CUSTOMER-SITED TIER PROGRAM			
Energy Target (GWh)	170	93	207
Individual Program Cost:			
Anaerobic Digester Program	$ 26.2	$ 9.5	$ 33.0
Small Wind Program	$ 2.8	$ 1.4	$ 4.6
PV Program	$ 54.1	$ 18.0	$ 69.6
Fuel Cell Program	$ 21.0	$ 7.0	$ 27.9
Total Base Program Cost	$ 104.1	$ 35.9	$ 135.1
TOTAL BASE RPS PROGRAM COSTS	$ 1,105.0	$ 242.0	$ 1,553.5
Aggressive PV (100 MW) Initiative Cost	$ 289.7	$ 316.0	$ 287.8
TOTAL RPS COST W/ 100 MW PV INITIATIVE	$ 1,394.7	$ 558.0	$ 1,841.4

**** does not include cost associated with monitoring and verification and program administrative costs***

Appendixes A, B and C present detailed cost study results for the Main and Customer-Sited Tier program components associated with the 25% Reference, 25% Post-EPS Load, and 30% Post-EPS Load scenarios as described above. These appendices depict derived targets, annual incremental funding requirements by program component and expectations for the development of resources by type of eligible resource and program component. The Appendices **do not include**;

(a) costs associated with monitoring and verification of CST program performance,
(b) NYSERDA administrative expenses including public authority fees, and
(c) any consideration of how the remaining positive balance of program funding, as depicted in Figure 1, should be applied programmatically.

Figure 1. Current RPS Program Cash Flow Estimates

Current RPS Program Cash Flow Estimates*

	Revenues			Estimated Costs							
	Specified Collections	Interest	Ltr of Credit proceeds	NYSERDA Admin	NYS Fees	Main Tier 3 RFPs	Maintenance Tier	Cust Tier	Total Estimated Costs	Annual Cash Flow	Cash Balance
2006	$24,072,908	$ 308,826	$ 192,107	$ (2,448,522)	($460,820)	($8,216,756)	$0	$0	$ (11,126,098)	$13,447,743	$13,447,743
2007	$43,143,017	$ 1,247,056	$ 662,256	$ (1,505,690)	($511,003)	($14,407,485)	($3,104,220)	($6,735)	$ (19,535,133)	$25,517,196	$38,964,939
2008	$62,136,526	n/a	$ -	$ (2,807,631)	($746,000)	$ (33,223,153.78)	($4,289,379)	($8,998,653)	$ (50,064,817)	$12,071,709	$51,036,648
2009	$82,639,913	n/a	$ -	$ (3,767,632)	($992,000)	$ (56,548,673.08)	($4,124,798)	($8,998,653)	$ (74,431,756)	$8,208,157	$59,244,805
2010	$100,765,818	n/a	$ -	$ (3,767,631)	($1,209,000)	$ (58,684,755.55)	($4,124,798)	($8,998,653)	$ (76,784,838)	$23,980,980	$83,225,785
2011	$122,617,832	n/a	$ -	$ (3,767,631)	($1,471,000)	$ (58,354,974.19)	($4,124,798)	($8,998,653)	$ (76,717,057)	$45,900,775	$129,126,561
2012	$138,876,294	n/a	$ -	$ (3,767,631)	($1,667,000)	$ (57,943,505.44)	($4,124,798)	($8,998,653)	$ (76,501,588)	$62,374,706	$191,501,267
2013	$167,222,814	n/a	$ -	$ (3,767,631)	($2,007,000)	$ (57,806,349.19)	($4,124,798)	$0	$ (67,705,779)	$99,517,035	$291,018,302
2014	$0	n/a	$ -			$ (57,806,349.19)	($3,480,439)	$0	$ (61,286,788)	($61,286,788)	$229,731,514
2015	$0	n/a	$ -			$ (57,806,349.19)	($1,920,000)	$0	$ (59,726,349)	($59,726,349)	$170,005,165
2016	$0	n/a	$ -			$ (44,340,257.66)	($480,000)	$0	$ (44,820,258)	($44,820,258)	$125,184,907
2017	$0	n/a	$ -			$ (25,902,320.85)		$0	$ (25,902,321)	($25,902,321)	$99,282,586
2018	$0	n/a	$ -			$ (27,141,252.02)		$0	$ (27,141,252)	($27,141,252)	$72,141,334
2019	$0	n/a	$ -			$ (3,125,426.56)		$0	$ (3,125,427)	($3,125,427)	$69,015,908
2020	$0	n/a	$ -					$0	$ -	$0	$69,015,908
2021	$0	n/a	$ -					$0	$ -	$0	$69,015,908
	$741,475,122	$ 1,555,882.00	$ 854,363.00	($25,600,001)	($9,063,823)	($561,307,608)	($33,898,028)	($45,000,000)	$ (674,869,459)	$69,015,908	

*estimated cash flow based on multi-year performance payments

NYSERDA Administration

	Staff/overhead	Consultant Support	Program Evaluation	CST Systems M&V	Total Admin
2006	$ 1,713,459	$ 675,715	$ 59,348	$ -	$ 2,448,522
2007	$ 1,122,544	$ 242,663	$ 138,865	$ 1,618	$ 1,505,690
2008	$ 1,610,666	$ 246,937	$ 550,297	$ 399,731	$ 2,807,631
2009	$ 2,570,666	$ 246,937	$ 550,298	$ 399,731	$ 3,767,632
2010	$ 2,570,666	$ 246,937	$ 550,298	$ 399,730	$ 3,767,631
2011	$ 2,570,666	$ 246,937	$ 550,298	$ 399,730	$ 3,767,631
2012	$ 2,570,666	$ 246,937	$ 550,298	$ 399,730	$ 3,767,631
2013	$ 2,570,666	$ 246,937	$ 550,298	$ 399,730	$ 3,767,631
Totals	$ 17,300,001	$ 2,400,000	$ 3,500,000	$ 2,400,000	$ 25,600,001

Notes:
1. Shaded cells are actual figures obtained from NYSERDA finance department
2. Original NYS fee budget for 2006-2013 period ($12.12 million) was based on program's share of the then current annual assessment, which was subsequently reduced

Appendix A. 25% New Load Case

Derived Incremental Targets

	Reference Load (1)	Baseline Resources (2)	EO 111 (2)	NY Main Tier and CST (3)	Main Tier and CST Requirement (4)	Green marketing % (5)	Green Marketing MWh	CST requirement = 2% of Incremental (6)	Main Tier Requirement Minus CST	% LIPA (3)	NYSERDA CST (6)	NYSERDA Main Tier	LIPA CST (7)	LIPA Main Tier (7)
2003	158,013,000	31,210,710	-	-	19.8%				-	0.00%	-	-	-	-
2004	160,211,000	31,468,717	-	-	19.6%				-	0.00%	-	-	-	-
2005	167,208,000	31,486,189	251,065	-	19.0%	0.0%	-		-	0.00%	-	-	-	-
2006	162,237,000	31,503,661	282,812	865,582	20.1%	0.1%	202,796		865,582	0.00%	-	865,582	-	-
2007	162,433,219	31,509,370	314,579	883,208	20.1%	0.3%	406,083		883,208	15.80%	17,626	865,582	-	-
2008	164,402,854	31,515,079	346,366	2,700,982	21.0%	0.4%	616,511		2,700,982	15.83%	35,252	2,665,730	-	-
2009	166,343,040	31,520,788	378,174	4,224,432	21.7%	0.5%	831,715	**52,878**	4,171,554	15.83%	52,878	3,502,673	9,948	658,933
2010	168,013,530	31,526,497	410,002	5,508,933	22.3%	0.6%	1,050,085	110,179	5,398,755	15.88%	92,687	4,634,326	17,492	857,115
2011	170,641,997	31,532,206	391,857	7,081,459	22.9%	0.8%	1,279,815	141,629	6,939,830	15.89%	119,131	5,837,431	22,498	1,102,399
2012	172,742,491	31,537,915	373,712	8,560,299	23.4%	0.9%	1,511,497	171,206	8,389,093	15.98%	143,840	7,048,137	27,366	1,340,956
2013	175,028,192	31,543,624	355,568	10,107,574	24.0%	1.0%	1,750,282	202,151	9,905,423	16.01%	169,788	8,319,625	32,363	1,585,798

(1) Actual numbers 2003-2006, Forecast from Case 07-M-0548, STRAW PROPOSAL, TECHNICAL APPENDIX, (February 11, 2008).
(2) from PSC 9/24 order, App. D, Table 1
(3) Sum of Actual NYSERDA contracts for Main Tier and CST plus Estimates for LIPA Procurements through 2009, based on RPS requirements 2010 and later
(4) "Glide Path" interpolated between 2010 and 2013 to reach the 24% goal, assume 1% from green marketing
(5) Interpolated between 2005 and 2013 to reach the 1% goal
(6) 2009 Value differs from the 2006-2009 Operating Plan to reflect corrected small wind numbers
(7) LIPA procurements are estimates based on LIPA's proporportional share of annual RPS glide path

Main Tier Incremental Demand Calculations
(MWh)

	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Main Tier w/o LIPA	2,665,730	3,502,673	4,634,326	5,837,431	7,048,137	8,319,625		
NYSERDA Incremental w/o LIPA	-	836,943	1,131,653	1,203,104	1,210,706	1,271,488		
Less Total Renewables Under NYSERDA contract (up	2,665,730	2,665,730	2,665,730	2,665,730	2,665,730	2,665,730		
Exports to New England	829,330	829,330	842,082	842,082	842,082	842,082		
Additional Exports to NE			255,227	510,454	765,681	1,020,907		
Green Marketing Estimates	616,511	831,715	1,050,085	1,279,815	1,511,497	1,750,282		
EO 111	346,366	378,174	410,002	391,857	373,712	355,568	-	-
Total New York Renewables Demand(MWH)	1,792,206	2,876,162	4,525,991	6,195,908	7,875,378	9,622,734	-	-
Annual New York Incremental Demand(MWh)	**1,792,206**	**1,083,956**	**1,649,830**	**1,669,917**	**1,679,470**	**1,747,356**		

Appendix A. 25% New Load Case Results

Summary of Direct Program Costs Only

(all nominal dollars)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Main Tier Budget															
NYS Incremental RPS Demand (MWhs)			1,131,653	1,203,104	1,210,706	1,271,488	0	0							
Renewable Attributes Market Clearing Price/MWh			$ 19.65	$ 18.94	$ 22.09	$ 22.28	$ -	$ -							
Contract Cost (2010 Increment)			$22,239,617	$22,239,617	$22,239,617	$22,239,617	$22,239,617	$22,239,617	$22,239,617	$22,239,617	$22,239,617	$22,239,617			
Contract Cost (2011 Increment)				$22,789,222	$22,789,222	$22,789,222	$22,789,222	$22,789,222	$22,789,222	$22,789,222	$22,789,222	$22,789,222	$22,789,222		
Contract Cost (2012 Increment)					$26,739,273	$26,739,273	$26,739,273	$26,739,273	$26,739,273	$26,739,273	$26,739,273	$26,739,273	$26,739,273	$26,739,273	
Contract Cost (2013 Increment)						$28,326,850	$28,326,850	$28,326,850	$28,326,850	$28,326,850	$28,326,850	$28,326,850	$28,326,850	$28,326,850	$28,326,850
Contract Cost (2014 Increment)							$0	$0	$0	$0	$0	$0	$0	$0	$0
Contract Cost (2015 Increment)								$0	$0	$0	$0	$0	$0	$0	$0
Subtotal Premium Cost (RPS Main Tier)		$0	$22,239,617	$45,028,839	$71,768,113	$100,094,963	$100,094,963	$100,094,963	$100,094,963	$100,094,963	$100,094,963	$100,094,963	$77,855,346	$55,066,124	$28,326,850
Annual Encumbered Budget		$0	$222,396,173	$227,892,221	$267,392,732	$283,268,504	$0	$0							
Total of Contracts		$1,000,949,631													
Customer Sited Tier Budget															
Incremental to Operating Plan															
Anearobic Digester			$ 10,237,018	$ 5,591,865	$ 5,110,486	$ 5,254,919									
Small Wind			$ 648,560	$ 713,416	$ 706,282	$ 776,910									
PV			$ 24,110,285	$ 10,513,316	$ 9,608,270	$ 9,879,820									
Fuel Cell (Small)			$ 750,000	$ 761,834	$ 696,251	$ 715,929									
Fuel Cell(Large)			$ 4,000,000	$ 4,921,451	$ 4,497,784	$ 4,624,901									
Total Annual Base CST Costs			$ 39,745,863	$ 22,501,882	$ 20,619,074	$ 21,252,479									
Total Cumulative Costs			$ 39,745,863	$ 62,247,746	$ 82,866,820	$ 104,119,299									
Additional PV for Aggressive PV Set Aside Scenario		$ 90,000,000	$ 65,889,715	$ 70,486,684	$ 63,291,730										
Total Cumulative Balance of PV Set Aside Costs		$ 90,000,000	$ 155,889,715	$ 226,376,399	$ 289,668,129										
al Annual Program w/PV Set Aside Funding Requirements		$ 90,000,000	$ 105,635,578	$ 92,988,566	$ 83,910,804	$ 21,252,479									
Current Program Positive Funding Balance	$ 69,016,000														
Net Annual Program Funding Requirement(1)		$ 90,000,000	$127,875,196	$138,017,406	$155,678,916	$121,347,442	$100,094,963	$100,094,963	$100,094,963	$100,094,963	$100,094,963	$100,094,963	$77,855,346	$55,066,124	$28,326,850
Cumulative Program Funding Requirement		$ 90,000,000	$ 217,875,196	$ 355,892,602	$ 511,571,518	$ 632,918,960	$ 733,013,923	$ 833,108,886	$ 933,203,849	$ 1,033,298,812	$ 1,133,393,775	$ 1,233,488,738	$ 1,311,344,084	$ 1,366,410,207	$ 1,394,737,058
Net Annual Program Funding Reqmt(w/o PV Set Aside)			$ 61,985,481	$ 67,530,722	$ 92,387,186	$ 121,347,442	$ 100,094,963	$ 100,094,963	$ 100,094,963	$ 100,094,963	$ 100,094,963	$ 100,094,963	$ 77,855,346	$ 55,066,124	$ 28,326,850
Cumulative Program Funding Reqmt(w/o PV Set Aside)			$ 61,985,481	$ 129,516,203	$ 221,903,389	$ 343,250,831	$ 443,345,794	$ 543,440,757	$ 643,535,720	$ 743,630,683	$ 843,725,646	$ 943,820,609	$ 1,021,675,955	$ 1,076,742,079	$ 1,105,068,929
(1) budget excludes NYSERDA adminstrative expenses,NYS PAL fee, CST monitoring and verification costs															

Appendix A. 25% New Load Case Results

Customer-Sited Tier Program Component

	2008	2009	2010	2011	2012	2013	Total By 2013	Total MW Potential by 2015	% of Potential
Incremental MWh									
Anaerobic Digester*	-	-	23,142	12,641	11,553	11,880	59,216		
Small Wind	-	-	530	583	641	705	2,460		
PV	-	-	8,800	4,264	4,330	4,947	22,340		
Fuel Cell (small)	-	-	329	334	305	314	1,281		
Fuel Cell (large)	-	-	7,008	8,622	7,880	8,103	31,613		
Total Base CST MWh	-	-	*39,809*	*26,444*	*24,709*	*25,948*	*116,910*		
Additional PV for 100 MW	-	32,850	24,050	28,586	28,520	-	114,006		
Total Incremental MWh	**-**	**32,850**	**63,859**	**55,030**	**53,229**	**25,948**	**230,916**		
Incremental MW									
Anaerobic Digester*	-	-	3.3	1.8	1.6	1.7	8.4	21.0	40%
Small Wind	-	-	0.2	0.3	0.3	0.3	1.1	1.9	60%
PV	-	-	6.7	3.2	3.3	3.8	17.0	187.4	9%
Fuel Cell (small)	-	-	0.2	0.2	0.1	0.1	0.6	3.2	19%
Fuel Cell (large)	-	-	0.8	1.0	0.9	0.9	3.6	7.8	46%
Total Base CST MW	-	-	*11.2*	*6.5*	*6.3*	*6.9*	*30.8*		
Additional PV for 100 MW	-	25.0	18.3	21.8	21.7	-	86.8		
Total PV	**-**	**25.0**	**25.0**	**25.0**	**25.0**	**3.8**	**104**		
Total Incremental MW	**-**	**25.0**	**29.5**	**28.2**	**28.0**	**6.9**	**118**		
CST Cost (thousands)									
Anaerobic Digester*	$0	$0	$10,237	$5,592	$5,110	$5,255	$ 26,194		
Small Wind	$0	$0	$649	$713	$706	$777	$ 2,845		
PV	$0	$0	$24,110	$10,513	$9,608	$9,880	$ 54,112		
Fuel Cell (small)	$0	$0	$750	$762	$696	$716	$ 2,924		
Fuel Cell (large)	$0	$0	$4,000	$4,921	$4,498	$4,625	$ 18,044		
Annual Base CST Cost	*$0*	*$0*	*$39,746*	*$22,502*	*$20,619*	*$21,252*	$ 104,119		
Additional PV Cost	$0	$90,000	$65,890	$70,487	$63,292	$0	$ 289,668		
Total Annual Cost	$0	$90,000	$105,636	$92,989	$83,911	$21,252	$ 393,787		
Total Cost	$393,787								
NPV	**$281,357**								

*** Includes Anaerobic Digesters in NYC metropolitan area (currently NYPA customers)**

Program specific results are a function of annual operating plan program allocations, estimates of technical potential and level of program incentives

Costs associated with program monitoring and verification and administration not included

Appendix A. 25% New Load Case

Summary of Cummulative Cleared MW by Year, Zone and Resource Type

Main Tier Program Component

Resource	Zone	2010	2011	2012	2013
Biomass	1	19.3	38.5	67.5	109.9
Biomass Total		19.3	38.5	67.5	109.9
Hydro	1	25.0	50.0	74.9	99.9
	2	4.6	9.2	13.7	18.3
	3	0.0	0.0	0.1	0.1
	ON	17.6	35.2	52.8	70.4
	QC	20.0	40.0	60.0	80.0
Hydro Total		67.2	134.4	201.5	268.7
Landfill Gas	1	17.6	35.3	52.9	70.5
	2	5.1	10.3	15.4	20.6
	3	0.7	1.3	2.0	2.7
Landfill Gas Total		23.4	46.9	70.3	93.8
Wind (Offshore) Total		-	-	-	-
Wind (Onshore)	1	320.0	647.0	953.6	1,251.1
	2	33.6	67.2	100.8	134.3
Wind (Onshore) Total		353.6	714.1	1,054.4	1,385.5
Grand Total		**463.5**	**933.9**	**1,393.7**	**1,857.9**

Summary of Cummulative Cleared GWh by Year, Zone and Resource Type

Resource	Zone	2010	2011	2012	2013
Biomass	1	134.9	269.8	473.0	770.4
Biomass Total		134.9	269.8	473.0	770.4
Hydro	1	100.7	201.3	302.0	402.6
	2	18.5	36.9	55.4	73.8
	3	0.1	0.1	0.2	0.3
	ON	103.3	206.6	309.9	413.2
	QC	87.6	175.2	262.8	350.4
Hydro Total		310.1	620.2	930.2	1,240.3
Landfill Gas	1	131.3	262.5	393.8	525.1
	2	38.3	76.6	114.9	153.3
	3	5.0	9.9	14.9	19.9
Landfill Gas Total		174.6	349.1	523.7	698.2
Wind (Offshore) Total		-	-	-	-
Wind (Onshore)	1	939.7	1,899.4	2,800.5	3,675.1
	2	90.6	181.2	271.9	362.5
Wind (Onshore) Total		1,030.3	2,080.7	3,072.3	4,037.6
Grand Total		**1,649.8**	**3,319.7**	**4,999.2**	**6,746.6**

Appendix B. 25% Post-EPS Load Case

Derived Incremental Targets

	Post-EPS Load (1)	Baseline Resources (2)	EO 111 (2)	NY Main Tier and CST (3)	Main Tier and CST Requirement (4)	Green marketing % (5)	Green Marketing MWh	CST requirement = 2% of Incremental (6)	Main Tier Requirement Minus CST	% LIPA (3)	NYSERDA CST (6)	NYSERDA Main Tier	LIPA CST (7)	LIPA Main Tier (7)
2003	158,013,000	31,210,710	-	-	19.8%				-	0.00%	-	-	-	-
2004	160,211,000	31,468,717	-	-	19.6%				-	0.00%	-	-	-	-
2005	167,208,000	31,486,189	251,065	-	19.0%	0.0%	-		-	0.00%	-	-	-	-
2006	162,237,000	31,503,661	282,812	865,582	20.1%	0.1%	202,796		865,582	0.00%	-	865,582	-	-
2007	162,433,219	31,509,370	314,579	883,208	20.1%	0.3%	406,083		883,208	15.80%	17,626	865,582	-	-
2008	163,552,495	31,515,079	346,366	2,700,982	21.1%	0.4%	613,322		2,700,982	15.83%	35,252	2,665,730	-	-
2009	162,041,065	31,520,788	378,174	4,224,432	22.3%	0.5%	810,205	**52,878**	4,171,554	15.83%	52,878	3,502,673	9,948	658,933
2010	160,192,211	31,526,497	410,002	4,884,601	22.7%	0.6%	1,001,201	97,692	4,786,909	15.88%	82,182	4,026,932	15,510	759,977
2011	159,167,794	31,532,206	391,857	5,544,771	23.1%	0.8%	1,193,758	110,895	5,433,875	15.89%	93,280	4,570,699	17,616	863,176
2012	157,553,065	31,537,915	373,712		23.6%	0.9%	1,378,589	-	-	15.98%	93,280	4,570,699	-	-
2013	156,016,509	31,543,624	355,568		24.0%	1.0%	1,560,165	-	-	16.01%	93,280	4,570,699	-	-

(1) Actual numbers 2003-2006, Forecast from Case 07-M-0548, STRAW PROPOSAL, TECHNICAL APPENDIX, (February 11, 2008).
(2) from PSC 9/24 order, App. D, Table 1
(3) Sum of Actual NYSERDA contracts for Main Tier and CST plus Estimates for LIPA Procurements through 2009, based on RPS requirements 2010 and later
(4) "Glide Path" interpolated between 2010 and 2013 to reach the 24% goal, assume 1% from green marketing
(5) Interpolated between 2005 and 2013 to reach the 1% goal
(6) 2009 Value differs from the 2006-2009 Operating Plan to reflect corrected small wind numbers
(7) LIPA procurements are estimates based on LIPA's proporportional share of annual RPS glide path

Main Tier Incremental Demand Calculations
(MWh)

	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Main Tier w/o LIPA	2,665,730	3,502,673	4,026,932	4,570,699	4,570,699	4,570,699		
NYSERDA Incremental w/o LIPA	-	836,943	524,259	543,767	-	-		
Less Total Renewables Under NYSERDA contract (up	2,665,730	2,665,730	2,665,730	2,665,730	2,665,730	2,665,730		
Exports to New England	829,330	829,330	842,082	842,082	842,082	842,082		
Additional Exports to NE			255,227	510,454	765,681	1,020,907		
Green Marketing Estimates	613,322	810,205	1,001,201	1,193,758	1,378,589	1,560,165		
EO 111	346,366	378,174	410,002	391,857	373,712	355,568	-	-
Total New York Renewables Demand(MWH)	1,789,017	2,854,652	3,869,714	4,843,120	5,265,032	5,683,691	-	-
Annual New York Incremental Demand(MWh)	**1,789,017**	**1,065,635**	**1,015,062**	**973,406**	**-**	**-**		

Appendix B. 25% Post-EPS Load Case Results

Summary of Direct Program Costs Only

(all nominal dollars)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Main Tier Budget													
NYS Incremental RPS Demand (MWhs)			524,259	543,767	0	0	0	0					
Renewable Attributes Market Clearing Price/MWh			$ 19.65	$ 18.94	$ -	$ -	$ -	$ -					
Contract Cost (2010 Increment)			$10,302,902	$10,302,902	$10,302,902	$10,302,902	$10,302,902	$10,302,902	$10,302,902	$10,302,902	$10,302,902	$10,302,902	
Contract Cost (2011 Increment)				$10,300,041	$10,300,041	$10,300,041	$10,300,041	$10,300,041	$10,300,041	$10,300,041	$10,300,041	$10,300,041	$10,300,041
Contract Cost (2012 Increment)					$0	$0	$0	$0	$0	$0	$0	$0	$0
Contract Cost (2013 Increment)						$0	$0	$0	$0	$0	$0	$0	$0
Contract Cost (2014 Increment)							$0	$0	$0	$0	$0	$0	$0
Contract Cost (2015 Increment)								$0	$0	$0	$0	$0	$0
Subtotal Premium Cost (RPS Main Tier)		$0	$10,302,902	$20,602,943	$20,602,943	$20,602,943	$20,602,943	$20,602,943	$20,602,943	$20,602,943	$20,602,943	$20,602,943	$10,300,041
Annual Encumbered Budget		$0	$103,029,023	$103,000,412	$0	$0	$0	$0					
Total of Contracts		$206,029,435											
Customer Sited Tier Budget													
Incremental to Operating Plan													
Anearobic Digester			$ 7,274,638	$ 2,273,637									
Small Wind			$ 648,560	$ 713,416									
PV			$ 13,677,112	$ 4,274,686									
Fuel Cell (Small)			$ 750,000	$ 309,760									
Fuel Cell(Large)			$ 4,000,000	$ 2,001,049									
Total Annual Base CST Costs			$ 26,350,309	$ 9,572,548									
Total Cumulative Costs			$ 26,350,309	$ 35,922,857									
Additional PV for Aggressive PV Set Aside Scenario		$ 90,000,000	$ 76,322,888	$ 76,725,314	$ 72,900,000								
Total Cumulative Balance of PV Set Aside Costs		$ 90,000,000	$ 166,322,888	$ 243,048,202	$ 315,948,202								
(all nominal dollars)													
Total Annual Program w/PV Funding Requirements		$ 90,000,000	$ 102,673,198	$ 86,297,862	$ 72,900,000								
Current Program Positive Funding Balance	$ 69,016,000												
Net Program Funding Requirement(1)		$ 90,000,000	$112,976,100	$106,900,805	$93,502,943	$20,602,943	$20,602,943	$20,602,943	$20,602,943	$20,602,943	$20,602,943	$20,602,943	$10,300,041
Cumulative Program Funding Requirement		$ 90,000,000	$ 202,976,100	$ 309,876,905	$ 403,379,849	$ 423,982,792	$ 444,585,736	$ 465,188,679	$ 485,791,623	$ 506,394,566	$ 526,997,510	$ 547,600,453	$ 557,900,494
Net Annual Program Funding Reqmt(w/o PV Set Aside)			$36,653,211	$30,175,491	$20,602,943	$20,602,943	$20,602,943	$20,602,943	$20,602,943	$20,602,943	$20,602,943	$20,602,943	$10,300,041
Cumulative Program Funding Reqmt(w/o PV Set Aside)			$36,653,211	$66,828,703	$87,431,646	$108,034,590	$128,637,533	$149,240,477	$169,843,420	$190,446,364	$211,049,307	$231,652,251	$241,952,292
(1) budget excludes NYSERDA adminstrative expenses,NYS PAL fee, CST monitoring and verification costs													

Appendix B. 25% Post-EPS Load Case Results

Customer-Sited Tier Program Component

	2008	2009	2010	2011	2012	2013	Total By 2013
Incremental MWh							
Anaerobic Digester*	-	-	16,445	5,140	-	-	21,585
Small Wind	-	-	530	583	-	-	1,113
PV	-	-	4,992	1,734	-	-	6,726
Fuel Cell (small)	-	-	329	136	-	-	464
Fuel Cell (large)	-	-	7,008	3,506	-	-	10,514
Total Base CST MWh	-	-	*29,304*	*11,098*	-	-	*40,402*
Additional PV for 100 MW	-	32,850	27,858	31,116	32,850	-	124,674
Total Incremental MWh	**-**	**32,850**	**57,162**	**42,214**	**32,850**	**-**	**165,076**

Incremental MW								**Total MW Potential by 2015**	**% of Potential**
Anaerobic Digester*			2.3	0.7	-	-	3.1	21.0	15%
Small Wind			0.2	0.3	-	-	0.5	1.9	27%
PV			3.8	1.3	-	-	5.1	187.4	3%
Fuel Cell (small)			0.2	0.1	-	-	0.2	3.2	7%
Fuel Cell (large)			0.8	0.4	-	-	1.2	7.8	15%
Total Base CST MW	-	-	*7.3*	*2.8*	-	-	*10.1*		
Additional PV for 100 MW	-	25.0	21.2	23.7	25.0	-	94.9		
Total PV	**-**	**25.0**	**25.0**	**25.0**	**25.0**	**-**	**100**		
Total Incremental MW	**-**	**25.0**	**28.5**	**26.5**	**25.0**	**-**	**105**		

CST Cost (thousands)							
Anaerobic Digester*	$0	$0	$7,275	$2,274	$0	$0	$ 9,548
Small Wind	$0	$0	$649	$713	$0	$0	$ 1,362
PV	$0	$0	$13,677	$4,275	$0	$0	$ 17,952
Fuel Cell (small)	$0	$0	$750	$310	$0	$0	$ 1,060
Fuel Cell (large)	$0	$0	$4,000	$2,001	$0	$0	$ 6,001
Annual Base CST Cost	*$0*	*$0*	*$26,350*	*$9,573*	*$0*	*$0*	$ 35,923
Additional PV Cost	$0	$90,000	$76,323	$76,725	$72,900	$0	$ 315,948
Total Annual Cost	$0	$90,000	$102,673	$86,298	$72,900	$0	$ 351,871
Total Cost	$351,871						
NPV	**$255,728**						

*** Includes Anaerobic Digesters in NYC metropolitan area (currently NYPA customers)**

Program specific results are a function of annual operating plan program allocations, estimates of technical potential and level of program incentives

Costs associated with program monitoring and verification and administration not included

Appendix B. 25% Post EPS Load Case

Summary of Cummulative Cleared MW by Year, Zone and Resource Type

Main Tier Program Component

Resource	Zone	2010	2011
Biomass	1	19.3	38.5
Biomass Total		19.3	38.5
Hydro	1	25.0	50.0
	2	4.6	9.2
	3	0.0	0.0
	ON	17.6	35.2
	QC	20.0	40.0
Hydro Total		67.2	134.4
Landfill Gas	1	17.6	35.3
	2	5.1	10.3
	3	0.7	1.3
Landfill Gas Total		23.4	46.9
Wind (Offshore) Total		-	-
Wind (Onshore)	1	100.4	186.4
	2	33.6	67.2
Wind (Onshore) Total		134.0	253.6
Grand Total		**243.9**	**473.4**

Summary of Cummulative Cleared GWh by Year, Zone and Resource Type

Resource	Zone	2010	2011
Biomass	1	134.9	269.8
Biomass Total		134.9	269.8
Hydro	1	100.7	201.3
	2	18.5	36.9
	3	0.1	0.1
	ON	103.3	206.6
	QC	87.6	175.2
Hydro Total		310.1	620.2
Landfill Gas	1	131.3	262.5
	2	38.3	76.6
	3	5.0	9.9
Landfill Gas Total		174.6	349.1
Wind (Offshore) Total		-	-
Wind (Onshore)	1	304.9	568.1
	2	90.6	181.2
Wind (Onshore) Total		395.5	749.4
Grand Total		**1,015.1**	**1,988.5**

Appendix C. 30% Post-EPS Load Case

Derived Incremental Targets

	Post-EPS Load (1)	Baseline Resources (2)	EO 111 (2)	NY Main Tier and CST (3)	Main Tier and CST Requirement (4)	Green marketing % (5)	Green Marketing MWh	CST requirement = 2% of Incremental (6)	Main Tier Requirement Minus CST	% LIPA (3)	NYSERDA CST (6)	NYSERDA Main Tier	LIPA CST (7)	LIPA Main Tier (7)
2003	158,013,000	31,210,710	-	-	19.8%				-	0.00%	-	-	-	-
2004	160,211,000	31,468,717	-	-	19.6%				-	0.00%	-	-	-	-
2005	167,208,000	31,486,189	251,065	-	19.0%	0.0%	-		-	0.00%	-	-	-	-
2006	162,237,000	31,503,661	282,812	865,582	20.1%	0.1%	202,796		865,582	0.00%	-	865,582	-	-
2007	162,433,219	31,509,370	314,579	883,208	20.1%	0.3%	406,083		883,208	15.80%	17,626	865,582	-	-
2008	163,552,495	31,515,079	346,366	2,700,982	21.1%	0.4%	613,322		2,700,982	15.83%	35,252	2,665,730	-	-
2009	162,041,065	31,520,788	378,174	4,224,432	22.3%	0.5%	810,205	**52,878**	4,171,554	15.83%	52,878	3,502,673	9,948	658,933
2010	160,192,211	31,526,497	410,002	5,565,486	23.4%	0.6%	1,001,201	111,310	5,454,176	15.88%	93,638	4,588,262	17,672	865,914
2011	159,167,794	31,532,206	391,857	7,117,399	24.5%	0.8%	1,193,758	142,348	6,975,051	15.89%	119,736	5,867,057	22,612	1,107,994
2012	157,553,065	31,537,915	373,712	8,495,015	25.6%	0.9%	1,378,589	169,900	8,325,115	15.98%	142,743	6,994,385	27,158	1,330,730
2013	156,016,509	31,543,624	355,568	9,857,452	26.8%	1.0%	1,560,165	197,149	9,660,303	16.01%	165,587	8,113,747	31,562	1,546,556
2014	154,177,290	31,543,624	337,424	11,106,854	27.9%	1.0%	1,541,773	222,137	10,884,717	16.08%	186,420	9,134,589	35,717	1,750,129
2015	152,351,948	31,543,624	319,280	12,319,161	29.0%	1.0%	1,523,519	246,383	12,072,778	16.15%	206,595	10,123,157	39,788	1,949,621.12

(1) Actual numbers 2003-2006, Forecast from Case 07-M-0548, STRAW PROPOSAL, TECHNICAL APPENDIX, (February 11, 2008).
(2) from PSC 9/24 order, App. D, Table 1
(3) Sum of Actual NYSERDA contracts for Main Tier and CST plus Estimates for LIPA Procurements through 2009, based on RPS requirements 2010 and later
(4) "Glide Path" interpolated between 2010 and 2013 to reach the 29% goal, assume 1% from green marketing
(5) Interpolated between 2005 and 2013 to reach the 1% goal
(6) 2009 Value differs from the 2006-2009 Operating Plan to reflect corrected small wind numbers
(7) LIPA procurements are estimates based on LIPA's proporportional share of annual RPS glide path

Main Tier Incremental Demand Calculations
(MWh)

	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Main Tier w/o LIPA	2,665,730	3,502,673	4,588,262	5,867,057	6,994,385	8,113,747	9,134,589	10,123,157
NYSERDA Incremental w/o LIPA	-	836,943	1,085,589	1,278,795	1,127,328	1,119,362	1,020,842	988,568
Less Total Renewables Under NYSERDA contract (up	2,665,730	2,665,730	2,665,730	2,665,730	2,665,730	2,665,730	2,665,730	2,665,730
Exports to New England	829,330	829,330	842,082	842,082	842,082	842,082	842,082	842,082
Additional Exports to NE			255,227	510,454	765,681	1,020,907	1,020,907	1,020,907
Green Marketing Estimates	613,322	810,205	1,001,201	1,193,758	1,378,589	1,560,165	1,541,773	1,523,519
EO 111	346,366	378,174	410,002	391,857	373,712	355,568	337,424	319,280
Total New York Renewables Demand(MWH)	1,789,017	2,854,652	4,431,044	6,139,478	7,688,719	9,226,739	10,211,045	11,163,216
Annual New York Incremental Demand(MWh)	**1,789,017**	**1,065,635**	**1,576,392**	**1,708,434**	**1,549,241**	**1,538,020**	**984,305**	**952,171**

Appendix C. 30% Post-EPS Load Case Results

Summary of Direct Program Costs Only

(all nominal dollars)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Main Tier Budget																	
NYS Incremental RPS Demand (MWhs)			1,085,589	1,278,795	1,127,328	1,119,362	1,020,842	988,568									
Renewable Attributes Market Clearing Price/MWh			$ 19.65	$ 18.94	$ 16.82	$ 15.15	$ 28.46	$ 31.67									
Contract Cost (2010 Increment)			$21,334,354	$21,334,354	$21,334,354	$21,334,354	$21,334,354	$21,334,354	$21,334,354	$21,334,354	$21,334,354	$21,334,354					
Contract Cost (2011 Increment)				$24,222,952	$24,222,952	$24,222,952	$24,222,952	$24,222,952	$24,222,952	$24,222,952	$24,222,952	$24,222,952	$24,222,952				
Contract Cost (2012 Increment)					$18,963,899	$18,963,899	$18,963,899	$18,963,899	$18,963,899	$18,963,899	$18,963,899	$18,963,899	$18,963,899	$18,963,899			
Contract Cost (2013 Increment)						$16,958,291	$16,958,291	$16,958,291	$16,958,291	$16,958,291	$16,958,291	$16,958,291	$16,958,291	$16,958,291	$16,958,291		
Contract Cost (2014 Increment)							$29,049,948	$29,049,948	$29,049,948	$29,049,948	$29,049,948	$29,049,948	$29,049,948	$29,049,948	$29,049,948	$29,049,948	
Contract Cost (2015 Increment)								$31,308,709	$31,308,709	$31,308,709	$31,308,709	$31,308,709	$31,308,709	$31,308,709	$31,308,709	$31,308,709	$31,308,709
Subtotal Premium Cost (RPS Main Tier)		$0	$21,334,354	$45,557,306	$64,521,205	$81,479,496	$110,529,444	$141,838,153	$141,838,153	$141,838,153	$141,838,153	$141,838,153	$120,503,800	$96,280,847	$77,316,948	$60,358,657	$31,308,709
Annual Encumbered Budget		$0	$213,343,535	$242,229,524	$189,638,990	$169,582,911	$290,499,482	$313,087,092									
Total of Contracts		$1,418,381,533															
Customer Sited Tier Budget																	
Incremental to Operating Plan																	
Anearobic Digester			$ 10,237,018	$ 5,517,050	$ 4,749,087	$ 4,608,738	$ 4,086,432	$ 3,845,509									
Small Wind			$ 648,560	$ 713,416	$ 706,282	$ 776,910	$ 854,601	$ 940,061									
PV			$ 26,715,765	$ 10,372,656	$ 8,928,801	$ 8,664,931	$ 7,682,938	$ 7,229,976									
Fuel Cell (Small)			$ 750,000	$ 751,642	$ 647,015	$ 627,894	$ 556,735	$ 523,911									
Fuel Cell(Large)			$ 4,000,000	$ 4,855,606	$ 4,179,714	$ 4,056,192	$ 3,596,506	$ 3,384,467									
Total Annual Base CST Costs			$ 42,351,343	$ 22,210,370	$ 19,210,899	$ 18,734,665	$ 16,777,213	$ 15,923,925									
Total Cumulative Costs			$ 42,351,343	$ 64,561,713	$ 83,772,612	$ 102,507,276	$ 119,284,489	$ 135,208,414									
Additional PV for Aggressive PV Set Aside Scenario		$ 90,000,000	$ 63,284,235	$ 70,627,344	$ 63,971,199												
Total Cumulative Balance of PV Set Aside Costs		$ 90,000,000	$ 153,284,235	$ 223,911,579	$ 287,882,778												
Total Annual Program w/PV Funding Requirements	$ -	$ 90,000,000	$ 105,635,578	$ 92,837,714	$ 83,182,098	$ 18,734,665	$ 16,777,213	$ 15,923,925									
Current Program Positive Funding Balance	$ 69,016,000																
Net Program Funding Requirement(1)		$ 90,000,000	$126,969,932	$138,395,020	$147,703,302	$100,214,161	$127,306,657	$157,762,079	$141,838,153	$141,838,153	$141,838,153	$141,838,153	$120,503,800	$96,280,847	$77,316,948	$60,358,657	$31,308,709
Cumulative Program Funding Requirement		$ 90,000,000	$ 216,969,932	$ 355,364,952	$ 503,068,254	$ 603,282,415	$ 730,589,071	$ 888,351,150	$ 1,030,189,303	$ 1,172,027,457	$ 1,313,865,610	$ 1,455,703,763	$ 1,576,207,563	$ 1,672,488,411	$ 1,749,805,359	$ 1,810,164,016	$ 1,841,472,726
Net Annual Program Funding Reqmt(w/o PV Set Aside)			$63,685,696	$67,767,676	$83,732,104	$100,214,161	$127,306,657	$157,762,079	$141,838,153	$141,838,153	$141,838,153	$141,838,153	$120,503,800	$96,280,847	$77,316,948	$60,358,657	$31,308,709
Cumulative Program Funding Reqmt(w/o PV Set Aside)			$63,685,696	$131,453,372	$215,185,476	$315,399,636	$442,706,293	$600,468,372	$742,306,525	$884,144,678	$1,025,982,832	$1,167,820,985	$1,288,324,785	$1,384,605,632	$1,461,922,581	$1,522,281,238	$1,553,589,947
(1) budget excludes NYSERDA adminstrative expenses,NYS PAL fee, CST monitoring and verification costs																	

Appendix C. 30% Post-EPS Load Case Results

Customer-Sited Tier Program Component

	2008	2009	2010	2011	2012	2013	2014	2015	Total by 2015		
Incremental MWh											
Anaerobic Digester*	-	-	23,142	12,472	10,736	10,419	9,238	8,693	74,700		
Small Wind	-	-	530	583	641	705	776	854	4,089		
PV	-	-	9,751	4,207	4,023	4,338	4,274	4,469	31,063		
Fuel Cell (small)	-	-	329	329	283	275	244	229	1,689		
Fuel Cell (large)	-	-	7,008	8,507	7,323	7,106	6,301	5,930	42,175		
Total Base CST MWh	-	-	*40,760*	*26,098*	*23,007*	*22,844*	*20,833*	*20,175*	*153,717*		
Additional PV for 100 MW	-	32,850	23,099	28,643	28,827	-	-	-	113,419		
Total Incremental MWh	**-**	**32,850**	**63,859**	**54,741**	**51,834**	**22,844**	**20,833**	**20,175**	**267,136**		
Incremental MW										**Total MW Potential by 2015**	**% of Potential**
Anaerobic Digester*			3.3	1.8	1.5	1.5	1.3	1.2	10.7	21.0	51%
Small Wind			0.2	0.3	0.3	0.3	0.4	0.4	1.9	1.9	100%
PV			7.4	3.2	3.1	3.3	3.3	3.4	23.6	187.4	13%
Fuel Cell (small)			0.2	0.2	0.1	0.1	0.1	0.1	0.8	3.2	24%
Fuel Cell (large)			0.8	1.0	0.8	0.8	0.7	0.7	4.8	7.8	62%
Total Base CST MW	-	-	*11.9*	*6.4*	*5.9*	*6.0*	*5.8*	*5.8*	*41.8*		
Additional PV for 100 MW	-	25.0	17.6	21.8	21.9				86.3		
Total PV	**-**	**25.0**	**25.0**	**25.0**	**25.0**	**3.3**	**3.3**	**3.4**	**110**		
Total Incremental MW	**-**	**25.0**	**29.5**	**28.2**	**27.8**	**6.0**	**5.8**	**5.8**	**128**		
CST Cost (thousands)											
Anaerobic Digester*	$0	$0	$10,237	$5,517	$4,749	$4,609	$4,086	$3,846	$ 33,044		
Small Wind	$0	$0	$649	$713	$706	$777	$855	$940	$ 4,640		
PV	$0	$0	$26,716	$10,373	$8,929	$8,665	$7,683	$7,230	$ 69,595		
Fuel Cell (small)	$0	$0	$750	$752	$647	$628	$557	$524	$ 3,857		
Fuel Cell (large)	$0	$0	$4,000	$4,856	$4,180	$4,056	$3,597	$3,384	$ 24,072		
Annual Base CST Cost	*$0*	*$0*	*$42,351*	*$22,210*	*$19,211*	*$18,735*	*$16,777*	*$15,924*	$ 135,208		
Additional PV Cost	$0	$90,000	$63,284	$70,627	$63,971	$0	$0	$0	$ 287,883		
Total Annual Cost	$0	$90,000	$105,636	$92,838	$83,182	$18,735	$16,777	$15,924	$ 423,091		
Total Cost	$423,091										
NPV	**$295,418**										

*** Includes Anaerobic Digesters in NYC metropolitan area (currently NYPA customers)**

Program specific results are a function of annual operating plan program allocations, estimates of technical potential and level of program incentives

Costs associated with program monitoring and verification and administration not included

Appendix C. 30% Post EPS Case

Summary of Cummulative Cleared MW by Year, Zone and Resource Type

Main Tier Program Component

Resource	Zone	2010	2011	2012	2013	2014	2015
Biomass	1	19.3	38.5	57.8	77.0	163.2	235.0
Biomass Total		19.3	38.5	57.8	77.0	163.2	235.0
Hydro	1	25.0	50.0	74.9	99.9	99.9	99.9
	2	4.6	9.2	13.7	18.3	18.3	18.3
	3	0.0	0.0	0.0	0.0	0.1	0.1
	ON	17.6	35.2	52.8	70.4	88.0	88.0
	QC	20.0	40.0	60.0	80.0	100.0	100.0
Hydro Total		67.2	134.4	201.5	268.7	306.3	306.3
Landfill Gas	1	17.6	35.3	52.9	70.5	70.5	70.5
	2	5.1	10.3	15.4	20.6	21.5	21.5
	3	0.7	1.3	2.0	2.7	2.7	2.7
Landfill Gas Total		23.4	46.9	70.3	93.8	94.6	94.6
Wind (Offshore) Total		-	-	-	-	-	-
Wind (Onshore)	1	294.6	634.9	920.1	1,201.5	1,257.5	1,324.0
	2	33.6	67.2	100.8	134.3	134.3	258.1
	3	-	-	-	-	10.0	10.0
Wind (Onshore) Total		328.2	702.1	1,020.9	1,335.8	1,401.8	1,592.1
Grand Total		**438.1**	**921.8**	**1,350.5**	**1,775.3**	**1,966.0**	**2,228.1**

Summary of Cummulative Cleared GWh by Year, Zone and Resource Type

Resource	Zone	2010	2011	2012	2013	2014	2015
Biomass	1	134.9	269.8	404.7	539.6	1,135.6	1,576.1
Biomass Total		134.9	269.8	404.7	539.6	1,135.6	1,576.1
Hydro	1	100.7	201.3	302.0	402.6	402.6	402.6
	2	18.5	36.9	55.4	73.8	73.8	73.8
	3	0.1	0.1	0.1	0.1	0.3	0.3
	ON	103.3	206.6	309.9	413.2	516.5	516.5
	QC	87.6	175.2	262.8	350.4	438.0	438.0
Hydro Total		310.1	620.2	930.2	1,240.2	1,431.3	1,431.3
Landfill Gas	1	131.3	262.5	393.8	525.1	525.1	525.1
	2	38.3	76.6	114.9	153.3	159.7	159.7
	3	5.0	9.9	14.9	19.9	19.9	19.9
Landfill Gas Total		174.6	349.1	523.7	698.2	704.7	704.7
Wind (Offshore) Total		-	-	-	-	-	-
Wind (Onshore)	1	866.2	1,864.5	2,703.6	3,531.6	3,693.4	3,883.5
	2	90.6	181.2	271.9	362.5	362.5	684.0
	3	-	-	-	-	28.9	28.9
Wind (Onshore) Total		956.9	2,045.7	2,975.5	3,894.1	4,084.8	4,596.5
Grand Total		**1,576.4**	**3,284.8**	**4,834.1**	**6,372.1**	**7,356.4**	**8,308.6**

Attachment 2

NEW YORK RENEWABLE PORTFOLIO STANDARD
COST STUDY UPDATE
MAIN TIER TARGET AND RESOURCES
(55 pages)

New York Renewable Portfolio Standard Cost Study Update

Main Tier Target and Resources

Prepared for:

New York State Energy Research and Development Authority

By:

La Capra Associates & Sustainable Energy Advantage, LLC

With input from

AWS TrueWind
Antares Group

March 18, 2008

NOTICE

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Table of Contents

I. Introduction and Overview

In reviewing the future costs of the New York Renewable Portfolio Standard Program, NYSERDA asked Sustainable Energy Advantage (SEA) and La Capra Associates to update the 2004 Cost Study Report II, Volume A (2004 Report).[1] The purpose of this report is to present results of the updated Main Tier cost analysis and describe the key underlying assumptions, focusing on those assumptions which changed from the initial 2004 Report.

In updating the 2004 Report, several changes have been made to the RPS targets, the supply curve methodology, import potential, resource potential and renewable energy cost assumptions. These include:

- RPS annual MWh target changes are a result of updated load forecasts and anticipated increases in new Demand Side Management (DSM) Programs that New York is planning – specifically, implementation of the Governor's 15 x 15 plan (15% reduction in load by 2015). Three scenarios were evaluated: (1) 25% Reference; (2) 25% Reduced Load(by 2013); (3) 30% Reduced Load (by 2015).
- The modeling approach was modified to better reflect the approach to evaluation and contracting ultimately adopted by NYSERDA subsequent to the 2004 Report.
- The available import potential from Canadian provinces and PJM have been greatly reduced due to both expansive new renewable energy directives and RPS in these regions, and to the costs and risks associated with ultimate requirements placed upon generators importing energy into the New York Control Area.
- The resource potential for certain resources was modified to reflect updated information or a change in methodology/assumptions.
- With increasing demand for renewable energy across the country and internationally, high material and fuel costs, and the weakened US dollar, the installed cost of renewable generation capacity has increased by 50% or more relative to the 2004 Report; fossil fuel cost increases and increased demand has also driven the cost of biomass fuel higher since 2004.

This report focuses on the "Main Tier" resources only. The "Customer-Site Tier" (CST) will be discussed in a separate report. This report describes the key assumptions made regarding the supply curve of renewable resources assumed to be available to meet New York RPS demand:

- the cost, location, and availability of renewable resources;
- the commodity energy market value of the renewable generation;
- the information sources that were relied upon;
- how these assumptions were combined to yield a "renewable generation premium" for numerous blocks of potential renewable generating resources; and
- how the supply curve constructed of renewable generation premiums, resource availability for each block of potential renewable generating resources, and the incremental demand for renewables from RPS targets and other demand drivers are combined to yield projections of the cost of meeting the main tier RPS.

[1] Retail Renewable Portfolio Standard — Case 03-E-0188, "Cost Study Report II, Volume A" February 27, 2004. <http://www.dps.state.ny.us/03e0188_CostStudy_II.htm>.

After updating renewable resource assumptions and revising RPS targets, a model, similar to the model used in the 2004 Report, was developed to compare the annual incremental demand with the incremental available undeveloped supply, sorted from least to highest renewable generation premium. The intersection of incremental supply and demand determined the market clearing price. This market clearing price, in dollars per megawatthour, represents the projected cost of all renewable attributes[2] to be procured by NYSERDA in meeting the main tier RPS targets. While to date NYSERDA's main tier RPS solicitations have applied on an as-bid rather than clearing price auction, the approach used assumed that over time, bid prices will tend to converge towards the clearing price with increased market experience, liquidity and transparency.

I.1. Commodity Revenues and Aggregation of New York Zones

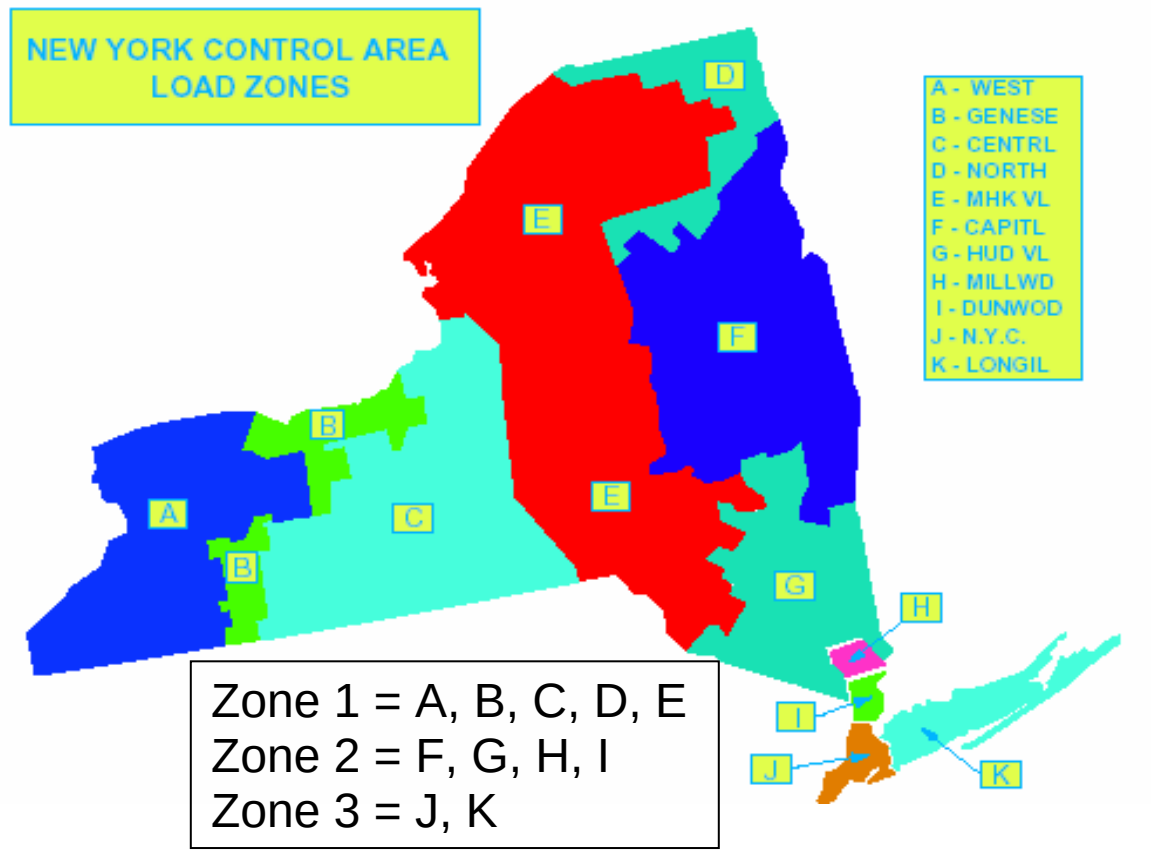
The cost-effectiveness of renewable resources will depend, in part, on the (commodity) market value of their electrical output. Under the New York wholesale market design, commodity market revenues will depend on energy locational based marginal prices (LBMP) available to resources located in each of the eleven NYISO zones. For purposes of efficiency and transparency of the analysis, the 11 NYISO zones were aggregated into three "Megazones" as shown in Figure 1 that capture the vast majority of market price differentials across the state, based on an analysis of zonal market prices:

- Zone 1 = NYISO zones A, B, C, D and E
- Zone 2 = NYISO zones F, G, H and I
- Zone 3 = NYISO zones J and K.

Within each megazone, prices have tended to be very similar, and transmission constraints are minimal relative to the constraints between megazones. As described further below, projections of available supply and utilized market energy and capacity price forecasts provided by DPS were derived for each megazone.

[2] The terms renewable attributes, RPS attributes (the term used in the RPS Maine Tier solicitations), and renewable energy certificates or credits (RECs) are used interchangeably throughout this report.

Figure 1: New York Grouped Zones



I.2. Relationship Between Analysis Assumptions and Collections Approach

For any particular input assumption, assumptions could be made that are aggressive, conservative, or middle-of-the-road in nature. To the extent that the results of this Report are used in setting RPS collections, the nature of cost study analytical assumptions is related to approach to setting collections. In particular, the repercussions of the method used to collect funds from customers to pay for RPS contracts – and the risk of having insufficient funds due to under-forecasting contract costs - will dictate whether assumptions are selected to be a best guess (middle-of-the-road) or conservative (unlikely to be exceeded). An approach to setting collections which did not allow for frequent true-ups – a "set it and forget it" approach – would need to be conservative, with assumptions selected so that resulting clearing price projections are unlikely to be exceeded. An approach which allowed periodic true-ups with sufficient frequency to assure that NYSERDA could always meet its obligations under RPS contracts, on the other hand, could be built around middle-of-the-road assumptions. The analysis described in this Report is intended to be best-guess, middle-of-the-road assumptions, with the exception of the Federal Production Tax Credit, as discussed in Section IX.

II. RPS Main Tier Targets

This section describes three different phases in forecasting RPS Main Teir demand. The first phase described is the state load forecast, which is the underlying basis for estimating the amount of renewable energy needed to meet the RPS target. The second phase presents the methodology used in estimating the amount of Main Tier and Customer-Sited Tier resources that NYSERDA is responsible for procuring. NYSERDA's obligation is then incorporated into a third set of forecasts that represent the New York renewable energy market as a whole, where multiple demands compete for the same pool of resources each year. This third forecasting phase is used for "market clearing."

To start, the load forecast used in the 2004 Report was updated with more current data, specifically, a summary of utility sales forecasts assembled by a working group and included in the February 11, 2008 straw man proposal in the Efficiency Portfolio Standard (EPS) proceeding[3]. This retail sales forecast was then grossed up for electrical losses to reflect generation (supply) level requirements. This forecast is referred herein as the New Load Forecast (used for the Reference Scenario). The revised load growth is more modest than originally anticipated in the "As-ordered" Load Forecast from the September 24, 2004 PSC order[4] (see Table 1). Going forward, the EPS working group is planning additional energy efficiency initiatives that would achieve about 15% reductions in load by 2015, relative to the New Load Forecast. Since there is a parallel goal of reducing load from the EPS proceedings, RPS requirements were also developed taking into consideration the "Post-EPS" load forecast.

Table 1: New York State Load Forecasts

(MWh)	New York State Load		
Year	As-ordered* Load Forecast	New Load Forecast **	Post-EPS Load**
2005	165,280,000	167,208,000	167,208,000
2006	167,490,000	162,237,000	162,237,000
2007	169,977,000	162,433,219	162,433,219
2008	172,404,000	164,402,854	163,552,495
2009	174,658,000	166,343,040	162,041,065
2010	176,910,000	168,013,530	160,192,211
2011	179,031,000	170,641,997	159,167,794
2012	180,907,000	172,742,491	157,553,065
2013	182,866,999	175,028,192	156,016,509
2014		177,074,908	154,177,290
2015		179,237,586	152,351,948

** From PSC 9/24 order, App. D, Table 1*

***Actual historical state load for 2003-2006. For 2007-2015, forecast from Case 07-M-0548, Straw Proposal, Technical Appendix,.2007 Forecast Sendout*

The Order adopting an RPS called for increasing the proportion of renewable energy used by New York consumers from the then current 19.3% to at least 25% by the end of 2013. The PSC in the Order expected that voluntary purchases of green power by retail customers would contribute at least 1% of the 25% target. The assumption that voluntary purchases would contribute 1% of the RPS program target remains unchanged throughout the analyses described herein.

[3] Case 07-M-0548 Proceeding on Motion of the Commission Regarding an Energy Efficiency Portfolio Standard.

[4] Order Regarding Retail Renewable Portfolio Standard, Case 03-E-0188.

Three Annual RPS Target Scenarios were developed, including two scenarios reflecting reductions to load anticipated as a result of the EPS proceeding:

a. **New Load (25% Goal):** Uses the 2007 forecast of unadjusted load developed by the EPS – the New Load Forecast - and assumes an RPS which contributes to achieving a 25% renewable energy goal by 2013.
b. **Post-EPS Load (25% Goal)**: Given that DPS is developing targets for a more expansive energy efficiency program to meet the proposed EPS, a reduced NY load forecast is used. This scenario assumes meeting the 25% renewable energy goal by 2013 also, though the absolute MWh target is lower due to lower Post-EPS Load.
c. **Post-EPS Load (30% Goal):** This scenario assumes that, as a result of an EPS-driven lower load, the renewable energy percentage target can be increased to 30% by 2015, through the implementation of more aggressive RPS procurement targets.

Several steps were needed to develop the RPS Main Tier and Customer-Sited Tier (CST) targets for NYSERDA's procurement of renewable attributes.

1. Prior to the RPS, New York already had a baseline of about 19% renewable energy (~31,500 GWh/yr), primarily from large-scale hydroelectric projects. This "baseline" amount was deducted from the overall RPS energy target.
2. In addition, Executive Order 111(EO 111) targets for state facilities, and voluntary green market purchases (growing to 1% of load by 2015) would also contribute to the 25% target. These were also deducted from the overall target.
3. NYSERDA's energy procurement obligations under the program are derived by subtracting the following from the overall target of 25% of loss-adjusted load: (a) baseline or historical renewable generation, (b) energy procurement targets associated with compliance with EO 111, and (c) anticipated voluntary green market purchases.
4. NYSERDA's total procurement obligations are then divided into two components. The Customer Sited Tier component is set at 2% of the total NYSERDA obligation calculated in step 3. and the balance of obligations are assigned to the Main Tier program component.
5. Because LIPA is not under the jurisdiction of the PSC and has no obligation to meet RPS requirements, the NYSERDA obligations for both program components are further adjusted downward to reflect LIPA load requirements expressed as a share of statewide load requirements.
6. Finally, targets for future procurements netted out prior contractual commitments resulting from NYSERDA's first two RPS procurements, as well as the anticipated contracts to result from the third procurement (whose bids are currently under review). This is reflected in the total shown in "Contracted Renewables" below.

Table 2: Assumptions Used in Deriving NYSERDA Main Tier and CST Targets

	Baseline Resources	EO 111	Contracted Renewables (Main Tier)	Contracted Renewables (CST)	Green Mkt %	% LIPA
2003	31,210,710	0				
2004	31,468,717	0				
2005	31,486,189	251,065			0.0%	
2006	31,503,661	282,812	865,582		0.1%	15.76%
2007	31,509,370	314,579	865,582	17,626	0.3%	15.80%
2008	31,515,079	346,366	2,665,730	35,252	0.4%	15.83%
2009	31,520,788	378,174	3,502,673	52,878	0.5%	15.83%
2010	31,526,497	410,002			0.6%	15.88%
2011	31,532,206	391,857			0.8%	15.89%
2012	31,537,915	373,712			0.9%	15.98%
2013	31,543,624	355,568			1.0%	16.01%

It is important to keep in mind that New York's RPS has a defined goal of 25% by 2013. The annual incremental targets or "glide paths" presented below were developed only to estimate intermediate years' procurements and are not "hard" targets that need to be met. Actual procurements have and will likely deviate from the "glide paths" presented. In the scenario for 25% RPS Target with Post-EPS Load, minimal incremental renewable attribute purchases are needed after the 2009 procurement. Thus, fewer future procurements were modeled and the 25% target was achieved sooner (by 2011).

Table 3: Derived Main Tier Cumulative and Incremental Annual Targets

(MWh)	As-Ordered Main Tier (w/o LIPA)	Cumulative Main Tier (w/o LIPA)*			Incremental Main Tier (w/o LIPA)		
Year		New Load (25% Goal)	Post-EPS Load (25% Goal)	Post-EPS Load (30% Goal)	New Load (25% Goal)	Post-EPS Load (25% Goal)	Post-EPS Load (30% Goal)
2006	1,121,247	865,582	865,582	865,582			
2007	2,326,171	865,582	865,582	865,582			
2008	3,549,026	2,665,730	2,665,730	2,665,730			
2009	4,767,994	3,502,673	3,502,673	3,502,673			
2010	6,012,179	4,634,326	4,026,932	4,588,262	1,131,653	524,259	1,085,589
2011	7,297,746	5,837,431	4,570,699	5,867,057	1,203,104	543,767	1,278,795
2012	8,556,710	7,048,137	4,570,699	6,994,385	1,210,706	0	1,127,328
2013	9,854,038	8,319,625	4,570,699	8,113,747	1,271,488	0	1,119,362
2014				9,134,589			1,020,842
2015				10,123,157			988,568

**Incremental Main Tier includes contracted procurements through three rounds of NYSERDA procurements (2006-2009).*

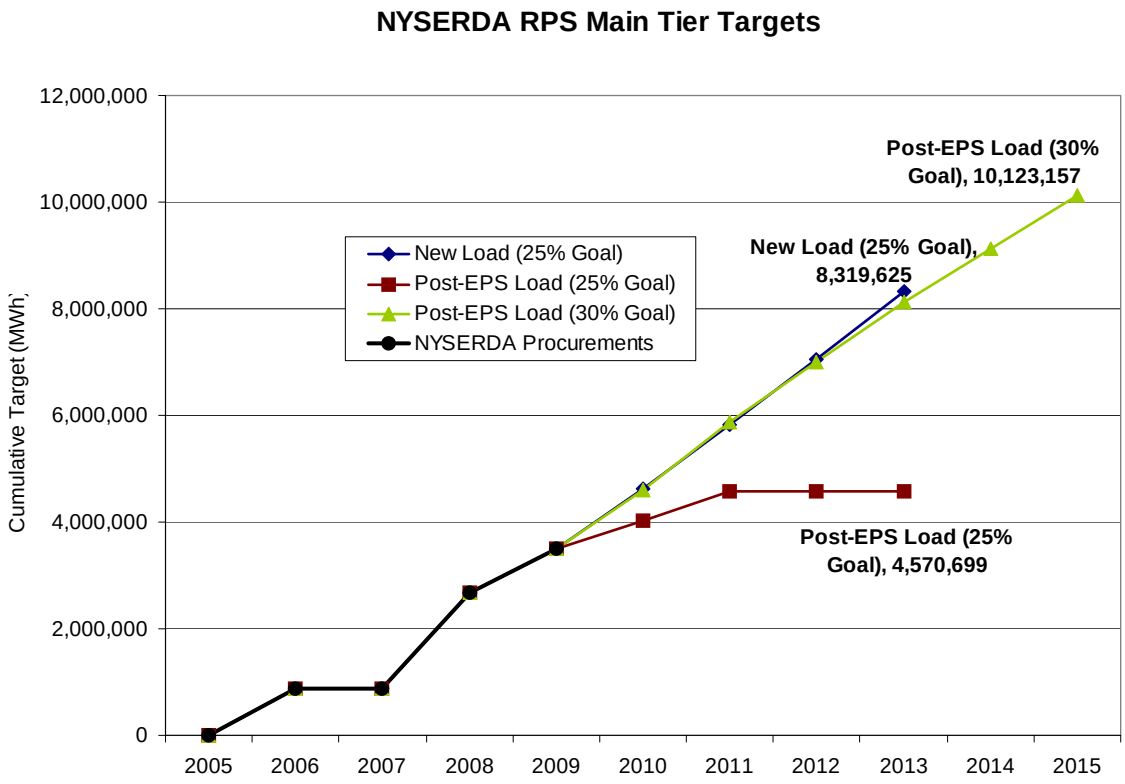


Figure 2: NYSERDA RPS Main Tier Targets

For market model "clearing" purposes, additional demand was added to reflect competing demand for New York renewable resources. Supply available to meet NY's renewable energy goals must net out that portion of the renewable energy generation attributable to EO111, green marketing, and export markets. Therefore, the total annual "demand" for New York renewable energy generation to be modeled also had to include an estimate of exports to the New England RPS markets. The export assumptions are shown below. The maximum amount of exports to New England was estimated to be about 1,860 GWh annually.[5] SEA developed estimates representing exports from existing or known projects as well as assumptions for the portion of generation from NYSERDA contracted projects that is not under contract to NYSERDA. The remaining amount of exports gradually increased until the maximum potential was reached.

Table 4: Assumed Exports to New England

	2008	2009	2010	2011	2012	2013	2014	2015
Existing or Known Exports to New England (MWh)	842,082	842,082	842,082	842,082	842,082	842,082	842,082	842,082
Additional Exports to NE (MWh)			255,227	510,454	765,681	1,020,907	1,020,907	1,020,907

[5] Calculation based on NY to NE transmission net of LI Cable (1388 MW - 137 MW of existing)*50% utilization*40% weighted capacity factor* 85% deliverability.

III. Projected Results for Main Tier

III.1. Summary of Results and Collections

Figure 3 is a summary of the expected remaining costs to satisfy RPS Main Tier procurement targets beyond NYSERDA's three rounds of procurement under the three scenarios analyzed. The total payments presented in the figure below represent the sum of the anticipated nominal cost streams for the duration of the incremental procurements modeled in each scenario. In the scenario with 25% RPS Target with Post-EPS Load, very little incremental renewable energy is needed after the 2009 procurement. Thus, the incremental expenditures are considerably less than the other two scenarios.

The annual contract payments shown in Table 5 represent commitments for future solicitations, excluding payments under contracts entered into as a result of the 1st, 2nd and 3rd (RFP 1168) main tier solicitations. In the Post-EPS 25% (Reduced Load) Scenario, there are no incremental procurements needed after 2011.

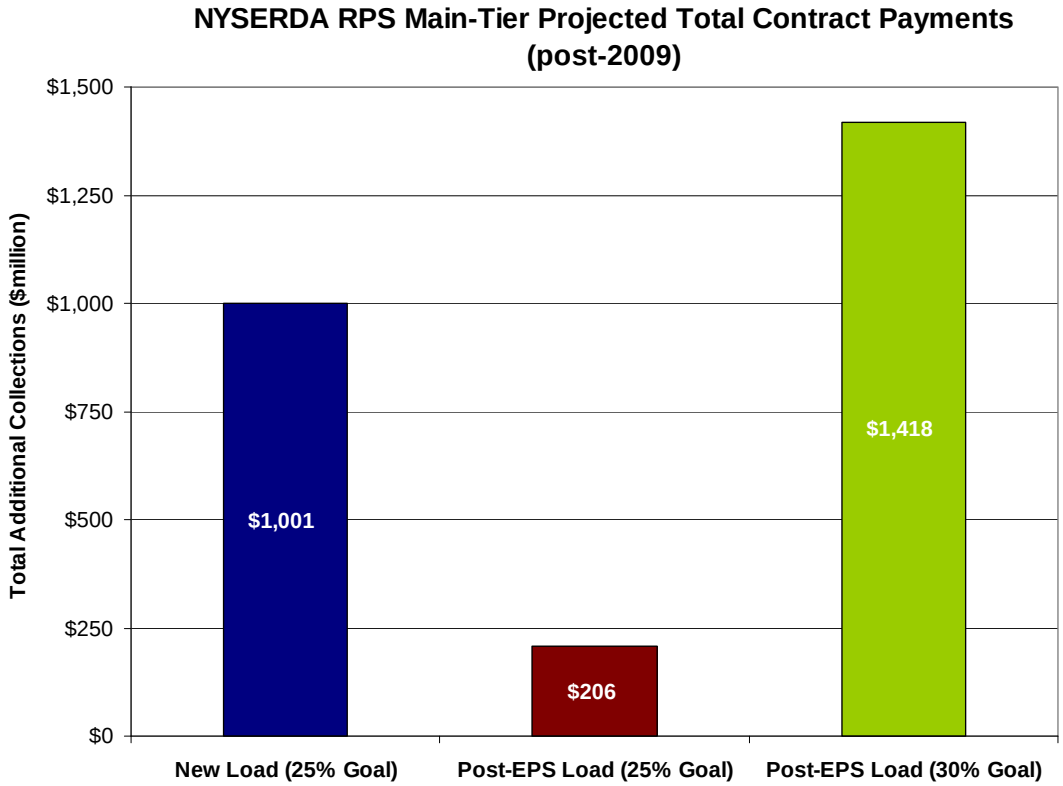


Figure 3: Projected Total Contract Payments

Table 5: Projected Annual RPS Contract Payments (Main Tier)

	New Load (25% Goal)	Post-EPS Load (25% Goal)	Post-EPS Load (30% Goal)
2010	$22,239,617	$10,302,902	$21,334,354
2011	$45,028,839	$20,602,943	$45,557,306
2012	$71,768,113	$20,602,943	$64,521,205
2013	$100,094,963	$20,602,943	$81,479,496
2014	$100,094,963	$20,602,943	$110,529,444
2015	$100,094,963	$20,602,943	$141,838,153
2016	$100,094,963	$20,602,943	$141,838,153
2017	$100,094,963	$20,602,943	$141,838,153
2018	$100,094,963	$20,602,943	$141,838,153
2019	$100,094,963	$20,602,943	$141,838,153
2020	$77,855,346	$10,300,041	$120,503,800
2021	$55,066,124	$0	$96,280,847
2022	$28,326,850	$0	$77,316,948
2023	$0	$0	$60,358,657
2024	$0	$0	$31,308,709
Total	$1,000,949,631	$206,029,435	$1,418,381,533
NPV@10% DiscountRate	$482,281,748	$109,856,906	$620,325,492

The results show that 2010 and 2011 market clearing prices are roughly the same in all three scenarios, because the incremental annual amounts are similar in quantity. However, in later years, the marginal price increases significantly for the 30% Post-EPS Load scenario as more expensive resources are tapped to reach higher targets.

Table 6: Annual Modeled Market Clearing Price

	New Load (25% Goal)	Post-EPS Load (25% Goal)	Post-EPS Load (30% Goal)
2010	$19.65	$19.65	$19.65
2011	$18.94	$18.94	$18.94
2012	$22.09		$16.82
2013	$22.28		$15.15
2014			$28.46
2015			$31.67

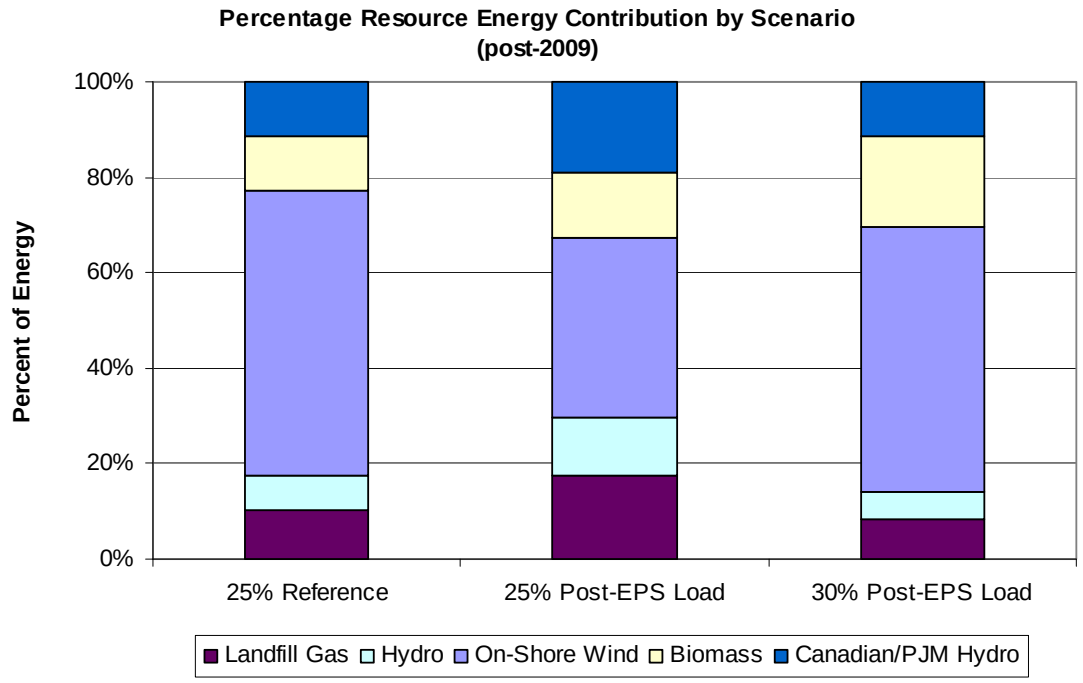


Figure 4: Market Cleared Resource Mix

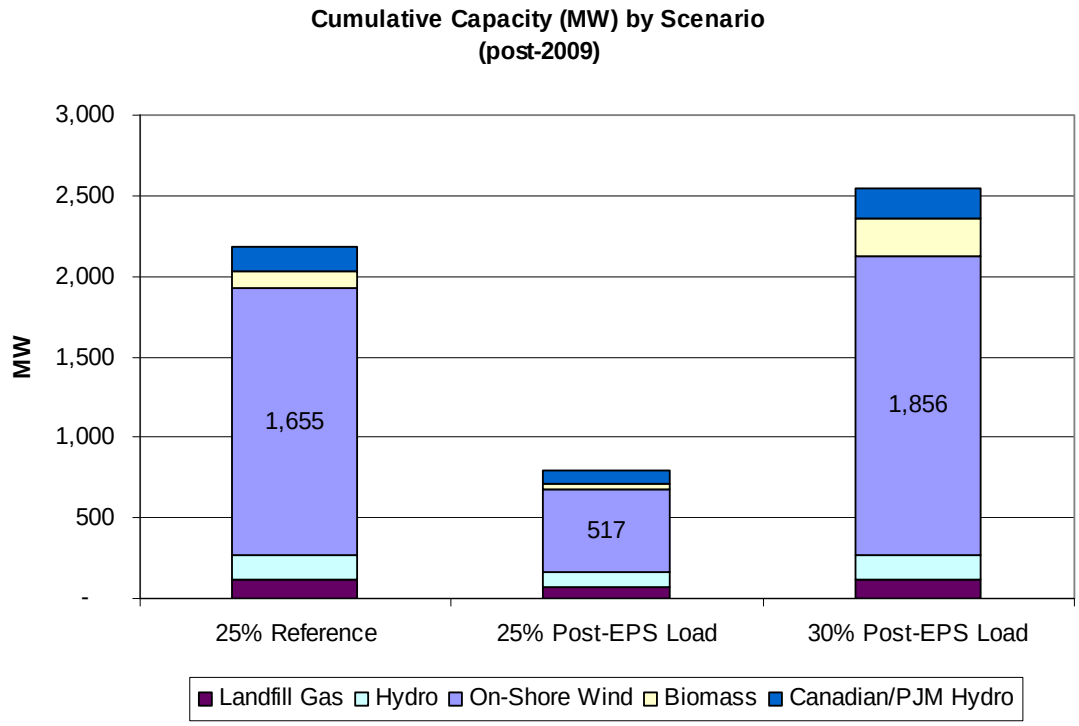


Figure 5: Total Cleared Capacity for Main Tier

The cumulative capacity by scenario shown in Figure 5 denotes additional capacity cleared[6] beyond resources procured through three rounds of NYSERDA Main Tier procurements.

IV. Resources Considered

In constructing the Main Tier supply curve, the renewable resources evaluated must meet NY RPS eligibility rules and be connected directly to the electrical grid in New York, or if located outside of New York, deliver energy into the NYISO or through a bilateral arrangement with a Load Serving Entity in New York (or one or more end-use consumers in NewYork). The following new renewable resources were assumed to be the most prevalent options:

- Wind (on-shore and off-shore)
- Hydroelectric (consisting of *new* low-impact hydro, i.e. <30 MW, run-of-river, no new storage impoundment, and the incremental production associated with any upgrades to existing facilities so long as no new impoundments are created)
- Landfill methane
- Biomass (including co-firing at coal plants, combined heat and power, as well as other technologies using eligible fuels)[7]

There are other resources that are eligible under the RPS, but were not included as part of the Main-Tier supply curve, mainly due to higher costs, relatively small quantities available over the study period, or technologies not yet commercial that are better suited for the Customer-Sited Tier.

- manure digesters; solar; geothermal; ocean (e.g. tidal, wave); and fuel cells using any fuel (included in the SBC-Like Tier only).

The supply curve derived for this analysis contains resources and technologies that are expected to be major contributors to meeting a New York RPS. The assumptions described in Appendix A of the 2004 Renewables Cost Study Report were used as a starting point for this study. These assumptions were then updated based on recent developments in the renewable energy market.[8] Revised "blocks" of wind potential based on wind power range (related to wind speed, at 80 meter hub height), distance from transmission, and size of facility were developed. Additionally, revised biomass assumptions for biomass fuel cost and conversion technologies were developed.

As described in a later section of this report, resources were segregated into different blocks to reflect differences within each type of resource and conversion technology that may be employed. For some resource types, multiple blocks were identified based on the nature of the resource. For example, wind cost is a strong function of wind speed as well as scale and distance from transmission, so multiple blocks were analyzed. Likewise, for biomass, the cost is a function of the

[6] The total cleared capacity represents that capacity needed to meet the sum of demands from the RPS Main Tier procurements, as well as the other sources of demand attributable to EO111, green marketing, and export markets.
[7] All potential non-waste biomass fuel feed stocks were considered eligible except for contaminated fuels such as particleboard and treated wood.
[8] Cost Study II, Appendix A, 2004. <http://www.dps.state.ny.us/rps/Appendix-A-rev020904-clean.pdf>

cost and performance of the conversion technology used and the accessibility of the resources in specific locations. The resource blocks evaluated included:

- Three different wind farm sizes (large, medium, small) with different distances from transmission (<5 miles, 5-10 miles, 10-20 miles) in the three NY zones, and different wind "power classes."[9]
- Wind resources located outside of New York were represented in a single block for PJM wind.
- Off-Shore Wind in New York's Great Lakes as well as off the shore of Long Island.
- Biomass co-firing at existing coal plants in the 3 NY zones, as well as Ontario and PJM.
- Biomass combined heat and power (CHP) in the 3 NY zones.
- Biomass used at Greenfield Stoker facilities in the 3 NY zones.
- Biomass used at repowered Fluidized-Bed facilities in the 3 NY zones.
- Hydro in the 3 NY zones, as well as Ontario and Quebec, broken up into 3 resource quality blocks: new very small (< 5 MW, NY only); new low-impact (<30 MW); Upgrades to existing facilities (no size limit).
- Landfill gas in the 3 NY zones using two technology scales, internal combustion engines and micro turbines.

After designating potential supply blocks as described above, in some cases it was determined that no resource would be available in specific megazones (resource quantities which show a value of zero in the column for Maximum MW in Block); the resulting blocks of resources reviewed are shown in Table 7. Each row represents a resource "block" – representing a potential quantity of a resource of uniform type, cost, location, and where useful, resource quality – and its key characteristics for purposes of this analysis:

- the block's location within New York (or delivery point for imports);[10]
- the maximum potential developable quantity (in MW);
- the maximum fraction of the resource block potentially available in a given year; and
- the levelized cost premium (in nominal$) under a long-term contract required by a plant in each resource block brought on-line in a given year.

[9] The power class associated with specific wind resource sites determines the performance of a particular site in terms of annual energy production. The development of power classes helps establish the quantities of potential from best to worst resources, which is a major driver to unit energy costs.

[10] This is denoted by the letter "z" followed by the zone number in the name of the block or the originating region if it is a potential import.

Table 7: Summary of Resource Potential, Availability and Required Premium

	Maximum MW in Block	Maximum Fraction of Block Potential							10-Year Fixed Premium for Renewable Attributes (nominal$/MWh)						
Resource Block		2009	2010	2011	2012	2013	2014	2015	2009	2010	2011	2012	2013	2014	2015
Wind Small NY-z1b1t1	**34**	20%	40%	60%	80%	100%	100%	100%	$ 55.37	$ 55.72	$ 55.58	$ 54.91	$ 53.67	$ 51.97	$ 50.35
Wind Small NY-z1b1t2	**10**	20%	40%	60%	80%	100%	100%	100%	$ 81.27	$ 82.37	$ 83.01	$ 83.13	$ 82.70	$ 82.11	$ 81.34
Wind Small NY-z1b2t1	**21**	20%	40%	60%	80%	100%	100%	100%	$ 76.93	$ 77.54	$ 77.66	$ 77.25	$ 76.27	$ 75.11	$ 73.54
Wind Small NY-z1b2t2	**17**	20%	40%	60%	80%	100%	100%	100%	$ 105.77	$ 107.23	$ 108.23	$ 108.72	$ 108.67	$ 108.46	$ 108.09
Wind Small NY-z1b3t1	**191**	20%	40%	60%	80%	100%	100%	100%	$ 104.31	$ 105.25	$ 105.70	$ 105.63	$ 105.01	$ 104.21	$ 103.22
Wind Small NY-z1b3t2	**78**	20%	40%	60%	80%	100%	100%	100%	$ 136.91	$ 138.82	$ 140.28	$ 141.24	$ 141.67	$ 141.96	$ 142.10
Wind Small NY-z2b1t1	**10**	20%	40%	60%	80%	100%	100%	100%	$ 35.61	$ 35.58	$ 35.17	$ 34.35	$ 33.07	$ 30.95	$ 28.89
Wind Small NY-z2b2t1	**11**	20%	40%	60%	80%	100%	100%	100%	$ 57.15	$ 57.38	$ 57.23	$ 56.65	$ 55.61	$ 54.19	$ 52.08
Wind Small NY-z2b2t2	**10**	20%	40%	60%	80%	100%	100%	100%	$ 86.12	$ 87.20	$ 87.92	$ 88.40	$ 88.28	$ 87.63	$ 86.75
Wind Small NY-z2b3t1	**62**	20%	40%	60%	80%	100%	100%	100%	$ 84.66	$ 85.22	$ 85.40	$ 85.16	$ 84.46	$ 83.39	$ 81.90
Wind Small NY-z2b3t2	**14**	20%	40%	60%	80%	100%	100%	100%	$ 117.57	$ 119.11	$ 120.28	$ 121.07	$ 121.43	$ 121.44	$ 121.07
Wind Small NY-z3b2t1	**10**	20%	40%	60%	80%	100%	100%	100%	$ 35.52	$ 35.44	$ 34.70	$ 33.24	$ 30.74	$ 28.28	$ 24.87
Wind Small NY-z3b3t1	**29**	20%	40%	60%	80%	100%	100%	100%	$ 62.60	$ 62.84	$ 62.42	$ 61.26	$ 59.24	$ 57.04	$ 54.52
Wind Small Agg NY-z3agt2	**15**	20%	40%	60%	80%	100%	100%	100%	$ 79.56	$ 80.54	$ 80.87	$ 80.49	$ 79.53	$ 78.13	$ 76.45
Wind Medium NY-z1b1t1	**0**	20%	40%	60%	80%	100%	100%	100%	$ 19.57	$ 19.33	$ 17.66	$ 16.50	$ 14.81	$ 12.95	$ 9.13
Wind Medium NY-z1b2t1	**60**	20%	40%	60%	80%	100%	100%	100%	$ 36.58	$ 36.50	$ 35.93	$ 34.84	$ 33.18	$ 30.88	$ 28.85
Wind Medium NY-z1b3t1	**364**	20%	40%	60%	80%	100%	100%	100%	$ 58.53	$ 58.68	$ 58.34	$ 57.46	$ 56.01	$ 54.38	$ 52.27
Wind Medium NY-z2b1t1	**0**	20%	40%	60%	80%	100%	100%	100%	$ 1.38	$ 0.90	$ 0.13	$ -	$ -	$ -	$ -
Wind Medium NY-z2b2t1	**60**	20%	40%	60%	80%	100%	100%	100%	$ 16.43	$ 16.02	$ 15.26	$ 14.11	$ 12.54	$ 8.89	$ 6.94
Wind Medium NY-z2b3t1	**113**	20%	40%	60%	80%	100%	100%	100%	$ 38.69	$ 38.47	$ 37.87	$ 36.85	$ 35.36	$ 33.49	$ 30.75
Wind Large NY-z1b1t1	**208**	20%	40%	60%	80%	100%	100%	100%	$ 4.74	$ 4.43	$ 3.74	$ 2.65	$ 1.12	$ -	$ -
Wind Large NY-z1b2t1	**1279**	20%	40%	60%	80%	100%	100%	100%	$ 19.89	$ 19.65	$ 18.94	$ 16.82	$ 15.15	$ 13.30	$ 9.44
Wind Large NY-z1b3t1	**5289**	20%	40%	60%	80%	100%	100%	100%	$ 39.19	$ 39.14	$ 38.61	$ 37.56	$ 35.94	$ 34.14	$ 31.67
Wind Large Agg NY-z2agt1	**108**	20%	40%	60%	80%	100%	100%	100%	$ 16.07	$ 15.67	$ 14.91	$ 13.76	$ 12.19	$ 8.61	$ 6.67
Off-Shore Wind Lakes NY-z1	**311**	0%	0%	0%	0%	20%	40%	60%	$ 177.38	$ 175.99	$ 174.10	$ 171.71	$ 168.78	$ 165.72	$ 162.55
Off-Shore Wind LI NY-z3	**579**	0%	0%	0%	0%	20%	40%	60%	$ 112.69	$ 110.61	$ 107.60	$ 104.07	$ 99.85	$ 95.23	$ 90.16
Wind Farms Quebec	**0**	0%	0%	0%	0%	0%	0%	0%	$ 82.55	$ 83.20	$ 83.36	$ 83.00	$ 82.08	$ 80.85	$ 79.57
Wind Farms Ontario	**0**	0%	0%	0%	0%	0%	0%	0%	$ 72.73	$ 73.37	$ 73.54	$ 73.18	$ 72.27	$ 71.18	$ 69.91
Wind Farms PJM b1	**250**	20%	40%	60%	80%	100%	100%	100%	$ 43.35	$ 43.26	$ 42.68	$ 41.56	$ 39.88	$ 37.64	$ 35.58

Summary of Resource Potential, Availability and Required Premium (continued)

	Maximum MW in Block	Maximum Fraction of Block Potential							10-Year Fixed Premium for Renewable Attributes (nominal$/MWh)						
Resource Block		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Biomass Co-firing w/Coal NY-z1	**81**	0%	0%	20%	40%	60%	80%	100%	$ 21.51	$ 22.23	$ 22.98	$ 23.86	$ 24.93	$ 25.54	$ 26.17
Biomass Co-firing w/Coal NY-z2	**29**	0%	0%	20%	40%	60%	80%	100%	$ 34.79	$ 39.70	$ 41.97	$ 44.33	$ 46.78	$ 49.32	$ 51.95
Biomass Co-firing w/Coal NY-z3	**0**	0%	0%	20%	40%	60%	80%	100%	$ 72.77	$ 109.81	$ 112.38	$ 115.01	$ 117.70	$ 120.46	$ 123.28
Biomass Co-firing w/Coal Ontario	**0**	0%	0%	0%	0%	0%	0%	0%	$ 28.12	$ 28.56	$ 29.02	$ 29.48	$ 29.95	$ 30.44	$ 30.94
Biomass Co-firing w/Coal PJM	**0**	0%	0%	20%	40%	60%	80%	100%	$ 23.76	$ 24.25	$ 24.76	$ 25.27	$ 25.80	$ 26.34	$ 26.90
Biomass CHP Existing NY z1	**96**	0%	20%	40%	60%	80%	100%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Biomass CHP Existing NY z2	**4**	0%	20%	40%	60%	80%	100%	100%	$ 61.44	$ 78.60	$ 85.17	$ 91.67	$ 98.04	$ 104.35	$ 110.83
Biomass CHP Existing NY z3	**89**	0%	20%	40%	60%	80%	100%	100%	$ 52.40	$ 134.00	$ 137.10	$ 139.54	$ 141.48	$ 143.06	$ 144.44
Biomass CHP New NY z1	**58**	0%	20%	40%	60%	80%	100%	100%	$ 20.33	$ 21.26	$ 21.78	$ 22.09	$ 22.28	$ 21.43	$ 20.52
Biomass CHP New NY z2	**0**	0%	20%	40%	60%	80%	100%	100%	$ 30.50	$ 40.88	$ 44.44	$ 48.12	$ 51.27	$ 54.58	$ 57.50
Biomass CHP New NY z3	**59**	0%	20%	40%	60%	80%	100%	100%	$ 80.37	$ 161.89	$ 165.53	$ 168.53	$ 171.02	$ 173.17	$ 175.14
Fluidized Bed Repower Existing NY z1	**286**	0%	0%	20%	40%	60%	80%	100%	$ 30.03	$ 31.42	$ 32.87	$ 33.60	$ 34.16	$ 33.86	$ 33.50
Fluidized Bed Repower Existing NY z2	**62**	0%	0%	20%	40%	60%	80%	100%	$ 33.40	$ 41.87	$ 45.18	$ 48.58	$ 51.43	$ 54.42	$ 56.98
Fluidized Bed Repower Existing NY z3	**132**	0%	0%	20%	40%	60%	80%	100%	$ 66.27	$ 131.49	$ 134.74	$ 137.34	$ 139.44	$ 141.19	$ 142.75
Fluidized Bed Repower Retire NY z1	**46**	0%	0%	20%	40%	60%	80%	100%	$ 24.44	$ 26.35	$ 27.22	$ 27.84	$ 28.29	$ 27.88	$ 27.43
Fluidized Bed Repower Retire NY z2	**217**	0%	0%	20%	40%	60%	80%	100%	$ 27.94	$ 36.31	$ 39.88	$ 42.85	$ 45.57	$ 48.48	$ 50.92
Fluidized Bed Repower Retire NY z3	**48**	0%	0%	20%	40%	60%	80%	100%	$ 61.09	$ 126.13	$ 129.28	$ 131.77	$ 133.76	$ 135.40	$ 136.84
Biomass Stoker NY z1	**500**	0%	0%	20%	40%	60%	80%	100%	$ 87.05	$ 89.75	$ 91.88	$ 93.75	$ 95.58	$ 96.45	$ 97.29
Biomass Stoker NY z2	**500**	0%	0%	20%	40%	60%	80%	100%	$ 88.91	$ 98.06	$ 102.48	$ 106.61	$ 110.74	$ 114.50	$ 118.13
Biomass Stoker NY z3	**0**	0%	0%	20%	40%	60%	80%	100%	$ 123.18	$ 184.96	$ 189.23	$ 192.87	$ 196.03	$ 198.87	$ 201.54

Summary of Resource Potential, Availability and Required Premium (continued)

	Maximum MW in Block	Maximum Fraction of Block Potential							10-Year Fixed Premium for Renewable Attributes (nominal$/MWh)						
Resource Block		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Hydro Upgrades NY z1	**125**	20%	40%	60%	80%	100%	100%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Upgrades NY z2	**23**	20%	40%	60%	80%	100%	100%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Upgrades NY z3	**0**	20%	40%	60%	80%	100%	100%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -
New Low-Impact Hydro NY z1	**34**	0%	20%	40%	60%	80%	100%	100%	$ 62.95	$ 65.92	$ 68.73	$ 70.96	$ 72.78	$ 74.83	$ 76.68
New Low-Impact Hydro NY z2	**9**	0%	20%	40%	60%	80%	100%	100%	$ 42.71	$ 45.25	$ 47.86	$ 49.88	$ 51.61	$ 53.13	$ 54.72
New Low-Impact Hydro NY z3	**0**	0%	20%	40%	60%	80%	100%	100%	$ 13.56	$ 15.62	$ 17.17	$ 19.15	$ 19.76	$ 20.06	$ 20.18
Very Small New Hydro NY z1	**10**	0%	20%	40%	60%	80%	100%	100%	$ 236.06	$ 244.16	$ 252.03	$ 259.68	$ 267.07	$ 274.64	$ 282.39
Very Small New Hydro NY z2	**3**	0%	20%	40%	60%	80%	100%	100%	$ 216.26	$ 223.96	$ 231.55	$ 239.02	$ 246.33	$ 253.61	$ 260.83
Very Small New Hydro NY z3	**0**	0%	20%	40%	60%	80%	100%	100%	$ 187.70	$ 195.14	$ 202.15	$ 208.69	$ 214.90	$ 220.93	$ 226.96
Hydro Upgrades Quebec	**100**	0%	20%	40%	60%	80%	100%	100%	$ 13.60	$ 13.92	$ 14.24	$ 14.57	$ 14.90	$ 15.24	$ 15.59
Hydro Upgrades Ontario	**24**	0%	20%	40%	60%	80%	100%	100%	$ 9.42	$ 9.64	$ 9.86	$ 10.08	$ 10.32	$ 10.55	$ 10.80
New Low-Impact Hydro Quebec	**100**	0%	20%	40%	60%	80%	100%	100%	$ 26.28	$ 27.60	$ 28.53	$ 29.04	$ 29.12	$ 29.16	$ 29.16
New Low-Impact Hydro Ontario	**64**	0%	20%	40%	60%	80%	100%	100%	$ 9.42	$ 9.64	$ 9.86	$ 10.08	$ 10.32	$ 10.55	$ 10.80
Landfill Gas IC Engines NY z1	**88**	20%	40%	60%	80%	100%	100%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Landfill Gas IC Engines NY z2	**26**	20%	40%	60%	80%	100%	100%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Landfill Gas IC Engines NY z3	**3**	20%	40%	60%	80%	100%	100%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Landfill Gas Microturbines NY z1	**3**	20%	40%	60%	80%	100%	100%	100%	$ 36.03	$ 38.02	$ 40.01	$ 41.21	$ 41.98	$ 42.74	$ 43.49
Landfill Gas Microturbines NY z2	**1**	20%	40%	60%	80%	100%	100%	100%	$ 17.74	$ 20.32	$ 21.67	$ 22.73	$ 23.48	$ 24.02	$ 24.34
Landfill Gas Microturbines NY z3	**0**	20%	40%	60%	80%	100%	100%	100%	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Zones *(z1=Megazone 1, z2=Megazone 2, z3=Megazone 3)*
Resource Blocks *(b1=Block 1, b2=Block 2, b3=Block 3, ag=Aggregated Block)*
Distance From Transmission *(t1=0-5miles, t2=5-10miles, t3=10-15miles)*
Wind *(Small=<20 MW, Medium=20-100 MW, Large=>100MW)*

Below is a representative supply curve for the years 2010 and 2013, shown to demonstrate the use of supply curves. The demand lines reflect cumulative demand for the Reference Scenario. The result, at the intersection of supply and demand curves, shows the projected clearing prices; in this example, around $20/MWh in 2010 and about $22/MWh in 2013.

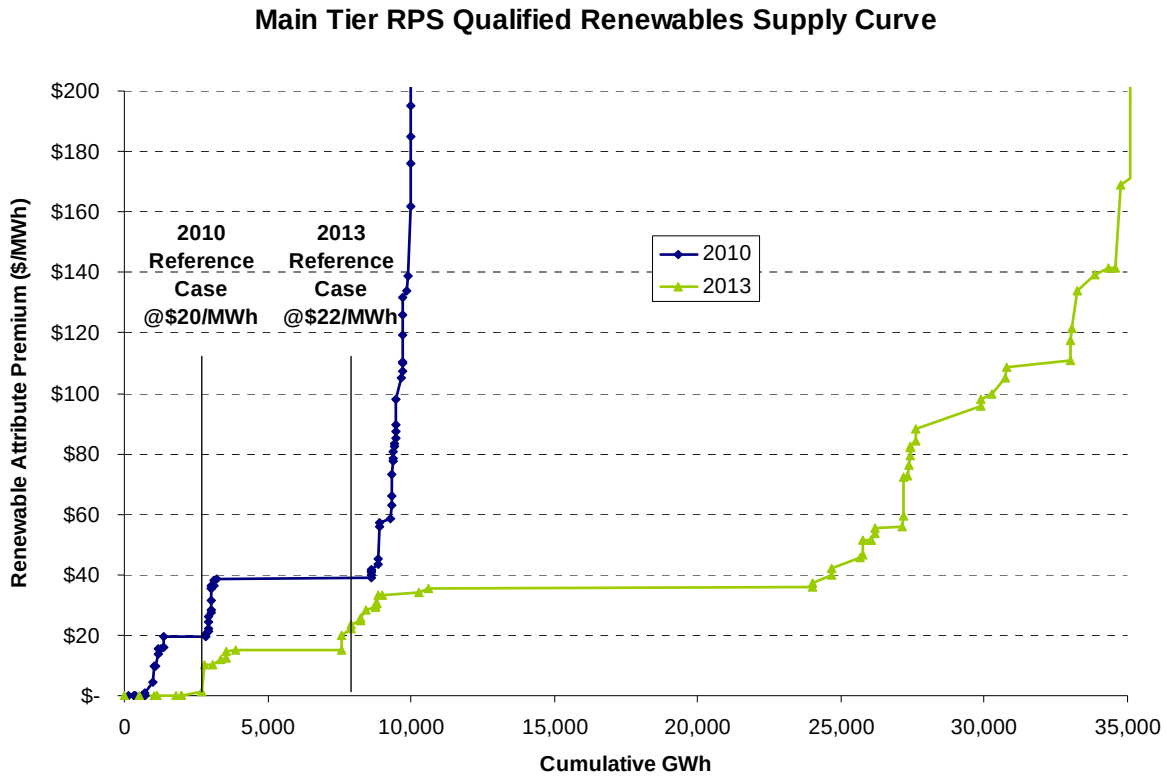


Figure 6: Supply Curve Example

V. Resource Costs

Supply curves consist of quantities of resources potentially available to meet the RPS, and their associated cost. The definition and derivation of costs is described in this section, and quantity is discussed in a later section.

As renewable resources have energy commodity markets available to them as a primary revenue source, constructing supply curves require one to determine the supplemental revenue stream necessary to attract capital to build a new renewable resource. The difference between the minimum revenue necessary to bring a resource on-line (which from the consumer's perspective represents "cost") and the commodity market value of a plant's production represents this minimum required supplemental revenue stream, which can be referred to as that resource's *"renewable generation premium*" or *RGP*.[11]

For the purposes of this analysis, the RGP, and the resource costs and commodity market values or revenues from which it is calculated, is determined on a levelized basis (in $/MWh), for a resource coming on-line in a specific year. The supply curve for each year is therefore the RGP needed for a 10-year contract with NYSERDA for all resources not committed in previous years. This assumption differs somewhat from the 2004 Report to reflect current procurement practices for the New York RPS, where 10-year fixed price contracts for renewable attributes are being procured.[12]

V.1. Derivation of Resource Cost

Levelized costs are calculated considering such factors as capital and operating costs, project life, financing costs and structure, availability of production tax credits and accelerated depreciation, and interconnection and transmission upgrade costs. For some mature technologies, capital costs were modeled as constant in real terms, while for others still undergoing technological advance and improvements in manufacturing scale economies, capital costs were assumed to decline in real terms over time. However, all capital costs have increased dramatically since the 2004 Report due to a combination of shortage of components in the supply chain, escalating commodity (steel, copper, oil, etc.) costs, increasing labor costs and weakening U.S. dollar and these market influences have been reflected accordingly in this study.

One report published by the U.S. Department of Energy, titled "Annual Report on U.S. Wind Power Installation, Cost, and Performance Trends: 2006," pointed out that the cost of wind turbines have been on the rise between 2003 and 2007 as shown in Figure 7. The increase has been almost 50% between January 2003 and January 2007. Personal communications with vendors and developers seem to indicate that turbine costs for delivery dates in 2008 and 2009 are even higher.

[11] Grace, Robert C. K. Cory and D. Smith, *Cost Estimate of N.Y. Executive Order 111 Renewable Energy Purchase Provisions*, for New York State Energy Research & Development Authority, October 2001.

[12] Previously, the assumption was a contract-for-difference ("CFD") structure where annual RGP payments were based on the difference between the levelized cost for a renewable generator and each year's forecasted commodity revenues. The 2004 Report assumed contracts would be longer than 10-years.

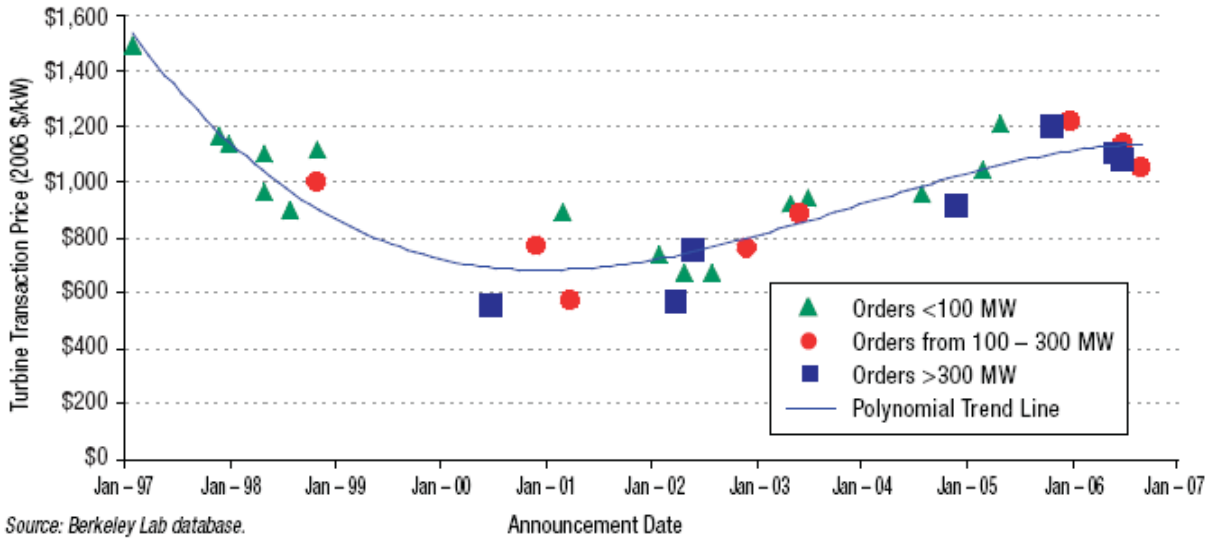


Figure 7: Excerpt from "Annual Report on U.S. Wind Power Installation, Cost, and Performance Trends: 2006"[13]

Another indicator for capital cost increases is a report from the Brattle Group, titled "Rising Utility Construction Cost," which summarizes the increasing capital cost of conventional generation and transmission/distribution equipment in the past few years.[14] According to the Brattle Group report, "between January 2004 and January 2007, the costs of steam-generation plant, transmission projects and distribution equipment rose by 25 percent to 35 percent (compared to an 8 percent increase in the GDP deflator)." The reasons behind these escalating costs in the power equipment sector are also applicable to all renewable generation.

[13] "Annual Report on U.S. Wind Power Installation, Cost, and Performance Trends: 2006." U.S. DOE Report. May 2007. <http://www.nrel.gov/docs/fy07osti/41435.pdf>

[14] "Rising Utility Construction Cost." Brattle Group. September 2007. <http://www.eei.org/industry_issues/electricity_policy/state_and_local_policies/rising_electricity_costs/Rising_Utility_Construction_Costs.pdf>

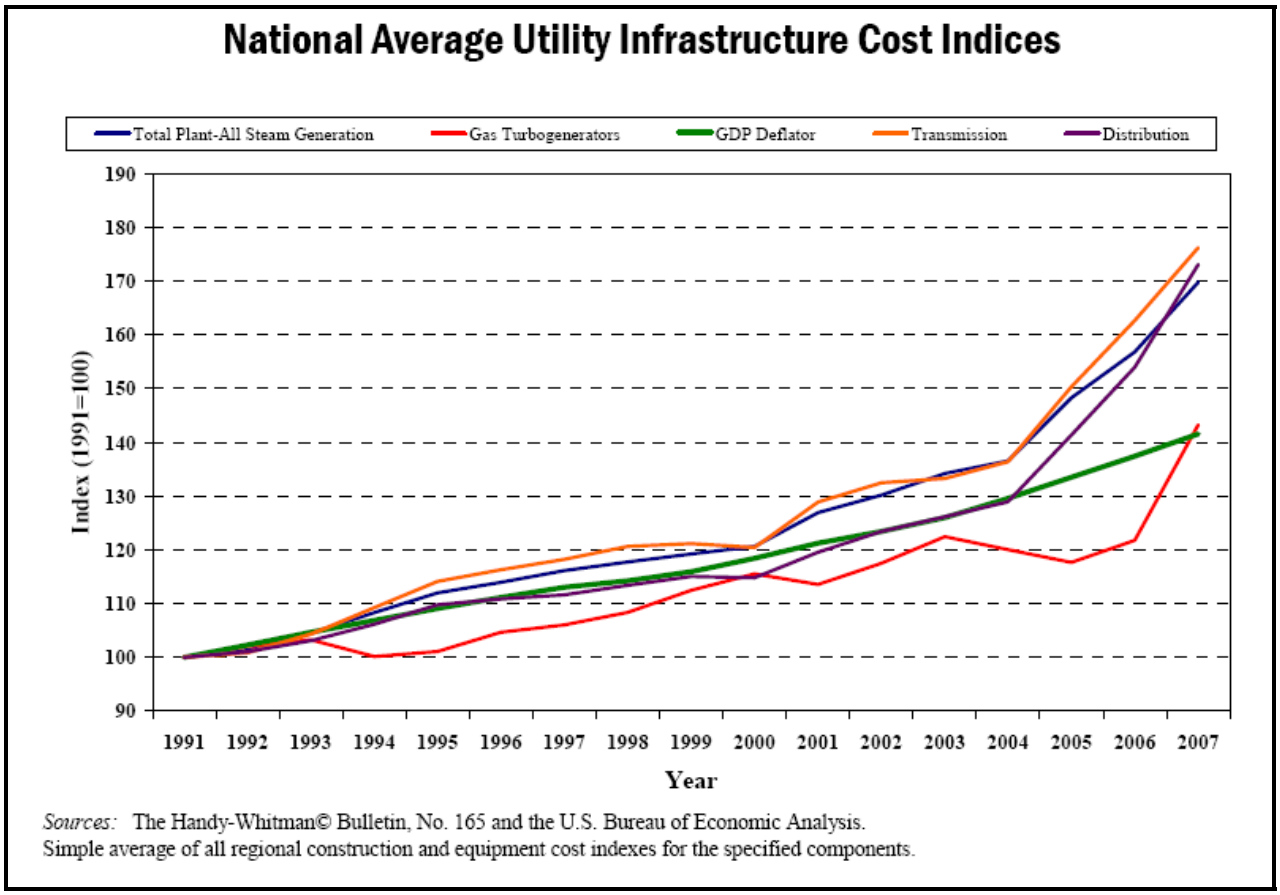


Figure 8: Excerpt from "Rising Utility Construction Cost"

V.2. Financing

A major component of the total cost of energy from renewable power projects is the up-front project capital cost of procuring and constructing the power producing facility. Applying a carrying charge to the estimated project capital costs provides a way to represent these costs on an annualized basis, for use in the derivation of total cost of energy. Fixed costs typically capitalized at the commencement of commercial operation were converted to levelized $/MWh by applying an annual carrying charge (after-tax) applicable to each resource type.

For this analysis, a carrying charge for each renewable technology was established by considering the typical economic life of the technology, likely financing requirements, and current tax treatment. A market-based rate of return approach was employed to determine the stream of levelized revenues that, if attained, would provide return of and on capital. Such an approach mimics the revenues a generator would obtain if it entered into a Power Purchase Agreement with a fixed, price over the life of the project. Estimated carrying charges for each technology were applied to all project capital costs, including the cost of transmission upgrades and interconnection.

The assumptions used to develop technology-specific carrying charges approximate the characteristics of a typical project within each technology class. For individual projects, variations may occur based on plant-specific characteristics and risk factors. The assumptions were chosen to

represent the middle of the range of potential financial structures and ultimate project revenue requirements. Key assumptions by technology are listed in Table 8 and Table 9.

Table 8: Resource Financing Assumptions

Technology	Economic Life (yrs)	Financing Structure Debt:Equity	Debt Term (years)	Debt Cost	Equity Cost	Tax Depreciation	PTC
Biomass co-firing	10	50:50	10	7.50%	12.5%	10 yrs, 1.5 DB	0%
Biomass (wood)	20	70:30	15	7.50%	14%	20 yrs, 1.5 DB	50%
Landfill Methane	20	70:30	10	7.50%	14%	7 yrs, MACRS	50%
Onshore Wind	20	55:45	15	7.00%	12%	5 yrs, MACRS	100%
Onshore Wind (Medium/Small)	20	55:45	15	7.00%	13%	5 yrs, MACRS	100%
Offshore Wind	20	55:45	15	9.00%	15%	5 yrs, MACRS	100%
Hydro (upgrades)	25	70:30	20	7.00%	13%	20 yrs, 1.5 DB	100%
Hydro (new)	25	70:30	20	7.00%	13%	20 yrs, 1.5 DB	0%

- *Economic Life* –Assumptions above reflect industry experience regarding typical projects within each technology class. For hydro projects, project lives were modified to 25 years to reflect a more conservative cost recovery period. It was also assumed that, due in part to the advanced age of many existing coal-fired plants, the capital investment associated with biomass co-firing would need to be recovered over 10 years.[15]
- *Financing Structure* –Financing structures for current renewable energy projects vary greatly from 100% equity investments to more even split between debt and equity. In the cases where Production Tax Credits (PTC) are available, tax-equity investors add to the complexity of modeling financing structures. In simplifying generic financing assumptions for the resources evaluated, biomass and hydroelectric technologies were assumed to be financed with a 70:30 debt equity ratio. Such a financing structure allowed the projects to meet industry standard minimum debt coverage ratios while attaining a reasonable equity return. Because the Production Tax Credit provides a substantial portion of a wind project's cash flow, wind projects supported slightly less leverage (55:45 debt to equity) of the pre-tax revenue stream in order to meet required coverage ratios.
- *Debt Term and Cost* – The debt term is assumed to be a period of approximately 5-years less than a project's economic life, with a maximum term of 20 years, consistent with industry standard practice if project financed. There are a variety of other financing mechanisms that the renewable energy industry is utilizing, but a representative method was chosen that is based on project financing. A few exceptions to the debt term assumption include landfill methane projects that opt for shorter debt financing for relatively small projects and biomass co-firing projects that have a debt term equivalent to the estimated economic life. Interest rates have also decreased somewhat since the 2004 Report and vary by resource type. The financial market still

[15] Most of these economic life assumptions were taken from the NYSERDA Technology Assessment. Exceptions include increasing hydro upgrades from a 20 to a 30 year life, reducing PV from a 25 to a 20 year life, and simplifying the fuel cell analysis, selecting a single life of 10 years rather than the technology-specific range of economic life assumptions in the NYSERDA Technology Assessment ranging from 14 years for PEM and MCFC to 26 years for SOFC.

places considerable risk on offshore wind projects, so the debt cost is significantly higher than other resources.

- *Equity Cost* – Based on experience with specific projects and discussions with financiers of renewable projects, it is assumed that after-tax equity costs vary depending on the type of resource and size of projects. They reflect different degrees of risk that the financial market has placed on these projects. Wind has reduced equity cost requirements significantly over time as financial players have become more comfortable with wind deals and structures.
- *U.S. Federal Tax Depreciation* – The U.S. federal tax code permits five-year MACRS accelerated depreciation for wind. The depreciation for landfill gas projects are less clear, but a 7-year MACRS schedule is assumed for this study.[16] For all other technologies, the standard depreciation allowable for electrical generation plant, or 150% declining balance over the economic life of plant (maximum 20 years) is applied.
- *Other taxes* - Property taxes are covered under the category of operations and maintenance costs. For wind projects, production tax credits are also treated outside of the carrying charge calculation, as described below.
- *Long Term Contracts* - Renewable energy will be purchased under long term contracts, which allow renewable generators to bid the lowest price per kWh that provides them a sufficient return due to reduced risk. Absent long-term contracts, it is expected that it would be more difficult, costly and time consuming to finance renewable projects to meet the New York RPS. Therefore, without long-term contracts, RPS compliance costs, particularly in the near term, would be expected to be noticeably higher.
- *Canadian Renewable Incentives*- Tax treatments and financing in Canada differs from the U.S. PTC and MACRs for wind and other renewable resources. A separate set of financing assumptions associated with Canadian projects based on their rules has been applied.[17] Under the Canadian Capital Cost Allowance, wind and other renewable energy projects, classified as asset class 43.1, are depreciated at an accelerated rate of 50% per year; and the Canadian Renewable and Conservation Expense (CRCE) allows flow through share expenses, this means that investors can deduct many development expenses.[18]

Table 9: Canadian Resource Finance Assumptions

Technology	Economic Life (yrs)	Financing Structure Debt:Equity	Debt Term (years)	Debt Cost	Equity Cost	CCA
Canadian Wind	20	55:45	15	7.00%	12%	0.50
Canadian Hydro	25	70:30	15	7.00%	12%	0.50

The results of the carrying charge analysis are shown in the Table 10.

[16] Publication 946 (2006) How to Depreciate Property? "Which Property Class Applies Under GDS?" <http://www.irs.gov/publications/p946/ch04.html#d0e4139>

[17] Typically, Canadian projects can receive incentives of 1¢ per kWh produced for up to 10 years (pre-tax) under the ecoEnergy Renewable Power Initiative. This initiative, formally known as the wind power production incentive (WPPI), have not been included as an incentive payment for Canadian renewables, because it is limited to 4000 MW of built between April 1, 2007 to March 31, 2011. Given that extensive development of renewables is anticipated for various initiatives set forth by Canadian provinces, we have assumed projects that export would have limited access to this incentive.

[18] http://www.parl.gc.ca/information/library/PRBpubs/prb0606-e.htm and http://www.fin.gc.ca/news96/96-046_2e.html

Table 10: Resulting Levelized Carrying Charge by Resource

Project Financed Technologies	Levelized Carrying Charge (Nominal)
U.S.	
Biomass co-firing	18.64%
Biomass (wood)	13.81%
Landfill Methane	12.00%
Onshore Wind	10.95%
Onshore Wind (Medium/Small)	11.38%
Offshore Wind	12.92%
Hydro (upgrades)	11.42%
Hydro (new)	11.42%
Canada	
Canadian Wind	9.28%
Canadian Hydro	7.80%
Canadian Biomass co-firing	10.80%

V.3. U.S. Federal Production Tax Credit

The Energy Policy Act of 2005 (H.R. 6) modified the production tax credit to incorporate additional renewable resources and extended it through December 31, 2007. In December 2006, the credit was extended for yet another year (through December 31, 2008) by Section 207 of the Tax Relief and Health Care Act of 2006 (H.R. 6111). With Energy Policy Act of 2005 (EPACT), wind and closed-loop biomass, and hydroelectric upgrades at existing dams are now eligible for the federal production tax credit (PTC) of 2.0 cents per kWh in 2007 for the first ten years of production, thereby reducing the cost of these resources to consumers. The expansion allowed open-loop biomass and landfill gas projects to receive half of the PTC value (1.0 cents per kWh for ten years. This credit increases annually in step with the GDP – Implicit Price Deflator (GDPIPD). Currently, it is unclear whether the PTC will be extended to apply to facilities that begin production after 2008, but the cost modeling assumes the PTC will be extended throughout the duration of the study. There are several bills in Congress that are proposing extensions of 2 to 5 years. If the PTC is not extended, the results of this analysis will significantly understate the necessary collections, which would need to be revised accordingly.

This analysis accounts for the value of the PTC by reducing the cost of all eligible resources by the pre-tax value of the PTC on a real-levelized basis.

V.4. Commodity Market Value of Renewable Production

V.4.A. Energy Market Forecast

The "commodity market value" absent RPS revenues is a function of a generator's seasonal and time-of-day production profile, and the commodity market LBMP prices available at its location. Additionally, a capacity value associated with the effective capacity value of each renewable

resource is included in this analysis. The DPS staff provided the LBMP and capacity forecasts used for each megazone. Other potential revenue streams, such as ancillary services, were not included. To the extent that such revenues are available, the cost premium required by renewable resources would be lower than projected herein.

Location. The commodity market value of a renewable resource will be influenced, in part, by where within New York it is located. Under present wholesale market design, generators are paid for their output based on the specific node at which their output enters the bulk transmission system. For the purpose of testing the cost-effectiveness of renewable resources, the state was divided into three "Megazones" that capture the vast majority of projected price differentiation within New York.

Season & Time of Day. The commodity value of a renewable project's output will also depend to some extent on the seasons and times of day during which it generates. This is because different resources have different production profiles, and wholesale market prices tend to be differentiated significantly by season and time of day. Generation profiles as used in the 2004 Report were again applied in this study.

The NYSERDA Technology Assessment estimated the relative output of potential renewable resources in terms of the following six different seasonal and time of day categories ("time slices") in which wholesale market prices were expected to be similar:

- Summer On Peak: June – August weekdays, noon to 6 pm
- Summer Off Peak: June – August, midnight to 8 am weekdays; all weekend hours June – August; and May, September and October, all hours
- Summer Shoulder: Weekdays June – August, 8 am to noon and 6pm to midnight
- Winter On Peak: December – February, noon to 8 pm
- Winter Off Peak: December – February, midnight to 8am and all weekend hours; March, April and November, all hours
- Winter Shoulder: Weekdays December – February, 8 am to noon and 8 pm to midnight

Below are the 20-year levelized values in $/MWh for capacity coming on-line in the specified year. A discount rate of 10% was used in the calculation of levelized commodity prices. The forecast was provided by DPS staff.

Table 11: Nominal 20-Year Levelized Energy Commodity Prices

ZONE	1							
Zone 1, Market Price $/MWh, r	2009	2010	2011	2012	2013	2014	2015	2016
Time Period 1	$ 94.32	$ 95.40	$ 97.10	$ 99.46	$ 102.54	$ 105.89	$ 109.55	$ 113.55
Time Period 2	$ 63.40	$ 64.12	$ 65.26	$ 66.85	$ 68.92	$ 71.17	$ 73.63	$ 76.32
Time Period 3	$ 74.89	$ 75.75	$ 77.09	$ 78.97	$ 81.41	$ 84.08	$ 86.98	$ 90.16
Time Period 4	$ 77.61	$ 78.50	$ 79.89	$ 81.83	$ 84.37	$ 87.13	$ 90.14	$ 93.43
Time Period 5	$ 58.64	$ 59.30	$ 60.36	$ 61.82	$ 63.74	$ 65.83	$ 68.10	$ 70.59
Time Period 6	$ 70.16	$ 70.96	$ 72.22	$ 73.98	$ 76.27	$ 78.77	$ 81.49	$ 84.46
ZONE	2							
Zone 2, Market Price $/MWh, r	2009	2010	2011	2012	2013	2014	2015	2016
Time Period 1	$ 141.45	$ 143.29	$ 145.73	$ 148.83	$ 152.66	$ 157.11	$ 162.27	$ 168.19
Time Period 2	$ 75.85	$ 76.84	$ 78.15	$ 79.81	$ 81.86	$ 84.25	$ 87.01	$ 90.19
Time Period 3	$ 86.99	$ 88.13	$ 89.63	$ 91.53	$ 93.89	$ 96.63	$ 99.80	$ 103.44
Time Period 4	$ 95.33	$ 96.57	$ 98.22	$ 100.31	$ 102.89	$ 105.89	$ 109.37	$ 113.36
Time Period 5	$ 74.18	$ 75.14	$ 76.42	$ 78.05	$ 80.06	$ 82.39	$ 85.09	$ 88.20
Time Period 6	$ 85.13	$ 86.24	$ 87.70	$ 89.57	$ 91.88	$ 94.56	$ 97.66	$ 101.22
ZONE	3							
Zone 3, Market Price $/MWh, r	2009	2010	2011	2012	2013	2014	2015	2016
Time Period 1	$ 171.11	$ 173.48	$ 176.88	$ 181.42	$ 186.89	$ 193.08	$ 199.80	$ 207.10
Time Period 2	$ 91.16	$ 92.42	$ 94.24	$ 96.65	$ 99.57	$ 102.87	$ 106.45	$ 110.34
Time Period 3	$ 108.23	$ 109.73	$ 111.89	$ 114.75	$ 118.21	$ 122.14	$ 126.39	$ 131.00
Time Period 4	$ 107.87	$ 109.37	$ 111.51	$ 114.37	$ 117.82	$ 121.73	$ 125.96	$ 130.56
Time Period 5	$ 83.85	$ 85.01	$ 86.68	$ 88.90	$ 91.58	$ 94.62	$ 97.91	$ 101.48
Time Period 6	$ 99.89	$ 101.27	$ 103.26	$ 105.90	$ 109.10	$ 112.72	$ 116.64	$ 120.90

V.4.B. Capacity Market

In the 2004 Report, the capacity value was not included in the resource premium calculation, but rather applied as a post-analysis adjustment. In this study, the value of capacity from the capacity market to renewable generators is directly included. The capacity market is divided into three zones: Rest of New York, New York City, and Long Island. The latter two are grouped into Megazone 3 in the study. Both Megazone 1 and 2 share the capacity value associated with Rest of NY.

Below are the 20-year levelized values in $/kW-year for capacity coming on-line in the specified year. A discount rate of 10% was used in the calculation of levelized commodity prices. The forecast was provided by DPS staff.

Table 12: Nominal 20-Year Levelized Capacity Prices

Zone 1, nominal	2009	2010	2011	2012	2013	2014	2015	2016
Capacity Price $/kW-year	$ 69.84	$ 74.08	$ 78.11	$ 81.84	$ 85.12	$ 87.79	$ 89.63	$ 91.52
Zone 2, nominal	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Capacity Price $/kW-year	$ 69.84	$ 74.08	$ 78.11	$ 81.84	$ 85.12	$ 87.79	$ 89.63	$ 91.52
Zone 3, nominal	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Capacity Price $/kW-year	$ 143.88	$ 147.79	$ 151.66	$ 155.46	$ 159.16	$ 162.73	$ 166.15	$ 169.65

NYISO will only give credit for a unit's "reliable" capacity that is available during summer and winter peaks. For dispatchable units, such as those utilizing biomass or landfill gas, the reliable capacity is assumed to be 100% of the rated capacity. For non-dispatchable, or interment, units, such as wind and hydro, adjustments were made to reflect their "reliable" capacity. Since wind has lower capacity factors during summer peak periods, the maximum capacity value for wind would be 10% for on-shore wind resources and 35% for wind resources off the shore of Long Island, which is

the estimated reliable capacity from NYSERDA's Wind Integration Study.[19] For hydro facilities, the capacity factor applied in this study is equivalent to the "reliable" capacity.

V.5. Calculating Premium for Renewables

For the purposes of developing renewable attribute premiums for different resources representative of the 10-year fixed price bids that developers are likely to propose, several steps were taken in the calculation. Given that NYSERDA is procuring only the RPS attributes associated with renewable energy through its contracts, the remaining revenue streams (energy and capacity) for developers are still exposed to the volatile wholesale market. Developers have to primary avenues t mitigate the long-term risk of these commodity revenues, either through signing long-term contracts or buying financial derivatives to hedge prices. This cost to achieve stability is reflected in the study as a hedging premium that reduces the potential revenue from energy and capacity.

The steps in calculating the premium for renewable generation are described below.

1. Develop levelized cost of renewable generation over the life of the project using carrying charge that was calculated for each type of resource and associated variable costs and PTC, if any.
2. Develop production weighted annual revenue streams, consisting of commodity energy and capacity, for each resource.
3. Levelize the stream of revenues. Discount the potential revenue stream by a "hedging" premium.
4. Calculate the difference between cost and revenue streams for each resource.
5. Adjust the premium to reflect front-loading of project costs as a result of contracts being a maximum of 10-years. A small residual value of $5/MWh is assumed for the renewable attributes after the first 10-years.

VI. Resource Availability

Blocks of resources shown in Table 7 do not represent resources that will certainly be developed but, rather, upper limits on quantities that might practically be developed if the economics of meeting the RPS dictate.[20] Projections of developable quantities were derived by zone, in order to capture the major differences in electricity market prices and resource availability across New York State, and for neighboring markets.

[19] "The Effects of Integrating Wind Power on Transmission System Planning, Reliability, and Operations. Report on Phase 2: System Performance Evaluation," March 4, 2005 <http://www.nyserda.org/publications/wind_integration_report.pdf>

[20] The quantity to be reflected in such a resource block is greater than the "economic potential", a concept that is not generally applicable for an RPS analysis (because if demands are sufficient and there is no lower cost resource available, potential will be developed regardless of cost unless a price cap kicks in). On the other hand, the quantities selected for each block are less than the "technical potential", both because we have tempered technical potential with a view towards what could be successfully developed given a host of real constraints. Thus, the "upper end" of the supply curve beyond a level that would likely ever be called upon for an RPS was excluded.

Finally, while a maximum quantity in MW and GWh/yr for each supply block is projected, it is not realistic in many cases to assume that the entire developable potential could be tapped instantaneously, for a variety of reasons. Therefore, the availability of each supply block over time is phased in where constraints on build-out were deemed to apply. These limitations represent a combination of factors such as evolving market barriers, delivery, manufacturing and installation infrastructure limitations, development lead time, permitting constraints, market acceptance, and technology availability. The maximum figures reflect the total projected developable potential in year 2015, the last year of the analysis. Annual percentages of that maximum quantity that would be available in earlier years, were then developed to reflect the phase in. Both biomass co-firing and wind from Canada have been zeroed out because it is assumed that the potential for export for these resources will be very limited, as explained further below in the Import section.

Table 13: Resource Availability by Year

Resources	2009	2010	2011	2012	2013	2014	2015
Biomass co-firing	0%	0%	20%	40%	60%	80%	100%
Biomass CHP	0%	20%	40%	60%	80%	100%	100%
Biomass (wood)	0%	0%	20%	40%	60%	80%	100%
Landfill Methane	20%	40%	60%	80%	100%	100%	100%
Onshore Wind	20%	40%	60%	80%	100%	100%	100%
Onshore Wind (Medium/Small)	20%	40%	60%	80%	100%	100%	100%
Offshore Wind	0%	0%	0%	0%	20%	40%	60%
Hydro (upgrades)	20%	40%	60%	80%	100%	100%	100%
Hydro (new)	0%	20%	40%	60%	80%	100%	100%
Canadian Hydro	0%	20%	40%	60%	80%	100%	100%

For the 2004 Report, he NYSERDA Technology Assessment was the primary source of information used in developing the resource potential for most technologies. In this update, these previous assumptions were revisited and changes were made when there was more updated information available. RPS experience gained to date in New York and New England states was also relied upon to help inform changes in assumptions where warranted.

VII. Resource-Specific Assumptions

This section details the assumptions made for fixed and O&M costs as well as developable quantities (capacity and capacity factor) and production profiles, for each of the resources modeled as part of the NY RPS supply curve.

Table 14 shows the production profiles used to assign the output of renewable resources in New York, PJM, Ontario, and Quebec.

Table 14: Resource Output by Time Period

New York Resources	Fraction of Annual Resource Output by Time Period					
	#1	#2	#3	#4	#5	#6
Wind Zone 1	2.4%	31.0%	3.6%	8.3%	46.7%	7.9%
Wind Zone 2	2.4%	31.0%	3.6%	8.3%	46.7%	7.9%
Wind Zone 3	3.2%	28.4%	4.4%	9.1%	45.7%	9.2%
Offshore Wind LI	3.2%	28.4%	4.4%	9.1%	45.7%	9.2%
Offshore Wind Lakes	2.4%	31.0%	3.6%	8.3%	46.7%	7.9%
Landfill Gas	4.5%	38.5%	7.4%	5.8%	37.9%	5.8%
Biomass	4.5%	38.4%	7.5%	5.9%	37.8%	5.9%
Biomass CHP	5.9%	36.9%	7.6%	7.4%	36.4%	5.8%
Large Hydro Upgrade	3.7%	32.1%	6.2%	6.9%	44.3%	6.8%
Low-impact/Small Hydro	4.0%	32.0%	6.0%	7.0%	44.0%	7.0%

Wind profiles remain unchanged from the 2004 Report, which were based on an analysis of actual New York wind data and a Vestas V47 production curve for Western New York (applied to zones 1 and 2 as well as off-shore wind in the Great Lakes) and Long Island (applied to Zone 3 wind and Long Island off-shore). Biomass and hydro came from the NYSERDA Technical Assessment. All other New York resources were assumed to be baseload, with production allocated in proportion to the hours in each time period.

Production profiles for Ontario, Quebec and PJM resources were assumed to be the same as the same resource types in New York (for wind, used the Western New York profile).

VII.1. Wind Resources

Input data for wind potential in New York was revised to reflect more recent data at hub heights (80 m) more representative of the current generation of installations, and to provide additional granularity to the analysis by considering distance to transmission interconnection. Wind potential blocks grouped by (a) wind class @80 meters; (b) size of farm; (c) distance from transmission interconnection; and (d) NYISO megazone were then developed.[21]

The resulting supply curve assumptions for wind potential and costs are summarized in Table 15.

[21] Exclusion areas mirror those used in NREL's wind potential study. They include exclusions for

Table 15: Wind Resource Assumptions

Resource Block	Capacity Factor	Maximum MW in Block	Levelized Cost per MWH		Total Installed Cost (2007$/kW of rated max output)		Fixed O&M (2007$/kw-yr)	Variable O&M Costs (2007$/MWh)
			2009	2015	2009	2015		
Wind Small NY-z1b1t1	37%	34	$103	$109	$2,689	$2,382	$55	$2
Wind Small NY-z1b1t2	37%	10	$121	$132	$2,689	$2,382	$55	$2
Wind Small NY-z1b2t1	33%	21	$119	$127	$2,689	$2,382	$55	$2
Wind Small NY-z1b2t2	33%	17	$139	$151	$2,689	$2,382	$55	$2
Wind Small NY-z1b3t1	29%	191	$139	$148	$2,689	$2,382	$55	$2
Wind Small NY-z1b3t2	29%	78	$163	$177	$2,689	$2,382	$55	$2
Wind Small NY-z2b1t1	37%	10	$103	$109	$2,689	$2,382	$55	$2
Wind Small NY-z2b2t1	33%	11	$119	$127	$2,689	$2,382	$55	$2
Wind Small NY-z2b2t2	33%	10	$139	$151	$2,689	$2,382	$55	$2
Wind Small NY-z2b3t1	29%	62	$139	$148	$2,689	$2,382	$55	$2
Wind Small NY-z2b3t2	29%	14	$163	$177	$2,689	$2,382	$55	$2
Wind Small NY-z3b2t1	33%	10	$119	$127	$2,689	$2,382	$55	$2
Wind Small NY-z3b3t1	29%	29	$139	$148	$2,689	$2,382	$55	$2
Wind Small Agg NY-z3agt2	31%	15	$151	$164	$2,689	$2,382	$55	$2
Wind Medium NY-z1b2t1	33%	60	$90	$94	$2,305	$2,042	$45	$2
Wind Medium NY-z1b3t1	29%	364	$106	$112	$2,305	$2,042	$45	$2
Wind Medium NY-z2b2t1	33%	60	$90	$94	$2,305	$2,042	$45	$2
Wind Medium NY-z2b3t1	29%	113	$106	$112	$2,305	$2,042	$45	$2
Wind Large NY-z1b1t1	37%	208	$66	$69	$2,113	$1,872	$45	$2
Wind Large NY-z1b2t1	33%	1279	$77	$81	$2,113	$1,872	$45	$2
Wind Large NY-z1b3t1	29%	5289	$92	$97	$2,113	$1,872	$45	$2
Wind Large Agg NY-z2agt1	30%	108	$90	$94	$2,113	$1,872	$45	$2
Wind Farms PJM b1	29%	250	$95	$100	$2,113	$1,872	$45	$2
Off-Shore Wind Lakes NY-z1	34%	311	$198	$199	$3,999	$3,331	$100	$2
Off-Shore Wind LI NY-z3	36%	579	$185	$186	$3,999	$3,331	$100	$2

VII.1.A. Wind in New York

Wind classes reviewed were grouped as Class 4, Class 5, Class 6, and Class 7.[22] The size of wind farms examined were <20 MW, 20-100 MW, and >100 MW. These estimates were developed for farms with different distances from transmission: 0-5 miles, 5-10 miles, 10-20 miles. These segmentations helped determine a reasonable amount of wind potential in New York, the installed cost (including interconnection) and performance characteristics of each wind block.[23] To simplify the analysis, some blocks were combined and denoted by "ag" to reflect the weighted average performance of multiple smaller blocks.

[22] Classes are based on Power Class at 80 meters which assume the following W/m^2 thresholds: (Class 3 = 300-400 W/m^2), (Class 4 = 400-500 W/m^2), (Class 5 = 500-600 W/m^2), (Class 6 = 600-800 W/m^2), (Class 7 = > 800 W/m^2)
[23] Class 3 resources were excluded because resources are considered marginal when measured at 80 meters.

The original dataset for New York wind resources was developed in 2003 by AWS Truewind for NYSERDA. The dataset covered all wind resources in the state of New York. In developing a set of feasible wind sites in New York, a set of general exclusionary criteria that were similar to those used by National Renewable Energy Laboratory were employed. The exclusions are listed in Table 16. Among the exclusions are national and state parks, urban areas, and wetlands/waterways. Also excluded were areas with slope greater than 20% grade.

Table 16: 100% Exclusion Areas in New York

Protected Lands	Data Source	Date	Applied Buffer
National Historic Preserves	NYS Department of Environmental Conservation	2007	N/A
Natural Resource Land	NYS Department of Environmental Conservation	2007	N/A
Wildlife Management Areas	NYS Department of Environmental Conservation	2007	N/A
Adirondack & Catskill Park Forest Preserve	NYS Department of Environmental Conservation	2007	N/A
Unique Wildlife Preserves	The Nature Conservancy / NYS DEC	2007	N/A
State and Local Parks	ESRI Parks	2007	N/A
National Historic Parks	ESRI Parks	2007	N/A
National Recreation Areas	ESRI Parks	2007	N/A
National Monuments	ESRI Parks	2007	N/A
National Wildlife Refuges	ESRI Parks	2007	N/A
National Park Service Land	USGS National Atlas	2007	N/A
Fish and Wildlife Serivice Lands	USGS National Atlas	2007	N/A
Indian Lands	USGS National Atlas	2007	N/A
Status 1 Lands (Protected Lands)	GAP Analysis	2007	N/A
State Parks, Recreation & Historic Lands	NY State Ofice of Parks, Recreation & Historic Lands	2006	N/A
Land Use/Land Cover	**Data Source**	**Date**	**Applied Buffer**
Urban Areas	USGS National Land Cover Data: Medium and High Intensity Developed Lands (NLCD Classes 23&24)	2001	Class (23) 0.5 Miles Class (24) 1 Mile
Wetlands & Waterbodies	USGS National Land Cover Data: Open Water (NLCD Class 11 & 90-95)	2001	N/A
Large Airports	ESRI Airports	2007	20,000 Feet
Medium Airports	ESRI Airports	2007	10,000 Feet
Small Airports	ESRI Airports	2007	N/A
Existing Wind Farms	AWS Truewind Wind Farm Data - Maple Ridge, Weathersfield, Madison, Fenner, Steel Winds	2007	N/A
Slopes > 20%	Derived From National Elevation Data DEM 30m	2001	N/A

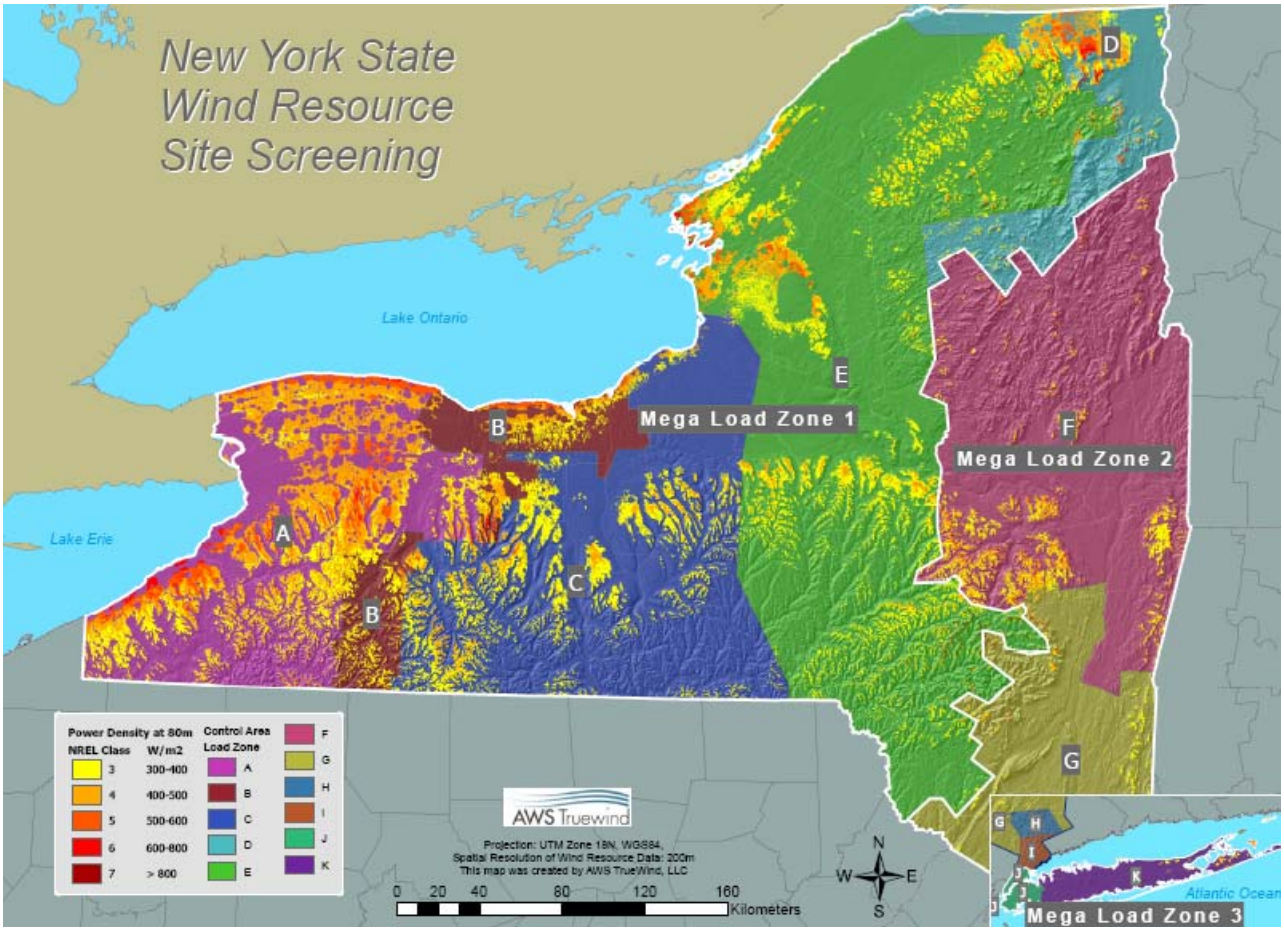
The remaining land area was then assessed for wind potential. Additional exclusions were applied to areas that may have reduced potential for wind development. It is assumed that no greater than 50% of the windy land in the following areas would be developable.

Table 17: 50% Exclusion Areas in New York

Protected Lands	Data Source	Date
Department of Defense Lands	USGS National Atlas	2007
Forest Service Lands	USGS National Atlas	2007
State Forest Lands	NYS Department of Environmental Conservation	2007
Lands Within the Adirondack and Catskill Parks outside the 100% exclusion status (Forest Preserve)	ESRI Parks & GIS analysis	2007
Land Use/Land Cover	**Data Source**	**Date**
Non Ridgecrest Forest Analysis	Intersection of Slopes ≤ 8 Degrees (NED) and USGS National Land Cover Data: Deciduous Forest, Evergreen Forest, & Mixed Forest (Classes 41-43)	2001

After taking into account this series of exclusions, the remaining total potential in New York occupied over 6,700 square kilometers. Assuming a conservative wind turbine density of 7.5 MW per square kilometer, the maximum technical potential is equal to over 50,000 MW. However, it is not reasonable that all of this technical potential will get developed, so it was assumed that 25% of the potential for wind farms < 20 MW and 20-100 MW would be developable. It was also assumed that only 15% of the technical potential for wind farms >100 MW would be developable in the near term, given the greater barriers in siting large wind farms. This leads to a total developable potential of about 8,000 MW of wind. The individual wind blocks are broken out in Table 15.

Figure 9: Wind Resource Map



Wind capacity factors improve with wind speed or wind classification. For each class of wind resource, the following net capacity factors were applied. While technology improvements may help improve the capacity factor of the resource over time, a conservative estimate was chosen that maintains the same capacity factor over the study period for each wind class.

Wind Class @80meters	Capacity Factor Used
Class 4	29%
Class 5	33%
Class 6+	37%

Based on recent experience with wind farms being proposed in the Northeast, the installed cost of wind farms have increased substantially since the previous study. The installed costs, without interconnection cost, range from $2100 for smaller installations to $2700 per kW for larger wind farms with greater scale economies. Depending on the distance to transmission and size of farm assumed, the interconnection cost may add $25 to $750 per kW to the installed cost.

At this time, there is no available estimate of the additional cost that New York wind projects may face in terms of upstream system upgrade and operational/integration costs that NYISO may implement in the future as more wind capacity comes on-line. Therefore, this analysis does not include any estimate of such costs. For total O & M costs, knowledge of property taxes/PILOT,

landowner and administrative costs, in addition to operation and maintenance cost formed the basis for study assumptions. Estimates include the long-term maintenance requirements where costs are low in the near-term and then increase faster than the assumed inflation rate, where large parts replacements are needed. This appears as a levelized fixed cost in $ per kW. New NYISO wind forecasting market rules will impose some costs, but because the cost of forecasting will be spread over a substantial volume of wind generation, a significant impact on per-unit O&M estimates is not expected.

VII.1.B. Off-shore Wind

A few off-shore wind projects have been proposed in the Northeast, including sites in Massachusetts, Rhode Island, New York, New Jersey, and Delaware, but none are close to being built. The same levels of resource potential that were presented in the 2004 Report were applied in this updated study. Studies of the installed costs for offshore wind projects vary from $3300 to over $5200 per kW.[24] For this analysis, it is assumed that costs may decline over time in $2007 dollars from about $4,000 in 2009 to$3,300 per kW by 2015. The contingencies associated with offshore wind projects can be very high since there are a variety of risks associated with these projects. Most of these risks are due to a lack of U.S. experience with offshore wind development, potentially high underwater cable and substation costs, scarcity of local maintenance infrastructure (including ships capable of servicing offshore turbines) and numerous federal and state regulatory hurdles that have stalled projects. Additional evidence that offshore wind costs are quite high today is demonstrated by a recent proposal by Bluewater Wind's offshore wind project proposed in Delaware. For a 25-year contract, the cost of energy, capacity, and renewable energy credits combined, totaled $180 per MWh nominal levelized starting in 2014.[25] It is also assumed that the first offshore wind project would be able to come on-line in 2013 at the earliest, given the current lead-times for offshore wind development.

VII.1.C. Wind in PJM

Wind resources are also expected to be available from PJM; the PJM resource available for export to NY was first estimated to be 500 MW based on transmission availability, but this value was cut in half, to 250 MW, to reflect substantially increased demand for this resource within PJM due to new and increased RPS mandates within the region. Transmission issues indicate that this resource will be delivered to New York Zone 1.

VII.1.D. Wind in Ontario and Quebec

In the 2004 Report, 3000 MW of wind from Quebec and 3000 MW of wind from Ontario were included in the resource potential, 40% of this was assumed to be available by 2013. Since that study, both Ontario and Quebec's provincial governments have announced aggressive directives that require the provinces to procure 4000 MW or more each (mostly from wind) by 2015. Ontario

[24] Cost estimates derived from PACE "Assessment of Offshore Wind Power Resources Prepared for: Long Island Power Authority" August 22, 2007 and "RIWINDS Phase I: Wind Energy Siting Study" April 2007. <http://www.lipower.org/newscenter/pr/2007/pace_wind.pdf> and <http://www.energy.ri.gov/documents/independence1/RIWINDSReport.pdf>

[25] Calculation derived from "Assessment of Power Purchase Agreement Between Delmarva Power and Bluewater Wind Delaware LLC," PSC Docket No. 06-241. December 13, 2007.

has already signed contracts with about 1,800 MW of wind and will be issuing multiple RFPs for additional wind supply to come on-line in the 2010-2015 period. Quebec has already issued two rounds of calls for tender for a total of 3000 MW, with another call for tender for 500 MW coming soon.

Additionally, both Ontario and Quebec transmission systems will likely face internal constraints as more wind projects come on-line, further reducing the potential for export until transmission systems are upgraded.[26] Lastly, even if there is some wind available for export, Quebec projects will more likely export to New England, where to date, projects have enjoyed higher prices for their attributes/renewable credits. Given these barriers, New York is unlikely to receive wind energy from the Canadian provinces to meet its RPS requirements. Experience from the first three Main Tier solicitations, conducted during a period of ample wind development in both provinces, supports the notion that Canadian wind may not be a major player in the NY RPS.

VII.2. Biomass Generation

Our analysis considers three different biomass technologies: cofiring of existing coal-fired plants with biomass fuel, combined heat and power (CHP), and stoker technology. The key cost and availability assumptions are shown in Table 18, along with the results.

Table 18: Biomass Resource and Technology Assumptions

Resource Block	Capacity Factor	Maximum MW in Block	Levelized Cost per MWH		Total Installed Cost (2007$/kW of rated max output)		Fixed O&M (2007$/kw-yr)	Variable O&M Costs (2007$/MWh)	Fuel Heat Rate (btu/kWh)
			2009	2015	2009	2015			
Biomass Co-firing w/Coal NY-z1	70%	81	$22	$26	$150	$150	$0	$5	11,500
Biomass Co-firing w/Coal NY-z2	70%	29	$35	$52	$150	$150	$0	$5	11,500
Biomass CHP Existing NY z1	80%	96	$69	$79	$3,234	$3,045	$100	$12	17,500
Biomass CHP Existing NY z2	80%	4	$132	$182	$5,930	$5,583	$250	$12	30,000
Biomass CHP Existing NY z3	80%	89	$150	$235	$3,234	$3,045	$100	$12	17,500
Biomass CHP New NY z1	80%	58	$89	$102	$4,312	$4,060	$100	$10	17,500
Biomass CHP New NY z3	80%	59	$170	$257	$4,312	$4,060	$100	$10	17,500
Fluidized Bed Repower Existing NY z1	85%	286	$95	$109	$1,176	$1,107	$75	$10	13,800
Fluidized Bed Repower Existing NY z2	85%	62	$112	$143	$1,176	$1,107	$75	$10	13,800
Fluidized Bed Repower Existing NY z3	85%	132	$159	$232	$1,176	$1,107	$75	$10	13,800
Fluidized Bed Repower Retire NY z1	85%	46	$91	$105	$980	$923	$75	$10	13,800
Fluidized Bed Repower Retire NY z2	85%	217	$108	$138	$980	$923	$75	$10	13,800
Fluidized Bed Repower Retire NY z3	85%	48	$155	$228	$980	$923	$75	$10	13,800
Biomass Stoker NY z1	85%	500	$136	$156	$3,234	$3,045	$100	$10	13,000
Biomass Stoker NY z2	85%	500	$152	$187	$3,234	$3,045	$100	$10	13,000

[26] A study by GE Energy on behalf of the Ontario Power Authority showed that there are minimal system impacts up to 5000 MW of wind power. < http://www.ieso.ca/imoweb/pubs/marketreports/OPA-Report-200610-1.pdf> Quebec is already facing internal constraints and estimate that it can accommodate about 4000 MW.

VII.2.A. Biomass Fuel

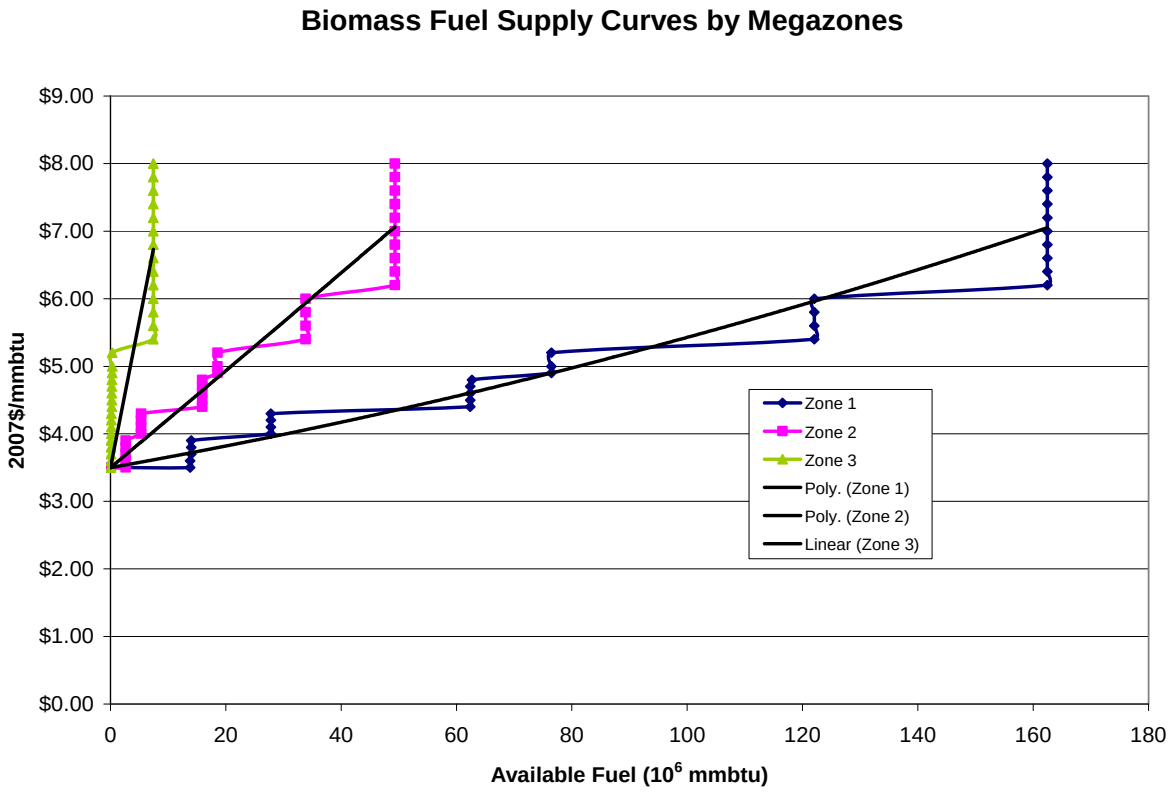
The availability and price of biomass fuel is an important consideration in the determination of biomass energy potential. The amount and price of eligible biomass fuel by zone has been updated for this study. However, given that the biomass residue from forest product industries has not expanded in the past few years, no change in the level of biomass fuel going forward is assumed. Supply curves were also developed for each of the zones that comprise of urban wood waste and logging residue.[27] This allows estimates of biomass prices to vary depending on the total amount of biomass "cleared" in the renewable supply model, regardless of application technology, since it was assumed that all technologies would be competing for the same pool of resources. The total amount of fuel is constrained in Megazones 2 and 3, demonstrated by steep supply curves (see Figure 10).

The most notable change in assumptions for future available biomass supply since the NYSERDA Technology Assessment is the assumed trend in available silviculture (residue). The Technology Assessment anticipated an expectation of increased pulp and paper (P&P) industry activity; however, since 2003, the P&P industry has stayed relatively flat, if not declined. There are conflicting views of the future growth of the P&P industry, so in this Report, a static view of the industry using estimates applicable to 2003 as provided in the NYSERDA Technology Assessment for all resources except for energy crops was used. It was assumed that only 50% of the estimated silviculture (harvest) potential from the Technology Assessment is accessible/developable by biomass suppliers. The previous study also assumed an increasing availability of energy crops, especially by 2022. Given a lack of energy crop projects being proposed and a necessary lead time of 3-5 years, the availability of energy crops are assumed to be delayed relative to the NYSERDA Technology Assessment.

The NYSERDA Technology Assessment identifies some fuels (woody yard trimmings, wood waste, construction and demolition residues) as having a negative cost. This cost represents the tipping fees, or receiving charge, for the collection of some biomass fuel types. However, especially in the current market environment, it is unlikely to be a negative cost to the generator. A more realistic approach was taken with the supply curve, reflecting the likelihood that such fuel sources would be widely dispersed and therefore would only comprise a small fraction of fuel available to any particular generator. Available biomass below today's market prices of $3.50/mmbtu was blended at 20% with higher cost biomass options to reflect the weighted average cost of multiple fuel sources for a generator. To the extent that some volumes are actually available to new renewable resources at lower (including negative) prices, the cost analysis is conservative. Biomass fuel currently being consumed by existing generators was also netted out.

[27] The NYSERDA Technology Assessment describes the term biomass to include "a wide-variety of closed-loop and open-loop organic energy resources. Closed-loop resources are those that are grown exclusively for the purpose of being consumed as an energy feedstock. Closed-loop resources can be either woody (e.g., hybrid poplar or willow) or herbaceous (e.g., switchgrass). Open-loop resources are typically either woody residues produced as by-products in the wood processing industry or are clean woody waste materials intercepted from the municipal solid waste stream." The resources included in Assessment's fuel supply curve include: mill residues, silviculture and silviculture residues, site conversion residues, woody yard trimmings, construction and demolition residues, pallets and other waste wood, agricultural residues, bio-energy crops, farm animal manure and wastewater methane. The last two sources are excluded from the quantity estimates. Construction and demolition residues are defined to include only the "clean and available" portion of such debris, to exclude that part of discarded wood that is not considered to be useable and recoverable due to excess contamination (e.g., treated wood not suitable for combustion, composting, or mulching), excessive commingling with other waste, or not recoverable for other reasons. As a result, we deemed the entire fuel supply curve identified in the Assessment to meet biomass eligibility requirements.

Figure 10: Biomass Fuel Supply Curve by Megazones



VII.2.B. Biomass Technologies

At the same time, the technologies in which biomass can be utilized have been revised to encompass the most economic options. The following list of technologies is included:

- Co-firing at existing coal plants
- Gasification CHP (Repower) fixed bed steam (no need for fluidized bed)
- Gasification CHP (New)
- Repowering former steam units with FB Boilers
- Greenfield Stoker with SCR

In Table 19, the estimated potential for each of the technologies listed are limited by available sites in New York. Greenfield stokers are not included in the table because this technology is limited by biomass availability.

Table 19: Estimate of Potential by Biomass Technologies

	Maximum Potential (MW)			Adjustment Factor	Estimated Potential (MW)		
	Zone 1	Zone 2	Zone 3		Zone 1	Zone 2	Zone 3
Co-firing at Existing Coal Plants	1619.5	582.4	0	5%	81.0	29.1	0.0
Repowering with FB Boilers (retired)	91.3	434.5	96.9	50%	45.7	217.3	48.5
Repowering with FB Boilers (on-line)	1145.1	249.7	527	25%	286.3	62.4	131.8
CHP (Existing Cogen)	385	14.9	356.2	25%	96.3	3.7	89.1
CHP (New)							
5 MW to 20 MW	61	n/a	147	25%	15.3	n/a	36.8
>20 MW	170	n/a	90	25%	42.5	n/a	22.5
Total Maximum Biomass Capacity Potential (MW)	**3472**	**1282**	**1217**		**648**	**342**	**329**

Co-firing with Coal (New York)

Co-firing technology generally refers to the use of biomass fuel as a supplemental fuel in an existing fossil fuel-based plant, such as a coal plant. Co-firing with coal requires modification of the fuel handling systems, and in some cases, the fuel injection systems, of existing coal plants to allow burning of biomass fuel in its existing boilers. Current technology allows co-firing of up to about 5% to 15% of output by biomass, subject to fuel availability. Generally, a co-firing coal plant does not suffer a significant efficiency loss, relative to stand-alone coal-fired operation, due to the small portion that is biomass. However, the heat rate (btu per kWh) associated with the biomass portion would be higher than the heat rate attributable to burning coal only.

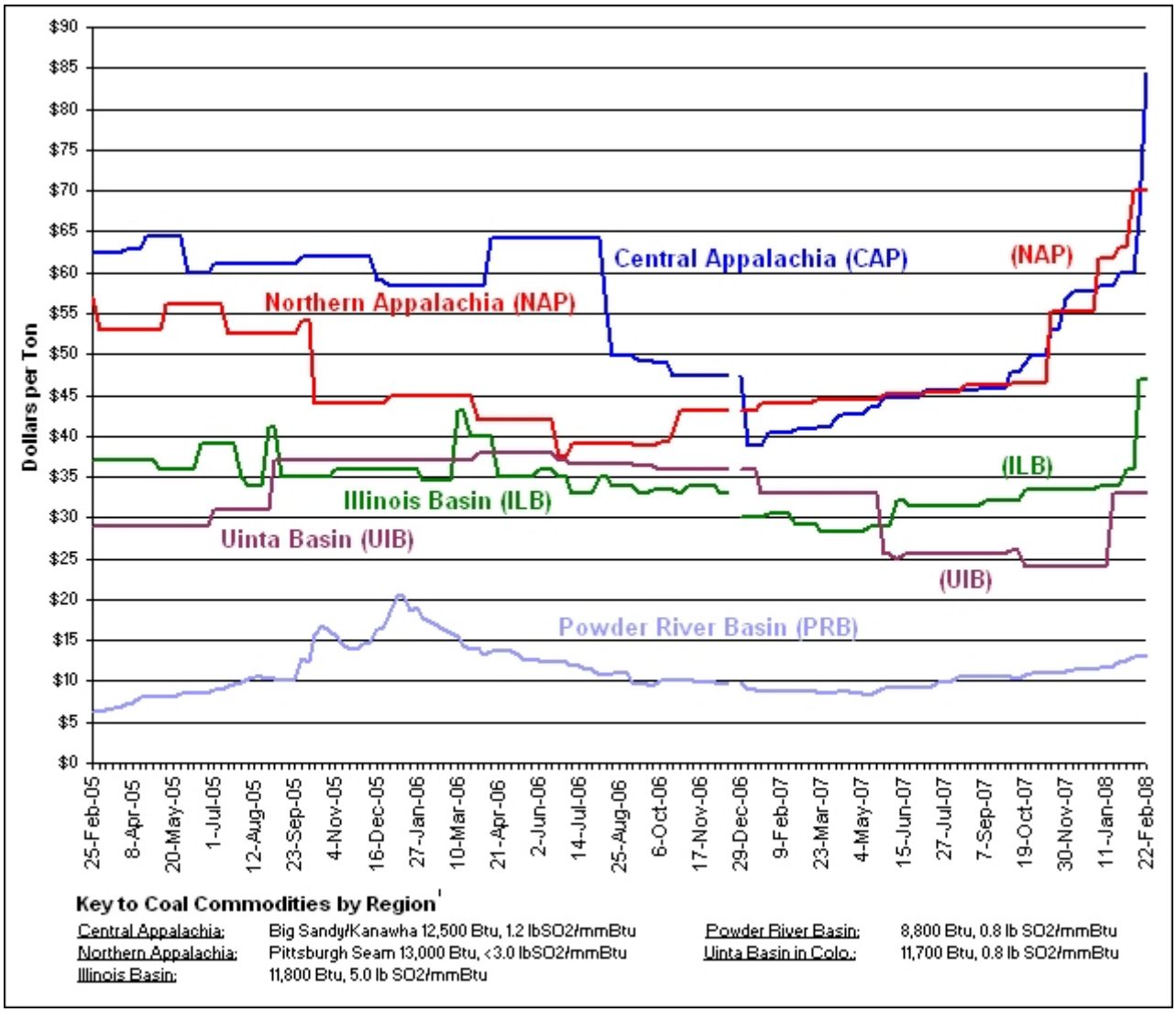
The renewable energy cost premium for cofiring represents the incremental cost of operating the plant, relative to coal-fired operation and offsets the cost of coal. The incremental cost is composed of the following components:

- Incremental capital costs – this is the cost of modifying the existing fuel handling and other systems in the coal plant to allow the plant to co-fire. These costs have increased significantly, similar to all capital costs, since the 2004 Study.
- Incremental O&M costs associated with co-firing – These are associated with additional handling costs for biomass and ash, as well as increased parasitic load. On the other hand, co-firing with biomass can also help generators reduce emissions allowance costs associated with SO_2, NO_x, and in the future, CO_2.
- Incremental cost of biomass fuel relative to coal – Biomass fuel prices are expected to increase significantly with increased demand for biomass in the region (>$3.50/mmbtu). The price of the coal, which would be displaced by biomass, has also risen substantially in the region. While the EIA reports the average cost of coal for New York generators was $2.40/mmbtu in 2007, the marginal cost of coal will likely be higher.[28] Based on the recent increases in the past year of 35% to 75% in Eastern coal prices (Central Appalachia, Northern Appalachia, and Illinois Basin), the marginal cost of displaced coal in New York will likely be higher than $2.40/mmbtu going forward. To be conservative, the avoided coal

[28] Based on EIA's 2007 estimated average delivered coal cost to electric generators of $2.40/mmbtu, Accessed February 25, 2008, <http://www.eia.doe.gov/cneaf/electricity/epm/table4_10_a.html>

cost is assumed to be 35% higher than 2007 levels, which would equal delivered coal costs of $3.25/mmbtu.

Figure 12: EIA Historical Coal Prices[29]



With these changes in fuel costs, co-firing remains one of the lower-cost biomass technology options considered in this analysis, though not the lowest cost. The premium required for co-firing is highly sensitive to forecasted coal prices and biomass costs and may be reduced if coal prices continue to increase in the future.

Quantity:

- The amount of cofiring is bounded by the megawatts of coal-fired generating capacity in New York. It was assumed that cofiring would be limited to those generators greater than 150 MW in capacity, which total approximately 2,200 MW. For the purpose of this analysis it was

[29] EIA Coal News and Markets. "Average Weekly Coal Commodity Spot Prices Business Week Ended February 22, 2008." Accessed February 25, 2008, <http://www.eia.doe.gov/cneaf/coal/page/coalnews/coalmar.html>

assumed that no new coal-fired plants would come on-line during the next decade. Each of these plants could co-fire at about 5% to 15% of its total heat input, but lower percentage of co-firing results in lower capital and operational costs. Therefore, it is assumed that coal plants would first choose co-firing at 5% or lower of heat input.

- Co-firing would not appreciably change the dispatch of the existing New York coal plants, which typically are utilized at annual capacity factors of 40 to 80 percent.

These assumptions indicate a potential of about 220 MW of cofiring output.

Co-Firing with Coal (PJM)

PJM co-firing potential for export to NY was changed to zero, assuming that such energy if available would stay in PJM to meet increasing RPS in PA, NJ, MD, and DE.

Co-Firing with Coal (Ontario)

Ontario is pursuing a plan to shut-down all of their coal-fired generation to help the province reduce CO_2 and meet Kyoto standards. This makes co-firing at coal plants an unlikely candidate for New York's RPS. The exact year of retiring most or all of the coal-fired generation in Ontario is still under review, but it will likely be in the near-term.

Combined Heat and Power (CHP)

Biomass CHP, a relatively mature technology, involves the production of heat and electricity from biomass fuel. Currently, the majority of CHP applications are at pulp and paper facilities. While the Main-Tier RPS does not support demand-side generation, CHP is included as a biomass technology option because excess electricity can be sold back into the wholesale market, although at a lower value than serving retail load.

In this analysis, CHP potential is expanded to include the potential conversion of existing CHP steam units that normally burn fossil fuels to use biomass fuels instead and it is assumed that such applications include coupling with gasification units. While the NYISO has over 4700 MW of units listed as cogenerators, most of these are combined-cycle units. It is assumed that only steam units in Megazone 1, which account for almost 400 MW, have the potential to accommodate biomass. For purposes of this analysis, it was assumed that no more than 25% of these may actually convert to using 100% biomass, which results in a potential of 96 MW.

The NYSERDA Technology Assessment was relied upon for new CHP potential. Because cost is sensitive to the size of the installation, two supply curve blocks were developed, for units 5-20 MW and >20 MW in size. These are found in Megazone 1 and 3, totaling almost 500 MW.

The cost of CHP installations can be greatly offset by its steam value, which results in displacing the use of natural gas at a cost of $8 per mmbtu. In the 2004 Report, CHP was seen as a more expensive option because of the small size of the applications and low conversion efficiencies. However, with higher natural gas prices, the net cost of electricity from CHP units, after accounting for steam value, may be lower than previous estimates. On the other hand, CHP developers would need to weigh the value of selling the electricity to retail load at retail rates against the value of the electricity on the wholesale market plus the value of the associated renewable attributes. For this analysis, it was assumed that 25% of this potential is developable.

Repowering/Retrofit with Fluidized-Bed Technology

In New England, several biomass projects have been developed or are being proposed at retired or existing steam units. This approach is much more cost-effective than a greenfield development of a biomass project. It is estimated that the total capacity of retired steam units in New York based on NYISO data to be about 623 MW. The capacity rating of the steam units was reduced by 50% after being retrofitted with a fluidized-bed to accommodate the biomass. There are 1920 MW of older steam units in New York that have smaller boilers (<150 MW) and have been in operation for 50 years or longer that may also serve as candidates for retrofitting. It was assumed that only half would consider a retrofit option. Of this 960 MW of steam units that may consider retrofitting with a fluidized-bed for handling biomass, the capacity rating is discounted by 50% once converted to using biomass. The total repowering potential is estimated to be about 790 MW.

Greenfield Potential for Biomass

As evidenced by recent proposals for biomass plants in the Northeast, many developers of greenfield projects are opting for new stoker technology. Stoker technology has been the traditional conversion technology most often found in existing biomass facilities. With recent advances, manufacturers are claiming better conversion efficiencies and lower capital costs relative to new fluidized-bed and biomass gasification technologies, while still being able to meet tough NO_x emission limits. Of the biomass technologies examined, greenfield biomass projects are the most costly sites to develop and, therefore, developers would choose the least cost technology option. If fluidized-bed or biomass gasification technology performance and cost improve in the future, they would only be selected if capital and operational costs are comparable to stoker technology.

VII.3. Hydroelectric

The major assumptions and costs results for hydropower resources are summarized in Table 20.

Table 20: Hydro Assumptions

Resource Block	Capacity Factor	Maximum MW in Block	Levelized Cost per MWH		Total Installed Cost (2007$/kW of rated max output)		Fixed O&M (2007$/kw-yr)	Variable O&M Costs (2007$/MWh)
			2009	2015	2009	2015		
Hydro Upgrades NY z1	46%	125	$40	$49	$1,900	$1,900	$22	$5
Hydro Upgrades NY z2	46%	23	$40	$49	$1,900	$1,900	$22	$5
Hydro Upgrades NY z3	46%	0	$40	$49	$1,900	$1,900	$22	$5
New Low-Impact Hydro NY z1	46%	34	$115	$136	$3,500	$3,500	$15	$4
New Low-Impact Hydro NY z2	46%	9	$115	$136	$3,500	$3,500	$15	$4
New Low-Impact Hydro NY z3	46%	0	$115	$136	$3,500	$3,500	$15	$4
Very Small New Hydro NY z1	29%	10	$241	$287	$4,600	$4,600	$24	$5
Very Small New Hydro NY z2	29%	3	$241	$287	$4,600	$4,600	$24	$5
Very Small New Hydro NY z3	29%	0	$241	$287	$4,600	$4,600	$24	$5
Hydro Upgrades Quebec	50%	100	$61	$70	$1,900	$1,900	$22	$5
Hydro Upgrades Ontario	67%	24	$46	$53	$1,900	$1,900	$22	$5
New Low-Impact Hydro Quebec	50%	100	$88	$102	$3,500	$3,500	$15	$4
New Low-Impact Hydro Ontario	67%	64	$66	$77	$3,500	$3,500	$15	$4

VII.3.A. Hydro in New York

As noted previously, the RPS being modeled treats as eligible two categories of hydroelectric resources: (i) *new* low-impact hydro, defined as new facilities of up to 30 MW, so long as they are run-of-river, with no new storage impoundment, and (ii) the incremental production associated with any upgrades to existing facilities so long as no new impoundments are created. The first category has been subdivided to carve out as a separate block very small hydro of less than 5 MW, because hydro cost is a strong function of size. The three blocks modeled for the supply curve were therefore defined as:

(1) *New Low-Impact Hydro (5-30 MW)*
(2) *Very Small New Hydro* (<= 5 MW) and
(3) *Hydro Upgrades*.

The same level of resource potential as developed for the 2004 Report was maintained for this analysis.

The capacity factors for hydro in New York State were updated to using EIA data for capacity and actual historical generation for New York hydro facilities. Hydroelectric generation capacity factors by independent power producers were used as a proxy for low impact hydro and hydro upgrades, while hydroelectric commercial generators were used as a proxy for very small generators.

NY Project Type	Capacity Factor
Very Small Hydro	28.5%
Low Impact Hydro	46%
Hydro Upgrades	46%

The Idaho National Laboratory (INL) created a database to estimate total installed cost and operating costs for individual new hydro facilities in the United States.[30] Using this database, the New York projects in this database were grouped by project size and type to calculate an average cost for each project size and type. Because of recent capital cost increases, the higher end of each group's capital costs was estimated as one standard deviation above the average cost.

The numbers from the INL database were in 2002 dollars. The calculated costs were escalated to 2007 dollars by using an escalation factor derived from the Handy-Whitman index for gas turbine construction costs from 2002 to 2007 as a proxy for increasing capital costs (about a 22% increase) to match other escalations in generator costs. The 2007$ cost estimates are provided in Table 21.

[30] The INL database can be found at http://hydropower.inel.gov/resourceassessment/d/ihred-29apr03.xls.

Table 21: Revised Hydro Cost Assumptions

	Very Small New Hydro (0-5 MW)	New Low Impact Hydro (5-30 MW)	Hydro Upgrades
Installed Cost ($/kW)			
Average	$3,579	$2,650	$1,664
Standard Deviation	$1,032	$878	$237
Modeled Cost	$4,600	$3,500	$1,900
Fixed O&M ($/kW-year)			
Average	$23.73	$15.49	$21.90
Standard Deviation	$2.91	$3.01	$3.83
Variable O&M ($/kWh)			
Average	$0.0053	$0.0037	$0.0049
Standard Deviation	$0.0005	$0.0055	$0.0007

Gas Turbine Construction Cost Indices from Handy-Whitman

2002 Index 424 2007 Index 518

VII.3.B. Hydro in Ontario

The Ontario Waterpower Association (OWA) estimated in August 2001 the incremental hydroelectric potential in Ontario to range from 1,000 to 2,000 MW (4,000 to 6,000 GWh/yr).[31] In 2007, Ontario Power Authority presented testimony on a plan to meet long-term renewables goals for the province. In this report, the hydroelectric development potential was outlined.[32] The OPA estimated that 256 MW of small hydroelectric projects and 96 MW of upgrades to hydroelectric projects could occur by 2015. It is assumed that 25% of this could possibly export to NY. The cost assumptions are similar to projects in New York of comparable size.

VII.3.C. Hydro in Quebec

The theoretical potential for small hydroelectric facilities in Quebec has been estimated to be 10,000 MW, of which 4,000 MW is located in the southern portion of the province within reasonable distance of the transmission grid. Since the 2004 Report, Hydro-Quebec has also completed or initiated construction of five new large-scale hydro projects expected to total almost 1950 MW by 2012. However, all are greater than 50 MW, which would render these units ineligible for New York's RPS. There is at least one other 1500 MW project being proposed, but this would not qualify for New York's RPS either.

Since the focus appears to be on developing new large-scale projects in Quebec, it is assumed that small hydro projects developed for export to New York will be few, with maximum potential of 100 MW. Likewise, the same assumption is made for incremental upgrades. Hydro from Canada is not expected to be available for the New York RPS until 2010 at the earliest. Cost assumptions are the same as those used for New York resources.

[31] See Ontario Wind Power Task Force: Industry Report and Recommendations, February 2002, page 73-74. The estimate excludes the potential of waterways in the northern most parts of Ontario that are remote from the grid.
[32] EB-2007-0707, Exhibit D <http://www.powerauthority.on.ca/Storage/53/4872_D-5-1_corrected_071019.pdf>

VII.4. Landfill Gas

The landfill gas potential was not revised from the 2004 Report. Total installed cost was also adjusted upward using the Handy-Whitman capital cost adjustment previously discussed in the hydropower section. In addition, in recognition of the potential alternative value of cleaned-up landfill methane as a substitute for natural gas, recent contracts have been structured to have a fixed cost and a variable cost component that is tied to fuel, so the operating costs was reallocated to reflect these two components. For the most part, landfill gas projects utilizing internal combustion engines are targeting New England to capture higher renewable energy certificate (REC) revenues. Therefore, these resources will not likely contribute significantly to New York's RPS. Nonetheless, these resources are modeled as contributing to the combined demands of New York and neighboring export markets.

Table 22 summarizes the assumptions and results for landfill gas generation.

Table 22: Landfill Gas Assumptions

Resource Block	Capacity Factor	Maximum MW in Block	Levelized Cost per MWH		Total Installed Cost (2007$/kW of rated max output)		Fixed O&M (2007$/kw-yr)	Variable O&M Costs (2007$/MWh)
			2009	2015	2009	2015		
Landfill Gas IC Engines NY z1	85%	88	$52	$61	$2,100	$2,100	$100	$12
Landfill Gas IC Engines NY z2	85%	26	$55	$65	$2,300	$2,300	$100	$12
Landfill Gas IC Engines NY z3	85%	3	$78	$92	$3,600	$3,600	$100	$12
Landfill Gas Microturbines NY z1	85%	3	$99	$117	$4,375	$4,375	$125	$15
Landfill Gas Microturbines NY z2	85%	1	$101	$119	$4,500	$4,500	$125	$15
Landfill Gas Microturbines NY z3	85%	0	$107	$126	$4,850	$4,850	$125	$15

VIII. Treatment of Imports

Renewable resources eligible to meet the RPS were not limited to generation located within New York. Out of state (and country) generation is assumed to be eligible, under conditions of *strict energy delivery*.[33] A strict energy delivery requirement will impose the cost of transmission wheeling (where applicable) and losses on the transaction, and in some cases other fees such as "uplift" charges. An hourly matching requirement will also expose the importer to basis differences between energy prices in the exporting and importing markets. Further, because of the requirement to schedule transmission between markets, intermittent resources which cannot be precisely controlled or forecasted are exposed to additional costs under an hourly matching requirement, either paying for transmission which is not used for transmitting renewable energy (e.g. during times when the wind does not blow), experiencing opportunity losses for renewable attributes not transferred (when production exceeds the schedule), or exposing themselves to commodity basis difference risk when importing more than a generator produces in an hour.

For this analysis, it was assumed that strict energy delivery would practically limit economic imports to one "wheel" away and impose an "export" cost associated with out-of-state resources.

[33] Per revised NY ruling on deliverability (CASE 03-E-0188), under strict energy delivery, attributes may only be imported via an energy import from a specific generator, with energy and attributes scheduled across the border into the sink region via a unit-contingent contract. The energy import must match the generator's production profile in real time, necessitating an hourly settlement.

Therefore, resources in Ontario, Quebec and PJM markets were reviewed as potential resources for the supply curve. Resources in New England were assumed to stay in New England because New England's aggressive RPS requirements and difficult siting environment are expected to make New England a net importer of renewable energy from New York, based on observation of current practices and SEA's proprietary analysis of the New England market.

Additionally, for projects located outside of New York, an adder of $4/MWh was included for the purpose of establishing a market "clearing" price and applied in the analysis for the purpose of resource selection only, but not for developing the marginal cost. The purpose of the adder is to reflect current NYSERDA RPS procurement criteria where the evaluation process includes a 70% weighting for price and a 30% weighting for local development benefit. Due to the local development criteria, projects outside of New York which do not source materials or labor extensively within New York would not be selected over a project located in New York with the same exact bid price.

VIII.1. Limits to Imported Quantities

With a requirement for strict energy delivery, under no circumstances could a greater amount of coincident renewable capacity be transmitted across an interface than the available transfer capacity of a transmission interface.[34] After reviewing transfer capability between New York and its neighbors, the maximum transmission constraints across each interface are determined to be as follows:

Table 23: Maximum Transmission Limits

Transmission Constraints	Max MW/Hr	Basis
Quebec --> NY	1500	total transfer capacity
Ontario --> NY	700/1000	total transfer capacity
PJM --> NY Z1	650	estimate of available transfer capacity
PJM --> NY Z2	100	Estimate of negligible available transfer capacity due to heavy competing uses
PJM --> NY Z3	0	Estimate of negligible available transfer capacity due to heavy competing uses

The constraints are the same as in the 2004 Report except for an update to the Ontario-New York interface. The interface rating is 1,300 MW out of Ontario in the summer and 1,950 MW out of Ontario in the winter. Based on a study by the Ontario IESO, internal constraints in New York can limit flows leaving Ontario to 700 MW and 1000 MW during the summer and winter periods, respectively.[35] This is lower than the previous estimate of 1250 MW of potential in the 2004 Report.

[34] Strictly speaking, offsetting flows could allow for greater imports, but the presence of such offsetting flows was viewed as insufficiently reliable to allow for project financing.
[35] "Ontario Transmission System," IESO_REP_0265v6, March 9, 2007, page 22.

VIII.2. Cost of Transmitting Out-of-State Renewables

In the assumed cost of power from each imported resource, the estimated cost to transmit power into New York is included. Major assumptions for each potential exporting region are as follows:

PJM. A renewable generator selling into New York would be able to sell to a load-serving entity in New York that would already have full network integration transmission service within New York. For the "export" cost adder for projects sited in PJM, an export cost model developed by SEA in 2006,[36] but updated with more recent historical data for energy prices for PJM/NYISO zones has been employed. Since capacity is not required to be delivered, the capacity prices are set to zero. RECs are assumed to be of equal value between PJM and NY, so there would be no opportunity loss of undelivered RECs. Since the 2004 Report, PJM, New York, and New England have agreed to do away with Point-to-Point service (wheeling charges) to the New York border. Therefore, the remaining cost components are: congestion cost from generator bus (PJM-West) to NY border (NYIS) and commodity opportunity loss/(gain) between generator bus (PJM-West) and NYISO market. The final calculated cost adder is estimated to be $4.00/MWh.

Ontario. In the 2004 Report, the modeled Ontario transmission cost was comprised of three components: (1) Export Cost of C$1 per MWh, (2) Financial Transmission Rights (FTR), and (3) Uplift Charges. The data used previously was from 2003. The historical FTR auction results were about C$2333 to C$4000 per MW-year and the uplift charge averaged C$4.40 per MWh. The total estimated transmission cost ranged from US$8-US$12/MWh.

Exports of electricity from Ontario to New York will be subject to the terms and condition of Rate Schedule ETS-Export Transmission Service. Under this schedule, exporters are billed by Ontario's Independent Electricity Market Operator (IMO) a rate for each MWh of energy scheduled for export.[37] The currently effective rate for this service is $1.00 per MWh. Thus, to the extent an exporter delivers less energy than was originally scheduled in an hour, the effective rate per MWh of delivered renewable energy will exceed the tariffed rate.

For the purposes of this Report, the most recent FTR results and uplift charges (2006-2007) were used. The most recent FTR auctions for annual rights resulted in C$6800 to C$9000 per MW-year. For this analysis, the higher auction result was used for an annual FTR to account for future price risk, but also assumed that costs may be mitigated by purchasing from monthly Transmission Rights Auctions (TRAs) that may more closely align with expected generation. Since there is significant volatility associated with the hourly uplift charge historically, the average uplift charge in 2006 and 2007 plus one standard deviation, totaling C$4.00/MWh, was used to account for risk.

Additionally, there is some LMP differential between areas where wind projects are located and the Ontario/Niagara border. The average historical differentials range from negative C$2.00 to positive C$2.00 per MWh, depending on the zone. Projects located in the Northeast and Northwest zones are not included because their LMP differentials may be as high as negative C$10 and negative C$40/MWh respectively. Since the current exchange rate between the Canadian dollar and U.S. dollar is almost equal to 1.0, the Canadian dollar was assumed as equal to the U.S. dollar for this

[36] Unit_Cont_Import_Model(Wind-ICAP-Derate).xls from 2006 Import Cost Study for NYSERDA (by SEA)
[37] The IMO is responsible for collecting transmission service charges from participants in the IMO-administered electricity market and distributing the revenues to the transmission system owners.

analysis. In general, the assumption for wind export cost is rounded to US$10 per MWh and hydro export cost is rounded to US$9 per MWh.

Table 24: Transmission Cost for Ontario Export

Ontario	Cost	Units	Wind @ 30% CF ($/MWh)	Hydro @ 50% CF ($/MWh)
Export Charge	$1.00	C$/MWh	$1.00	$1.00
Uplift Charge	$4.00	C$/MWh	$4.00	$4.00
TRA Results	$9,000.00	C$/MW-year	$3.42	$2.05
Intra-Ontario LMP Differential	$2.00	C$/MWh	$2.00	$2.00
	Total Export Cost (C$/MWh)		$10.42	$9.05

Quebec. In the original 2004 Report, export costs from Quebec were estimated to range from $6 to $8 per MWh. These are likely too low going forward given the need for hourly matching and the recent increase in exchange rates between Canada and the U.S. There are several components of transmission costs that may need to be accounted for: transmission service charge for point-to-point delivery, ancillary services, system upgrade costs, and imbalance charges. In addition, an additional system integration adder for wind projects, which was used in Hydro Quebec's last RFP (A/O 2005-03) to approximate generic system upgrade costs associated with adding 500 MW of generation in different zones in Quebec, was also included. The cost adders ranged between C$0/kW/year to C$74.20/kW/year for different zones in Quebec. Most zones range between C$9.50/kW/year to C$15.00/kW/year in 2008$. It was assumed that projects for export would more likely locate in these areas and face a reinforcement cost of C$14.00/kW/year.

The mechanism by which Hydro Quebec's power marketing affiliate, or a developer, chooses to deliver energy into New York may result in very different costs. The most cost-effective option would be Hydro Quebec's power marketing group "firming" up exports with hydroelectric or system power.[38] This means only the transmission service attributable to the wind project's output would be allocated to the wind import; the complementary energy import would bear its share of total transmission service costs. However, since the LMP along the border between HQ and NY-Zone D has historically resulted in a slightly higher average LMP of about $1/MWh in HQ vs. NY-Zone D, the exported non-wind portion would see a slight loss in revenue. This lost revenue would need to be made up by the wind sale portion. The resulting export cost is estimated to be US$13 to US$17 per MWh.

[38] Other options where the owner of the project, that is not HQ, schedules and delivers energy themselves may face significant Firm Transmission Service and imbalance charges.

Table 25: Transmission Cost for Quebec Export

Quebec	Cost	Units	Wind @ 30% CF ($/MWh)	Hydro @ 50% CF ($/MWh)
Non-Firm Service (daily)	$0.19	C$/kW/day	$7.92	$7.92
Ancillary Service (annual)	$0.74	C$/kW/year	$0.28	$0.17
Reinforcement Adder	$14.00	C$/kW/year	$5.33	$3.20
LMP Differential (HQ-NY)	$1.00	US$/kW/year	$3.51	$2.11
	Total Non-Firm Export Cost w/o Imbalance (C$/MWh)		$17.03	$13.39

IX. Limitations of this Study: Key Uncertainties and Risks

The estimates of future costs for renewable energy in New York were developed with assumptions based on today's market environment. However, there are many uncertainties in the future that can potentially change the cost estimates dramatically. Key risks and uncertainties are discussed in this section in rough order of the magnitude of their potential impact on the results; it is beyond the scope of this analysis, and highly speculative, to place a probability on each risk.

Federal Product Tax Credit Expiration or Modification. The biggest risk in this analysis is the extension of the production tax credit (PTC). The PTC is set to expire at the end of 2008; projects not yet reaching commercial operation prior to expiration would be unable to qualify for this substantial tax benefit. Throughout this analysis, it was assumed that the PTC would be extended in its current eligibility and form through the end of the RPS period. Since the face value of the PTC to developers is $10 to $20 per MWh for 10-years[39], escalating with inflation, it will significantly shift the cost of renewable projects, especially wind, which currently gets the full ($20/MWh in 2008) PTC benefits. Wind is also anticipated to be the largest contributor to the New York RPS. If the PTC does not get extended, this may translate to a minimum of an additional $20/MWh in costs to the RPS, which would effectively double the costs estimated. As a result, if the PTC does not get extended, it would be appropriate to update the entire analysis in order to reset RPS collections which were based on this analysis.

Other Key Assumptions. As described earlier in this report, the following assumptions are middle-of-the road, and so are crafted with the intent of having roughly equal probability of being higher or lower. The repercussions of movements in each are discussed briefly below.

- **Capital costs.** Capital cost assumptions are critical drivers to the analysis, particularly for non-fuel resources such as wind and hydropower. If capital costs exceed the projects detailed in this report, the clearing prices would likely exceed those forecast in this report; while capital cost decreases would lower clearing prices below the forecast. Exchange rates play an important part in capital costs, since many components to renewable energy generators are today manufactured overseas. An increase in the value of the source

[39] After consideration of the effect on revenue requirement, this translates to roughly $15-30/MWh over 10 years in bid price impact.

country's currency relative to the dollar would increase capital cost, while a strengthening of the dollar would tend to have the opposite effect.

- **Market energy/ capacity price forecast.** The revenue available to renewable generators in New York's commodity electricity markets dictates the additional revenue required to meet financial hurdles. As a result, if energy or capacity prices rise, the expected renewable energy premium will decrease, while drops in energy or capacity market prices below the forecast used in this analysis will cause clearing prices to increase above those projected.

- **Export levels.** The quantity of exports from New York generators is based on the assumptions that New England REC prices are higher, and that PJM REC prices are similar to those prevailing in NY. As a result, this Report presumes a level of exports that can reliably be moved over the interties to New England with a high probability of successfully settling in the NEPOOL market. If exports increased, either due to higher utilization of the New England ties, expansion of the New England ties, or high prices in PJM, then clearing prices would likely exceed those forecast here. Conversely, if this Report's assumptions have overstated the degree of exports, it may also overstate clearing prices.

- **Wind Capacity Factor, Availability, and Ability to Develop Windiest Land.** This Report is based on assumptions of the wind regime at various locations throughout the state, project performance, and the likelihood of permitting projects in various windy locations. To the extent that actual wind power performance results in less generation (MWh) per unit of installed capacity (MW) (e.g. lower capacity factors) for any of these reasons, then clearing prices would be expected to rise. There also may be issues associated with the location of certain wind projects that may face congestion in the future, which have not been captured in this analysis. If so, these projects may require higher premiums.

- **Biomass fuel costs.** If biomass fuel costs exceed the levels assumed herein, then clearing prices may rise somewhat in some years (biomass plays a modest role and therefore will not have as pervasive effect on results as drivers of wind costs).

- **Success of Energy Efficiency** In the event that the state is unable to reduce load sufficiently to meet the 15x15 load reduction goals, RPS MWh targets would increase in order to meet whichever percentage goal is applicable, which would increase both the clearing prices and the volumes purchased

- **Other Factors**. Some secondary factors that can also impact the analysis are:
  - Assumptions related to finance costs and hedging premiums. If either exceed the level projected in this analysis, clearing prices would tend to increase. In addition, it is assumed that generic financing costs of capital and terms for each resource type. In practice, there are a variety of financing structures and associated costs, which in practice cause project revenue needs to vary around industry averages. This factor will inevitably cause some uncertainty in actual price bids to NYSERDA Main Tier solicitations.
  - The supply curve includes resources such as hydro upgrades and certain biomass projects that may be able to meet a portion of the RPS demand at a low cost. To date, supply from these sources has been limited in quantity, relative to wind power.

Whether these projects can come to fruition is unclear at this time. If development of lower-cost resources lags the projections herein, then clearing prices will tend to rise;

- Lastly, wind projects may face additional integration, curtailment, forecasting and network upgrade costs in the future, beyond those provided for and described in this Report. Any additional costs allocated to wind generators as a result of these factors would increase cost over those projected in this Report.

Appendix: Detailed Summary Sheets

25% New Load Case

Summary of Cummulative Cleared MW by Year, Zone and Resource Type

Main Tier Program Component

Resource	Zone	2010	2011	2012	2013
Biomass	1	19.3	38.5	67.5	109.9
Biomass Total		19.3	38.5	67.5	109.9
Hydro	1	25.0	50.0	74.9	99.9
	2	4.6	9.2	13.7	18.3
	3	0.0	0.0	0.1	0.1
	ON	17.6	35.2	52.8	70.4
	QC	20.0	40.0	60.0	80.0
Hydro Total		67.2	134.4	201.5	268.7
Landfill Gas	1	17.6	35.3	52.9	70.5
	2	5.1	10.3	15.4	20.6
	3	0.7	1.3	2.0	2.7
Landfill Gas Total		23.4	46.9	70.3	93.8
Wind (Offshore) Total		-	-	-	-
Wind (Onshore)	1	320.0	647.0	953.6	1,251.1
	2	33.6	67.2	100.8	134.3
Wind (Onshore) Total		353.6	714.1	1,054.4	1,385.5
Grand Total		**463.5**	**933.9**	**1,393.7**	**1,857.9**

Summary of Cummulative Cleared GWh by Year, Zone and Resource Type

Resource	Zone	2010	2011	2012	2013
Biomass	1	134.9	269.8	473.0	770.4
Biomass Total		134.9	269.8	473.0	770.4
Hydro	1	100.7	201.3	302.0	402.6
	2	18.5	36.9	55.4	73.8
	3	0.1	0.1	0.2	0.3
	ON	103.3	206.6	309.9	413.2
	QC	87.6	175.2	262.8	350.4
Hydro Total		310.1	620.2	930.2	1,240.3
Landfill Gas	1	131.3	262.5	393.8	525.1
	2	38.3	76.6	114.9	153.3
	3	5.0	9.9	14.9	19.9
Landfill Gas Total		174.6	349.1	523.7	698.2
Wind (Offshore) Total		-	-	-	-
Wind (Onshore)	1	939.7	1,899.4	2,800.5	3,675.1
	2	90.6	181.2	271.9	362.5
Wind (Onshore) Total		1,030.3	2,080.7	3,072.3	4,037.6
Grand Total		**1,649.8**	**3,319.7**	**4,999.2**	**6,746.6**

25% Post-EPS Load Case

Summary of Cummulative Cleared MW by Year, Zone and Resource Type

Main Tier Program Component

Resource	Zone	2010	2011
Biomass	1	19.3	38.5
Biomass Total		19.3	38.5
Hydro	1	25.0	50.0
	2	4.6	9.2
	3	0.0	0.0
	ON	17.6	35.2
	QC	20.0	40.0
Hydro Total		67.2	134.4
Landfill Gas	1	17.6	35.3
	2	5.1	10.3
	3	0.7	1.3
Landfill Gas Total		23.4	46.9
Wind (Offshore) Total		-	-
Wind (Onshore)	1	100.4	186.4
	2	33.6	67.2
Wind (Onshore) Total		134.0	253.6
Grand Total		**243.9**	**473.4**

Summary of Cummulative Cleared GWh by Year, Zone and Resource Type

Resource	Zone	2010	2011
Biomass	1	134.9	269.8
Biomass Total		134.9	269.8
Hydro	1	100.7	201.3
	2	18.5	36.9
	3	0.1	0.1
	ON	103.3	206.6
	QC	87.6	175.2
Hydro Total		310.1	620.2
Landfill Gas	1	131.3	262.5
	2	38.3	76.6
	3	5.0	9.9
Landfill Gas Total		174.6	349.1
Wind (Offshore) Total		-	-
Wind (Onshore)	1	304.9	568.1
	2	90.6	181.2
Wind (Onshore) Total		395.5	749.4
Grand Total		**1,015.1**	**1,988.5**

30% Post-EPS Load Case

Summary of Cummulative Cleared MW by Year, Zone and Resource Type

Main Tier Program Component

Resource	Zone	2010	2011	2012	2013	2014	2015
Biomass	1	19.3	38.5	57.8	77.0	163.2	235.0
Biomass Total		19.3	38.5	57.8	77.0	163.2	235.0
Hydro	1	25.0	50.0	74.9	99.9	99.9	99.9
	2	4.6	9.2	13.7	18.3	18.3	18.3
	3	0.0	0.0	0.0	0.0	0.1	0.1
	ON	17.6	35.2	52.8	70.4	88.0	88.0
	QC	20.0	40.0	60.0	80.0	100.0	100.0
Hydro Total		67.2	134.4	201.5	268.7	306.3	306.3
Landfill Gas	1	17.6	35.3	52.9	70.5	70.5	70.5
	2	5.1	10.3	15.4	20.6	21.5	21.5
	3	0.7	1.3	2.0	2.7	2.7	2.7
Landfill Gas Total		23.4	46.9	70.3	93.8	94.6	94.6
Wind (Offshore) Total		-	-	-	-	-	-
Wind (Onshore)	1	294.6	634.9	920.1	1,201.5	1,257.5	1,324.0
	2	33.6	67.2	100.8	134.3	134.3	258.1
	3	-	-	-	-	10.0	10.0
Wind (Onshore) Total		328.2	702.1	1,020.9	1,335.8	1,401.8	1,592.1
Grand Total		**438.1**	**921.8**	**1,350.5**	**1,775.3**	**1,966.0**	**2,228.1**

Summary of Cummulative Cleared GWh by Year, Zone and Resource Type

Resource	Zone	2010	2011	2012	2013	2014	2015
Biomass	1	134.9	269.8	404.7	539.6	1,135.6	1,576.1
Biomass Total		134.9	269.8	404.7	539.6	1,135.6	1,576.1
Hydro	1	100.7	201.3	302.0	402.6	402.6	402.6
	2	18.5	36.9	55.4	73.8	73.8	73.8
	3	0.1	0.1	0.1	0.1	0.3	0.3
	ON	103.3	206.6	309.9	413.2	516.5	516.5
	QC	87.6	175.2	262.8	350.4	438.0	438.0
Hydro Total		310.1	620.2	930.2	1,240.2	1,431.3	1,431.3
Landfill Gas	1	131.3	262.5	393.8	525.1	525.1	525.1
	2	38.3	76.6	114.9	153.3	159.7	159.7
	3	5.0	9.9	14.9	19.9	19.9	19.9
Landfill Gas Total		174.6	349.1	523.7	698.2	704.7	704.7
Wind (Offshore) Total		-	-	-	-	-	-
Wind (Onshore)	1	866.2	1,864.5	2,703.6	3,531.6	3,693.4	3,883.5
	2	90.6	181.2	271.9	362.5	362.5	684.0
	3	-	-	-	-	28.9	28.9
Wind (Onshore) Total		956.9	2,045.7	2,975.5	3,894.1	4,084.8	4,596.5
Grand Total		**1,576.4**	**3,284.8**	**4,834.1**	**6,372.1**	**7,356.4**	**8,308.6**

Attachment 3

TOTAL COLLECTIONS BY UTILITY
(one page)

Total Collections by Utility

25% Reference

Utility	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
CHG&E	$6,714,046	$6,951,809	$8,152,379	$9,649,583	$8,360,458	$8,278,445	$7,236,797	$7,201,066	$5,826,314	$5,201,539	$4,053,669	$2,877,490	$1,497,244
CONED	57,734,709	60,459,119	71,538,832	85,317,608	74,480,663	74,248,960	64,906,474	64,585,999	52,255,920	46,652,347	36,357,153	25,808,063	13,428,706
NYSEG	33,155,843	34,237,899	40,039,618	47,249,050	40,801,143	40,285,466	35,216,487	35,042,606	28,352,641	25,312,294	19,726,402	14,002,753	7,286,051
NIMO	17,580,823	18,080,774	21,070,816	24,764,886	21,301,627	20,923,259	18,290,559	18,200,249	14,725,649	13,146,570	10,245,398	7,272,678	3,784,192
O&R	5,015,190	5,154,553	6,064,046	7,205,020	6,270,409	6,236,635	5,451,901	5,424,983	4,389,302	3,918,623	3,053,865	2,167,781	1,127,961
RG&E	8,645,148	8,871,755	10,317,012	12,101,912	10,389,812	10,186,978	8,905,187	8,861,217	7,169,527	6,400,715	4,988,212	3,540,874	1,842,422
Total	$128,845,759	$133,755,908	$157,182,703	$186,288,060	$161,604,112	$160,159,744	$140,007,404	$139,316,119	$112,719,354	$100,632,089	$78,424,699	$55,669,638	$28,966,576

25% Post-EEPS

Utility	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
CHG&E	$5,251,929	$4,908,953	$4,372,272	$4,374,184	$4,277,198	$4,111,136	$3,142,702	$3,101,044	$1,726,821	$1,102,607	$572,324
CONED	45,161,825	42,692,621	38,367,600	38,674,721	38,104,195	36,872,572	28,186,735	27,813,109	15,487,775	9,889,230	5,133,146
NYSEG	25,935,497	24,176,760	21,473,989	21,418,133	20,873,803	20,006,055	15,293,355	15,090,636	8,403,245	5,365,627	2,785,106
NIMO	13,752,248	12,767,563	11,300,669	11,225,995	10,897,880	10,390,642	7,942,985	7,837,697	4,364,435	2,786,772	1,446,514
O&R	3,923,033	3,639,837	3,252,260	3,266,057	3,207,932	3,097,158	2,367,580	2,336,197	1,300,915	830,658	431,165
RG&E	6,762,495	6,264,703	5,533,204	5,485,832	5,315,412	5,058,927	3,867,228	3,815,966	2,124,927	1,356,805	704,269
Total	$100,787,025	$94,450,437	$84,299,994	$84,444,922	$82,676,420	$79,536,491	$60,800,585	$59,994,651	$33,408,119	$21,331,701	$11,072,524

30% Post-EEPS

Utility	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
CHG&E	$6,821,130	$6,978,600	$7,779,354	$8,629,229	$9,871,055	$11,361,131	$9,503,944	$9,467,972	$8,099,775	$7,369,095	$6,268,610	$5,018,954	$4,041,274	$3,167,415	$1,668,715
CONED	58,655,536	60,692,118	68,265,459	76,296,067	87,938,091	101,897,418	85,240,400	84,917,766	72,646,482	66,093,043	56,222,854	45,014,746	36,245,989	28,408,384	14,966,619
NYSEG	33,684,655	34,369,845	38,207,542	42,252,904	48,173,237	55,286,767	46,249,122	46,074,069	39,416,005	35,860,287	30,504,991	24,423,777	19,666,087	15,413,616	8,120,480
NIMO	17,861,224	18,150,454	20,106,687	22,146,231	25,150,480	28,714,558	24,020,632	23,929,714	20,471,683	18,624,932	15,843,526	12,685,096	10,214,072	8,005,445	4,217,573
O&R	5,095,179	5,174,417	5,786,576	6,443,157	7,403,368	8,559,003	7,159,875	7,132,775	6,102,033	5,551,569	4,722,510	3,781,071	3,044,528	2,386,198	1,257,140
RG&E	8,783,032	8,905,945	9,844,941	10,822,248	12,267,079	13,980,355	11,695,007	11,650,742	9,967,118	9,067,984	7,713,791	6,176,036	4,972,960	3,897,638	2,053,424
Total	$130,900,756	$134,271,380	$149,990,558	$166,589,836	$190,803,310	$219,799,231	$183,868,981	$183,173,038	$156,703,097	$142,566,911	$121,276,282	$97,099,679	$78,184,910	$61,278,697	$32,283,951

Attachment 4

BUDGET SENSITIVITIES
(3 pages)

25% New Load Case: Budget														
(all nominal dollars)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Main Tier Budget														
Contract Cost (2006 Increment)	$ 17,351,068	$ 17,351,068	$ 17,351,068	$ 17,351,068	$ 17,351,068	$ 17,351,068								
Contract Cost (2008 Increment)	$ 26,625,448	$ 26,625,448	$ 26,625,448	$ 26,625,448	$ 26,625,448	$ 26,625,448	$ 26,625,448	$ 26,625,448						
Contract Cost (2009 Increment)	$ 12,117,669	$ 12,117,669	$ 12,117,669	$ 12,117,669	$ 12,117,669	$ 12,117,669	$ 12,117,669	$ 12,117,669	$ 12,117,669					
Contract Cost (2010 Increment)	$22,239,617	$22,239,617	$22,239,617	$22,239,617	$22,239,617	$22,239,617	$22,239,617	$22,239,617	$22,239,617	$22,239,617				
Contract Cost (2011 Increment)		$22,789,222	$22,789,222	$22,789,222	$22,789,222	$22,789,222	$22,789,222	$22,789,222	$22,789,222	$22,789,222	$22,789,222			
Contract Cost (2012 Increment)			$26,739,273	$26,739,273	$26,739,273	$26,739,273	$26,739,273	$26,739,273	$26,739,273	$26,739,273	$26,739,273	$26,739,273		
Contract Cost (2013 Increment)				$28,326,850	$28,326,850	$28,326,850	$28,326,850	$28,326,850	$28,326,850	$28,326,850	$28,326,850	$28,326,850	$28,326,850	
Subtotal Premium Cost (RPS Main Tier)	$ 78,333,802	$ 101,123,024	$ 127,862,297	$ 156,189,147	$ 156,189,147	$ 156,189,147	$ 138,838,080	$ 138,838,080	$ 112,212,632	$ 100,094,963	$ 77,855,346	$ 55,066,124	$ 28,326,850	
Anearobic Digester	$ 10,237,018	$ 5,591,865	$ 5,110,486	$ 5,254,919										
Small Wind	$ 648,560	$ 713,416	$ 706,282	$ 776,910										
PV	$ 24,110,285	$ 10,513,316	$ 9,608,270	$ 9,879,820										
Fuel Cell (Small)	$ 750,000	$ 761,834	$ 696,251	$ 715,929										
Fuel Cell(Large)	$ 4,000,000	$ 4,921,451	$ 4,497,784	$ 4,624,901										
Discretionary	$ 1,500,000	$ 1,500,000	$ 500,000	$ 500,000										
M&E Costs	$ 2,003,083	$ 1,245,034	$ 1,140,026	$ 1,174,272										
Subtotal Annual Base CST Costs	$ 43,248,946	$ 25,246,916	$ 22,259,099	$ 22,926,751										
Total Annual Main Tier & CST Costs	$ 121,582,748	$ 126,369,940	$ 150,121,396	$ 179,115,898	$ 156,189,147	$ 156,189,147	$ 138,838,080	$ 138,838,080	$ 112,212,632	$ 100,094,963	$ 77,855,346	$ 55,066,124	$ 28,326,850	
Maintenance Tier	4,124,798	4,124,798	4,124,798	4,124,798	3,480,439	1,920,000	480,000							
Collections Needed to Support Generation	$ 125,707,546	$ 130,494,738	$ 154,246,194	$ 183,240,696	$ 159,669,586	$ 158,109,147	$ 139,318,080	$ 138,838,080	$ 112,212,632	$ 100,094,963	$ 77,855,346	$ 55,066,124	$ 28,326,850	
Administrative Costs	$ 3,138,213	$ 3,261,170	$ 2,936,508	$ 3,047,363	$ 1,934,526	$ 2,050,597	$ 689,324	$ 478,040	$ 506,722	$ 537,126	$ 569,353	$ 603,514	$ 639,725	
Total Collections to Satisfy Program	$ 128,845,759	$ 133,755,908	$ 157,182,703	$ 186,288,060	$ 161,604,112	$ 160,159,744	$ 140,007,404	$ 139,316,119	$ 112,719,354	$ 100,632,089	$ 78,424,699	$ 55,669,638	$ 28,966,576	

25% Post EPS Case: Budget											
(all nominal dollars)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Main Tier Budget											
Contract Cost (2006 Increment)	$ 17,351,068	$ 17,351,068	$ 17,351,068	$ 17,351,068	$ 17,351,068	$ 17,351,068					
Contract Cost (2008 Increment)	$ 26,625,448	$ 26,625,448	$ 26,625,448	$ 26,625,448	$ 26,625,448	$ 26,625,448	$ 26,625,448	$ 26,625,448			
Contract Cost (2009 Increment)	$ 12,117,669	$ 12,117,669	$ 12,117,669	$ 12,117,669	$ 12,117,669	$ 12,117,669	$ 12,117,669	$ 12,117,669	$ 12,117,669		
Contract Cost (2010 Increment)	$10,302,902	$10,302,902	$10,302,902	$10,302,902	$10,302,902	$10,302,902	$10,302,902	$10,302,902	$10,302,902	$10,302,902	
Contract Cost (2011 Increment)		$10,300,041	$10,300,041	$10,300,041	$10,300,041	$10,300,041	$10,300,041	$10,300,041	$10,300,041	$10,300,041	$10,300,041
Subtotal Premium Cost (RPS Main Tier)	$ 66,397,087	$ 76,697,128	$ 76,697,128	$ 76,697,128	$ 76,697,128	$ 76,697,128	$ 59,346,060	$ 59,346,060	$ 32,720,612	$ 20,602,943	$ 10,300,041
Customer Sited Tier Budget											
Incremental to Operating Plan											
Anearobic Digester	$ 7,274,638	$ 2,273,637									
Small Wind	$ 648,560	$ 713,416									
PV	$ 13,677,112	$ 4,274,686									
Fuel Cell (Small)	$ 750,000	$ 309,760									
Fuel Cell(Large)	$ 4,000,000	$ 2,001,049									
Discretionary	$ 500,000	$ 500,000									
M&E Costs	$ 1,423,473	$ 523,161									
Subtotal Annual Base CST Costs	$ 26,850,310	$ 10,072,548									
Total Annual Main Tier & CST Costs	$ 93,247,397	$ 86,769,675	$ 76,697,128	$ 76,697,128	$ 76,697,128	$ 76,697,128	$ 59,346,060	$ 59,346,060	$ 32,720,612	$ 20,602,943	$ 10,300,041
Maintenance Tier	4,124,798	4,124,798	4,124,798	4,124,798	3,480,439	1,920,000	480,000				
Collections Needed to Support Generation	$ 97,372,195	$ 90,894,473	$ 80,821,926	$ 80,821,926	$ 80,177,567	$ 78,617,128	$ 59,826,060	$ 59,346,060	$ 32,720,612	$ 20,602,943	$ 10,300,041
Administrative Costs	$ 3,414,830	$ 3,555,964	$ 3,478,068	$ 3,622,996	$ 2,498,853	$ 919,363	$ 974,525	$ 648,591	$ 687,507	$ 728,757	$ 772,483
Total Collections to Satisfy Program	$ 100,787,025	$ 94,450,437	$ 84,299,994	$ 84,444,922	$ 82,676,420	$ 79,536,491	$ 60,800,585	$ 59,994,651	$ 33,408,119	$ 21,331,701	$ 11,072,524

30% Post EPS Case: Budget																	
(all nominal dollars)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Main Tier Budget															
Contract Cost (2006 Increment)	$ 17,351,068	$ 17,351,068	$ 17,351,068	$ 17,351,068	$ 17,351,068	$ 17,351,068									
Contract Cost (2008 Increment)	$ 26,625,448	$ 26,625,448	$ 26,625,448	$ 26,625,448	$ 26,625,448	$ 26,625,448	$ 26,625,448	$ 26,625,448							
Contract Cost (2009 Increment)	$ 12,117,669	$ 12,117,669	$ 12,117,669	$ 12,117,669	$ 12,117,669	$ 12,117,669	$ 12,117,669	$ 12,117,669	$ 12,117,669						
Contract Cost (2010 Increment)	$ 21,334,354	$ 21,334,354	$ 21,334,354	$ 21,334,354	$ 21,334,354	$ 21,334,354	$ 21,334,354	$ 21,334,354	$ 21,334,354	$ 21,334,354					
Contract Cost (2011 Increment)		$ 24,222,952	$ 24,222,952	$ 24,222,952	$ 24,222,952	$ 24,222,952	$ 24,222,952	$ 24,222,952	$ 24,222,952	$ 24,222,952	$ 24,222,952				
Contract Cost (2012 Increment)			$ 18,963,899	$ 18,963,899	$ 18,963,899	$ 18,963,899	$ 18,963,899	$ 18,963,899	$ 18,963,899	$ 18,963,899	$ 18,963,899	$ 18,963,899			
Contract Cost (2013 Increment)				$ 16,958,291	$ 16,958,291	$ 16,958,291	$ 16,958,291	$ 16,958,291	$ 16,958,291	$ 16,958,291	$ 16,958,291	$ 16,958,291	$ 16,958,291		
Contract Cost (2014 Increment)					$ 29,049,948	$ 29,049,948	$ 29,049,948	$ 29,049,948	$ 29,049,948	$ 29,049,948	$ 29,049,948	$ 29,049,948	$ 29,049,948	$ 29,049,948	
Contract Cost (2015 Increment)						$ 31,308,709	$ 31,308,709	$ 31,308,709	$ 31,308,709	$ 31,308,709	$ 31,308,709	$ 31,308,709	$ 31,308,709	$ 31,308,709	$ 31,308,709
Subtotal Premium Cost (RPS Main Tier)	$ 77,428,538	$ 101,651,490	$ 120,615,389	$ 137,573,680	$ 166,623,628	$ 197,932,338	$ 180,581,270	$ 180,581,270	$ 153,955,822	$ 141,838,153	$ 120,503,800	$ 96,280,847	$ 77,316,948	$ 60,358,657	$ 31,308,709
Customer Sited Tier Budget															
Incremental to Operating Plan															
Anearobic Digester	$ 10,237,018	$ 5,517,050	$ 4,749,087	$ 4,608,738	$ 4,086,432	$ 3,845,509									
Small Wind	$ 648,560	$ 713,416	$ 706,282	$ 776,910	$ 854,601	$ 940,061									
PV	$ 26,715,765	$ 10,372,656	$ 8,928,801	$ 8,664,931	$ 7,682,938	$ 7,229,976									
Fuel Cell (Small)	$ 750,000	$ 751,642	$ 647,015	$ 627,894	$ 556,735	$ 523,911									
Fuel Cell(Large)	$ 4,000,000	$ 4,855,606	$ 4,179,714	$ 4,056,192	$ 3,596,506	$ 3,384,467									
Discretionary	$ 1,500,000	$ 1,500,000	$ 1,500,000	$ 1,500,000	$ 500,000	$ 500,000									
M&E Costs	$ 2,081,247	$ 1,228,758	$ 1,061,404	$ 1,033,697	$ 923,178	$ 874,184									
Subtotal Annual Base CST Costs	$ 45,932,590	$ 24,939,128	$ 21,772,303	$ 21,268,362	$ 18,200,390	$ 17,298,109									
Total Annual Main Tier & CST Costs	$ 123,361,128	$ 126,590,618	$ 142,387,692	$ 158,842,042	$ 184,824,018	$ 215,230,446	$ 180,581,270	$ 180,581,270	$ 153,955,822	$ 141,838,153	$ 120,503,800	$ 96,280,847	$ 77,316,948	$ 60,358,657	$ 31,308,709
Maintenance Tier	4,124,798	4,124,798	4,124,798	4,124,798	3,480,439	1,920,000	480,000								
Collections Needed to Support Generation	$ 127,485,926	$ 130,715,416	$ 146,512,490	$ 162,966,840	$ 188,304,457	$ 217,150,446	$ 181,061,270	$ 180,581,270	$ 153,955,822	$ 141,838,153	$ 120,503,800	$ 96,280,847	$ 77,316,948		
Administrative Costs	3,414,830	3,555,964	3,478,068	3,622,996	2,498,853	2,648,784	2,807,711	2,591,769	2,747,275	728,757	772,483	818,832	867,961	920,039	975,242
Total Collections to Satisfy Program	$ 130,900,756	$ 134,271,380	$ 149,990,558	$ 166,589,836	$ 190,803,310	$ 219,799,231	$ 183,868,981	$ 183,173,038	$ 156,703,097	$ 142,566,911	$ 121,276,282	$ 97,099,679	$ 78,184,910	$ 61,278,697	$ 32,283,951

Attachment 5

MAIN TIER TARGETS AND RESULTS
(10 pages)

25% Reference Case: Targets

	Reference Load (1)	Baseline Resources (2)	EO 111 (2)	NY Main Tier and CST (3)	Main Tier and CST Requirement (4)	Green marketing % (5)	Green Marketing MWh	CST requirement = 2% of Incremental (6)	Main Tier Requirement Minus CST	% LIPA (3)	NYSERDA CST (6)	NYSERDA Main Tier	LIPA CST (7)	LIPA Main Tier (7)
2003	158,013,000	31,210,710	-	-	19.8%				-				-	-
2004	160,211,000	31,468,717	-	-	19.6%				-				-	-
2005	167,208,000	31,486,189	251,065	-	19.0%	0.0%	-		-				-	-
2006	162,237,000	31,503,661	282,812	865,582	20.1%	0.1%	202,796		865,582	0.00%		865,582	-	-
2007	162,433,219	31,509,370	314,579	883,208	20.1%	0.3%	406,083		883,208	15.80%	17,626	865,582	-	-
2008	164,402,854	31,515,079	346,366	2,700,982	21.0%	0.4%	616,511		2,700,982	15.83%	35,252	2,665,730	-	-
2009	166,343,040	31,520,788	378,174	4,224,432	21.7%	0.5%	831,715	**52,878**	4,171,554	15.83%	52,878	3,502,673	9,948	658,933
2010	168,013,530	31,526,497	410,002	5,508,933	22.3%	0.6%	1,050,085	110,179	5,398,755	15.88%	92,687	4,634,326	17,492	857,115
2011	170,641,997	31,532,206	391,857	7,081,459	22.9%	0.8%	1,279,815	141,629	6,939,830	15.89%	119,131	5,837,431	22,498	1,102,399
2012	172,742,491	31,537,915	373,712	8,560,299	23.4%	0.9%	1,511,497	171,206	8,389,093	15.98%	143,840	7,048,137	27,366	1,340,956
2013	175,028,192	31,543,624	355,568	10,107,574	24.0%	1.0%	1,750,282	202,151	9,905,423	16.01%	169,788	8,319,625	32,363	1,585,798

(1) Actual numbers 2003-2006, Forecast from Case 07-M-0548, STRAW PROPOSAL, TECHNICAL APPENDIX, (February 11, 2008).
(2) from PSC 9/24 order, App. D, Table 1
(3) Sum of Actual NYSERDA contracts for Main Tier and CST plus Estimates for LIPA Procurements through 2009, based on RPS requirements 2010 and later
(4) "Glide Path" interpolated between 2010 and 2013 to reach the 24% goal, assume 1% from green marketing
(5) Interpolated between 2005 and 2013 to reach the 1% goal
(6) 2009 Value differs from the 2006-2009 Operating Plan to reflect corrected small wind numbers
(7) LIPA procurements are estimates based on LIPA's proporportional share of annual RPS glide path

Main Tier Incremental Demand Calculations
(MWh)

	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Main Tier w/o LIPA	2,665,730	3,502,673	4,634,326	5,837,431	7,048,137	8,319,625		
NYSERDA Incremental w/o LIPA	-	836,943	1,131,653	1,203,104	1,210,706	1,271,488		
Less Total Renewables Under NYSERDA contra	2,665,730	2,665,730	2,665,730	2,665,730	2,665,730	2,665,730		
Exports to New England	829,330	829,330	842,082	842,082	842,082	842,082		
Additional Exports to NE			255,227	510,454	765,681	1,020,907		
Green Marketing Estimates	616,511	831,715	1,050,085	1,279,815	1,511,497	1,750,282		
EO 111	346,366	378,174	410,002	391,857	373,712	355,568	-	-
Total New York Renewables Demand	1,792,206	2,876,162	4,525,991	6,195,908	7,875,378	9,622,734	-	-
Annual New York Incremental Demand	**1,792,206**	**1,083,956**	**1,649,830**	**1,669,917**	**1,679,470**	**1,747,356**		

25% Post EPS Case: Targets

	Post-EPS Load (1)	Baseline Resources (2)	EO 111 (2)	NY Main Tier and CST (3)	Main Tier and CST Requirement (4)	Green marketing % (5)	Green Marketing MWh	CST requirement = 2% of Incremental (6)	Main Tier Requirement Minus CST	% LIPA (3)	NYSERDA CST (6)	NYSERDA Main Tier	LIPA CST (7)	LIPA Main Tier (7)
2003	158,013,000	31,210,710	-	-	19.8%				-				-	-
2004	160,211,000	31,468,717	-	-	19.6%				-				-	-
2005	167,208,000	31,486,189	251,065	-	19.0%	0.0%	-		-				-	-
2006	162,237,000	31,503,661	282,812	865,582	20.1%	0.1%	202,796		865,582	0.00%		865,582	-	-
2007	162,433,219	31,509,370	314,579	883,208	20.1%	0.3%	406,083		883,208	15.80%	17,626	865,582	-	-
2008	163,552,495	31,515,079	346,366	2,700,982	21.1%	0.4%	613,322		2,700,982	15.83%	35,252	2,665,730	-	-
2009	162,041,065	31,520,788	378,174	4,224,432	22.3%	0.5%	810,205	**52,878**	4,171,554	15.83%	52,878	3,502,673	9,948	658,933
2010	160,192,211	31,526,497	410,002	4,884,601	22.7%	0.6%	1,001,201	97,692	4,786,909	15.88%	82,182	4,026,932	15,510	759,977
2011	159,167,794	31,532,206	391,857	5,544,771	23.1%	0.8%	1,193,758	110,895	5,433,875	15.89%	93,280	4,570,699	17,616	863,176
2012	157,553,065	31,537,915	373,712		23.6%	0.9%	1,378,589	-	-	15.98%	93,280	4,570,699	-	-
2013	156,016,509	31,543,624	355,568		24.0%	1.0%	1,560,165	-	-	16.01%	93,280	4,570,699	-	-

(1) Actual numbers 2003-2006, Forecast from Case 07-M-0548, STRAW PROPOSAL, TECHNICAL APPENDIX, (February 11, 2008).
(2) from PSC 9/24 order, App. D, Table 1
(3) Sum of Actual NYSERDA contracts for Main Tier and CST plus Estimates for LIPA Procurements through 2009, based on RPS requirements 2010 and later
(4) "Glide Path" interpolated between 2010 and 2013 to reach the 24% goal, assume 1% from green marketing
(5) Interpolated between 2005 and 2013 to reach the 1% goal
(6) 2009 Value differs from the 2006-2009 Operating Plan to reflect corrected small wind numbers
(7) LIPA procurements are estimates based on LIPA's proporportional share of annual RPS glide path

Main Tier Incremental Demand Calculations (MWh)

	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Main Tier w/o LIPA	2,665,730	3,502,673	4,026,932	4,570,699	4,570,699	4,570,699		
NYSERDA Incremental w/o LIPA	-	836,943	524,259	543,767	-	-		
Less Total Renewables Under NYSERDA contra	2,665,730	2,665,730	2,665,730	2,665,730	2,665,730	2,665,730		
Exports to New England	829,330	829,330	842,082	842,082	842,082	842,082		
Additional Exports to NE			255,227	510,454	765,681	1,020,907		
Green Marketing Estimates	613,322	810,205	1,001,201	1,193,758	1,378,589	1,560,165		
EO 111	346,366	378,174	410,002	391,857	373,712	355,568	-	-
Total New York Renewables Demand	1,789,017	2,854,652	3,869,714	4,843,120	5,265,032	5,683,691	-	-
Annual New York Incremental Demand	**1,789,017**	**1,065,635**	**1,015,062**	**973,406**	**-**	**-**		

30% Post EPS Case: Targets

	Post-EPS Load (1)	Baseline Resources (2)	EO 111 (2)	NY Main Tier and CST (3)	Main Tier and CST Requirement (4)	Green marketing % (5)	Green Marketing MWh	CST requirement = 2% of Incremental (6)	Main Tier Requirement Minus CST	% LIPA (3)	NYSERDA CST (6)	NYSERDA Main Tier	LIPA CST (7)	LIPA Main Tier (7)
2003	158,013,000	31,210,710	-	-	19.8%				-				-	-
2004	160,211,000	31,468,717	-	-	19.6%				-				-	-
2005	167,208,000	31,486,189	251,065	-	19.0%	0.0%	-		-				-	-
2006	162,237,000	31,503,661	282,812	865,582	20.1%	0.1%	202,796		865,582	0.00%		865,582	-	-
2007	162,433,219	31,509,370	314,579	883,208	20.1%	0.3%	406,083		883,208	15.80%	17,626	865,582	-	-
2008	163,552,495	31,515,079	346,366	2,700,982	21.1%	0.4%	613,322		2,700,982	15.83%	35,252	2,665,730	-	-
2009	162,041,065	31,520,788	378,174	4,224,432	22.3%	0.5%	810,205	**52,878**	4,171,554	15.83%	52,878	3,502,673	9,948	658,933
2010	160,192,211	31,526,497	410,002	5,565,486	23.4%	0.6%	1,001,201	111,310	5,454,176	15.88%	93,638	4,588,262	17,672	865,914
2011	159,167,794	31,532,206	391,857	7,117,399	24.5%	0.8%	1,193,758	142,348	6,975,051	15.89%	119,736	5,867,057	22,612	1,107,994
2012	157,553,065	31,537,915	373,712	8,495,015	25.6%	0.9%	1,378,589	169,900	8,325,115	15.98%	142,743	6,994,385	27,158	1,330,730
2013	156,016,509	31,543,624	355,568	9,857,452	26.8%	1.0%	1,560,165	197,149	9,660,303	16.01%	165,587	8,113,747	31,562	1,546,556
2014	154,177,290	31,543,624	337,424	11,106,854	27.9%	1.0%	1,541,773	222,137	10,884,717	16.08%	186,420	9,134,589	35,717	1,750,129
2015	152,351,948	31,543,624	319,280	12,319,161	29.0%	1.0%	1,523,519	246,383	12,072,778	16.15%	206,595	10,123,157	39,788	1,949,621.12

(1) Actual numbers 2003-2006, Forecast from Case 07-M-0548, STRAW PROPOSAL, TECHNICAL APPENDIX, (February 11, 2008).
(2) from PSC 9/24 order, App. D, Table 1
(3) Sum of Actual NYSERDA contracts for Main Tier and CST plus Estimates for LIPA Procurements through 2009, based on RPS requirements 2010 and later
(4) "Glide Path" interpolated between 2010 and 2013 to reach the 29% goal, assume 1% from green marketing
(5) Interpolated between 2005 and 2013 to reach the 1% goal
(6) 2009 Value differs from the 2006-2009 Operating Plan to reflect corrected small wind numbers
(7) LIPA procurements are estimates based on LIPA's proporportional share of annual RPS glide path

Main Tier Incremental Demand Calculations (MWh)

	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Main Tier w/o LIPA	2,665,730	3,502,673	4,588,262	5,867,057	6,994,385	8,113,747	9,134,589	10,123,157
NYSERDA Incremental w/o LIPA	-	836,943	1,085,589	1,278,795	1,127,328	1,119,362	1,020,842	988,568
Less Total Renewables Under NYSERDA contr	2,665,730	2,665,730	2,665,730	2,665,730	2,665,730	2,665,730	2,665,730	2,665,730
Exports to New England	829,330	829,330	842,082	842,082	842,082	842,082	842,082	842,082
Additional Exports to NE			255,227	510,454	765,681	1,020,907	1,020,907	1,020,907
Green Marketing Estimates	613,322	810,205	1,001,201	1,193,758	1,378,589	1,560,165	1,541,773	1,523,519
EO 111	346,366	378,174	410,002	391,857	373,712	355,568	337,424	319,280
Total New York Renewables Demand	1,789,017	2,854,652	4,431,044	6,139,478	7,688,719	9,226,739	10,211,045	11,163,216
Annual New York Incremental Demand	**1,789,017**	**1,065,635**	**1,576,392**	**1,708,434**	**1,549,241**	**1,538,020**	**984,305**	**952,171**

Reference Case: Main Tier Results

					Maximum Annual Build (% of Max Potential)			
Resource Block	**Resource Type**	**Zone**	**CF**	**Max MW**	**2010**	**2011**	**2012**	**2013**
Wind Large Agg NY-z2agt1	Wind (>100 MW)	2	30%	108	40%	60%	80%	100%
Wind Large NY-z1b1t1	Wind (>100 MW)	1	37%	208	40%	60%	80%	100%
Wind Large NY-z1b2t1	Wind (>100 MW)	1	33%	1279	40%	60%	80%	100%
Wind Large NY-z1b3t1	Wind (>100 MW)	1	29%	5289	40%	60%	80%	100%
Wind Medium NY-z1b1t1	Wind (20-100 MW)	1	37%	0	40%	60%	80%	100%
Wind Medium NY-z1b2t1	Wind (20-100 MW)	1	33%	60	40%	60%	80%	100%
Wind Medium NY-z1b3t1	Wind (20-100 MW)	1	29%	364	40%	60%	80%	100%
Wind Medium NY-z2b1t1	Wind (20-100 MW)	2	37%	0	40%	60%	80%	100%
Wind Medium NY-z2b2t1	Wind (20-100 MW)	2	33%	60	40%	60%	80%	100%
Wind Medium NY-z2b3t1	Wind (20-100 MW)	2	29%	113	40%	60%	80%	100%
Wind Small Agg NY-z3agt2	Wind (20-100 MW)	3	31%	15	40%	60%	80%	100%
Wind Small NY-z1b1t1	Wind (<20 MW)	1	37%	34	40%	60%	80%	100%
Wind Small NY-z1b1t2	Wind (<20 MW)	1	37%	10	40%	60%	80%	100%
Wind Small NY-z1b2t1	Wind (<20 MW)	1	33%	21	40%	60%	80%	100%
Wind Small NY-z1b2t2	Wind (<20 MW)	1	33%	17	40%	60%	80%	100%
Wind Small NY-z1b3t1	Wind (<20 MW)	1	29%	191	40%	60%	80%	100%
Wind Small NY-z1b3t2	Wind (<20 MW)	1	29%	78	40%	60%	80%	100%
Wind Small NY-z2b1t1	Wind (<20 MW)	2	37%	10	40%	60%	80%	100%
Wind Small NY-z2b2t1	Wind (<20 MW)	2	33%	11	40%	60%	80%	100%
Wind Small NY-z3b2t1	Wind (<20 MW)	3	33%	10	40%	60%	80%	100%
Wind Small NY-z2b2t2	Wind (<20 MW)	2	33%	10	40%	60%	80%	100%
Wind Small NY-z2b3t1	Wind (<20 MW)	2	29%	62	40%	60%	80%	100%
Wind Small NY-z3b3t1	Wind (<20 MW)	3	29%	29	40%	60%	80%	100%
Wind Small NY-z2b3t2	Wind (<20 MW)	2	29%	14	40%	60%	80%	100%
Off-Shore Wind Lakes NY-z1	Wind (Offshore)	1	34%	311	0%	0%	0%	20%
Off-Shore Wind LI NY-z3	Wind (Offshore)	3	36%	579	0%	0%	0%	20%
Wind Farms Quebec	Import Wind (Farm)	QC	29%	0	0%	0%	0%	0%
Wind Farms Ontario	Import Wind (Farm)	ON	29%	0	0%	0%	0%	0%
Wind Farms PJM b1	Import Wind (Farm)	PJM	29%	250	40%	60%	80%	100%
Wind Farms PJM b2	Import Wind (Farm)	PJM	29%	0	40%	60%	80%	100%
Biomass CHP Existing NY z1	Biomass (Zone 1)	1	80%	96	20%	40%	60%	80%
Biomass CHP New NY z1	Biomass (Zone 1)	1	80%	58	20%	40%	60%	80%
Biomass Co-firing w/Coal NY-z1	Biomass (Zone 1)	1	70%	81	0%	20%	40%	60%
Biomass Stoker NY z1	Biomass (Zone 1)	1	85%	500	0%	20%	40%	60%
Fluidized Bed Repower Existing NY z1	Biomass (Zone 1)	1	85%	286	0%	20%	40%	60%
Fluidized Bed Repower Retire NY z1	Biomass (Zone 1)	1	85%	46	0%	20%	40%	60%
Biomass CHP Existing NY z2	Biomass (Zone 2)	2	80%	4	20%	40%	60%	80%
Biomass CHP New NY z2	Biomass (Zone 2)	2	80%	0	20%	40%	60%	80%
Biomass Co-firing w/Coal NY-z2	Biomass (Zone 2)	2	70%	29	0%	20%	40%	60%
Biomass Stoker NY z2	Biomass (Zone 2)	2	85%	500	0%	20%	40%	60%
Fluidized Bed Repower Existing NY z2	Biomass (Zone 2)	2	85%	62	0%	20%	40%	60%
Fluidized Bed Repower Retire NY z2	Biomass (Zone 2)	2	85%	217	0%	20%	40%	60%
Biomass CHP Existing NY z3	Biomass (Zone 3)	3	80%	89	20%	40%	60%	80%
Biomass CHP New NY z3	Biomass (Zone 3)	3	80%	59	20%	40%	60%	80%
Biomass Co-firing w/Coal NY-z3	Biomass (Zone 3)	3	55%	0	0%	20%	40%	60%
Biomass Stoker NY z3	Biomass (Zone 3)	3	80%	0	0%	20%	40%	60%
Fluidized Bed Repower Existing NY z3	Biomass (Zone 3)	3	85%	132	0%	20%	40%	60%
Fluidized Bed Repower Retire NY z3	Biomass (Zone 3)	3	85%	48	0%	20%	40%	60%
Biomass Co-firing w/Coal Ontario	Import Biomass (co-fire w/coal)	ON	55%	0	0%	0%	0%	0%
Biomass Co-firing w/Coal PJM	Import Biomass (co-fire w/coal)	PJM	65%	0	0%	20%	40%	60%
New Low-Impact Hydro NY z1	Hydro (new low-impact <30MW ROR)	1	46%	34	20%	40%	60%	80%
New Low-Impact Hydro NY z2	Hydro (new low-impact <30MW ROR)	2	46%	9	20%	40%	60%	80%
New Low-Impact Hydro NY z3	Hydro (new low-impact <30MW ROR)	3	46%	0	20%	40%	60%	80%
New Low-Impact Hydro Quebec	ImportHydro (new low-impact <30MW ROR)	QC	50%	100	20%	40%	60%	80%
New Low-Impact Hydro Ontario	ImportHydro (new low-impact <30MW ROR)	ON	67%	64	20%	40%	60%	80%
Hydro Upgrades NY z1	Hydro (upgrades)	1	46%	125	40%	60%	80%	100%
Hydro Upgrades NY z2	Hydro (upgrades)	2	46%	23	40%	60%	80%	100%
Hydro Upgrades NY z3	Hydro (upgrades)	3	46%	0	40%	60%	80%	100%
Hydro Upgrades Quebec	Import Hydro (upgrades)	QC	50%	100	20%	40%	60%	80%
Hydro Upgrades Ontario	Import Hydro (upgrades)	ON	67%	24	20%	40%	60%	80%
Very Small New Hydro NY z1	Hydro (very small new)	1	29%	10	20%	40%	60%	80%
Very Small New Hydro NY z2	Hydro (very small new)	2	29%	3	20%	40%	60%	80%
Very Small New Hydro NY z3	Hydro (very small new)	3	29%	0	20%	40%	60%	80%
Landfill Gas IC Engines NY z1	Landfill Gas	1	85%	88	40%	60%	80%	100%
Landfill Gas IC Engines NY z2	Landfill Gas	2	85%	26	40%	60%	80%	100%
Landfill Gas IC Engines NY z3	Landfill Gas	3	85%	3	40%	60%	80%	100%
Landfill Gas Microturbines NY z1	Landfill Gas	1	85%	3	40%	60%	80%	100%
Landfill Gas Microturbines NY z2	Landfill Gas	2	85%	1	40%	60%	80%	100%
Landfill Gas Microturbines NY z3	Landfill Gas	3	85%	0	40%	60%	80%	100%

Reference Case: Main Tier F														
					2010	2011	2012	2013						
	Incremental Goal (GWh)				1,650	1,670	1,679	1,747						
	REC Clearing Price				$19.65	$18.94	$22.09	$22.28						
				Cleared GWh	1,650	1,670	1,679	1,747						
	Cleared MW				Cleared GWH					REC Price Requirement				
Resource Block	**2010**	**2011**	**2012**	**2013**	**2010**	**2011**	**2012**	**2013**		**2010**	**2011**	**2012**	**2013**
Wind Large Agg NY-z2agt1	22	22	22	22	56	56	56	56		$ 15.67	$ 14.91	$ 13.76	$ 12.19
Wind Large NY-z1b1t1	42	42	42	42	135	135	135	135		$ 4.43	$ 3.74	$ 2.65	$ 1.12
Wind Large NY-z1b2t1	278	285	265	256	805	825	766	740		$ 19.65	$ 18.94	$ 16.82	$ 15.15
Wind Large NY-z1b3t1	0	0	0	0	0	0	0	0		$ 39.14	$ 38.61	$ 37.56	$ 35.94
Wind Medium NY-z1b1t1	0	0	0	0	0	0	0	0		$ 19.33	$ 17.66	$ 16.50	$ 14.81
Wind Medium NY-z1b2t1	0	0	0	0	0	0	0	0		$ 36.50	$ 35.93	$ 34.84	$ 33.18
Wind Medium NY-z1b3t1	0	0	0	0	0	0	0	0		$ 58.68	$ 58.34	$ 57.46	$ 56.01
Wind Medium NY-z2b1t1	0	0	0	0	0	0	0	0		$ 0.90	$ 0.13	$ -	$ -
Wind Medium NY-z2b2t1	12	12	12	12	35	35	35	35		$ 16.02	$ 15.26	$ 14.11	$ 12.54
Wind Medium NY-z2b3t1	0	0	0	0	0	0	0	0		$ 38.47	$ 37.87	$ 36.85	$ 35.36
Wind Small Agg NY-z3agt2	0	0	0	0	0	0	0	0		$ 80.54	$ 80.87	$ 80.49	$ 79.53
Wind Small NY-z1b1t1	0	0	0	0	0	0	0	0		$ 55.72	$ 55.58	$ 54.91	$ 53.67
Wind Small NY-z1b1t2	0	0	0	0	0	0	0	0		$ 82.37	$ 83.01	$ 83.13	$ 82.70
Wind Small NY-z1b2t1	0	0	0	0	0	0	0	0		$ 77.54	$ 77.66	$ 77.25	$ 76.27
Wind Small NY-z1b2t2	0	0	0	0	0	0	0	0		$ 107.23	$ 108.23	$ 108.72	$ 108.67
Wind Small NY-z1b3t1	0	0	0	0	0	0	0	0		$ 105.25	$ 105.70	$ 105.63	$ 105.01
Wind Small NY-z1b3t2	0	0	0	0	0	0	0	0		$ 138.82	$ 140.28	$ 141.24	$ 141.67
Wind Small NY-z2b1t1	0	0	0	0	0	0	0	0		$ 35.58	$ 35.17	$ 34.35	$ 33.07
Wind Small NY-z2b2t1	0	0	0	0	0	0	0	0		$ 57.38	$ 57.23	$ 56.65	$ 55.61
Wind Small NY-z3b2t1	0	0	0	0	0	0	0	0		$ 35.44	$ 34.70	$ 33.24	$ 30.74
Wind Small NY-z2b2t2	0	0	0	0	0	0	0	0		$ 87.20	$ 87.92	$ 88.40	$ 88.28
Wind Small NY-z2b3t1	0	0	0	0	0	0	0	0		$ 85.22	$ 85.40	$ 85.16	$ 84.46
Wind Small NY-z3b3t1	0	0	0	0	0	0	0	0		$ 62.84	$ 62.42	$ 61.26	$ 59.24
Wind Small NY-z2b3t2	0	0	0	0	0	0	0	0		$ 119.11	$ 120.28	$ 121.07	$ 121.43
Off-Shore Wind Lakes NY-z1	0	0	0	0	0	0	0	0		$ 175.99	$ 174.10	$ 171.71	$ 168.78
Off-Shore Wind LI NY-z3	0	0	0	0	0	0	0	0		$ 110.61	$ 107.60	$ 104.07	$ 99.85
Wind Farms Quebec	0	0	0	0	0	0	0	0		$ 87.20	$ 87.36	$ 87.00	$ 86.08
Wind Farms Ontario	0	0	0	0	0	0	0	0		$ 77.37	$ 77.54	$ 77.18	$ 76.27
Wind Farms PJM b1	0	0	0	0	0	0	0	0		$ 47.26	$ 46.68	$ 45.56	$ 43.88
Wind Farms PJM b2	0	0	0	0	0	0	0	0		$ 45.12	$ 44.50	$ 42.95	$ 41.21
Biomass CHP Existing NY z1	19	19	19	19	135	135	135	135		$ -	$ -	$ -	$ -
Biomass CHP New NY z1	0	0	10	23	0	0	68	163		$ 21.26	$ 21.78	$ 22.09	$ 22.28
Biomass Co-firing w/Coal NY-z1	0	0	0	0	0	0	0	0		$ 22.23	$ 22.98	$ 23.86	$ 24.93
Biomass Stoker NY z1	0	0	0	0	0	0	0	0		$ 89.75	$ 91.88	$ 93.75	$ 95.58
Fluidized Bed Repower Existing NY z1	0	0	0	0	0	0	0	0		$ 31.42	$ 32.87	$ 33.60	$ 34.16
Fluidized Bed Repower Retire NY z1	0	0	0	0	0	0	0	0		$ 26.35	$ 27.22	$ 27.84	$ 28.29
Biomass CHP Existing NY z2	0	0	0	0	0	0	0	0		$ 78.60	$ 85.17	$ 91.67	$ 98.04
Biomass CHP New NY z2	0	0	0	0	0	0	0	0		$ 40.88	$ 44.44	$ 48.12	$ 51.27
Biomass Co-firing w/Coal NY-z2	0	0	0	0	0	0	0	0		$ 39.70	$ 41.97	$ 44.33	$ 46.78
Biomass Stoker NY z2	0	0	0	0	0	0	0	0		$ 98.06	$ 102.48	$ 106.61	$ 110.74
Fluidized Bed Repower Existing NY z2	0	0	0	0	0	0	0	0		$ 41.87	$ 45.18	$ 48.58	$ 51.43
Fluidized Bed Repower Retire NY z2	0	0	0	0	0	0	0	0		$ 36.31	$ 39.88	$ 42.85	$ 45.57
Biomass CHP Existing NY z3	0	0	0	0	0	0	0	0		$ 134.00	$ 137.10	$ 139.54	$ 141.48
Biomass CHP New NY z3	0	0	0	0	0	0	0	0		$ 161.89	$ 165.53	$ 168.53	$ 171.02
Biomass Co-firing w/Coal NY-z3	0	0	0	0	0	0	0	0		$ 109.81	$ 112.38	$ 115.01	$ 117.70
Biomass Stoker NY z3	0	0	0	0	0	0	0	0		$ 184.96	$ 189.23	$ 192.87	$ 196.03
Fluidized Bed Repower Existing NY z3	0	0	0	0	0	0	0	0		$ 131.49	$ 134.74	$ 137.34	$ 139.44
Fluidized Bed Repower Retire NY z3	0	0	0	0	0	0	0	0		$ 126.13	$ 129.28	$ 131.77	$ 133.76
Biomass Co-firing w/Coal Ontario	0	0	0	0	0	0	0	0		$ 32.56	$ 33.02	$ 33.48	$ 33.95
Biomass Co-firing w/Coal PJM	0	0	0	0	0	0	0	0		$ 28.25	$ 28.76	$ 29.27	$ 29.80
New Low-Impact Hydro NY z1	0	0	0	0	0	0	0	0		$ 65.92	$ 68.73	$ 70.96	$ 72.78
New Low-Impact Hydro NY z2	0	0	0	0	0	0	0	0		$ 45.25	$ 47.86	$ 49.88	$ 51.61
New Low-Impact Hydro NY z3	0	0	0	0	0	0	0	0		$ 15.62	$ 17.17	$ 19.15	$ 19.76
New Low-Impact Hydro Quebec	0	0	0	0	0	0	0	0		$ 31.60	$ 32.53	$ 33.04	$ 33.12
New Low-Impact Hydro Ontario	13	13	13	13	75	75	75	75		$ 13.64	$ 13.86	$ 14.08	$ 14.32
Hydro Upgrades NY z1	25	25	25	25	101	101	101	101		$ -	$ -	$ -	$ -
Hydro Upgrades NY z2	5	5	5	5	18	18	18	18		$ -	$ -	$ -	$ -
Hydro Upgrades NY z3	0	0	0	0	0	0	0	0		$ -	$ -	$ -	$ -
Hydro Upgrades Quebec	20	20	20	20	88	88	88	88		$ 13.92	$ 14.24	$ 14.57	$ 14.90
Hydro Upgrades Ontario	5	5	5	5	28	28	28	28		$ 9.64	$ 9.86	$ 10.08	$ 10.32
Very Small New Hydro NY z1	0	0	0	0	0	0	0	0		$ 244.16	$ 252.03	$ 259.68	$ 267.07
Very Small New Hydro NY z2	0	0	0	0	0	0	0	0		$ 223.96	$ 231.55	$ 239.02	$ 246.33
Very Small New Hydro NY z3	0	0	0	0	0	0	0	0		$ 195.14	$ 202.15	$ 208.69	$ 214.90
Landfill Gas IC Engines NY z1	18	18	18	18	131	131	131	131		$ -	$ -	$ -	$ -
Landfill Gas IC Engines NY z2	5	5	5	5	38	38	38	38		$ -	$ -	$ -	$ -
Landfill Gas IC Engines NY z3	1	1	1	1	5	5	5	5		$ -	$ -	$ -	$ -
Landfill Gas Microturbines NY z1	0	0	0	0	0	0	0	0		$ 38.02	$ 40.01	$ 41.21	$ 41.98
Landfill Gas Microturbines NY z2	0	0	0	0	0	0	0	0		$ 20.32	$ 21.67	$ 22.73	$ 23.48
Landfill Gas Microturbines NY z3	0	0	0	0	0	0	0	0		$ -	$ -	$ -	$ -

25% Post EPS Case: Results

					Maximum Annual Build (% of Max Potential)			
Resource Block	**Resource Type**	**Zone**	**CF**	**Max MW**	**2010**	**2011**	**2012**	**2013**
Wind Large Agg NY-z2agt1	Wind (>100 MW)	2	30%	108	40%	60%	80%	100%
Wind Large NY-z1b1t1	Wind (>100 MW)	1	37%	208	40%	60%	80%	100%
Wind Large NY-z1b2t1	Wind (>100 MW)	1	33%	1279	40%	60%	80%	100%
Wind Large NY-z1b3t1	Wind (>100 MW)	1	29%	5289	40%	60%	80%	100%
Wind Medium NY-z1b1t1	Wind (20-100 MW)	1	37%	0	40%	60%	80%	100%
Wind Medium NY-z1b2t1	Wind (20-100 MW)	1	33%	60	40%	60%	80%	100%
Wind Medium NY-z1b3t1	Wind (20-100 MW)	1	29%	364	40%	60%	80%	100%
Wind Medium NY-z2b1t1	Wind (20-100 MW)	2	37%	0	40%	60%	80%	100%
Wind Medium NY-z2b2t1	Wind (20-100 MW)	2	33%	60	40%	60%	80%	100%
Wind Medium NY-z2b3t1	Wind (20-100 MW)	2	29%	113	40%	60%	80%	100%
Wind Small Agg NY-z3agt2	Wind (20-100 MW)	3	31%	15	40%	60%	80%	100%
Wind Small NY-z1b1t1	Wind (<20 MW)	1	37%	34	40%	60%	80%	100%
Wind Small NY-z1b1t2	Wind (<20 MW)	1	37%	10	40%	60%	80%	100%
Wind Small NY-z1b2t1	Wind (<20 MW)	1	33%	21	40%	60%	80%	100%
Wind Small NY-z1b2t2	Wind (<20 MW)	1	33%	17	40%	60%	80%	100%
Wind Small NY-z1b3t1	Wind (<20 MW)	1	29%	191	40%	60%	80%	100%
Wind Small NY-z1b3t2	Wind (<20 MW)	1	29%	78	40%	60%	80%	100%
Wind Small NY-z2b1t1	Wind (<20 MW)	2	37%	10	40%	60%	80%	100%
Wind Small NY-z2b2t1	Wind (<20 MW)	2	33%	11	40%	60%	80%	100%
Wind Small NY-z3b2t1	Wind (<20 MW)	3	33%	10	40%	60%	80%	100%
Wind Small NY-z2b2t2	Wind (<20 MW)	2	33%	10	40%	60%	80%	100%
Wind Small NY-z2b3t1	Wind (<20 MW)	2	29%	62	40%	60%	80%	100%
Wind Small NY-z3b3t1	Wind (<20 MW)	3	29%	29	40%	60%	80%	100%
Wind Small NY-z2b3t2	Wind (<20 MW)	2	29%	14	40%	60%	80%	100%
Off-Shore Wind Lakes NY-z1	Wind (Offshore)	1	34%	311	0%	0%	0%	20%
Off-Shore Wind LI NY-z3	Wind (Offshore)	3	36%	579	0%	0%	0%	20%
Wind Farms Quebec	Import Wind (Farm)	QC	29%	0	0%	0%	0%	0%
Wind Farms Ontario	Import Wind (Farm)	ON	29%	0	0%	0%	0%	0%
Wind Farms PJM b1	Import Wind (Farm)	PJM	29%	250	40%	60%	80%	100%
Wind Farms PJM b2	Import Wind (Farm)	PJM	29%	0	40%	60%	80%	100%
Biomass CHP Existing NY z1	Biomass (Zone 1)	1	80%	96	20%	40%	60%	80%
Biomass CHP New NY z1	Biomass (Zone 1)	1	80%	58	20%	40%	60%	80%
Biomass Co-firing w/Coal NY-z1	Biomass (Zone 1)	1	70%	81	0%	20%	40%	60%
Biomass Stoker NY z1	Biomass (Zone 1)	1	85%	500	0%	20%	40%	60%
Fluidized Bed Repower Existing NY z1	Biomass (Zone 1)	1	85%	286	0%	20%	40%	60%
Fluidized Bed Repower Retire NY z1	Biomass (Zone 1)	1	85%	46	0%	20%	40%	60%
Biomass CHP Existing NY z2	Biomass (Zone 2)	2	80%	4	20%	40%	60%	80%
Biomass CHP New NY z2	Biomass (Zone 2)	2	80%	0	20%	40%	60%	80%
Biomass Co-firing w/Coal NY-z2	Biomass (Zone 2)	2	70%	29	0%	20%	40%	60%
Biomass Stoker NY z2	Biomass (Zone 2)	2	85%	500	0%	20%	40%	60%
Fluidized Bed Repower Existing NY z2	Biomass (Zone 2)	2	85%	62	0%	20%	40%	60%
Fluidized Bed Repower Retire NY z2	Biomass (Zone 2)	2	85%	217	0%	20%	40%	60%
Biomass CHP Existing NY z3	Biomass (Zone 3)	3	80%	89	20%	40%	60%	80%
Biomass CHP New NY z3	Biomass (Zone 3)	3	80%	59	20%	40%	60%	80%
Biomass Co-firing w/Coal NY-z3	Biomass (Zone 3)	3	55%	0	0%	20%	40%	60%
Biomass Stoker NY z3	Biomass (Zone 3)	3	80%	0	0%	20%	40%	60%
Fluidized Bed Repower Existing NY z3	Biomass (Zone 3)	3	85%	132	0%	20%	40%	60%
Fluidized Bed Repower Retire NY z3	Biomass (Zone 3)	3	85%	48	0%	20%	40%	60%
Biomass Co-firing w/Coal Ontario	Import Biomass (co-fire	ON	55%	0	0%	0%	0%	0%
Biomass Co-firing w/Coal PJM	Import Biomass (co-fire	PJM	65%	0	0%	20%	40%	60%
New Low-Impact Hydro NY z1	Hydro (new low-impact	1	46%	34	20%	40%	60%	80%
New Low-Impact Hydro NY z2	Hydro (new low-impact	2	46%	9	20%	40%	60%	80%
New Low-Impact Hydro NY z3	Hydro (new low-impact	3	46%	0	20%	40%	60%	80%
New Low-Impact Hydro Quebec	ImportHydro (new low-i	QC	50%	100	20%	40%	60%	80%
New Low-Impact Hydro Ontario	ImportHydro (new low-i	ON	67%	64	20%	40%	60%	80%
Hydro Upgrades NY z1	Hydro (upgrades)	1	46%	125	40%	60%	80%	100%
Hydro Upgrades NY z2	Hydro (upgrades)	2	46%	23	40%	60%	80%	100%
Hydro Upgrades NY z3	Hydro (upgrades)	3	46%	0	40%	60%	80%	100%
Hydro Upgrades Quebec	Import Hydro (upgrades	QC	50%	100	20%	40%	60%	80%
Hydro Upgrades Ontario	Import Hydro (upgrades	ON	67%	24	20%	40%	60%	80%
Very Small New Hydro NY z1	Hydro (very small new)	1	29%	10	20%	40%	60%	80%
Very Small New Hydro NY z2	Hydro (very small new)	2	29%	3	20%	40%	60%	80%
Very Small New Hydro NY z3	Hydro (very small new)	3	29%	0	20%	40%	60%	80%
Landfill Gas IC Engines NY z1	Landfill Gas	1	85%	88	40%	60%	80%	100%
Landfill Gas IC Engines NY z2	Landfill Gas	2	85%	26	40%	60%	80%	100%
Landfill Gas IC Engines NY z3	Landfill Gas	3	85%	3	40%	60%	80%	100%
Landfill Gas Microturbines NY z1	Landfill Gas	1	85%	3	40%	60%	80%	100%
Landfill Gas Microturbines NY z2	Landfill Gas	2	85%	1	40%	60%	80%	100%
Landfill Gas Microturbines NY z3	Landfill Gas	3	85%	0	40%	60%	80%	100%

	25% Post EPS Case: Results											
					2010	2011	2012	2013				
			Incremental Goal (GWh)		1,015	973	-	-				
			REC Clearing Price		$19.65	$18.94	$0.00	$0.00				
				Cleared GWh	1,015	973	-	-				
	Cleared MW				Cleared GWh				REC Price Requirement			
Resource Block	**2010**	**2011**	**2012**	**2013**	**2010**	**2011**	**2012**	**2013**	**2010**	**2011**	**2012**	**2013**
Wind Large Agg NY-z2agt1	22	22	0	0	56	56	0	0	$ 15.67	$ 14.91	$ 13.76	$ 12.19
Wind Large NY-z1b1t1	42	42	0	0	135	135	0	0	$ 4.43	$ 3.74	$ 2.65	$ 1.12
Wind Large NY-z1b2t1	59	44	0	0	170	128	0	0	$ 19.65	$ 18.94	$ 16.82	$ 15.15
Wind Large NY-z1b3t1	0	0	0	0	0	0	0	0	$ 39.14	$ 38.61	$ 37.56	$ 35.94
Wind Medium NY-z1b1t1	0	0	0	0	0	0	0	0	$ 19.33	$ 17.66	$ 16.50	$ 14.81
Wind Medium NY-z1b2t1	0	0	0	0	0	0	0	0	$ 36.50	$ 35.93	$ 34.84	$ 33.18
Wind Medium NY-z1b3t1	0	0	0	0	0	0	0	0	$ 58.68	$ 58.34	$ 57.46	$ 56.01
Wind Medium NY-z2b1t1	0	0	0	0	0	0	0	0	$ 0.90	$ 0.13	$ -	$ -
Wind Medium NY-z2b2t1	12	12	0	0	35	35	0	0	$ 16.02	$ 15.26	$ 14.11	$ 12.54
Wind Medium NY-z2b3t1	0	0	0	0	0	0	0	0	$ 38.47	$ 37.87	$ 36.85	$ 35.36
Wind Small Agg NY-z3agt2	0	0	0	0	0	0	0	0	$ 80.54	$ 80.87	$ 80.49	$ 79.53
Wind Small NY-z1b1t1	0	0	0	0	0	0	0	0	$ 55.72	$ 55.58	$ 54.91	$ 53.67
Wind Small NY-z1b1t2	0	0	0	0	0	0	0	0	$ 82.37	$ 83.01	$ 83.13	$ 82.70
Wind Small NY-z1b2t1	0	0	0	0	0	0	0	0	$ 77.54	$ 77.66	$ 77.25	$ 76.27
Wind Small NY-z1b2t2	0	0	0	0	0	0	0	0	$ 107.23	$ 108.23	$ 108.72	$ 108.67
Wind Small NY-z1b3t1	0	0	0	0	0	0	0	0	$ 105.25	$ 105.70	$ 105.63	$ 105.01
Wind Small NY-z1b3t2	0	0	0	0	0	0	0	0	$ 138.82	$ 140.28	$ 141.24	$ 141.67
Wind Small NY-z2b1t1	0	0	0	0	0	0	0	0	$ 35.58	$ 35.17	$ 34.35	$ 33.07
Wind Small NY-z2b2t1	0	0	0	0	0	0	0	0	$ 57.38	$ 57.23	$ 56.65	$ 55.61
Wind Small NY-z3b2t1	0	0	0	0	0	0	0	0	$ 35.44	$ 34.70	$ 33.24	$ 30.74
Wind Small NY-z2b2t2	0	0	0	0	0	0	0	0	$ 87.20	$ 87.92	$ 88.40	$ 88.28
Wind Small NY-z2b3t1	0	0	0	0	0	0	0	0	$ 85.22	$ 85.40	$ 85.16	$ 84.46
Wind Small NY-z3b3t1	0	0	0	0	0	0	0	0	$ 62.84	$ 62.42	$ 61.26	$ 59.24
Wind Small NY-z2b3t2	0	0	0	0	0	0	0	0	$ 119.11	$ 120.28	$ 121.07	$ 121.43
Off-Shore Wind Lakes NY-z1	0	0	0	0	0	0	0	0	$ 175.99	$ 174.10	$ 171.71	$ 168.78
Off-Shore Wind LI NY-z3	0	0	0	0	0	0	0	0	$ 110.61	$ 107.60	$ 104.07	$ 99.85
Wind Farms Quebec	0	0	0	0	0	0	0	0	$ 83.20	$ 83.36	$ 83.00	$ 82.08
Wind Farms Ontario	0	0	0	0	0	0	0	0	$ 73.37	$ 73.54	$ 73.18	$ 72.27
Wind Farms PJM b1	0	0	0	0	0	0	0	0	$ 43.26	$ 42.68	$ 41.56	$ 39.88
Wind Farms PJM b2	0	0	0	0	0	0	0	0	$ 41.12	$ 40.50	$ 38.95	$ 37.21
Biomass CHP Existing NY z1	19	19	0	0	135	135	0	0	$ -	$ -	$ -	$ -
Biomass CHP New NY z1	0	0	0	0	0	0	0	0	$ 20.21	$ 20.70	$ 20.78	$ 20.39
Biomass Co-firing w/Coal NY-z1	0	0	0	0	0	0	0	0	$ 21.72	$ 22.45	$ 23.22	$ 24.01
Biomass Stoker NY z1	0	0	0	0	0	0	0	0	$ 88.91	$ 91.01	$ 92.70	$ 93.92
Fluidized Bed Repower Existing NY z1	0	0	0	0	0	0	0	0	$ 30.56	$ 31.52	$ 32.06	$ 32.13
Fluidized Bed Repower Retire NY z1	0	0	0	0	0	0	0	0	$ 24.86	$ 26.35	$ 26.78	$ 26.76
Biomass CHP Existing NY z2	0	0	0	0	0	0	0	0	$ 78.60	$ 85.17	$ 91.67	$ 98.04
Biomass CHP New NY z2	0	0	0	0	0	0	0	0	$ 40.88	$ 44.44	$ 48.12	$ 51.27
Biomass Co-firing w/Coal NY-z2	0	0	0	0	0	0	0	0	$ 39.70	$ 41.97	$ 44.33	$ 46.78
Biomass Stoker NY z2	0	0	0	0	0	0	0	0	$ 98.06	$ 102.48	$ 106.61	$ 110.74
Fluidized Bed Repower Existing NY z2	0	0	0	0	0	0	0	0	$ 41.87	$ 45.18	$ 48.58	$ 51.43
Fluidized Bed Repower Retire NY z2	0	0	0	0	0	0	0	0	$ 36.31	$ 39.88	$ 42.85	$ 45.57
Biomass CHP Existing NY z3	0	0	0	0	0	0	0	0	$ 134.00	$ 137.10	$ 139.54	$ 141.48
Biomass CHP New NY z3	0	0	0	0	0	0	0	0	$ 161.89	$ 165.53	$ 168.53	$ 171.02
Biomass Co-firing w/Coal NY-z3	0	0	0	0	0	0	0	0	$ 109.81	$ 112.38	$ 115.01	$ 117.70
Biomass Stoker NY z3	0	0	0	0	0	0	0	0	$ 184.96	$ 189.23	$ 192.87	$ 196.03
Fluidized Bed Repower Existing NY z3	0	0	0	0	0	0	0	0	$ 131.49	$ 134.74	$ 137.34	$ 139.44
Fluidized Bed Repower Retire NY z3	0	0	0	0	0	0	0	0	$ 126.13	$ 129.28	$ 131.77	$ 133.76
Biomass Co-firing w/Coal Ontario	0	0	0	0	0	0	0	0	$ 28.56	$ 29.02	$ 29.48	$ 29.95
Biomass Co-firing w/Coal PJM	0	0	0	0	0	0	0	0	$ 24.25	$ 24.76	$ 25.27	$ 25.80
New Low-Impact Hydro NY z1	0	0	0	0	0	0	0	0	$ 65.92	$ 68.73	$ 70.96	$ 72.78
New Low-Impact Hydro NY z2	0	0	0	0	0	0	0	0	$ 45.25	$ 47.86	$ 49.88	$ 51.61
New Low-Impact Hydro NY z3	0	0	0	0	0	0	0	0	$ 15.62	$ 17.17	$ 19.15	$ 19.76
New Low-Impact Hydro Quebec	0	0	0	0	0	0	0	0	$ 27.60	$ 28.53	$ 29.04	$ 29.12
New Low-Impact Hydro Ontario	13	13	0	0	75	75	0	0	$ 9.64	$ 9.86	$ 10.08	$ 10.32
Hydro Upgrades NY z1	25	25	0	0	101	101	0	0	$ -	$ -	$ -	$ -
Hydro Upgrades NY z2	5	5	0	0	18	18	0	0	$ -	$ -	$ -	$ -
Hydro Upgrades NY z3	0	0	0	0	0	0	0	0	$ -	$ -	$ -	$ -
Hydro Upgrades Quebec	20	20	0	0	88	88	0	0	$ 13.92	$ 14.24	$ 14.57	$ 14.90
Hydro Upgrades Ontario	5	5	0	0	28	28	0	0	$ 9.64	$ 9.86	$ 10.08	$ 10.32
Very Small New Hydro NY z1	0	0	0	0	0	0	0	0	$ 244.16	$ 252.03	$ 259.68	$ 267.07
Very Small New Hydro NY z2	0	0	0	0	0	0	0	0	$ 223.96	$ 231.55	$ 239.02	$ 246.33
Very Small New Hydro NY z3	0	0	0	0	0	0	0	0	$ 195.14	$ 202.15	$ 208.69	$ 214.90
Landfill Gas IC Engines NY z1	18	18	0	0	131	131	0	0	$ -	$ -	$ -	$ -
Landfill Gas IC Engines NY z2	5	5	0	0	38	38	0	0	$ -	$ -	$ -	$ -
Landfill Gas IC Engines NY z3	1	1	0	0	5	5	0	0	$ -	$ -	$ -	$ -
Landfill Gas Microturbines NY z1	0	0	0	0	0	0	0	0	$ 38.02	$ 40.01	$ 41.21	$ 41.98
Landfill Gas Microturbines NY z2	0	0	0	0	0	0	0	0	$ 20.32	$ 21.67	$ 22.73	$ 23.48
Landfill Gas Microturbines NY z3	0	0	0	0	0	0	0	0	$ -	$ -	$ -	$ -

30% Post EPS Case: Main Tier Results

					Maximum Annual Build (% of Max Potential)					
Resource Block	**Resource Type**	**Zone**	**CF**	**Max MW**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Wind Large Agg NY-z2agt1	Wind (>100 MW)	2	30%	108	40%	60%	80%	100%	100%	100%
Wind Large NY-z1b1t1	Wind (>100 MW)	1	37%	208	40%	60%	80%	100%	100%	100%
Wind Large NY-z1b2t1	Wind (>100 MW)	1	33%	1279	40%	60%	80%	100%	100%	100%
Wind Large NY-z1b3t1	Wind (>100 MW)	1	29%	5289	40%	60%	80%	100%	100%	100%
Wind Medium NY-z1b1t1	Wind (20-100 MW)	1	37%	0	40%	60%	80%	100%	100%	100%
Wind Medium NY-z1b2t1	Wind (20-100 MW)	1	33%	60	40%	60%	80%	100%	100%	100%
Wind Medium NY-z1b3t1	Wind (20-100 MW)	1	29%	364	40%	60%	80%	100%	100%	100%
Wind Medium NY-z2b1t1	Wind (20-100 MW)	2	37%	0	40%	60%	80%	100%	100%	100%
Wind Medium NY-z2b2t1	Wind (20-100 MW)	2	33%	60	40%	60%	80%	100%	100%	100%
Wind Medium NY-z2b3t1	Wind (20-100 MW)	2	29%	113	40%	60%	80%	100%	100%	100%
Wind Small Agg NY-z3agt2	Wind (20-100 MW)	3	31%	15	40%	60%	80%	100%	100%	100%
Wind Small NY-z1b1t1	Wind (<20 MW)	1	37%	34	40%	60%	80%	100%	100%	100%
Wind Small NY-z1b1t2	Wind (<20 MW)	1	37%	10	40%	60%	80%	100%	100%	100%
Wind Small NY-z1b2t1	Wind (<20 MW)	1	33%	21	40%	60%	80%	100%	100%	100%
Wind Small NY-z1b2t2	Wind (<20 MW)	1	33%	17	40%	60%	80%	100%	100%	100%
Wind Small NY-z1b3t1	Wind (<20 MW)	1	29%	191	40%	60%	80%	100%	100%	100%
Wind Small NY-z1b3t2	Wind (<20 MW)	1	29%	78	40%	60%	80%	100%	100%	100%
Wind Small NY-z2b1t1	Wind (<20 MW)	2	37%	10	40%	60%	80%	100%	100%	100%
Wind Small NY-z2b2t1	Wind (<20 MW)	2	33%	11	40%	60%	80%	100%	100%	100%
Wind Small NY-z3b2t1	Wind (<20 MW)	3	33%	10	40%	60%	80%	100%	100%	100%
Wind Small NY-z2b2t2	Wind (<20 MW)	2	33%	10	40%	60%	80%	100%	100%	100%
Wind Small NY-z2b3t1	Wind (<20 MW)	2	29%	62	40%	60%	80%	100%	100%	100%
Wind Small NY-z3b3t1	Wind (<20 MW)	3	29%	29	40%	60%	80%	100%	100%	100%
Wind Small NY-z2b3t2	Wind (<20 MW)	2	29%	14	40%	60%	80%	100%	100%	100%
Off-Shore Wind Lakes NY-z1	Wind (Offshore)	1	34%	311	0%	0%	0%	20%	40%	60%
Off-Shore Wind LI NY-z3	Wind (Offshore)	3	36%	579	0%	0%	0%	20%	40%	60%
Wind Farms Quebec	Import Wind (Farm)	QC	29%	0	0%	0%	0%	0%	0%	0%
Wind Farms Ontario	Import Wind (Farm)	ON	29%	0	0%	0%	0%	0%	0%	0%
Wind Farms PJM b1	Import Wind (Farm)	PJM	29%	250	40%	60%	80%	100%	100%	100%
Wind Farms PJM b2	Import Wind (Farm)	PJM	29%	0	40%	60%	80%	100%	100%	100%
Biomass CHP Existing NY z1	Biomass (Zone 1)	1	80%	96	20%	40%	60%	80%	100%	100%
Biomass CHP New NY z1	Biomass (Zone 1)	1	80%	58	20%	40%	60%	80%	100%	100%
Biomass Co-firing w/Coal NY-z1	Biomass (Zone 1)	1	70%	81	0%	20%	40%	60%	80%	100%
Biomass Stoker NY z1	Biomass (Zone 1)	1	85%	500	0%	20%	40%	60%	80%	100%
Fluidized Bed Repower Existing NY z1	Biomass (Zone 1)	1	85%	286	0%	20%	40%	60%	80%	100%
Fluidized Bed Repower Retire NY z1	Biomass (Zone 1)	1	85%	46	0%	20%	40%	60%	80%	100%
Biomass CHP Existing NY z2	Biomass (Zone 2)	2	80%	4	20%	40%	60%	80%	100%	100%
Biomass CHP New NY z2	Biomass (Zone 2)	2	80%	0	20%	40%	60%	80%	100%	100%
Biomass Co-firing w/Coal NY-z2	Biomass (Zone 2)	2	70%	29	0%	20%	40%	60%	80%	100%
Biomass Stoker NY z2	Biomass (Zone 2)	2	85%	500	0%	20%	40%	60%	80%	100%
Fluidized Bed Repower Existing NY z2	Biomass (Zone 2)	2	85%	62	0%	20%	40%	60%	80%	100%
Fluidized Bed Repower Retire NY z2	Biomass (Zone 2)	2	85%	217	0%	20%	40%	60%	80%	100%
Biomass CHP Existing NY z3	Biomass (Zone 3)	3	80%	89	20%	40%	60%	80%	100%	100%
Biomass CHP New NY z3	Biomass (Zone 3)	3	80%	59	20%	40%	60%	80%	100%	100%
Biomass Co-firing w/Coal NY-z3	Biomass (Zone 3)	3	55%	0	0%	20%	40%	60%	80%	100%
Biomass Stoker NY z3	Biomass (Zone 3)	3	80%	0	0%	20%	40%	60%	80%	100%
Fluidized Bed Repower Existing NY z3	Biomass (Zone 3)	3	85%	132	0%	20%	40%	60%	80%	100%
Fluidized Bed Repower Retire NY z3	Biomass (Zone 3)	3	85%	48	0%	20%	40%	60%	80%	100%
Biomass Co-firing w/Coal Ontario	Import Biomass (co-fir	ON	55%	0	0%	0%	0%	0%	0%	0%
Biomass Co-firing w/Coal PJM	Import Biomass (co-fir	PJM	65%	0	0%	20%	40%	60%	80%	100%
New Low-Impact Hydro NY z1	Hydro (new low-impac	1	46%	34	20%	40%	60%	80%	100%	100%
New Low-Impact Hydro NY z2	Hydro (new low-impac	2	46%	9	20%	40%	60%	80%	100%	100%
New Low-Impact Hydro NY z3	Hydro (new low-impac	3	46%	0	20%	40%	60%	80%	100%	100%
New Low-Impact Hydro Quebec	ImportHydro (new low-	QC	50%	100	20%	40%	60%	80%	100%	100%
New Low-Impact Hydro Ontario	ImportHydro (new low-	ON	67%	64	20%	40%	60%	80%	100%	100%
Hydro Upgrades NY z1	Hydro (upgrades)	1	46%	125	40%	60%	80%	100%	100%	100%
Hydro Upgrades NY z2	Hydro (upgrades)	2	46%	23	40%	60%	80%	100%	100%	100%
Hydro Upgrades NY z3	Hydro (upgrades)	3	46%	0	40%	60%	80%	100%	100%	100%
Hydro Upgrades Quebec	Import Hydro (upgrade	QC	50%	100	20%	40%	60%	80%	100%	100%
Hydro Upgrades Ontario	Import Hydro (upgrade	ON	67%	24	20%	40%	60%	80%	100%	100%
Very Small New Hydro NY z1	Hydro (very small new	1	29%	10	20%	40%	60%	80%	100%	100%
Very Small New Hydro NY z2	Hydro (very small new	2	29%	3	20%	40%	60%	80%	100%	100%
Very Small New Hydro NY z3	Hydro (very small new	3	29%	0	20%	40%	60%	80%	100%	100%
Landfill Gas IC Engines NY z1	Landfill Gas	1	85%	88	40%	60%	80%	100%	100%	100%
Landfill Gas IC Engines NY z2	Landfill Gas	2	85%	26	40%	60%	80%	100%	100%	100%
Landfill Gas IC Engines NY z3	Landfill Gas	3	85%	3	40%	60%	80%	100%	100%	100%
Landfill Gas Microturbines NY z1	Landfill Gas	1	85%	3	40%	60%	80%	100%	100%	100%
Landfill Gas Microturbines NY z2	Landfill Gas	2	85%	1	40%	60%	80%	100%	100%	100%
Landfill Gas Microturbines NY z3	Landfill Gas	3	85%	0	40%	60%	80%	100%	100%	100%

		30% Post EPS Case: Main Tier Results											
								2010	2011	2012	2013	2014	2015
						Incremental NY Goal (GWh)		1,576	1,708	1,549	1,538	984	952
						REC Clearing Price		$19.65	$18.94	$16.82	$15.15	$28.46	$31.67
						Cleared GWh		1,576	1,708	1,549	1,538	984	952
	Cleared MW							Cleared GWh					
Resource Block	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**		**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Wind Large Agg NY-z2agt1	22	22	22	22	0	0		56	56	56	56	0	0
Wind Large NY-z1b1t1	42	42	42	42	0	0		135	135	135	135	0	0
Wind Large NY-z1b2t1	253	299	244	240	56	0		731	863	704	693	162	0
Wind Large NY-z1b3t1	0	0	0	0	0	7		0	0	0	0	0	17
Wind Medium NY-z1b1t1	0	0	0	0	0	0		0	0	0	0	0	0
Wind Medium NY-z1b2t1	0	0	0	0	0	60		0	0	0	0	0	173
Wind Medium NY-z1b3t1	0	0	0	0	0	0		0	0	0	0	0	0
Wind Medium NY-z2b1t1	0	0	0	0	0	0		0	0	0	0	0	0
Wind Medium NY-z2b2t1	12	12	12	12	0	0		35	35	35	35	0	0
Wind Medium NY-z2b3t1	0	0	0	0	0	113		0	0	0	0	0	288
Wind Small Agg NY-z3agt2	0	0	0	0	0	0		0	0	0	0	0	0
Wind Small NY-z1b1t1	0	0	0	0	0	0		0	0	0	0	0	0
Wind Small NY-z1b1t2	0	0	0	0	0	0		0	0	0	0	0	0
Wind Small NY-z1b2t1	0	0	0	0	0	0		0	0	0	0	0	0
Wind Small NY-z1b2t2	0	0	0	0	0	0		0	0	0	0	0	0
Wind Small NY-z1b3t1	0	0	0	0	0	0		0	0	0	0	0	0
Wind Small NY-z1b3t2	0	0	0	0	0	0		0	0	0	0	0	0
Wind Small NY-z2b1t1	0	0	0	0	0	10		0	0	0	0	0	33
Wind Small NY-z2b2t1	0	0	0	0	0	0		0	0	0	0	0	0
Wind Small NY-z3b2t1	0	0	0	0	10	0		0	0	0	0	29	0
Wind Small NY-z2b2t2	0	0	0	0	0	0		0	0	0	0	0	0
Wind Small NY-z2b3t1	0	0	0	0	0	0		0	0	0	0	0	0
Wind Small NY-z3b3t1	0	0	0	0	0	0		0	0	0	0	0	0
Wind Small NY-z2b3t2	0	0	0	0	0	0		0	0	0	0	0	0
Off-Shore Wind Lakes NY-z1	0	0	0	0	0	0		0	0	0	0	0	0
Off-Shore Wind LI NY-z3	0	0	0	0	0	0		0	0	0	0	0	0
Wind Farms Quebec	0	0	0	0	0	0		0	0	0	0	0	0
Wind Farms Ontario	0	0	0	0	0	0		0	0	0	0	0	0
Wind Farms PJM b1	0	0	0	0	0	0		0	0	0	0	0	0
Wind Farms PJM b2	0	0	0	0	0	0		0	0	0	0	0	0
Biomass CHP Existing NY z1	19	19	19	19	19	0		135	135	135	135	135	0
Biomass CHP New NY z1	0	0	0	0	58	0		0	0	0	0	405	0
Biomass Co-firing w/Coal NY-z1	0	0	0	0	9	72		0	0	0	0	56	441
Biomass Stoker NY z1	0	0	0	0	0	0		0	0	0	0	0	0
Fluidized Bed Repower Existing NY z1	0	0	0	0	0	0		0	0	0	0	0	0
Fluidized Bed Repower Retire NY z1	0	0	0	0	0	0		0	0	0	0	0	0
Biomass CHP Existing NY z2	0	0	0	0	0	0		0	0	0	0	0	0
Biomass CHP New NY z2	0	0	0	0	0	0		0	0	0	0	0	0
Biomass Co-firing w/Coal NY-z2	0	0	0	0	0	0		0	0	0	0	0	0
Biomass Stoker NY z2	0	0	0	0	0	0		0	0	0	0	0	0
Fluidized Bed Repower Existing NY z2	0	0	0	0	0	0		0	0	0	0	0	0
Fluidized Bed Repower Retire NY z2	0	0	0	0	0	0		0	0	0	0	0	0
Biomass CHP Existing NY z3	0	0	0	0	0	0		0	0	0	0	0	0
Biomass CHP New NY z3	0	0	0	0	0	0		0	0	0	0	0	0
Biomass Co-firing w/Coal NY-z3	0	0	0	0	0	0		0	0	0	0	0	0
Biomass Stoker NY z3	0	0	0	0	0	0		0	0	0	0	0	0
Fluidized Bed Repower Existing NY z3	0	0	0	0	0	0		0	0	0	0	0	0
Fluidized Bed Repower Retire NY z3	0	0	0	0	0	0		0	0	0	0	0	0
Biomass Co-firing w/Coal Ontario	0	0	0	0	0	0		0	0	0	0	0	0
Biomass Co-firing w/Coal PJM	0	0	0	0	0	0		0	0	0	0	0	0
New Low-Impact Hydro NY z1	0	0	0	0	0	0		0	0	0	0	0	0
New Low-Impact Hydro NY z2	0	0	0	0	0	0		0	0	0	0	0	0
New Low-Impact Hydro NY z3	0	0	0	0	0	0		0	0	0	0	0	0
New Low-Impact Hydro Quebec	0	0	0	0	0	0		0	0	0	0	0	0
New Low-Impact Hydro Ontario	13	13	13	13	13	0		75	75	75	75	75	0
Hydro Upgrades NY z1	25	25	25	25	0	0		101	101	101	101	0	0
Hydro Upgrades NY z2	5	5	5	5	0	0		18	18	18	18	0	0
Hydro Upgrades NY z3	0	0	0	0	0	0		0	0	0	0	0	0
Hydro Upgrades Quebec	20	20	20	20	20	0		88	88	88	88	88	0
Hydro Upgrades Ontario	5	5	5	5	5	0		28	28	28	28	28	0
Very Small New Hydro NY z1	0	0	0	0	0	0		0	0	0	0	0	0
Very Small New Hydro NY z2	0	0	0	0	0	0		0	0	0	0	0	0
Very Small New Hydro NY z3	0	0	0	0	0	0		0	0	0	0	0	0
Landfill Gas IC Engines NY z1	18	18	18	18	0	0		131	131	131	131	0	0
Landfill Gas IC Engines NY z2	5	5	5	5	0	0		38	38	38	38	0	0
Landfill Gas IC Engines NY z3	1	1	1	1	0	0		5	5	5	5	0	0
Landfill Gas Microturbines NY z1	0	0	0	0	0	0		0	0	0	0	0	0
Landfill Gas Microturbines NY z2	0	0	0	0	1	0		0	0	0	0	6	0
Landfill Gas Microturbines NY z3	0	0	0	0	0	0		0	0	0	0	0	0

30% Post EPS Case: Main Tier Results

	REC Price Requirement					
Resource Block	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Wind Large Agg NY-z2agt1	$ 15.67	$ 14.91	$ 13.76	$ 12.19	$ 8.61	$ 6.67
Wind Large NY-z1b1t1	$ 4.43	$ 3.74	$ 2.65	$ 1.12	$ -	$ -
Wind Large NY-z1b2t1	$ 19.65	$ 18.94	$ 16.82	$ 15.15	$ 13.30	$ 9.44
Wind Large NY-z1b3t1	$ 39.14	$ 38.61	$ 37.56	$ 35.94	$ 34.14	$ 31.67
Wind Medium NY-z1b1t1	$ 19.33	$ 17.66	$ 16.50	$ 14.81	$ 12.95	$ 9.13
Wind Medium NY-z1b2t1	$ 36.50	$ 35.93	$ 34.84	$ 33.18	$ 30.88	$ 28.85
Wind Medium NY-z1b3t1	$ 58.68	$ 58.34	$ 57.46	$ 56.01	$ 54.38	$ 52.27
Wind Medium NY-z2b1t1	$ 0.90	$ 0.13	$ -	$ -	$ -	$ -
Wind Medium NY-z2b2t1	$ 16.02	$ 15.26	$ 14.11	$ 12.54	$ 8.89	$ 6.94
Wind Medium NY-z2b3t1	$ 38.47	$ 37.87	$ 36.85	$ 35.36	$ 33.49	$ 30.75
Wind Small Agg NY-z3agt2	$ 80.54	$ 80.87	$ 80.49	$ 79.53	$ 78.13	$ 76.45
Wind Small NY-z1b1t1	$ 55.72	$ 55.58	$ 54.91	$ 53.67	$ 51.97	$ 50.35
Wind Small NY-z1b1t2	$ 82.37	$ 83.01	$ 83.13	$ 82.70	$ 82.11	$ 81.34
Wind Small NY-z1b2t1	$ 77.54	$ 77.66	$ 77.25	$ 76.27	$ 75.11	$ 73.54
Wind Small NY-z1b2t2	$ 107.23	$ 108.23	$ 108.72	$ 108.67	$ 108.46	$ 108.09
Wind Small NY-z1b3t1	$ 105.25	$ 105.70	$ 105.63	$ 105.01	$ 104.21	$ 103.22
Wind Small NY-z1b3t2	$ 138.82	$ 140.28	$ 141.24	$ 141.67	$ 141.96	$ 142.10
Wind Small NY-z2b1t1	$ 35.58	$ 35.17	$ 34.35	$ 33.07	$ 30.95	$ 28.89
Wind Small NY-z2b2t1	$ 57.38	$ 57.23	$ 56.65	$ 55.61	$ 54.19	$ 52.08
Wind Small NY-z3b2t1	$ 35.44	$ 34.70	$ 33.24	$ 30.74	$ 28.28	$ 24.87
Wind Small NY-z2b2t2	$ 87.20	$ 87.92	$ 88.40	$ 88.28	$ 87.63	$ 86.75
Wind Small NY-z2b3t1	$ 85.22	$ 85.40	$ 85.16	$ 84.46	$ 83.39	$ 81.90
Wind Small NY-z3b3t1	$ 62.84	$ 62.42	$ 61.26	$ 59.24	$ 57.04	$ 54.52
Wind Small NY-z2b3t2	$ 119.11	$ 120.28	$ 121.07	$ 121.43	$ 121.44	$ 121.07
Off-Shore Wind Lakes NY-z1	$ 175.99	$ 174.10	$ 171.71	$ 168.78	$ 165.72	$ 162.55
Off-Shore Wind LI NY-z3	$ 110.61	$ 107.60	$ 104.07	$ 99.85	$ 95.23	$ 90.16
Wind Farms Quebec	$ 87.20	$ 87.36	$ 87.00	$ 86.08	$ 84.85	$ 83.57
Wind Farms Ontario	$ 77.37	$ 77.54	$ 77.18	$ 76.27	$ 75.18	$ 73.91
Wind Farms PJM b1	$ 47.26	$ 46.68	$ 45.56	$ 43.88	$ 41.64	$ 39.58
Wind Farms PJM b2	$ 45.12	$ 44.50	$ 42.95	$ 41.21	$ 39.29	$ 37.15
Biomass CHP Existing NY z1	$ -	$ -	$ -	$ -	$ -	$ 0.16
Biomass CHP New NY z1	$ 26.20	$ 26.83	$ 27.02	$ 26.76	$ 28.10	$ 29.26
Biomass Co-firing w/Coal NY-z1	$ 24.32	$ 25.12	$ 25.94	$ 26.79	$ 28.46	$ 30.08
Biomass Stoker NY z1	$ 93.19	$ 95.53	$ 97.31	$ 98.64	$ 101.24	$ 103.80
Fluidized Bed Repower Existing NY z1	$ 35.39	$ 36.46	$ 37.10	$ 37.29	$ 38.75	$ 40.47
Fluidized Bed Repower Retire NY z1	$ 29.81	$ 30.76	$ 31.29	$ 31.37	$ 33.19	$ 34.40
Biomass CHP Existing NY z2	$ 78.60	$ 85.17	$ 91.67	$ 98.04	$ 104.35	$ 110.83
Biomass CHP New NY z2	$ 40.88	$ 44.44	$ 48.12	$ 51.27	$ 54.58	$ 57.50
Biomass Co-firing w/Coal NY-z2	$ 39.70	$ 41.97	$ 44.33	$ 46.78	$ 49.32	$ 51.95
Biomass Stoker NY z2	$ 98.06	$ 102.48	$ 106.61	$ 110.74	$ 114.50	$ 118.13
Fluidized Bed Repower Existing NY z2	$ 41.87	$ 45.18	$ 48.58	$ 51.43	$ 54.42	$ 56.98
Fluidized Bed Repower Retire NY z2	$ 36.31	$ 39.88	$ 42.85	$ 45.57	$ 48.48	$ 50.92
Biomass CHP Existing NY z3	$ 134.00	$ 137.10	$ 139.54	$ 141.48	$ 143.06	$ 144.44
Biomass CHP New NY z3	$ 161.89	$ 165.53	$ 168.53	$ 171.02	$ 173.17	$ 175.14
Biomass Co-firing w/Coal NY-z3	$ 109.81	$ 112.38	$ 115.01	$ 117.70	$ 120.46	$ 123.28
Biomass Stoker NY z3	$ 184.96	$ 189.23	$ 192.87	$ 196.03	$ 198.87	$ 201.54
Fluidized Bed Repower Existing NY z3	$ 131.49	$ 134.74	$ 137.34	$ 139.44	$ 141.19	$ 142.75
Fluidized Bed Repower Retire NY z3	$ 126.13	$ 129.28	$ 131.77	$ 133.76	$ 135.40	$ 136.84
Biomass Co-firing w/Coal Ontario	$ 32.56	$ 33.02	$ 33.48	$ 33.95	$ 34.44	$ 34.94
Biomass Co-firing w/Coal PJM	$ 28.25	$ 28.76	$ 29.27	$ 29.80	$ 30.34	$ 30.90
New Low-Impact Hydro NY z1	$ 65.92	$ 68.73	$ 70.96	$ 72.78	$ 74.83	$ 76.68
New Low-Impact Hydro NY z2	$ 45.25	$ 47.86	$ 49.88	$ 51.61	$ 53.13	$ 54.72
New Low-Impact Hydro NY z3	$ 15.62	$ 17.17	$ 19.15	$ 19.76	$ 20.06	$ 20.18
New Low-Impact Hydro Quebec	$ 31.60	$ 32.53	$ 33.04	$ 33.12	$ 33.16	$ 33.16
New Low-Impact Hydro Ontario	$ 13.64	$ 13.86	$ 14.08	$ 14.32	$ 14.55	$ 14.80
Hydro Upgrades NY z1	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Upgrades NY z2	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Upgrades NY z3	$ -	$ -	$ -	$ -	$ -	$ -
Hydro Upgrades Quebec	$ 13.92	$ 14.24	$ 14.57	$ 14.90	$ 15.24	$ 15.59
Hydro Upgrades Ontario	$ 9.64	$ 9.86	$ 10.08	$ 10.32	$ 10.55	$ 10.80
Very Small New Hydro NY z1	$ 244.16	$ 252.03	$ 259.68	$ 267.07	$ 274.64	$ 282.39
Very Small New Hydro NY z2	$ 223.96	$ 231.55	$ 239.02	$ 246.33	$ 253.61	$ 260.83
Very Small New Hydro NY z3	$ 195.14	$ 202.15	$ 208.69	$ 214.90	$ 220.93	$ 226.96
Landfill Gas IC Engines NY z1	$ -	$ -	$ -	$ -	$ -	$ -
Landfill Gas IC Engines NY z2	$ -	$ -	$ -	$ -	$ -	$ -
Landfill Gas IC Engines NY z3	$ -	$ -	$ -	$ -	$ -	$ -
Landfill Gas Microturbines NY z1	$ 38.02	$ 40.01	$ 41.21	$ 41.98	$ 42.74	$ 43.49
Landfill Gas Microturbines NY z2	$ 20.32	$ 21.67	$ 22.73	$ 23.48	$ 24.02	$ 24.34
Landfill Gas Microturbines NY z3	$ -	$ -	$ -	$ -	$ -	$ -

Attachment 6

MAIN TIER CLEARING PRICES AND RESOURCES REACHED ON SUPPLY CURVE

(12 pages)

25% New Load Case

2010 Market Clearing Price

	2010
Incremental NY Goal (GWh)	**1,650**
REC Clearing Price	**$19.65**
Cleared GWh	1,650

Resource Block	Resource	Zone	CF	Max MW	Cleared MW 2010	Cleared GWH 2010	REC Price Requirement 2010
Very Small New Hydro NY z1	Hydro	1	29%	10	0	0	$ 244.16
Very Small New Hydro NY z2	Hydro	2	29%	3	0	0	$ 223.96
Very Small New Hydro NY z3	Hydro	3	29%	0	0	0	$ 195.14
Biomass Stoker NY z3	Biomass	3	80%	0	0	0	$ 184.96
Off-Shore Wind Lakes NY-z1	Wind (Offshore)	1	34%	311	0	0	$ 175.99
Biomass CHP New NY z3	Biomass	3	80%	59	0	0	$ 161.89
Wind Small NY-z1b3t2	Wind (Onshore)	1	29%	78	0	0	$ 138.82
Biomass CHP Existing NY z3	Biomass	3	80%	89	0	0	$ 134.00
Fluidized Bed Repower Existing NY z3	Biomass	3	85%	132	0	0	$ 131.49
Fluidized Bed Repower Retire NY z3	Biomass	3	85%	48	0	0	$ 126.13
Wind Small NY-z2b3t2	Wind (Onshore)	2	29%	14	0	0	$ 119.11
Off-Shore Wind LI NY-z3	Wind (Offshore)	3	36%	579	0	0	$ 110.61
Biomass Co-firing w/Coal NY-z3	Biomass	3	55%	0	0	0	$ 109.81
Wind Small NY-z1b2t2	Wind (Onshore)	1	33%	17	0	0	$ 107.23
Wind Small NY-z1b3t1	Wind (Onshore)	1	29%	191	0	0	$ 105.25
Biomass Stoker NY z2	Biomass	2	85%	500	0	0	$ 98.06
Biomass Stoker NY z1	Biomass	1	85%	500	0	0	$ 89.75
Wind Small NY-z2b2t2	Wind (Onshore)	2	33%	10	0	0	$ 87.20
Wind Farms Quebec	Wind (Onshore)	QC	29%	0	0	0	$ 87.20
Wind Small NY-z2b3t1	Wind (Onshore)	2	29%	62	0	0	$ 85.22
Wind Small NY-z1b1t2	Wind (Onshore)	1	37%	10	0	0	$ 82.37
Wind Small Agg NY-z3agt2	Wind (Onshore)	3	31%	15	0	0	$ 80.54
Biomass CHP Existing NY z2	Biomass	2	80%	4	0	0	$ 78.60
Wind Small NY-z1b2t1	Wind (Onshore)	1	33%	21	0	0	$ 77.54
Wind Farms Ontario	Wind (Onshore)	ON	29%	0	0	0	$ 77.37
New Low-Impact Hydro NY z1	Hydro	1	46%	34	0	0	$ 65.92
Wind Small NY-z3b3t1	Wind (Onshore)	3	29%	29	0	0	$ 62.84
Wind Medium NY-z1b3t1	Wind (Onshore)	1	29%	364	0	0	$ 58.68
Wind Small NY-z2b2t1	Wind (Onshore)	2	33%	11	0	0	$ 57.38
Wind Small NY-z1b1t1	Wind (Onshore)	1	37%	34	0	0	$ 55.72
Wind Farms PJM b1	Wind (Onshore)	PJM	29%	250	0	0	$ 47.26
New Low-Impact Hydro NY z2	Hydro	2	46%	9	0	0	$ 45.25
Wind Farms PJM b2	Wind (Onshore)	PJM	29%	0	0	0	$ 45.12
Fluidized Bed Repower Existing NY z2	Biomass	2	85%	62	0	0	$ 41.87
Biomass CHP New NY z2	Biomass	2	80%	0	0	0	$ 40.88
Biomass Co-firing w/Coal NY-z2	Biomass	2	70%	29	0	0	$ 39.70
Wind Large NY-z1b3t1	Wind (Onshore)	1	29%	5289	0	0	$ 39.14
Wind Medium NY-z2b3t1	Wind (Onshore)	2	29%	113	0	0	$ 38.47
Landfill Gas Microturbines NY z1	Landfill Gas	1	85%	3	0	0	$ 38.02
Wind Medium NY-z1b2t1	Wind (Onshore)	1	33%	60	0	0	$ 36.50
Fluidized Bed Repower Retire NY z2	Biomass	2	85%	217	0	0	$ 36.31
Wind Small NY-z2b1t1	Wind (Onshore)	2	37%	10	0	0	$ 35.58
Wind Small NY-z3b2t1	Wind (Onshore)	3	33%	10	0	0	$ 35.44
Biomass Co-firing w/Coal Ontario	Biomass	ON	55%	0	0	0	$ 32.56
New Low-Impact Hydro Quebec	Hydro	QC	50%	100	0	0	$ 31.60
Fluidized Bed Repower Existing NY z1	Biomass	1	85%	286	0	0	$ 31.42
Biomass Co-firing w/Coal PJM	Biomass	PJM	65%	0	0	0	$ 28.25
Fluidized Bed Repower Retire NY z1	Biomass	1	85%	46	0	0	$ 26.35
Biomass Co-firing w/Coal NY-z1	Biomass	1	70%	81	0	0	$ 22.23
Biomass CHP New NY z1	Biomass	1	80%	58	0	0	$ 21.26
Landfill Gas Microturbines NY z2	Landfill Gas	2	85%	1	0	0	$ 20.32
Wind Large NY-z1b2t1	Wind (Onshore)	1	33%	1279	278	805	$ 19.65
Wind Medium NY-z1b1t1	Wind (Onshore)	1	37%	0	0	0	$ 19.33
Wind Medium NY-z2b2t1	Wind (Onshore)	2	33%	60	12	35	$ 16.02
Wind Large Agg NY-z2agt1	Wind (Onshore)	2	30%	108	22	56	$ 15.67
New Low-Impact Hydro NY z3	Hydro	3	46%	0	0	0	$ 15.62
Hydro Upgrades Quebec	Hydro	QC	50%	100	20	88	$ 13.92
New Low-Impact Hydro Ontario	Hydro	ON	67%	64	13	75	$ 13.64
Hydro Upgrades Ontario	Hydro	ON	67%	24	5	28	$ 9.64
Wind Large NY-z1b1t1	Wind (Onshore)	1	37%	208	42	135	$ 4.43
Wind Medium NY-z2b1t1	Wind (Onshore)	2	37%	0	0	0	$ 0.90
Biomass CHP Existing NY z1	Biomass	1	80%	96	19	135	$ -
Hydro Upgrades NY z1	Hydro	1	46%	125	25	101	$ -
Hydro Upgrades NY z2	Hydro	2	46%	23	5	18	$ -
Hydro Upgrades NY z3	Hydro	3	46%	0	0	0	$ -
Landfill Gas IC Engines NY z1	Landfill Gas	1	85%	88	18	131	$ -
Landfill Gas IC Engines NY z2	Landfill Gas	2	85%	26	5	38	$ -
Landfill Gas IC Engines NY z3	Landfill Gas	3	85%	3	1	5	$ -
Landfill Gas Microturbines NY z3	Landfill Gas	3	85%	0	0	0	$ -

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25% Post EPS Case: Results

2010 Market Clearing Price

	2010
Incremental NY Goal (GWh)	**1,015**
REC Clearing Price	**$19.65**
Cleared GWh	1,015

Resource Block	Resource	Zone	CF	Max MW	Cleared MW 2010	Cleared GWH 2010	REC Price Requirement 2010
Very Small New Hydro NY z1	Hydro	1	29%	10	0	0	$ 244.16
Very Small New Hydro NY z2	Hydro	2	29%	3	0	0	$ 223.96
Very Small New Hydro NY z3	Hydro	3	29%	0	0	0	$ 195.14
Biomass Stoker NY z3	Biomass	3	80%	0	0	0	$ 184.96
Off-Shore Wind Lakes NY-z1	Wind (Offshore)	1	34%	311	0	0	$ 175.99
Biomass CHP New NY z3	Biomass	3	80%	59	0	0	$ 161.89
Wind Small NY-z1b3t2	Wind (Onshore)	1	29%	78	0	0	$ 138.82
Biomass CHP Existing NY z3	Biomass	3	80%	89	0	0	$ 134.00
Fluidized Bed Repower Existing NY z3	Biomass	3	85%	132	0	0	$ 131.49
Fluidized Bed Repower Retire NY z3	Biomass	3	85%	48	0	0	$ 126.13
Wind Small NY-z2b3t2	Wind (Onshore)	2	29%	14	0	0	$ 119.11
Off-Shore Wind LI NY-z3	Wind (Offshore)	3	36%	579	0	0	$ 110.61
Biomass Co-firing w/Coal NY-z3	Biomass	3	55%	0	0	0	$ 109.81
Wind Small NY-z1b2t2	Wind (Onshore)	1	33%	17	0	0	$ 107.23
Wind Small NY-z1b3t1	Wind (Onshore)	1	29%	191	0	0	$ 105.25
Biomass Stoker NY z2	Biomass	2	85%	500	0	0	$ 98.06
Biomass Stoker NY z1	Biomass	1	85%	500	0	0	$ 89.75
Wind Small NY-z2b2t2	Wind (Onshore)	2	33%	10	0	0	$ 87.20
Wind Small NY-z2b3t1	Wind (Onshore)	2	29%	62	0	0	$ 87.20
Wind Farms Quebec	Wind (Onshore)	QC	29%	0	0	0	$ 85.22
Wind Small NY-z1b1t2	Wind (Onshore)	1	37%	10	0	0	$ 82.37
Wind Small Agg NY-z3agt2	Wind (Onshore)	3	31%	15	0	0	$ 80.54
Biomass CHP Existing NY z2	Biomass	2	80%	4	0	0	$ 78.60
Wind Small NY-z1b2t1	Wind (Onshore)	1	33%	21	0	0	$ 77.54
Wind Farms Ontario	Wind (Onshore)	ON	29%	0	0	0	$ 77.37
New Low-Impact Hydro NY z1	Hydro	1	46%	34	0	0	$ 65.92
Wind Small NY-z3b3t1	Wind (Onshore)	3	29%	29	0	0	$ 62.84
Wind Medium NY-z1b3t1	Wind (Onshore)	1	29%	364	0	0	$ 58.68
Wind Small NY-z2b2t1	Wind (Onshore)	2	33%	11	0	0	$ 57.38
Wind Small NY-z1b1t1	Wind (Onshore)	1	37%	34	0	0	$ 55.72
New Low-Impact Hydro NY z2	Hydro	2	46%	9	0	0	$ 47.26
Wind Farms PJM b1	Wind (Onshore)	PJM	29%	250	0	0	$ 45.25
Fluidized Bed Repower Existing NY z2	Biomass	2	85%	62	0	0	$ 45.12
Wind Farms PJM b2	Wind (Onshore)	PJM	29%	0	0	0	$ 41.87
Biomass CHP New NY z2	Biomass	2	80%	0	0	0	$ 40.88
Biomass Co-firing w/Coal NY-z2	Biomass	2	70%	29	0	0	$ 39.70
Wind Large NY-z1b3t1	Wind (Onshore)	1	29%	5289	0	0	$ 39.14
Wind Medium NY-z2b3t1	Wind (Onshore)	2	29%	113	0	0	$ 38.47
Landfill Gas Microturbines NY z1	Landfill Gas	1	85%	3	0	0	$ 38.02
Wind Medium NY-z1b2t1	Wind (Onshore)	1	33%	60	0	0	$ 36.50
Fluidized Bed Repower Retire NY z2	Biomass	2	85%	217	0	0	$ 36.31
Wind Small NY-z2b1t1	Wind (Onshore)	2	37%	10	0	0	$ 35.58
Wind Small NY-z3b2t1	Wind (Onshore)	3	33%	10	0	0	$ 35.44
Fluidized Bed Repower Existing NY z1	Biomass	1	85%	286	0	0	$ 32.56
Biomass Co-firing w/Coal Ontario	Biomass	ON	55%	0	0	0	$ 31.60
New Low-Impact Hydro Quebec	Hydro	QC	50%	100	0	0	$ 31.42
Fluidized Bed Repower Retire NY z1	Biomass	1	85%	46	0	0	$ 28.25
Biomass Co-firing w/Coal PJM	Biomass	PJM	65%	0	0	0	$ 26.35
Biomass Co-firing w/Coal NY-z1	Biomass	1	70%	81	0	0	$ 22.23
Landfill Gas Microturbines NY z2	Landfill Gas	2	85%	1	0	0	$ 21.26
Biomass CHP New NY z1	Biomass	1	80%	58	0	0	$ 20.32
Wind Large NY-z1b2t1	Wind (Onshore)	1	33%	1279	59	170	$ 19.65
Wind Medium NY-z1b1t1	Wind (Onshore)	1	37%	0	0	0	$ 19.33
Wind Medium NY-z2b2t1	Wind (Onshore)	2	33%	60	12	35	$ 16.02
Wind Large Agg NY-z2agt1	Wind (Onshore)	2	30%	108	22	56	$ 15.67
New Low-Impact Hydro NY z3	Hydro	3	46%	0	0	0	$ 15.62
Hydro Upgrades Quebec	Hydro	QC	50%	100	20	88	$ 13.92
New Low-Impact Hydro Ontario	Hydro	ON	67%	64	13	75	$ 13.64
Hydro Upgrades Ontario	Hydro	ON	67%	24	5	28	$ 9.64
Wind Large NY-z1b1t1	Wind (Onshore)	1	37%	208	42	135	$ 4.43
Wind Medium NY-z2b1t1	Wind (Onshore)	2	37%	0	0	0	$ 0.90
Biomass CHP Existing NY z1	Biomass	1	80%	96	19	135	$ -
Hydro Upgrades NY z1	Hydro	1	46%	125	25	101	$ -
Hydro Upgrades NY z2	Hydro	2	46%	23	5	18	$ -
Hydro Upgrades NY z3	Hydro	3	46%	0	0	0	$ -
Landfill Gas IC Engines NY z1	Landfill Gas	1	85%	88	18	131	$ -
Landfill Gas IC Engines NY z2	Landfill Gas	2	85%	26	5	38	$ -
Landfill Gas IC Engines NY z3	Landfill Gas	3	85%	3	1	5	$ -
Landfill Gas Microturbines NY z3	Landfill Gas	3	85%	0	0	0	$ -

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30% Post EPS Case: Results

2010 Market Clearing Price

	2010
Incremental NY Goal (GWh)	**1,576**
REC Clearing Price	**$19.65**
Cleared GWh	1,576

Resource Block	Resource	Zone	CF	Max MW	Cleared MW 2010	Cleared GWh 2010	REC Price Requirement 2010
Very Small New Hydro NY z1	Hydro	1	29%	10	0	0	$ 244.16
Very Small New Hydro NY z2	Hydro	2	29%	3	0	0	$ 223.96
Very Small New Hydro NY z3	Hydro	3	29%	0	0	0	$ 195.14
Biomass Stoker NY z3	Biomass	3	80%	0	0	0	$ 184.96
Off-Shore Wind Lakes NY-z1	Wind (Offshore)	1	34%	311	0	0	$ 175.99
Biomass CHP New NY z3	Biomass	3	80%	59	0	0	$ 161.89
Wind Small NY-z1b3t2	Wind (Onshore)	1	29%	78	0	0	$ 138.82
Biomass CHP Existing NY z3	Biomass	3	80%	89	0	0	$ 134.00
Fluidized Bed Repower Existing NY z3	Biomass	3	85%	132	0	0	$ 131.49
Fluidized Bed Repower Retire NY z3	Biomass	3	85%	48	0	0	$ 126.13
Wind Small NY-z2b3t2	Wind (Onshore)	2	29%	14	0	0	$ 119.11
Off-Shore Wind LI NY-z3	Wind (Offshore)	3	36%	579	0	0	$ 109.81
Biomass Co-firing w/Coal NY-z3	Biomass	3	55%	0	0	0	$ 107.23
Wind Small NY-z1b2t2	Wind (Onshore)	1	33%	17	0	0	$ 98.06
Wind Small NY-z1b3t1	Wind (Onshore)	1	29%	191	0	0	$ 105.25
Biomass Stoker NY z2	Biomass	2	85%	500	0	0	$ 110.61
Biomass Stoker NY z1	Biomass	1	85%	500	0	0	$ 93.19
Wind Small NY-z2b2t2	Wind (Onshore)	2	33%	10	0	0	$ 78.60
Wind Farms Quebec	Wind (Onshore)	QC	29%	0	0	0	$ 87.20
Wind Small NY-z2b3t1	Wind (Onshore)	2	29%	62	0	0	$ 87.20
Wind Small NY-z1b1t2	Wind (Onshore)	1	37%	10	0	0	$ 85.22
Wind Small Agg NY-z3agt2	Wind (Onshore)	3	31%	15	0	0	$ 82.37
Biomass CHP Existing NY z2	Biomass	2	80%	4	0	0	$ 80.54
Wind Small NY-z1b2t1	Wind (Onshore)	1	33%	21	0	0	$ 77.54
Wind Farms Ontario	Wind (Onshore)	ON	29%	0	0	0	$ 77.37
New Low-Impact Hydro NY z1	Hydro	1	46%	34	0	0	$ 65.92
Wind Small NY-z3b3t1	Wind (Onshore)	3	29%	29	0	0	$ 62.84
Wind Medium NY-z1b3t1	Wind (Onshore)	1	29%	364	0	0	$ 58.68
Wind Small NY-z2b2t1	Wind (Onshore)	2	33%	11	0	0	$ 57.38
Wind Small NY-z1b1t1	Wind (Onshore)	1	37%	34	0	0	$ 55.72
Wind Farms PJM b1	Wind (Onshore)	PJM	29%	250	0	0	$ 45.25
New Low-Impact Hydro NY z2	Hydro	2	46%	9	0	0	$ 41.87
Wind Farms PJM b2	Wind (Onshore)	PJM	29%	0	0	0	$ 40.88
Fluidized Bed Repower Existing NY z2	Biomass	2	85%	62	0	0	$ 47.26
Biomass CHP New NY z2	Biomass	2	80%	0	0	0	$ 39.70
Biomass Co-firing w/Coal NY-z2	Biomass	2	70%	29	0	0	$ 45.12
Wind Large NY-z1b3t1	Wind (Onshore)	1	29%	5289	0	0	$ 36.31
Wind Medium NY-z2b3t1	Wind (Onshore)	2	29%	113	0	0	$ 38.02
Landfill Gas Microturbines NY z1	Landfill Gas	1	85%	3	0	0	$ 39.14
Wind Medium NY-z1b2t1	Wind (Onshore)	1	33%	60	0	0	$ 35.39
Fluidized Bed Repower Retire NY z2	Biomass	2	85%	217	0	0	$ 38.47
Wind Small NY-z2b1t1	Wind (Onshore)	2	37%	10	0	0	$ 36.50
Wind Small NY-z3b2t1	Wind (Onshore)	3	33%	10	0	0	$ 35.58
Fluidized Bed Repower Existing NY z1	Biomass	1	85%	286	0	0	$ 32.56
Biomass Co-firing w/Coal Ontario	Biomass	ON	55%	0	0	0	$ 35.44
New Low-Impact Hydro Quebec	Hydro	QC	50%	100	0	0	$ 31.60
Fluidized Bed Repower Retire NY z1	Biomass	1	85%	46	0	0	$ 29.81
Biomass Co-firing w/Coal PJM	Biomass	PJM	65%	0	0	0	$ 28.25
Biomass CHP New NY z1	Biomass	1	80%	58	0	0	$ 26.20
Biomass Co-firing w/Coal NY-z1	Biomass	1	70%	81	0	0	$ 24.32
Landfill Gas Microturbines NY z2	Landfill Gas	2	85%	1	0	0	$ 20.32
Wind Large NY-z1b2t1	Wind (Onshore)	1	33%	1279	253	0	$ 15.62
Wind Medium NY-z1b1t1	Wind (Onshore)	1	37%	0	0	731	$ 19.65
Wind Medium NY-z2b2t1	Wind (Onshore)	2	33%	60	12	0	$ 19.33
Wind Large Agg NY-z2agt1	Wind (Onshore)	2	30%	108	22	88	$ 13.92
New Low-Impact Hydro NY z3	Hydro	3	46%	0	0	35	$ 16.02
Hydro Upgrades Quebec	Hydro	QC	50%	100	20	75	$ 13.64
New Low-Impact Hydro Ontario	Hydro	ON	67%	64	13	56	$ 15.67
Hydro Upgrades Ontario	Hydro	ON	67%	24	5	28	$ 9.64
Wind Large NY-z1b1t1	Wind (Onshore)	1	37%	208	42	135	$ 4.43
Wind Medium NY-z2b1t1	Wind (Onshore)	2	37%	0	0	0	$ 0.90
Biomass CHP Existing NY z1	Biomass	1	80%	96	19	135	$ -
Hydro Upgrades NY z1	Hydro	1	46%	125	25	101	$ -
Hydro Upgrades NY z2	Hydro	2	46%	23	5	18	$ -
Hydro Upgrades NY z3	Hydro	3	46%	0	0	0	$ -
Landfill Gas IC Engines NY z1	Landfill Gas	1	85%	88	18	131	$ -
Landfill Gas IC Engines NY z2	Landfill Gas	2	85%	26	5	38	$ -
Landfill Gas IC Engines NY z3	Landfill Gas	3	85%	3	1	5	$ -
Landfill Gas Microturbines NY z3	Landfill Gas	3	85%	0	0	0	$ -

25% New Load Case

2011 Market Clearing Price

	2011
Incremental NY Goal (GWh)	**1,670**
REC Clearing Price	**$18.94**
Cleared GWh	1,670

Resource Block	Resource	Zone	CF	Max MW	Cleared MW 2011	Cleared GWH 2011		REC Price Requirement 2011
Very Small New Hydro NY z1	Hydro	1	29%	10	0	0	$	252.03
Very Small New Hydro NY z2	Hydro	2	29%	3	0	0	$	231.55
Very Small New Hydro NY z3	Hydro	3	29%	0	0	0	$	202.15
Biomass Stoker NY z3	Biomass	3	80%	0	0	0	$	189.23
Off-Shore Wind Lakes NY-z1	Wind (Offshore)	1	34%	311	0	0	$	174.10
Biomass CHP New NY z3	Biomass	3	80%	59	0	0	$	165.53
Wind Small NY-z1b3t2	Wind (Onshore)	1	29%	78	0	0	$	140.28
Biomass CHP Existing NY z3	Biomass	3	80%	89	0	0	$	137.10
Fluidized Bed Repower Existing NY z3	Biomass	3	85%	132	0	0	$	134.74
Fluidized Bed Repower Retire NY z3	Biomass	3	85%	48	0	0	$	129.28
Wind Small NY-z2b3t2	Wind (Onshore)	2	29%	14	0	0	$	120.28
Biomass Co-firing w/Coal NY-z3	Biomass	3	55%	0	0	0	$	112.38
Wind Small NY-z1b2t2	Wind (Onshore)	1	33%	17	0	0	$	108.23
Off-Shore Wind LI NY-z3	Wind (Offshore)	3	36%	579	0	0	$	107.60
Wind Small NY-z1b3t1	Wind (Onshore)	1	29%	191	0	0	$	105.70
Biomass Stoker NY z2	Biomass	2	85%	500	0	0	$	102.48
Biomass Stoker NY z1	Biomass	1	85%	500	0	0	$	91.88
Wind Small NY-z2b2t2	Wind (Onshore)	2	33%	10	0	0	$	87.92
Wind Farms Quebec	Wind (Onshore)	QC	29%	0	0	0	$	87.36
Wind Small NY-z2b3t1	Wind (Onshore)	2	29%	62	0	0	$	85.40
Biomass CHP Existing NY z2	Biomass	2	80%	4	0	0	$	85.17
Wind Small NY-z1b1t2	Wind (Onshore)	1	37%	10	0	0	$	83.01
Wind Small Agg NY-z3agt2	Wind (Onshore)	3	31%	15	0	0	$	80.87
Wind Small NY-z1b2t1	Wind (Onshore)	1	33%	21	0	0	$	77.66
Wind Farms Ontario	Wind (Onshore)	ON	29%	0	0	0	$	77.54
New Low-Impact Hydro NY z1	Hydro	1	46%	34	0	0	$	68.73
Wind Small NY-z3b3t1	Wind (Onshore)	3	29%	29	0	0	$	62.42
Wind Medium NY-z1b3t1	Wind (Onshore)	1	29%	364	0	0	$	58.34
Wind Small NY-z2b2t1	Wind (Onshore)	2	33%	11	0	0	$	57.23
Wind Small NY-z1b1t1	Wind (Onshore)	1	37%	34	0	0	$	55.58
New Low-Impact Hydro NY z2	Hydro	2	46%	9	0	0	$	47.86
Wind Farms PJM b1	Wind (Onshore)	PJM	29%	250	0	0	$	46.68
Fluidized Bed Repower Existing NY z2	Biomass	2	85%	62	0	0	$	45.18
Wind Farms PJM b2	Wind (Onshore)	PJM	29%	0	0	0	$	44.50
Biomass CHP New NY z2	Biomass	2	80%	0	0	0	$	44.44
Biomass Co-firing w/Coal NY-z2	Biomass	2	70%	29	0	0	$	41.97
Landfill Gas Microturbines NY z1	Landfill Gas	1	85%	3	0	0	$	40.01
Fluidized Bed Repower Retire NY z2	Biomass	2	85%	217	0	0	$	39.88
Wind Large NY-z1b3t1	Wind (Onshore)	1	29%	5289	0	0	$	38.61
Wind Medium NY-z2b3t1	Wind (Onshore)	2	29%	113	0	0	$	37.87
Wind Medium NY-z1b2t1	Wind (Onshore)	1	33%	60	0	0	$	35.93
Wind Small NY-z2b1t1	Wind (Onshore)	2	37%	10	0	0	$	35.17
Wind Small NY-z3b2t1	Wind (Onshore)	3	33%	10	0	0	$	34.70
Biomass Co-firing w/Coal Ontario	Biomass	ON	55%	0	0	0	$	33.02
Fluidized Bed Repower Existing NY z1	Biomass	1	85%	286	0	0	$	32.87
New Low-Impact Hydro Quebec	Hydro	QC	50%	100	0	0	$	32.53
Biomass Co-firing w/Coal PJM	Biomass	PJM	65%	0	0	0	$	28.76
Fluidized Bed Repower Retire NY z1	Biomass	1	85%	46	0	0	$	27.22
Biomass Co-firing w/Coal NY-z1	Biomass	1	70%	81	0	0	$	22.98
Biomass CHP New NY z1	Biomass	1	80%	58	0	0	$	21.78
Landfill Gas Microturbines NY z2	Landfill Gas	2	85%	1	0	0	$	21.67
Wind Large NY-z1b2t1	Wind (Onshore)	1	33%	1279	285	825	$	18.94
Wind Medium NY-z1b1t1	Wind (Onshore)	1	37%	0	0	0	$	17.66
New Low-Impact Hydro NY z3	Hydro	3	46%	0	0	0	$	17.17
Wind Medium NY-z2b2t1	Wind (Onshore)	2	33%	60	12	35	$	15.26
Wind Large Agg NY-z2agt1	Wind (Onshore)	2	30%	108	22	56	$	14.91
Hydro Upgrades Quebec	Hydro	QC	50%	100	20	88	$	14.24
New Low-Impact Hydro Ontario	Hydro	ON	67%	64	13	75	$	13.86
Hydro Upgrades Ontario	Hydro	ON	67%	24	5	28	$	9.86
Wind Large NY-z1b1t1	Wind (Onshore)	1	37%	208	42	135	$	3.74
Wind Medium NY-z2b1t1	Wind (Onshore)	2	37%	0	0	0	$	0.13
Biomass CHP Existing NY z1	Biomass	1	80%	96	19	135	$	-
Hydro Upgrades NY z1	Hydro	1	46%	125	25	101	$	-
Hydro Upgrades NY z2	Hydro	2	46%	23	5	18	$	-
Hydro Upgrades NY z3	Hydro	3	46%	0	0	0	$	-
Landfill Gas IC Engines NY z1	Landfill Gas	1	85%	88	18	131	$	-
Landfill Gas IC Engines NY z2	Landfill Gas	2	85%	26	5	38	$	-
Landfill Gas IC Engines NY z3	Landfill Gas	3	85%	3	1	5	$	-
Landfill Gas Microturbines NY z3	Landfill Gas	3	85%	0	0	0	$	-

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25% Post EPS Case: Results

2011 Market Clearing Price

	2011
Incremental NY Goal (GWh)	**973**
REC Clearing Price	**$18.94**
Cleared GWh	**973**

Resource Block	Resource	Zone	CF	Max MW	Cleared MW 2011	Cleared GWH 2011	REC Price Requirement 2011
Very Small New Hydro NY z1	Hydro	1	29%	10	0	0	$ 252.03
Very Small New Hydro NY z2	Hydro	2	29%	3	0	0	$ 231.55
Very Small New Hydro NY z3	Hydro	3	29%	0	0	0	$ 202.15
Biomass Stoker NY z3	Biomass	3	80%	0	0	0	$ 189.23
Off-Shore Wind Lakes NY-z1	Wind (Offshore)	1	34%	311	0	0	$ 174.10
Biomass CHP New NY z3	Biomass	3	80%	59	0	0	$ 165.53
Wind Small NY-z1b3t2	Wind (Onshore)	1	29%	78	0	0	$ 140.28
Biomass CHP Existing NY z3	Biomass	3	80%	89	0	0	$ 137.10
Fluidized Bed Repower Existing NY z3	Biomass	3	85%	132	0	0	$ 134.74
Fluidized Bed Repower Retire NY z3	Biomass	3	85%	48	0	0	$ 129.28
Wind Small NY-z2b3t2	Wind (Onshore)	2	29%	14	0	0	$ 120.28
Biomass Co-firing w/Coal NY-z3	Biomass	3	55%	0	0	0	$ 112.38
Wind Small NY-z1b2t2	Wind (Onshore)	1	33%	17	0	0	$ 108.23
Off-Shore Wind LI NY-z3	Wind (Offshore)	3	36%	579	0	0	$ 107.60
Wind Small NY-z1b3t1	Wind (Onshore)	1	29%	191	0	0	$ 105.70
Biomass Stoker NY z2	Biomass	2	85%	500	0	0	$ 102.48
Biomass Stoker NY z1	Biomass	1	85%	500	0	0	$ 91.01
Wind Small NY-z2b2t2	Wind (Onshore)	2	33%	10	0	0	$ 87.92
Wind Small NY-z2b3t1	Wind (Onshore)	2	29%	62	0	0	$ 85.40
Biomass CHP Existing NY z2	Biomass	2	80%	4	0	0	$ 85.17
Wind Farms Quebec	Wind (Onshore)	QC	29%	0	0	0	$ 83.36
Wind Small NY-z1b1t2	Wind (Onshore)	1	37%	10	0	0	$ 83.01
Wind Small Agg NY-z3agt2	Wind (Onshore)	3	31%	15	0	0	$ 80.87
Wind Small NY-z1b2t1	Wind (Onshore)	1	33%	21	0	0	$ 77.66
Wind Farms Ontario	Wind (Onshore)	ON	29%	0	0	0	$ 73.54
New Low-Impact Hydro NY z1	Hydro	1	46%	34	0	0	$ 68.73
Wind Small NY-z3b3t1	Wind (Onshore)	3	29%	29	0	0	$ 62.42
Wind Medium NY-z1b3t1	Wind (Onshore)	1	29%	364	0	0	$ 58.34
Wind Small NY-z2b2t1	Wind (Onshore)	2	33%	11	0	0	$ 57.23
Wind Small NY-z1b1t1	Wind (Onshore)	1	37%	34	0	0	$ 55.58
New Low-Impact Hydro NY z2	Hydro	2	46%	9	0	0	$ 47.86
Fluidized Bed Repower Existing NY z2	Biomass	2	85%	62	0	0	$ 45.18
Biomass CHP New NY z2	Biomass	2	80%	0	0	0	$ 44.44
Wind Farms PJM b1	Wind (Onshore)	PJM	29%	250	0	0	$ 42.68
Biomass Co-firing w/Coal NY-z2	Biomass	2	70%	29	0	0	$ 41.97
Wind Farms PJM b2	Wind (Onshore)	PJM	29%	0	0	0	$ 40.50
Landfill Gas Microturbines NY z1	Landfill Gas	1	85%	3	0	0	$ 40.01
Fluidized Bed Repower Retire NY z2	Biomass	2	85%	217	0	0	$ 39.88
Wind Large NY-z1b3t1	Wind (Onshore)	1	29%	5289	0	0	$ 38.61
Wind Medium NY-z2b3t1	Wind (Onshore)	2	29%	113	0	0	$ 37.87
Wind Medium NY-z1b2t1	Wind (Onshore)	1	33%	60	0	0	$ 35.93
Wind Small NY-z2b1t1	Wind (Onshore)	2	37%	10	0	0	$ 35.17
Wind Small NY-z3b2t1	Wind (Onshore)	3	33%	10	0	0	$ 34.70
Fluidized Bed Repower Existing NY z1	Biomass	1	85%	286	0	0	$ 31.52
Biomass Co-firing w/Coal Ontario	Biomass	ON	55%	0	0	0	$ 29.02
New Low-Impact Hydro Quebec	Hydro	QC	50%	100	0	0	$ 28.53
Fluidized Bed Repower Retire NY z1	Biomass	1	85%	46	0	0	$ 26.35
Biomass Co-firing w/Coal PJM	Biomass	PJM	65%	0	0	0	$ 24.76
Biomass Co-firing w/Coal NY-z1	Biomass	1	70%	81	0	0	$ 22.45
Landfill Gas Microturbines NY z2	Landfill Gas	2	85%	1	0	0	$ 21.67
Biomass CHP New NY z1	Biomass	1	80%	58	0	0	$ 20.70
Wind Large NY-z1b2t1	Wind (Onshore)	1	33%	1279	44	128	$ 18.94
Wind Medium NY-z1b1t1	Wind (Onshore)	1	37%	0	0	0	$ 17.66
New Low-Impact Hydro NY z3	Hydro	3	46%	0	0	0	$ 17.17
Wind Medium NY-z2b2t1	Wind (Onshore)	2	33%	60	12	35	$ 15.26
Wind Large Agg NY-z2agt1	Wind (Onshore)	2	30%	108	22	56	$ 14.91
Hydro Upgrades Quebec	Hydro	QC	50%	100	20	88	$ 14.24
New Low-Impact Hydro Ontario	Hydro	ON	67%	64	13	75	$ 9.86
Hydro Upgrades Ontario	Hydro	ON	67%	24	5	28	$ 9.86
Wind Large NY-z1b1t1	Wind (Onshore)	1	37%	208	42	135	$ 3.74
Wind Medium NY-z2b1t1	Wind (Onshore)	2	37%	0	0	0	$ 0.13
Biomass CHP Existing NY z1	Biomass	1	80%	96	19	135	$ -
Hydro Upgrades NY z1	Hydro	1	46%	125	25	101	$ -
Hydro Upgrades NY z2	Hydro	2	46%	23	5	18	$ -
Hydro Upgrades NY z3	Hydro	3	46%	0	0	0	$ -
Landfill Gas IC Engines NY z1	Landfill Gas	1	85%	88	18	131	$ -
Landfill Gas IC Engines NY z2	Landfill Gas	2	85%	26	5	38	$ -
Landfill Gas IC Engines NY z3	Landfill Gas	3	85%	3	1	5	$ -
Landfill Gas Microturbines NY z3	Landfill Gas	3	85%	0	0	0	$ -

973

30% Post EPS Case: Results

2011 Market Clearing Price

	2011
Incremental NY Goal (GWh)	**1,708**
REC Clearing Price	**$18.94**
Cleared GWh	**1,708**

Resource Block	Resource	Zone	CF	Max MW	Cleared MW 2011	Cleared GWh 2011	REC Price Requirement 2011
Very Small New Hydro NY z1	Hydro	1	29%	10	0	0	$ 252.03
Very Small New Hydro NY z2	Hydro	2	29%	3	0	0	$ 231.55
Very Small New Hydro NY z3	Hydro	3	29%	0	0	0	$ 202.15
Biomass Stoker NY z3	Biomass	3	80%	0	0	0	$ 189.23
Off-Shore Wind Lakes NY-z1	Wind (Offshore)	1	34%	311	0	0	$ 174.10
Biomass CHP New NY z3	Biomass	3	80%	59	0	0	$ 165.53
Wind Small NY-z1b3t2	Wind (Onshore)	1	29%	78	0	0	$ 140.28
Biomass CHP Existing NY z3	Biomass	3	80%	89	0	0	$ 137.10
Fluidized Bed Repower Existing NY z3	Biomass	3	85%	132	0	0	$ 134.74
Fluidized Bed Repower Retire NY z3	Biomass	3	85%	48	0	0	$ 129.28
Wind Small NY-z2b3t2	Wind (Onshore)	2	29%	14	0	0	$ 120.28
Biomass Co-firing w/Coal NY-z3	Biomass	3	55%	0	0	0	$ 112.38
Wind Small NY-z1b2t2	Wind (Onshore)	1	33%	17	0	0	$ 108.23
Off-Shore Wind LI NY-z3	Wind (Offshore)	3	36%	579	0	0	$ 102.48
Wind Small NY-z1b3t1	Wind (Onshore)	1	29%	191	0	0	$ 105.70
Biomass Stoker NY z2	Biomass	2	85%	500	0	0	$ 107.60
Biomass Stoker NY z1	Biomass	1	85%	500	0	0	$ 95.53
Wind Small NY-z2b2t2	Wind (Onshore)	2	33%	10	0	0	$ 85.17
Wind Farms Quebec	Wind (Onshore)	QC	29%	0	0	0	$ 87.92
Wind Small NY-z2b3t1	Wind (Onshore)	2	29%	62	0	0	$ 87.36
Biomass CHP Existing NY z2	Biomass	2	80%	4	0	0	$ 85.40
Wind Small NY-z1b1t2	Wind (Onshore)	1	37%	10	0	0	$ 83.01
Wind Small Agg NY-z3agt2	Wind (Onshore)	3	31%	15	0	0	$ 80.87
Wind Small NY-z1b2t1	Wind (Onshore)	1	33%	21	0	0	$ 77.66
Wind Farms Ontario	Wind (Onshore)	ON	29%	0	0	0	$ 77.54
New Low-Impact Hydro NY z1	Hydro	1	46%	34	0	0	$ 68.73
Wind Small NY-z3b3t1	Wind (Onshore)	3	29%	29	0	0	$ 62.42
Wind Medium NY-z1b3t1	Wind (Onshore)	1	29%	364	0	0	$ 58.34
Wind Small NY-z2b2t1	Wind (Onshore)	2	33%	11	0	0	$ 57.23
Wind Small NY-z1b1t1	Wind (Onshore)	1	37%	34	0	0	$ 55.58
New Low-Impact Hydro NY z2	Hydro	2	46%	9	0	0	$ 47.86
Wind Farms PJM b1	Wind (Onshore)	PJM	29%	250	0	0	$ 45.18
Fluidized Bed Repower Existing NY z2	Biomass	2	85%	62	0	0	$ 44.44
Wind Farms PJM b2	Wind (Onshore)	PJM	29%	0	0	0	$ 46.68
Biomass CHP New NY z2	Biomass	2	80%	0	0	0	$ 41.97
Biomass Co-firing w/Coal NY-z2	Biomass	2	70%	29	0	0	$ 44.50
Landfill Gas Microturbines NY z1	Landfill Gas	1	85%	3	0	0	$ 39.88
Fluidized Bed Repower Retire NY z2	Biomass	2	85%	217	0	0	$ 40.01
Wind Large NY-z1b3t1	Wind (Onshore)	1	29%	5289	0	0	$ 38.61
Wind Medium NY-z2b3t1	Wind (Onshore)	2	29%	113	0	0	$ 36.46
Fluidized Bed Repower Existing NY z1	Biomass	1	85%	286	0	0	$ 37.87
Wind Medium NY-z1b2t1	Wind (Onshore)	1	33%	60	0	0	$ 35.93
Wind Small NY-z2b1t1	Wind (Onshore)	2	37%	10	0	0	$ 35.17
Wind Small NY-z3b2t1	Wind (Onshore)	3	33%	10	0	0	$ 33.02
Biomass Co-firing w/Coal Ontario	Biomass	ON	55%	0	0	0	$ 34.70
New Low-Impact Hydro Quebec	Hydro	QC	50%	100	0	0	$ 32.53
Fluidized Bed Repower Retire NY z1	Biomass	1	85%	46	0	0	$ 30.76
Biomass Co-firing w/Coal PJM	Biomass	PJM	65%	0	0	0	$ 28.76
Biomass CHP New NY z1	Biomass	1	80%	58	0	0	$ 26.83
Biomass Co-firing w/Coal NY-z1	Biomass	1	70%	81	0	0	$ 25.12
Landfill Gas Microturbines NY z2	Landfill Gas	2	85%	1	0	0	$ 21.67
Wind Large NY-z1b2t1	Wind (Onshore)	1	33%	1279	0	0	$ 17.17
Wind Medium NY-z1b1t1	Wind (Onshore)	1	37%	0	299	863	$ 18.94
New Low-Impact Hydro NY z3	Hydro	3	46%	0	0	0	$ 17.66
Wind Medium NY-z2b2t1	Wind (Onshore)	2	33%	60	20	88	$ 14.24
Wind Large Agg NY-z2agt1	Wind (Onshore)	2	30%	108	12	35	$ 15.26
Hydro Upgrades Quebec	Hydro	QC	50%	100	13	75	$ 13.86
New Low-Impact Hydro Ontario	Hydro	ON	67%	64	22	56	$ 14.91
Hydro Upgrades Ontario	Hydro	ON	67%	24	5	28	$ 9.86
Wind Large NY-z1b1t1	Wind (Onshore)	1	37%	208	42	135	$ 3.74
Wind Medium NY-z2b1t1	Wind (Onshore)	2	37%	0	0	0	$ 0.13
Biomass CHP Existing NY z1	Biomass	1	80%	96	19	135	$ -
Hydro Upgrades NY z1	Hydro	1	46%	125	25	101	$ -
Hydro Upgrades NY z2	Hydro	2	46%	23	5	18	$ -
Hydro Upgrades NY z3	Hydro	3	46%	0	0	0	$ -
Landfill Gas IC Engines NY z1	Landfill Gas	1	85%	88	18	131	$ -
Landfill Gas IC Engines NY z2	Landfill Gas	2	85%	26	5	38	$ -
Landfill Gas IC Engines NY z3	Landfill Gas	3	85%	3	1	5	$ -
Landfill Gas Microturbines NY z3	Landfill Gas	3	85%	0	0	0	$ -

25% New Load Case

2012 Market Clearing Price

	2012
Incremental NY Goal (GWh)	**1,679**
REC Clearing Price	**$22.09**
Cleared GWh	1,679

Resource Block	Resource	Zone	CF	Max MW	Cleared MW 2012	Cleared GWH 2012	REC Price Requirement 2012
Very Small New Hydro NY z1	Hydro	1	29%	10	0	0	$ 259.68
Very Small New Hydro NY z2	Hydro	2	29%	3	0	0	$ 239.02
Very Small New Hydro NY z3	Hydro	3	29%	0	0	0	$ 208.69
Biomass Stoker NY z3	Biomass	3	80%	0	0	0	$ 192.87
Off-Shore Wind Lakes NY-z1	Wind (Offshore)	1	34%	311	0	0	$ 171.71
Biomass CHP New NY z3	Biomass	3	80%	59	0	0	$ 168.53
Wind Small NY-z1b3t2	Wind (Onshore)	1	29%	78	0	0	$ 141.24
Biomass CHP Existing NY z3	Biomass	3	80%	89	0	0	$ 139.54
Fluidized Bed Repower Existing NY z3	Biomass	3	85%	132	0	0	$ 137.34
Fluidized Bed Repower Retire NY z3	Biomass	3	85%	48	0	0	$ 131.77
Wind Small NY-z2b3t2	Wind (Onshore)	2	29%	14	0	0	$ 121.07
Biomass Co-firing w/Coal NY-z3	Biomass	3	55%	0	0	0	$ 115.01
Wind Small NY-z1b2t2	Wind (Onshore)	1	33%	17	0	0	$ 108.72
Biomass Stoker NY z2	Biomass	2	85%	500	0	0	$ 106.61
Wind Small NY-z1b3t1	Wind (Onshore)	1	29%	191	0	0	$ 105.63
Off-Shore Wind LI NY-z3	Wind (Offshore)	3	36%	579	0	0	$ 104.07
Biomass Stoker NY z1	Biomass	1	85%	500	0	0	$ 93.75
Biomass CHP Existing NY z2	Biomass	2	80%	4	0	0	$ 91.67
Wind Small NY-z2b2t2	Wind (Onshore)	2	33%	10	0	0	$ 88.40
Wind Farms Quebec	Wind (Onshore)	QC	29%	0	0	0	$ 87.00
Wind Small NY-z2b3t1	Wind (Onshore)	2	29%	62	0	0	$ 85.16
Wind Small NY-z1b1t2	Wind (Onshore)	1	37%	10	0	0	$ 83.13
Wind Small Agg NY-z3agt2	Wind (Onshore)	3	31%	15	0	0	$ 80.49
Wind Small NY-z1b2t1	Wind (Onshore)	1	33%	21	0	0	$ 77.25
Wind Farms Ontario	Wind (Onshore)	ON	29%	0	0	0	$ 77.18
New Low-Impact Hydro NY z1	Hydro	1	46%	34	0	0	$ 70.96
Wind Small NY-z3b3t1	Wind (Onshore)	3	29%	29	0	0	$ 61.26
Wind Medium NY-z1b3t1	Wind (Onshore)	1	29%	364	0	0	$ 57.46
Wind Small NY-z2b2t1	Wind (Onshore)	2	33%	11	0	0	$ 56.65
Wind Small NY-z1b1t1	Wind (Onshore)	1	37%	34	0	0	$ 54.91
New Low-Impact Hydro NY z2	Hydro	2	46%	9	0	0	$ 49.88
Fluidized Bed Repower Existing NY z2	Biomass	2	85%	62	0	0	$ 48.58
Biomass CHP New NY z2	Biomass	2	80%	0	0	0	$ 48.12
Wind Farms PJM b1	Wind (Onshore)	PJM	29%	250	0	0	$ 45.56
Biomass Co-firing w/Coal NY-z2	Biomass	2	70%	29	0	0	$ 44.33
Wind Farms PJM b2	Wind (Onshore)	PJM	29%	0	0	0	$ 42.95
Fluidized Bed Repower Retire NY z2	Biomass	2	85%	217	0	0	$ 42.85
Landfill Gas Microturbines NY z1	Landfill Gas	1	85%	3	0	0	$ 41.21
Wind Large NY-z1b3t1	Wind (Onshore)	1	29%	5289	0	0	$ 37.56
Wind Medium NY-z2b3t1	Wind (Onshore)	2	29%	113	0	0	$ 36.85
Wind Medium NY-z1b2t1	Wind (Onshore)	1	33%	60	0	0	$ 34.84
Wind Small NY-z2b1t1	Wind (Onshore)	2	37%	10	0	0	$ 34.35
Fluidized Bed Repower Existing NY z1	Biomass	1	85%	286	0	0	$ 33.60
Biomass Co-firing w/Coal Ontario	Biomass	ON	55%	0	0	0	$ 33.48
Wind Small NY-z3b2t1	Wind (Onshore)	3	33%	10	0	0	$ 33.24
New Low-Impact Hydro Quebec	Hydro	QC	50%	100	0	0	$ 33.04
Biomass Co-firing w/Coal PJM	Biomass	PJM	65%	0	0	0	$ 29.27
Fluidized Bed Repower Retire NY z1	Biomass	1	85%	46	0	0	$ 27.84
Biomass Co-firing w/Coal NY-z1	Biomass	1	70%	81	0	0	$ 23.86
Landfill Gas Microturbines NY z2	Landfill Gas	2	85%	1	0	0	$ 22.73
Biomass CHP New NY z1	Biomass	1	80%	58	10	68	$ 22.09
New Low-Impact Hydro NY z3	Hydro	3	46%	0	0	0	$ 19.15
Wind Large NY-z1b2t1	Wind (Onshore)	1	33%	1279	265	766	$ 16.82
Wind Medium NY-z1b1t1	Wind (Onshore)	1	37%	0	0	0	$ 16.50
Hydro Upgrades Quebec	Hydro	QC	50%	100	20	88	$ 14.57
Wind Medium NY-z2b2t1	Wind (Onshore)	2	33%	60	12	35	$ 14.11
New Low-Impact Hydro Ontario	Hydro	ON	67%	64	13	75	$ 14.08
Wind Large Agg NY-z2agt1	Wind (Onshore)	2	30%	108	22	56	$ 13.76
Hydro Upgrades Ontario	Hydro	ON	67%	24	5	28	$ 10.08
Wind Large NY-z1b1t1	Wind (Onshore)	1	37%	208	42	135	$ 2.65
Wind Medium NY-z2b1t1	Wind (Onshore)	2	37%	0	0	0	$ -
Biomass CHP Existing NY z1	Biomass	1	80%	96	19	135	$ -
Hydro Upgrades NY z1	Hydro	1	46%	125	25	101	$ -
Hydro Upgrades NY z2	Hydro	2	46%	23	5	18	$ -
Hydro Upgrades NY z3	Hydro	3	46%	0	0	0	$ -
Landfill Gas IC Engines NY z1	Landfill Gas	1	85%	88	18	131	$ -
Landfill Gas IC Engines NY z2	Landfill Gas	2	85%	26	5	38	$ -
Landfill Gas IC Engines NY z3	Landfill Gas	3	85%	3	1	5	$ -
Landfill Gas Microturbines NY z3	Landfill Gas	3	85%	0	0	0	$ -

1679

30% Post EPS Case: Results

2012 Market Clearing Price

	2012
Incremental NY Goal (GWh)	**1,549**
REC Clearing Price	**$16.82**
Cleared GWh	**1,549**

Resource Block	Resource	Zone	CF	Max MW	Cleared MW 2012	Cleared GWh 2012		REC Price Requirement 2012
Very Small New Hydro NY z1	Hydro	1	29%	10	0	0	$	259.68
Very Small New Hydro NY z2	Hydro	2	29%	3	0	0	$	239.02
Very Small New Hydro NY z3	Hydro	3	29%	0	0	0	$	208.69
Biomass Stoker NY z3	Biomass	3	80%	0	0	0	$	192.87
Off-Shore Wind Lakes NY-z1	Wind (Offshore)	1	34%	311	0	0	$	171.71
Biomass CHP New NY z3	Biomass	3	80%	59	0	0	$	168.53
Wind Small NY-z1b3t2	Wind (Onshore)	1	29%	78	0	0	$	141.24
Biomass CHP Existing NY z3	Biomass	3	80%	89	0	0	$	139.54
Fluidized Bed Repower Existing NY z3	Biomass	3	85%	132	0	0	$	137.34
Fluidized Bed Repower Retire NY z3	Biomass	3	85%	48	0	0	$	131.77
Wind Small NY-z2b3t2	Wind (Onshore)	2	29%	14	0	0	$	121.07
Biomass Co-firing w/Coal NY-z3	Biomass	3	55%	0	0	0	$	115.01
Wind Small NY-z1b2t2	Wind (Onshore)	1	33%	17	0	0	$	108.72
Biomass Stoker NY z2	Biomass	2	85%	500	0	0	$	106.61
Wind Small NY-z1b3t1	Wind (Onshore)	1	29%	191	0	0	$	105.63
Off-Shore Wind LI NY-z3	Wind (Offshore)	3	36%	579	0	0	$	104.07
Biomass Stoker NY z1	Biomass	1	85%	500	0	0	$	97.31
Biomass CHP Existing NY z2	Biomass	2	80%	4	0	0	$	91.67
Wind Small NY-z2b2t2	Wind (Onshore)	2	33%	10	0	0	$	88.40
Wind Farms Quebec	Wind (Onshore)	QC	29%	0	0	0	$	87.00
Wind Small NY-z2b3t1	Wind (Onshore)	2	29%	62	0	0	$	85.16
Wind Small NY-z1b1t2	Wind (Onshore)	1	37%	10	0	0	$	83.13
Wind Small Agg NY-z3agt2	Wind (Onshore)	3	31%	15	0	0	$	80.49
Wind Small NY-z1b2t1	Wind (Onshore)	1	33%	21	0	0	$	77.25
Wind Farms Ontario	Wind (Onshore)	ON	29%	0	0	0	$	77.18
New Low-Impact Hydro NY z1	Hydro	1	46%	34	0	0	$	70.96
Wind Small NY-z3b3t1	Wind (Onshore)	3	29%	29	0	0	$	61.26
Wind Medium NY-z1b3t1	Wind (Onshore)	1	29%	364	0	0	$	57.46
Wind Small NY-z2b2t1	Wind (Onshore)	2	33%	11	0	0	$	56.65
Wind Small NY-z1b1t1	Wind (Onshore)	1	37%	34	0	0	$	54.91
New Low-Impact Hydro NY z2	Hydro	2	46%	9	0	0	$	49.88
Fluidized Bed Repower Existing NY z2	Biomass	2	85%	62	0	0	$	48.58
Biomass CHP New NY z2	Biomass	2	80%	0	0	0	$	48.12
Wind Farms PJM b1	Wind (Onshore)	PJM	29%	250	0	0	$	45.56
Biomass Co-firing w/Coal NY-z2	Biomass	2	70%	29	0	0	$	44.33
Wind Farms PJM b2	Wind (Onshore)	PJM	29%	0	0	0	$	42.95
Fluidized Bed Repower Retire NY z2	Biomass	2	85%	217	0	0	$	42.85
Landfill Gas Microturbines NY z1	Landfill Gas	1	85%	3	0	0	$	41.21
Wind Large NY-z1b3t1	Wind (Onshore)	1	29%	5289	0	0	$	37.56
Fluidized Bed Repower Existing NY z1	Biomass	1	85%	286	0	0	$	37.10
Wind Medium NY-z2b3t1	Wind (Onshore)	2	29%	113	0	0	$	36.85
Wind Medium NY-z1b2t1	Wind (Onshore)	1	33%	60	0	0	$	34.84
Wind Small NY-z2b1t1	Wind (Onshore)	2	37%	10	0	0	$	34.35
Biomass Co-firing w/Coal Ontario	Biomass	ON	55%	0	0	0	$	33.48
Wind Small NY-z3b2t1	Wind (Onshore)	3	33%	10	0	0	$	33.24
New Low-Impact Hydro Quebec	Hydro	QC	50%	100	0	0	$	33.04
Fluidized Bed Repower Retire NY z1	Biomass	1	85%	46	0	0	$	31.29
Biomass Co-firing w/Coal PJM	Biomass	PJM	65%	0	0	0	$	29.27
Biomass CHP New NY z1	Biomass	1	80%	58	0	0	$	27.02
Biomass Co-firing w/Coal NY-z1	Biomass	1	70%	81	0	0	$	25.94
Landfill Gas Microturbines NY z2	Landfill Gas	2	85%	1	0	0	$	22.73
New Low-Impact Hydro NY z3	Hydro	3	46%	0	0	0	$	19.15
Wind Large NY-z1b2t1	Wind (Onshore)	1	33%	1279	244	704	$	16.82
Wind Medium NY-z1b1t1	Wind (Onshore)	1	37%	0	0	0	$	16.50
Hydro Upgrades Quebec	Hydro	QC	50%	100	20	88	$	14.57
Wind Medium NY-z2b2t1	Wind (Onshore)	2	33%	60	12	35	$	14.11
New Low-Impact Hydro Ontario	Hydro	ON	67%	64	13	75	$	14.08
Wind Large Agg NY-z2agt1	Wind (Onshore)	2	30%	108	22	56	$	13.76
Hydro Upgrades Ontario	Hydro	ON	67%	24	5	28	$	10.08
Wind Large NY-z1b1t1	Wind (Onshore)	1	37%	208	42	135	$	2.65
Wind Medium NY-z2b1t1	Wind (Onshore)	2	37%	0	0	0	$	-
Biomass CHP Existing NY z1	Biomass	1	80%	96	19	135	$	-
Hydro Upgrades NY z1	Hydro	1	46%	125	25	101	$	-
Hydro Upgrades NY z2	Hydro	2	46%	23	5	18	$	-
Hydro Upgrades NY z3	Hydro	3	46%	0	0	0	$	-
Landfill Gas IC Engines NY z1	Landfill Gas	1	85%	88	18	131	$	-
Landfill Gas IC Engines NY z2	Landfill Gas	2	85%	26	5	38	$	-
Landfill Gas IC Engines NY z3	Landfill Gas	3	85%	3	1	5	$	-
Landfill Gas Microturbines NY z3	Landfill Gas	3	85%	0	0	0	$	-

1549

25% New Load Case

2013 Market Clearing Price

	2013
Incremental NY Goal (GWh)	**1,747**
REC Clearing Price	**$22.28**
Cleared GWh	1,747

Resource Block	Resource	Zone	CF	Max MW	Cleared MW 2013	Cleared GWH 2013	REC Price Requirement 2013
Very Small New Hydro NY z1	Hydro	1	29%	10	0	0	$ 267.07
Very Small New Hydro NY z2	Hydro	2	29%	3	0	0	$ 246.33
Very Small New Hydro NY z3	Hydro	3	29%	0	0	0	$ 214.90
Biomass Stoker NY z3	Biomass	3	80%	0	0	0	$ 196.03
Biomass CHP New NY z3	Biomass	3	80%	59	0	0	$ 171.02
Off-Shore Wind Lakes NY-z1	Wind (Offshore)	1	34%	311	0	0	$ 168.78
Wind Small NY-z1b3t2	Wind (Onshore)	1	29%	78	0	0	$ 141.67
Biomass CHP Existing NY z3	Biomass	3	80%	89	0	0	$ 141.48
Fluidized Bed Repower Existing NY z3	Biomass	3	85%	132	0	0	$ 139.44
Fluidized Bed Repower Retire NY z3	Biomass	3	85%	48	0	0	$ 133.76
Wind Small NY-z2b3t2	Wind (Onshore)	2	29%	14	0	0	$ 121.43
Biomass Co-firing w/Coal NY-z3	Biomass	3	55%	0	0	0	$ 117.70
Biomass Stoker NY z2	Biomass	2	85%	500	0	0	$ 110.74
Wind Small NY-z1b2t2	Wind (Onshore)	1	33%	17	0	0	$ 108.67
Wind Small NY-z1b3t1	Wind (Onshore)	1	29%	191	0	0	$ 105.01
Off-Shore Wind LI NY-z3	Wind (Offshore)	3	36%	579	0	0	$ 99.85
Biomass CHP Existing NY z2	Biomass	2	80%	4	0	0	$ 98.04
Biomass Stoker NY z1	Biomass	1	85%	500	0	0	$ 95.58
Wind Small NY-z2b2t2	Wind (Onshore)	2	33%	10	0	0	$ 88.28
Wind Farms Quebec	Wind (Onshore)	QC	29%	0	0	0	$ 86.08
Wind Small NY-z2b3t1	Wind (Onshore)	2	29%	62	0	0	$ 84.46
Wind Small NY-z1b1t2	Wind (Onshore)	1	37%	10	0	0	$ 82.70
Wind Small Agg NY-z3agt2	Wind (Onshore)	3	31%	15	0	0	$ 79.53
Wind Small NY-z1b2t1	Wind (Onshore)	1	33%	21	0	0	$ 76.27
Wind Farms Ontario	Wind (Onshore)	ON	29%	0	0	0	$ 76.27
New Low-Impact Hydro NY z1	Hydro	1	46%	34	0	0	$ 72.78
Wind Small NY-z3b3t1	Wind (Onshore)	3	29%	29	0	0	$ 59.24
Wind Medium NY-z1b3t1	Wind (Onshore)	1	29%	364	0	0	$ 56.01
Wind Small NY-z2b2t1	Wind (Onshore)	2	33%	11	0	0	$ 55.61
Wind Small NY-z1b1t1	Wind (Onshore)	1	37%	34	0	0	$ 53.67
New Low-Impact Hydro NY z2	Hydro	2	46%	9	0	0	$ 51.61
Fluidized Bed Repower Existing NY z2	Biomass	2	85%	62	0	0	$ 51.43
Biomass CHP New NY z2	Biomass	2	80%	0	0	0	$ 51.27
Biomass Co-firing w/Coal NY-z2	Biomass	2	70%	29	0	0	$ 46.78
Fluidized Bed Repower Retire NY z2	Biomass	2	85%	217	0	0	$ 45.57
Wind Farms PJM b1	Wind (Onshore)	PJM	29%	250	0	0	$ 43.88
Landfill Gas Microturbines NY z1	Landfill Gas	1	85%	3	0	0	$ 41.98
Wind Farms PJM b2	Wind (Onshore)	PJM	29%	0	0	0	$ 41.21
Wind Large NY-z1b3t1	Wind (Onshore)	1	29%	5289	0	0	$ 35.94
Wind Medium NY-z2b3t1	Wind (Onshore)	2	29%	113	0	0	$ 35.36
Fluidized Bed Repower Existing NY z1	Biomass	1	85%	286	0	0	$ 34.16
Biomass Co-firing w/Coal Ontario	Biomass	ON	55%	0	0	0	$ 33.95
Wind Medium NY-z1b2t1	Wind (Onshore)	1	33%	60	0	0	$ 33.18
New Low-Impact Hydro Quebec	Hydro	QC	50%	100	0	0	$ 33.12
Wind Small NY-z2b1t1	Wind (Onshore)	2	37%	10	0	0	$ 33.07
Wind Small NY-z3b2t1	Wind (Onshore)	3	33%	10	0	0	$ 30.74
Biomass Co-firing w/Coal PJM	Biomass	PJM	65%	0	0	0	$ 29.80
Fluidized Bed Repower Retire NY z1	Biomass	1	85%	46	0	0	$ 28.29
Biomass Co-firing w/Coal NY-z1	Biomass	1	70%	81	0	0	$ 24.93
Landfill Gas Microturbines NY z2	Landfill Gas	2	85%	1	0	0	$ 23.48
Biomass CHP New NY z1	Biomass	1	80%	58	23	163	$ 22.28
New Low-Impact Hydro NY z3	Hydro	3	46%	0	0	0	$ 19.76
Wind Large NY-z1b2t1	Wind (Onshore)	1	33%	1279	256	740	$ 15.15
Hydro Upgrades Quebec	Hydro	QC	50%	100	20	88	$ 14.90
Wind Medium NY-z1b1t1	Wind (Onshore)	1	37%	0	0	0	$ 14.81
New Low-Impact Hydro Ontario	Hydro	ON	67%	64	13	75	$ 14.32
Wind Medium NY-z2b2t1	Wind (Onshore)	2	33%	60	12	35	$ 12.54
Wind Large Agg NY-z2agt1	Wind (Onshore)	2	30%	108	22	56	$ 12.19
Hydro Upgrades Ontario	Hydro	ON	67%	24	5	28	$ 10.32
Wind Large NY-z1b1t1	Wind (Onshore)	1	37%	208	42	135	$ 1.12
Wind Medium NY-z2b1t1	Wind (Onshore)	2	37%	0	0	0	$ -
Biomass CHP Existing NY z1	Biomass	1	80%	96	19	135	$ -
Hydro Upgrades NY z1	Hydro	1	46%	125	25	101	$ -
Hydro Upgrades NY z2	Hydro	2	46%	23	5	18	$ -
Hydro Upgrades NY z3	Hydro	3	46%	0	0	0	$ -
Landfill Gas IC Engines NY z1	Landfill Gas	1	85%	88	18	131	$ -
Landfill Gas IC Engines NY z2	Landfill Gas	2	85%	26	5	38	$ -
Landfill Gas IC Engines NY z3	Landfill Gas	3	85%	3	1	5	$ -
Landfill Gas Microturbines NY z3	Landfill Gas	3	85%	0	0	0	$ -

1747

30% Post EPS Case: Results

2013 Market Clearing Price

Incremental NY Goal (GWh)	**2013**	
REC Clearing Price	**1,538**	
Cleared GWh	**$15.15**	
	1,538	

Resource Block	Resource	Zone	CF	Max MW	Cleared MW 2013	Cleared GWh 2013	REC Price Requirement 2013
Very Small New Hydro NY z1	Hydro	1	29%	10	0	0	$ 267.07
Very Small New Hydro NY z2	Hydro	2	29%	3	0	0	$ 246.33
Very Small New Hydro NY z3	Hydro	3	29%	0	0	0	$ 214.90
Biomass Stoker NY z3	Biomass	3	80%	0	0	0	$ 196.03
Biomass CHP New NY z3	Biomass	3	80%	59	0	0	$ 171.02
Off-Shore Wind Lakes NY-z1	Wind (Offshore)	1	34%	311	0	0	$ 168.78
Wind Small NY-z1b3t2	Wind (Onshore)	1	29%	78	0	0	$ 141.67
Biomass CHP Existing NY z3	Biomass	3	80%	89	0	0	$ 141.48
Fluidized Bed Repower Existing NY z3	Biomass	3	85%	132	0	0	$ 139.44
Fluidized Bed Repower Retire NY z3	Biomass	3	85%	48	0	0	$ 133.76
Wind Small NY-z2b3t2	Wind (Onshore)	2	29%	14	0	0	$ 121.43
Biomass Co-firing w/Coal NY-z3	Biomass	3	55%	0	0	0	$ 117.70
Biomass Stoker NY z2	Biomass	2	85%	500	0	0	$ 110.74
Wind Small NY-z1b2t2	Wind (Onshore)	1	33%	17	0	0	$ 108.67
Wind Small NY-z1b3t1	Wind (Onshore)	1	29%	191	0	0	$ 105.01
Off-Shore Wind LI NY-z3	Wind (Offshore)	3	36%	579	0	0	$ 99.85
Biomass Stoker NY z1	Biomass	1	85%	500	0	0	$ 98.64
Biomass CHP Existing NY z2	Biomass	2	80%	4	0	0	$ 98.04
Wind Small NY-z2b2t2	Wind (Onshore)	2	33%	10	0	0	$ 88.28
Wind Farms Quebec	Wind (Onshore)	QC	29%	0	0	0	$ 86.08
Wind Small NY-z2b3t1	Wind (Onshore)	2	29%	62	0	0	$ 84.46
Wind Small NY-z1b1t2	Wind (Onshore)	1	37%	10	0	0	$ 82.70
Wind Small Agg NY-z3agt2	Wind (Onshore)	3	31%	15	0	0	$ 79.53
Wind Small NY-z1b2t1	Wind (Onshore)	1	33%	21	0	0	$ 76.27
Wind Farms Ontario	Wind (Onshore)	ON	29%	0	0	0	$ 76.27
New Low-Impact Hydro NY z1	Hydro	1	46%	34	0	0	$ 72.78
Wind Small NY-z3b3t1	Wind (Onshore)	3	29%	29	0	0	$ 59.24
Wind Medium NY-z1b3t1	Wind (Onshore)	1	29%	364	0	0	$ 56.01
Wind Small NY-z2b2t1	Wind (Onshore)	2	33%	11	0	0	$ 55.61
Wind Small NY-z1b1t1	Wind (Onshore)	1	37%	34	0	0	$ 53.67
New Low-Impact Hydro NY z2	Hydro	2	46%	9	0	0	$ 51.61
Fluidized Bed Repower Existing NY z2	Biomass	2	85%	62	0	0	$ 51.43
Biomass CHP New NY z2	Biomass	2	80%	0	0	0	$ 51.27
Biomass Co-firing w/Coal NY-z2	Biomass	2	70%	29	0	0	$ 46.78
Fluidized Bed Repower Retire NY z2	Biomass	2	85%	217	0	0	$ 45.57
Wind Farms PJM b1	Wind (Onshore)	PJM	29%	250	0	0	$ 43.88
Landfill Gas Microturbines NY z1	Landfill Gas	1	85%	3	0	0	$ 41.98
Wind Farms PJM b2	Wind (Onshore)	PJM	29%	0	0	0	$ 41.21
Fluidized Bed Repower Existing NY z1	Biomass	1	85%	286	0	0	$ 37.29
Wind Large NY-z1b3t1	Wind (Onshore)	1	29%	5289	0	0	$ 35.94
Wind Medium NY-z2b3t1	Wind (Onshore)	2	29%	113	0	0	$ 35.36
Biomass Co-firing w/Coal Ontario	Biomass	ON	55%	0	0	0	$ 33.95
Wind Medium NY-z1b2t1	Wind (Onshore)	1	33%	60	0	0	$ 33.18
New Low-Impact Hydro Quebec	Hydro	QC	50%	100	0	0	$ 33.12
Wind Small NY-z2b1t1	Wind (Onshore)	2	37%	10	0	0	$ 33.07
Fluidized Bed Repower Retire NY z1	Biomass	1	85%	46	0	0	$ 31.37
Wind Small NY-z3b2t1	Wind (Onshore)	3	33%	10	0	0	$ 30.74
Biomass Co-firing w/Coal PJM	Biomass	PJM	65%	0	0	0	$ 29.80
Biomass Co-firing w/Coal NY-z1	Biomass	1	70%	81	0	0	$ 26.79
Biomass CHP New NY z1	Biomass	1	80%	58	0	0	$ 26.76
Landfill Gas Microturbines NY z2	Landfill Gas	2	85%	1	0	0	$ 23.48
New Low-Impact Hydro NY z3	Hydro	3	46%	0	0	0	$ 19.76
Wind Large NY-z1b2t1	Wind (Onshore)	1	33%	1279	240	693	$ 15.15
Hydro Upgrades Quebec	Hydro	QC	50%	100	20	0	$ 14.90
Wind Medium NY-z1b1t1	Wind (Onshore)	1	37%	0	0	88	$ 14.81
New Low-Impact Hydro Ontario	Hydro	ON	67%	64	13	35	$ 14.32
Wind Medium NY-z2b2t1	Wind (Onshore)	2	33%	60	12	75	$ 12.54
Wind Large Agg NY-z2agt1	Wind (Onshore)	2	30%	108	22	56	$ 12.19
Hydro Upgrades Ontario	Hydro	ON	67%	24	5	28	$ 10.32
Wind Large NY-z1b1t1	Wind (Onshore)	1	37%	208	42	135	$ 1.12
Wind Medium NY-z2b1t1	Wind (Onshore)	2	37%	0	0	0	$ -
Biomass CHP Existing NY z1	Biomass	1	80%	96	19	135	$ -
Hydro Upgrades NY z1	Hydro	1	46%	125	25	101	$ -
Hydro Upgrades NY z2	Hydro	2	46%	23	5	18	$ -
Hydro Upgrades NY z3	Hydro	3	46%	0	0	0	$ -
Landfill Gas IC Engines NY z1	Landfill Gas	1	85%	88	18	131	$ -
Landfill Gas IC Engines NY z2	Landfill Gas	2	85%	26	5	38	$ -
Landfill Gas IC Engines NY z3	Landfill Gas	3	85%	3	1	5	$ -
Landfill Gas Microturbines NY z3	Landfill Gas	3	85%	0	0	0	$ -

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30% Post EPS Case: Results

2014 Market Clearing Price

Incremental NY Goal (GWh)	**2014**
REC Clearing Price	**984**
Cleared GWh	**$28.46**
	984

Resource Block	Resource	Zone	CF	Max MW	Cleared MW 2014	Cleared GWh 2014	REC Price Requirement 2013
Very Small New Hydro NY z1	Hydro		1 29%	10	0	0	$ 274.64
Very Small New Hydro NY z2	Hydro		2 29%	3	0	0	$ 253.61
Very Small New Hydro NY z3	Hydro		3 29%	0	0	0	$ 220.93
Biomass Stoker NY z3	Biomass		3 80%	0	0	0	$ 198.87
Biomass CHP New NY z3	Biomass		3 80%	59	0	0	$ 173.17
Off-Shore Wind Lakes NY-z1	Wind (Offshore)		1 34%	311	0	0	$ 165.72
Biomass CHP Existing NY z3	Biomass		3 80%	89	0	0	$ 143.06
Wind Small NY-z1b3t2	Wind (Onshore)		1 29%	78	0	0	$ 141.96
Fluidized Bed Repower Existing NY z3	Biomass		3 85%	132	0	0	$ 141.19
Fluidized Bed Repower Retire NY z3	Biomass		3 85%	48	0	0	$ 135.40
Wind Small NY-z2b3t2	Wind (Onshore)		2 29%	14	0	0	$ 121.44
Biomass Co-firing w/Coal NY-z3	Biomass		3 55%	0	0	0	$ 120.46
Biomass Stoker NY z2	Biomass		2 85%	500	0	0	$ 114.50
Wind Small NY-z1b2t2	Wind (Onshore)		1 33%	17	0	0	$ 108.46
Biomass CHP Existing NY z2	Biomass		2 80%	4	0	0	$ 104.35
Wind Small NY-z1b3t1	Wind (Onshore)		1 29%	191	0	0	$ 104.21
Biomass Stoker NY z1	Biomass		1 85%	500	0	0	$ 101.24
Off-Shore Wind LI NY-z3	Wind (Offshore)		3 36%	579	0	0	$ 95.23
Wind Small NY-z2b2t2	Wind (Onshore)		2 33%	10	0	0	$ 87.63
Wind Farms Quebec	Wind (Onshore)	QC	29%	0	0	0	$ 84.85
Wind Small NY-z2b3t1	Wind (Onshore)		2 29%	62	0	0	$ 83.39
Wind Small NY-z1b1t2	Wind (Onshore)		1 37%	10	0	0	$ 82.11
Wind Small Agg NY-z3agt2	Wind (Onshore)		3 31%	15	0	0	$ 78.13
Wind Farms Ontario	Wind (Onshore)	ON	29%	0	0	0	$ 75.18
Wind Small NY-z1b2t1	Wind (Onshore)		1 33%	21	0	0	$ 75.11
New Low-Impact Hydro NY z1	Hydro		1 46%	34	0	0	$ 74.83
Wind Small NY-z3b3t1	Wind (Onshore)		3 29%	29	0	0	$ 57.04
Biomass CHP New NY z2	Biomass		2 80%	0	0	0	$ 54.58
Fluidized Bed Repower Existing NY z2	Biomass		2 85%	62	0	0	$ 54.42
Wind Medium NY-z1b3t1	Wind (Onshore)		1 29%	364	0	0	$ 54.38
Wind Small NY-z2b2t1	Wind (Onshore)		2 33%	11	0	0	$ 54.19
New Low-Impact Hydro NY z2	Hydro		2 46%	9	0	0	$ 53.13
Wind Small NY-z1b1t1	Wind (Onshore)		1 37%	34	0	0	$ 51.97
Biomass Co-firing w/Coal NY-z2	Biomass		2 70%	29	0	0	$ 49.32
Fluidized Bed Repower Retire NY z2	Biomass		2 85%	217	0	0	$ 48.48
Landfill Gas Microturbines NY z1	Landfill Gas		1 85%	3	0	0	$ 42.74
Wind Farms PJM b1	Wind (Onshore)	PJM	29%	250	0	0	$ 41.64
Wind Farms PJM b2	Wind (Onshore)	PJM	29%	0	0	0	$ 39.29
Fluidized Bed Repower Existing NY z1	Biomass		1 85%	286	0	0	$ 38.75
Biomass Co-firing w/Coal Ontario	Biomass	ON	55%	0	0	0	$ 34.44
Wind Large NY-z1b3t1	Wind (Onshore)		1 29%	5289	0	0	$ 34.14
Wind Medium NY-z2b3t1	Wind (Onshore)		2 29%	113	0	0	$ 33.49
Fluidized Bed Repower Retire NY z1	Biomass		1 85%	46	0	0	$ 33.19
New Low-Impact Hydro Quebec	Hydro	QC	50%	100	0	0	$ 33.16
Wind Small NY-z2b1t1	Wind (Onshore)		2 37%	10	0	0	$ 30.95
Wind Medium NY-z1b2t1	Wind (Onshore)		1 33%	60	0	0	$ 30.88
Biomass Co-firing w/Coal PJM	Biomass	PJM	65%	0	0	0	$ 30.34
Biomass Co-firing w/Coal NY-z1	Biomass		1 70%	81	9	56	$ 28.46
Wind Small NY-z3b2t1	Wind (Onshore)		3 33%	10	10	29	$ 28.28
Biomass CHP New NY z1	Biomass		1 80%	58	58	405	$ 28.10
Landfill Gas Microturbines NY z2	Landfill Gas		2 85%	1	1	6	$ 24.02
New Low-Impact Hydro NY z3	Hydro		3 46%	0	0	0	$ 20.06
Hydro Upgrades Quebec	Hydro	QC	50%	100	20	88	$ 15.24
New Low-Impact Hydro Ontario	Hydro	ON	67%	64	13	75	$ 14.55
Wind Large NY-z1b2t1	Wind (Onshore)		1 33%	1279	56	162	$ 13.30
Wind Medium NY-z1b1t1	Wind (Onshore)		1 37%	0	0	0	$ 12.95
Hydro Upgrades Ontario	Hydro	ON	67%	24	5	28	$ 10.55
Wind Medium NY-z2b2t1	Wind (Onshore)		2 33%	60	0	0	$ 8.89
Wind Large Agg NY-z2agt1	Wind (Onshore)		2 30%	108	0	0	$ 8.61
Biomass CHP Existing NY z1	Biomass		1 80%	96	19	135	$ -
Wind Large NY-z1b1t1	Wind (Onshore)		1 37%	208	0	0	$ -
Wind Medium NY-z2b1t1	Wind (Onshore)		2 37%	0	0	0	$ -
Hydro Upgrades NY z1	Hydro		1 46%	125	0	0	$ -
Hydro Upgrades NY z2	Hydro		2 46%	23	0	0	$ -
Hydro Upgrades NY z3	Hydro		3 46%	0	0	0	$ -
Landfill Gas IC Engines NY z1	Landfill Gas		1 85%	88	0	0	$ -
Landfill Gas IC Engines NY z2	Landfill Gas		2 85%	26	0	0	$ -
Landfill Gas IC Engines NY z3	Landfill Gas		3 85%	3	0	0	$ -
Landfill Gas Microturbines NY z3	Landfill Gas		3 85%	0	0	0	$ -

30% Post EPS Case: Results

2015 Market Clearing Price

	2015
Incremental NY Goal (GWh)	**952**
REC Clearing Price	**$31.67**
Cleared GWh	952

Resource Block	Resource	Zone	CF	Max MW	Cleared MW 2015	Cleared GWh 2015	REC Price Requirement 2013
Very Small New Hydro NY z1	Hydro	1	29%	10	0	0	$ 282.39
Very Small New Hydro NY z2	Hydro	2	29%	3	0	0	$ 260.83
Very Small New Hydro NY z3	Hydro	3	29%	0	0	0	$ 226.96
Biomass Stoker NY z3	Biomass	3	80%	0	0	0	$ 201.54
Biomass CHP New NY z3	Biomass	3	80%	59	0	0	$ 175.14
Off-Shore Wind Lakes NY-z1	Wind (Offshore)	1	34%	311	0	0	$ 162.55
Biomass CHP Existing NY z3	Biomass	3	80%	89	0	0	$ 144.44
Fluidized Bed Repower Existing NY z3	Biomass	3	85%	132	0	0	$ 142.75
Wind Small NY-z1b3t2	Wind (Onshore)	1	29%	78	0	0	$ 142.10
Fluidized Bed Repower Retire NY z3	Biomass	3	85%	48	0	0	$ 136.84
Biomass Co-firing w/Coal NY-z3	Biomass	3	55%	0	0	0	$ 123.28
Wind Small NY-z2b3t2	Wind (Onshore)	2	29%	14	0	0	$ 121.07
Biomass Stoker NY z2	Biomass	2	85%	500	0	0	$ 118.13
Biomass CHP Existing NY z2	Biomass	2	80%	4	0	0	$ 110.83
Wind Small NY-z1b2t2	Wind (Onshore)	1	33%	17	0	0	$ 108.09
Biomass Stoker NY z1	Biomass	1	85%	500	0	0	$ 103.80
Wind Small NY-z1b3t1	Wind (Onshore)	1	29%	191	0	0	$ 103.22
Off-Shore Wind LI NY-z3	Wind (Offshore)	3	36%	579	0	0	$ 90.16
Wind Small NY-z2b2t2	Wind (Onshore)	2	33%	10	0	0	$ 86.75
Wind Farms Quebec	Wind (Onshore)	QC	29%	0	0	0	$ 83.57
Wind Small NY-z2b3t1	Wind (Onshore)	2	29%	62	0	0	$ 81.90
Wind Small NY-z1b1t2	Wind (Onshore)	1	37%	10	0	0	$ 81.34
New Low-Impact Hydro NY z1	Hydro	1	46%	34	0	0	$ 76.68
Wind Small Agg NY-z3agt2	Wind (Onshore)	3	31%	15	0	0	$ 76.45
Wind Farms Ontario	Wind (Onshore)	ON	29%	0	0	0	$ 73.91
Wind Small NY-z1b2t1	Wind (Onshore)	1	33%	21	0	0	$ 73.54
Biomass CHP New NY z2	Biomass	2	80%	0	0	0	$ 57.50
Fluidized Bed Repower Existing NY z2	Biomass	2	85%	62	0	0	$ 56.98
New Low-Impact Hydro NY z2	Hydro	2	46%	9	0	0	$ 54.72
Wind Small NY-z3b3t1	Wind (Onshore)	3	29%	29	0	0	$ 54.52
Wind Medium NY-z1b3t1	Wind (Onshore)	1	29%	364	0	0	$ 52.27
Wind Small NY-z2b2t1	Wind (Onshore)	2	33%	11	0	0	$ 52.08
Biomass Co-firing w/Coal NY-z2	Biomass	2	70%	29	0	0	$ 51.95
Fluidized Bed Repower Retire NY z2	Biomass	2	85%	217	0	0	$ 50.92
Wind Small NY-z1b1t1	Wind (Onshore)	1	37%	34	0	0	$ 50.35
Landfill Gas Microturbines NY z1	Landfill Gas	1	85%	3	0	0	$ 43.49
Fluidized Bed Repower Existing NY z1	Biomass	1	85%	286	0	0	$ 40.47
Wind Farms PJM b1	Wind (Onshore)	PJM	29%	250	0	0	$ 39.58
Wind Farms PJM b2	Wind (Onshore)	PJM	29%	0	0	0	$ 37.15
Biomass Co-firing w/Coal Ontario	Biomass	ON	55%	0	0	0	$ 34.94
Fluidized Bed Repower Retire NY z1	Biomass	1	85%	46	0	0	$ 34.40
New Low-Impact Hydro Quebec	Hydro	QC	50%	100	0	0	$ 33.16
Wind Large NY-z1b3t1	Wind (Onshore)	1	29%	5289	7	17	$ 31.67
Biomass Co-firing w/Coal PJM	Biomass	PJM	65%	0	0	0	$ 30.90
Wind Medium NY-z2b3t1	Wind (Onshore)	2	29%	113	113	288	$ 30.75
Biomass Co-firing w/Coal NY-z1	Biomass	1	70%	81	72	441	$ 30.08
Biomass CHP New NY z1	Biomass	1	80%	58	0	0	$ 29.26
Wind Small NY-z2b1t1	Wind (Onshore)	2	37%	10	10	33	$ 28.89
Wind Medium NY-z1b2t1	Wind (Onshore)	1	33%	60	60	173	$ 28.85
Wind Small NY-z3b2t1	Wind (Onshore)	3	33%	10	0	0	$ 24.87
Landfill Gas Microturbines NY z2	Landfill Gas	2	85%	1	0	0	$ 24.34
New Low-Impact Hydro NY z3	Hydro	3	46%	0	0	0	$ 20.18
Hydro Upgrades Quebec	Hydro	QC	50%	100	0	0	$ 15.59
New Low-Impact Hydro Ontario	Hydro	ON	67%	64	0	0	$ 14.80
Hydro Upgrades Ontario	Hydro	ON	67%	24	0	0	$ 10.80
Wind Large NY-z1b2t1	Wind (Onshore)	1	33%	1279	0	0	$ 9.44
Wind Medium NY-z1b1t1	Wind (Onshore)	1	37%	0	0	0	$ 9.13
Wind Medium NY-z2b2t1	Wind (Onshore)	2	33%	60	0	0	$ 6.94
Wind Large Agg NY-z2agt1	Wind (Onshore)	2	30%	108	0	0	$ 6.67
Biomass CHP Existing NY z1	Biomass	1	80%	96	0	0	$ 0.16
Wind Large NY-z1b1t1	Wind (Onshore)	1	37%	208	0	0	$ -
Wind Medium NY-z2b1t1	Wind (Onshore)	2	37%	0	0	0	$ -
Hydro Upgrades NY z1	Hydro	1	46%	125	0	0	$ -
Hydro Upgrades NY z2	Hydro	2	46%	23	0	0	$ -
Hydro Upgrades NY z3	Hydro	3	46%	0	0	0	$ -
Landfill Gas IC Engines NY z1	Landfill Gas	1	85%	88	0	0	$ -
Landfill Gas IC Engines NY z2	Landfill Gas	2	85%	26	0	0	$ -
Landfill Gas IC Engines NY z3	Landfill Gas	3	85%	3	0	0	$ -
Landfill Gas Microturbines NY z3	Landfill Gas	3	85%	0	0	0	$ -

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Attachment 7

MAIN TIER SUPPLY CURVE ASSUMPTIONS
(7 pages)

Supply Details

Resource Block	Resource Type	Zone	Financing Category	Capacity Factor	Maximum MW in Block	Modeled Project Size (MW)
Wind Large Agg NY-z2agt1	Wind (>100 MW)	2	Onshore Wind	30%	108	100
Wind Large NY-z1b1t1	Wind (>100 MW)	1	Onshore Wind	37%	208	100
Wind Large NY-z1b2t1	Wind (>100 MW)	1	Onshore Wind	33%	1279	100
Wind Large NY-z1b3t1	Wind (>100 MW)	1	Onshore Wind	29%	5289	100
Wind Medium NY-z1b1t1	Wind (20-100 MW)	1	Onshore Wind (Medium/Small	37%	0	60
Wind Medium NY-z1b2t1	Wind (20-100 MW)	1	Onshore Wind (Medium/Small	33%	60	60
Wind Medium NY-z1b3t1	Wind (20-100 MW)	1	Onshore Wind (Medium/Small	29%	364	60
Wind Medium NY-z2b1t1	Wind (20-100 MW)	2	Onshore Wind (Medium/Small	37%	0	60
Wind Medium NY-z2b2t1	Wind (20-100 MW)	2	Onshore Wind (Medium/Small	33%	60	60
Wind Medium NY-z2b3t1	Wind (20-100 MW)	2	Onshore Wind (Medium/Small	29%	113	60
Wind Small Agg NY-z3agt2	Wind (20-100 MW)	3	Onshore Wind (Medium/Small	31%	15	10
Wind Small NY-z1b1t1	Wind (<20 MW)	1	Onshore Wind (Medium/Small	37%	34	10
Wind Small NY-z1b1t2	Wind (<20 MW)	1	Onshore Wind (Medium/Small	37%	10	10
Wind Small NY-z1b2t1	Wind (<20 MW)	1	Onshore Wind (Medium/Small	33%	21	10
Wind Small NY-z1b2t2	Wind (<20 MW)	1	Onshore Wind (Medium/Small	33%	17	10
Wind Small NY-z1b3t1	Wind (<20 MW)	1	Onshore Wind (Medium/Small	29%	191	10
Wind Small NY-z1b3t2	Wind (<20 MW)	1	Onshore Wind (Medium/Small	29%	78	10
Wind Small NY-z2b1t1	Wind (<20 MW)	2	Onshore Wind (Medium/Small	37%	10	10
Wind Small NY-z2b2t1	Wind (<20 MW)	2	Onshore Wind (Medium/Small	33%	11	10
Wind Small NY-z3b2t1	Wind (<20 MW)	3	Onshore Wind (Medium/Small	33%	10	10
Wind Small NY-z2b2t2	Wind (<20 MW)	2	Onshore Wind (Medium/Small	33%	10	10
Wind Small NY-z2b3t1	Wind (<20 MW)	2	Onshore Wind (Medium/Small	29%	62	10
Wind Small NY-z3b3t1	Wind (<20 MW)	3	Onshore Wind (Medium/Small	29%	29	10
Wind Small NY-z2b3t2	Wind (<20 MW)	2	Onshore Wind (Medium/Small	29%	14	10
Off-Shore Wind Lakes NY-z1	Wind (Offshore)	1	Offshore Wind	34%	311	300
Off-Shore Wind LI NY-z3	Wind (Offshore)	3	Offshore Wind	36%	579	300
Wind Farms Quebec	Import Wind (Farm)	QC	Canadian Wind	29%	**0**	100
Wind Farms Ontario	Import Wind (Farm)	ON	Canadian Wind	29%	**0**	100
Wind Farms PJM b1	Import Wind (Farm)	PJM	Onshore Wind	29%	**250**	100
Wind Farms PJM b2	Import Wind (Farm)	PJM	Onshore Wind	29%	**0**	100
Biomass CHP Existing NY z1	Biomass (Zone 1)	1	Biomass (wood)	80%	96	25
Biomass CHP New NY z1	Biomass (Zone 1)	1	Biomass (wood)	80%	58	20
Biomass Co-firing w/Coal NY-z1	Biomass (Zone 1)	1	Biomass co-firing	70%	80.975	20
Biomass Stoker NY z1	Biomass (Zone 1)	1	Biomass (wood)	85%	500	25
Fluidized Bed Repower Existing NY z1	Biomass (Zone 1)	1	Biomass (wood)	85%	286.275	25
Fluidized Bed Repower Retire NY z1	Biomass (Zone 1)	1	Biomass (wood)	85%	45.65	25
Biomass CHP Existing NY z2	Biomass (Zone 2)	2	Biomass (wood)	80%	4	5
Biomass CHP New NY z2	Biomass (Zone 2)	2	Biomass (wood)	80%	-	20
Biomass Co-firing w/Coal NY-z2	Biomass (Zone 2)	2	Biomass co-firing	70%	29.12	20
Biomass Stoker NY z2	Biomass (Zone 2)	2	Biomass (wood)	85%	500	25
Fluidized Bed Repower Existing NY z2	Biomass (Zone 2)	2	Biomass (wood)	85%	62.425	25
Fluidized Bed Repower Retire NY z2	Biomass (Zone 2)	2	Biomass (wood)	85%	217.25	25
Biomass CHP Existing NY z3	Biomass (Zone 3)	3	Biomass (wood)	80%	89	25
Biomass CHP New NY z3	Biomass (Zone 3)	3	Biomass (wood)	80%	59	20
Biomass Co-firing w/Coal NY-z3	Biomass (Zone 3)	3	Biomass co-firing	55%	0	20
Biomass Stoker NY z3	Biomass (Zone 3)	3	Biomass (wood)	80%	-	25
Fluidized Bed Repower Existing NY z3	Biomass (Zone 3)	3	Biomass (wood)	85%	131.75	25
Fluidized Bed Repower Retire NY z3	Biomass (Zone 3)	3	Biomass (wood)	85%	48.45	25
Biomass Co-firing w/Coal Ontario	Import Biomass (co-fire w/coal)	ON	Canadian Biomass co-firing	55%	-	20
Biomass Co-firing w/Coal PJM	Import Biomass (co-fire w/coal)	PJM	Biomass co-firing	65%	-	20
New Low-Impact Hydro NY z1	Hydro (new low-impact <30MW ROR)	1	Hydro (new)	46%	34	5
New Low-Impact Hydro NY z2	Hydro (new low-impact <30MW ROR)	2	Hydro (new)	46%	9	5
New Low-Impact Hydro NY z3	Hydro (new low-impact <30MW ROR)	3	Hydro (new)	46%	0	5
New Low-Impact Hydro Quebec	ImportHydro (new low-impact <30MW ROR)	QC	Canadian Hydro	50%	**100**	5
New Low-Impact Hydro Ontario	ImportHydro (new low-impact <30MW ROR)	ON	Canadian Hydro	67%	**64**	5
Hydro Upgrades NY z1	Hydro (upgrades)	1	Hydro (upgrades)	46%	125	5
Hydro Upgrades NY z2	Hydro (upgrades)	2	Hydro (upgrades)	46%	23	5
Hydro Upgrades NY z3	Hydro (upgrades)	3	Hydro (upgrades)	46%	0	5
Hydro Upgrades Quebec	Import Hydro (upgrades)	QC	Canadian Hydro	50%	**100**	5
Hydro Upgrades Ontario	Import Hydro (upgrades)	ON	Canadian Hydro	67%	**24**	5
Very Small New Hydro NY z1	Hydro (very small new)	1	Hydro (new)	29%	10	1
Very Small New Hydro NY z2	Hydro (very small new)	2	Hydro (new)	29%	3	1
Very Small New Hydro NY z3	Hydro (very small new)	3	Hydro (new)	29%	0	1
Landfill Gas IC Engines NY z1	Landfill Gas	1	Landfill Methane	85%	88	5
Landfill Gas IC Engines NY z2	Landfill Gas	2	Landfill Methane	85%	26	5
Landfill Gas IC Engines NY z3	Landfill Gas	3	Landfill Methane	85%	3	3
Landfill Gas Microturbines NY z1	Landfill Gas	1	Landfill Methane	85%	3	3
Landfill Gas Microturbines NY z2	Landfill Gas	2	Landfill Methane	85%	1	1
Landfill Gas Microturbines NY z3	Landfill Gas	3	Landfill Methane	85%	0	1

Supply Details	**RESULTS (Total All-in $/MWh based on all inputted costs)**						
Resource Block	**Levelized Cost per MWH**	**Levelized Cost per MWH**	**Levelized Cost per MWH**	**Levelized Cost per MWH**	**Levelized Cost per MWH**	**Levelized Cost per MWH**	**Levelized Cost per MWH**
	2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Wind Large Agg NY-z2agt1	$ 89.60	$ 90.39	$ 91.17	$ 91.97	$ 92.77	$ 93.57	$ 94.38
Wind Large NY-z1b1t1	$ 66.14	$ 66.64	$ 67.14	$ 67.64	$ 68.14	$ 68.65	$ 69.16
Wind Large NY-z1b2t1	$ 77.48	$ 78.12	$ 78.76	$ 79.40	$ 80.05	$ 80.70	$ 81.35
Wind Large NY-z1b3t1	$ 91.95	$ 92.76	$ 93.58	$ 94.40	$ 95.23	$ 96.07	$ 96.91
Wind Medium NY-z1b1t1	$ 76.97	$ 77.58	$ 78.20	$ 78.82	$ 79.44	$ 80.07	$ 80.70
Wind Medium NY-z1b2t1	$ 89.62	$ 90.39	$ 91.16	$ 91.93	$ 92.71	$ 93.50	$ 94.29
Wind Medium NY-z1b3t1	$ 105.77	$ 106.73	$ 107.69	$ 108.66	$ 109.65	$ 110.64	$ 111.64
Wind Medium NY-z2b1t1	$ 76.97	$ 77.58	$ 78.20	$ 78.82	$ 79.44	$ 80.07	$ 80.70
Wind Medium NY-z2b2t1	$ 89.62	$ 90.39	$ 91.16	$ 91.93	$ 92.71	$ 93.50	$ 94.29
Wind Medium NY-z2b3t1	$ 105.77	$ 106.73	$ 107.69	$ 108.66	$ 109.65	$ 110.64	$ 111.64
Wind Small Agg NY-z3agt2	$ 150.67	$ 152.74	$ 154.85	$ 157.00	$ 159.19	$ 161.42	$ 163.70
Wind Small NY-z1b1t1	$ 102.82	$ 103.88	$ 104.96	$ 106.06	$ 107.17	$ 108.29	$ 109.43
Wind Small NY-z1b1t2	$ 121.44	$ 123.07	$ 124.73	$ 126.41	$ 128.13	$ 129.89	$ 131.67
Wind Small NY-z1b2t1	$ 118.60	$ 119.88	$ 121.17	$ 122.47	$ 123.80	$ 125.14	$ 126.51
Wind Small NY-z1b2t2	$ 139.49	$ 141.39	$ 143.32	$ 145.30	$ 147.31	$ 149.36	$ 151.44
Wind Small NY-z1b3t1	$ 138.75	$ 140.28	$ 141.84	$ 143.42	$ 145.02	$ 146.64	$ 148.29
Wind Small NY-z1b3t2	$ 162.51	$ 164.76	$ 167.05	$ 169.39	$ 171.77	$ 174.20	$ 176.67
Wind Small NY-z2b1t1	$ 102.82	$ 103.88	$ 104.96	$ 106.06	$ 107.17	$ 108.29	$ 109.43
Wind Small NY-z2b2t1	$ 118.60	$ 119.88	$ 121.17	$ 122.47	$ 123.80	$ 125.14	$ 126.51
Wind Small NY-z3b2t1	$ 118.60	$ 119.88	$ 121.17	$ 122.47	$ 123.80	$ 125.14	$ 126.51
Wind Small NY-z2b2t2	$ 139.49	$ 141.39	$ 143.32	$ 145.30	$ 147.31	$ 149.36	$ 151.44
Wind Small NY-z2b3t1	$ 138.75	$ 140.28	$ 141.84	$ 143.42	$ 145.02	$ 146.64	$ 148.29
Wind Small NY-z3b3t1	$ 138.75	$ 140.28	$ 141.84	$ 143.42	$ 145.02	$ 146.64	$ 148.29
Wind Small NY-z2b3t2	$ 162.51	$ 164.76	$ 167.05	$ 169.39	$ 171.77	$ 174.20	$ 176.67
Off-Shore Wind Lakes NY-z1	$ 197.69	$ 197.84	$ 197.99	$ 198.15	$ 198.32	$ 198.50	$ 198.69
Off-Shore Wind LI NY-z3	$ 185.18	$ 185.29	$ 185.40	$ 185.51	$ 185.64	$ 185.77	$ 185.90
Wind Farms Quebec	$ 122.98	$ 124.31	$ 125.65	$ 127.02	$ 128.40	$ 129.81	$ 131.24
Wind Farms Ontario	$ 115.98	$ 117.31	$ 118.65	$ 120.02	$ 121.40	$ 122.81	$ 124.24
Wind Farms PJM b1	$ 94.81	$ 95.59	$ 96.37	$ 97.15	$ 97.94	$ 98.74	$ 99.54
Wind Farms PJM b2	$ 94.81	$ 95.59	$ 96.37	$ 97.15	$ 97.94	$ 98.74	$ 99.54
Biomass CHP Existing NY z1	$ 68.56	$ 70.23	$ 71.95	$ 73.89	$ 76.14	$ 77.65	$ 79.19
Biomass CHP New NY z1	$ 88.66	$ 90.71	$ 92.83	$ 95.17	$ 97.83	$ 99.76	$ 101.72
Biomass Co-firing w/Coal NY-z1	$ 21.51	$ 22.23	$ 22.98	$ 23.86	$ 24.93	$ 25.54	$ 26.17
Biomass Stoker NY z1	$ 135.53	$ 138.68	$ 141.90	$ 145.32	$ 149.03	$ 152.23	$ 155.50
Fluidized Bed Repower Existing NY z1	$ 94.51	$ 96.86	$ 99.27	$ 101.88	$ 104.76	$ 107.09	$ 109.47
Fluidized Bed Repower Retire NY z1	$ 90.66	$ 92.93	$ 95.26	$ 97.79	$ 100.59	$ 102.84	$ 105.13
Biomass CHP Existing NY z2	$ 132.38	$ 146.41	$ 153.06	$ 159.95	$ 167.08	$ 174.47	$ 182.12
Biomass CHP New NY z2	$ 110.30	$ 119.18	$ 123.78	$ 128.53	$ 133.44	$ 138.51	$ 143.75
Biomass Co-firing w/Coal NY-z2	$ 34.79	$ 39.70	$ 41.97	$ 44.33	$ 46.78	$ 49.32	$ 51.95
Biomass Stoker NY z2	$ 151.61	$ 159.82	$ 164.89	$ 170.11	$ 175.48	$ 181.02	$ 186.72
Fluidized Bed Repower Existing NY z2	$ 111.58	$ 119.31	$ 123.68	$ 128.19	$ 132.84	$ 137.65	$ 142.61
Fluidized Bed Repower Retire NY z2	$ 107.72	$ 115.38	$ 119.67	$ 124.10	$ 128.67	$ 133.40	$ 138.27
Biomass CHP Existing NY z3	$ 149.96	$ 210.76	$ 215.38	$ 220.10	$ 224.92	$ 229.86	$ 234.90
Biomass CHP New NY z3	$ 170.06	$ 231.24	$ 236.25	$ 241.38	$ 246.61	$ 251.96	$ 257.43
Biomass Co-firing w/Coal NY-z3	$ 72.77	$ 109.81	$ 112.38	$ 115.01	$ 117.70	$ 120.46	$ 123.28
Biomass Stoker NY z3	$ 201.01	$ 248.17	$ 253.65	$ 259.26	$ 264.98	$ 270.83	$ 276.82
Fluidized Bed Repower Existing NY z3	$ 158.70	$ 207.67	$ 212.37	$ 217.18	$ 222.09	$ 227.12	$ 232.26
Fluidized Bed Repower Retire NY z3	$ 154.85	$ 203.74	$ 208.36	$ 213.09	$ 217.92	$ 222.87	$ 227.92
Biomass Co-firing w/Coal Ontario	$ 28.12	$ 28.56	$ 29.02	$ 29.48	$ 29.95	$ 30.44	$ 30.94
Biomass Co-firing w/Coal PJM	$ 23.76	$ 24.25	$ 24.76	$ 25.27	$ 25.80	$ 26.34	$ 26.90
New Low-Impact Hydro NY z1	$ 114.69	$ 118.07	$ 121.54	$ 125.12	$ 128.80	$ 132.59	$ 136.50
New Low-Impact Hydro NY z2	$ 114.69	$ 118.07	$ 121.54	$ 125.12	$ 128.80	$ 132.59	$ 136.50
New Low-Impact Hydro NY z3	$ 114.69	$ 118.07	$ 121.54	$ 125.12	$ 128.80	$ 132.59	$ 136.50
New Low-Impact Hydro Quebec	$ 88.20	$ 90.39	$ 92.65	$ 94.97	$ 97.37	$ 99.83	$ 102.36
New Low-Impact Hydro Ontario	$ 66.36	$ 68.03	$ 69.74	$ 71.50	$ 73.32	$ 75.19	$ 77.11
Hydro Upgrades NY z1	$ 40.05	$ 41.37	$ 42.74	$ 44.14	$ 45.60	$ 47.09	$ 48.64
Hydro Upgrades NY z2	$ 40.05	$ 41.37	$ 42.74	$ 44.14	$ 45.60	$ 47.09	$ 48.64
Hydro Upgrades NY z3	$ 40.05	$ 41.37	$ 42.74	$ 44.14	$ 45.60	$ 47.09	$ 48.64
Hydro Upgrades Quebec	$ 61.15	$ 62.51	$ 63.91	$ 65.34	$ 66.82	$ 68.34	$ 69.91
Hydro Upgrades Ontario	$ 46.48	$ 47.53	$ 48.61	$ 49.72	$ 50.86	$ 52.04	$ 53.24
Very Small New Hydro NY z1	$ 241.14	$ 248.25	$ 255.57	$ 263.10	$ 270.86	$ 278.85	$ 287.08
Very Small New Hydro NY z2	$ 241.14	$ 248.25	$ 255.57	$ 263.10	$ 270.86	$ 278.85	$ 287.08
Very Small New Hydro NY z3	$ 241.14	$ 248.25	$ 255.57	$ 263.10	$ 270.86	$ 278.85	$ 287.08
Landfill Gas IC Engines NY z1	$ 52.06	$ 53.50	$ 54.99	$ 56.52	$ 58.10	$ 59.72	$ 61.38
Landfill Gas IC Engines NY z2	$ 55.47	$ 57.03	$ 58.62	$ 60.26	$ 61.95	$ 63.68	$ 65.47
Landfill Gas IC Engines NY z3	$ 77.70	$ 79.92	$ 82.20	$ 84.55	$ 86.96	$ 89.45	$ 92.01
Landfill Gas Microturbines NY z1	$ 98.72	$ 101.52	$ 104.39	$ 107.35	$ 110.39	$ 113.52	$ 116.74
Landfill Gas Microturbines NY z2	$ 100.86	$ 103.72	$ 106.66	$ 109.68	$ 112.80	$ 116.00	$ 119.29
Landfill Gas Microturbines NY z3	$ 106.84	$ 109.88	$ 113.01	$ 116.22	$ 119.53	$ 122.93	$ 126.43

Supply Details	**NOMINAL INSTALLED COSTS (calculated)**						
Resource Block	**Total Installed Cost (nominal$/kW of rated max output)**	**Total Installed Cost (nominal$/kW of rated max output)**	**Total Installed Cost (nominal$/kW of rated max output)**	**Total Installed Cost (nominal$/kW of rated max output)**	**Total Installed Cost (nominal$/kW of rated max output)**	**Total Installed Cost (nominal$/kW of rated max output)**	**Total Installed Cost (nominal$/kW of rated max output)**
	2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Wind Large Agg NY-z2agt1	$ 2,268	$ 2,290	$ 2,312	$ 2,334	$ 2,357	$ 2,380	$ 2,403
Wind Large NY-z1b1t1	$ 2,268	$ 2,290	$ 2,312	$ 2,334	$ 2,357	$ 2,380	$ 2,403
Wind Large NY-z1b2t1	$ 2,268	$ 2,290	$ 2,312	$ 2,334	$ 2,357	$ 2,380	$ 2,403
Wind Large NY-z1b3t1	$ 2,268	$ 2,290	$ 2,312	$ 2,334	$ 2,357	$ 2,380	$ 2,403
Wind Medium NY-z1b1t1	$ 2,490	$ 2,514	$ 2,538	$ 2,563	$ 2,588	$ 2,614	$ 2,639
Wind Medium NY-z1b2t1	$ 2,490	$ 2,514	$ 2,538	$ 2,563	$ 2,588	$ 2,614	$ 2,639
Wind Medium NY-z1b3t1	$ 2,490	$ 2,514	$ 2,538	$ 2,563	$ 2,588	$ 2,614	$ 2,639
Wind Medium NY-z2b1t1	$ 2,490	$ 2,514	$ 2,538	$ 2,563	$ 2,588	$ 2,614	$ 2,639
Wind Medium NY-z2b2t1	$ 2,490	$ 2,514	$ 2,538	$ 2,563	$ 2,588	$ 2,614	$ 2,639
Wind Medium NY-z2b3t1	$ 2,490	$ 2,514	$ 2,538	$ 2,563	$ 2,588	$ 2,614	$ 2,639
Wind Small Agg NY-z3agt2	$ 3,649	$ 3,699	$ 3,751	$ 3,804	$ 3,857	$ 3,912	$ 3,968
Wind Small NY-z1b1t1	$ 3,118	$ 3,153	$ 3,188	$ 3,224	$ 3,260	$ 3,297	$ 3,334
Wind Small NY-z1b1t2	$ 3,649	$ 3,699	$ 3,751	$ 3,804	$ 3,857	$ 3,912	$ 3,968
Wind Small NY-z1b2t1	$ 3,118	$ 3,153	$ 3,188	$ 3,224	$ 3,260	$ 3,297	$ 3,334
Wind Small NY-z1b2t2	$ 3,649	$ 3,699	$ 3,751	$ 3,804	$ 3,857	$ 3,912	$ 3,968
Wind Small NY-z1b3t1	$ 3,118	$ 3,153	$ 3,188	$ 3,224	$ 3,260	$ 3,297	$ 3,334
Wind Small NY-z1b3t2	$ 3,649	$ 3,699	$ 3,751	$ 3,804	$ 3,857	$ 3,912	$ 3,968
Wind Small NY-z2b1t1	$ 3,118	$ 3,153	$ 3,188	$ 3,224	$ 3,260	$ 3,297	$ 3,334
Wind Small NY-z2b2t1	$ 3,118	$ 3,153	$ 3,188	$ 3,224	$ 3,260	$ 3,297	$ 3,334
Wind Small NY-z3b2t1	$ 3,118	$ 3,153	$ 3,188	$ 3,224	$ 3,260	$ 3,297	$ 3,334
Wind Small NY-z2b2t2	$ 3,649	$ 3,699	$ 3,751	$ 3,804	$ 3,857	$ 3,912	$ 3,968
Wind Small NY-z2b3t1	$ 3,118	$ 3,153	$ 3,188	$ 3,224	$ 3,260	$ 3,297	$ 3,334
Wind Small NY-z3b3t1	$ 3,118	$ 3,153	$ 3,188	$ 3,224	$ 3,260	$ 3,297	$ 3,334
Wind Small NY-z2b3t2	$ 3,649	$ 3,699	$ 3,751	$ 3,804	$ 3,857	$ 3,912	$ 3,968
Off-Shore Wind Lakes NY-z1	$ 4,242	$ 4,239	$ 4,235	$ 4,231	$ 4,227	$ 4,223	$ 4,219
Off-Shore Wind LI NY-z3	$ 4,242	$ 4,239	$ 4,235	$ 4,231	$ 4,227	$ 4,223	$ 4,219
Wind Farms Quebec	$ 2,242	$ 2,263	$ 2,284	$ 2,305	$ 2,327	$ 2,349	$ 2,371
Wind Farms Ontario	$ 2,242	$ 2,263	$ 2,284	$ 2,305	$ 2,327	$ 2,349	$ 2,371
Wind Farms PJM b1	$ 2,242	$ 2,263	$ 2,284	$ 2,305	$ 2,327	$ 2,349	$ 2,371
Wind Farms PJM b2	$ 2,242	$ 2,263	$ 2,284	$ 2,305	$ 2,327	$ 2,349	$ 2,371
Biomass CHP Existing NY z1	$ 3,431	$ 3,499	$ 3,568	$ 3,638	$ 3,710	$ 3,783	$ 3,857
Biomass CHP New NY z1	$ 4,575	$ 4,665	$ 4,757	$ 4,851	$ 4,946	$ 5,044	$ 5,143
Biomass Co-firing w/Coal NY-z1	$ 159	$ 164	$ 169	$ 174	$ 179	$ 184	$ 190
Biomass Stoker NY z1	$ 3,431	$ 3,499	$ 3,568	$ 3,638	$ 3,710	$ 3,783	$ 3,857
Fluidized Bed Repower Existing NY z1	$ 1,248	$ 1,272	$ 1,297	$ 1,323	$ 1,349	$ 1,376	$ 1,403
Fluidized Bed Repower Retire NY z1	$ 1,040	$ 1,060	$ 1,081	$ 1,102	$ 1,124	$ 1,146	$ 1,169
Biomass CHP Existing NY z2	$ 6,291	$ 6,415	$ 6,541	$ 6,670	$ 6,801	$ 6,935	$ 7,072
Biomass CHP New NY z2	$ 4,575	$ 4,665	$ 4,757	$ 4,851	$ 4,946	$ 5,044	$ 5,143
Biomass Co-firing w/Coal NY-z2	$ 159	$ 164	$ 169	$ 174	$ 179	$ 184	$ 190
Biomass Stoker NY z2	$ 3,431	$ 3,499	$ 3,568	$ 3,638	$ 3,710	$ 3,783	$ 3,857
Fluidized Bed Repower Existing NY z2	$ 1,248	$ 1,272	$ 1,297	$ 1,323	$ 1,349	$ 1,376	$ 1,403
Fluidized Bed Repower Retire NY z2	$ 1,040	$ 1,060	$ 1,081	$ 1,102	$ 1,124	$ 1,146	$ 1,169
Biomass CHP Existing NY z3	$ 3,431	$ 3,499	$ 3,568	$ 3,638	$ 3,710	$ 3,783	$ 3,857
Biomass CHP New NY z3	$ 4,575	$ 4,665	$ 4,757	$ 4,851	$ 4,946	$ 5,044	$ 5,143
Biomass Co-firing w/Coal NY-z3	$ 159	$ 164	$ 169	$ 174	$ 179	$ 184	$ 190
Biomass Stoker NY z3	$ 3,431	$ 3,499	$ 3,568	$ 3,638	$ 3,710	$ 3,783	$ 3,857
Fluidized Bed Repower Existing NY z3	$ 1,248	$ 1,272	$ 1,297	$ 1,323	$ 1,349	$ 1,376	$ 1,403
Fluidized Bed Repower Retire NY z3	$ 1,040	$ 1,060	$ 1,081	$ 1,102	$ 1,124	$ 1,146	$ 1,169
Biomass Co-firing w/Coal Ontario	$ 159	$ 164	$ 169	$ 174	$ 179	$ 184	$ 190
Biomass Co-firing w/Coal PJM	$ 159	$ 164	$ 169	$ 174	$ 179	$ 184	$ 190
New Low-Impact Hydro NY z1	$ 3,713	$ 3,825	$ 3,939	$ 4,057	$ 4,179	$ 4,305	$ 4,434
New Low-Impact Hydro NY z2	$ 3,713	$ 3,825	$ 3,939	$ 4,057	$ 4,179	$ 4,305	$ 4,434
New Low-Impact Hydro NY z3	$ 3,713	$ 3,825	$ 3,939	$ 4,057	$ 4,179	$ 4,305	$ 4,434
New Low-Impact Hydro Quebec	$ 3,713	$ 3,825	$ 3,939	$ 4,057	$ 4,179	$ 4,305	$ 4,434
New Low-Impact Hydro Ontario	$ 3,713	$ 3,825	$ 3,939	$ 4,057	$ 4,179	$ 4,305	$ 4,434
Hydro Upgrades NY z1	$ 2,016	$ 2,076	$ 2,138	$ 2,203	$ 2,269	$ 2,337	$ 2,407
Hydro Upgrades NY z2	$ 2,016	$ 2,076	$ 2,138	$ 2,203	$ 2,269	$ 2,337	$ 2,407
Hydro Upgrades NY z3	$ 2,016	$ 2,076	$ 2,138	$ 2,203	$ 2,269	$ 2,337	$ 2,407
Hydro Upgrades Quebec	$ 2,016	$ 2,076	$ 2,138	$ 2,203	$ 2,269	$ 2,337	$ 2,407
Hydro Upgrades Ontario	$ 2,016	$ 2,076	$ 2,138	$ 2,203	$ 2,269	$ 2,337	$ 2,407
Very Small New Hydro NY z1	$ 4,880	$ 5,027	$ 5,177	$ 5,333	$ 5,493	$ 5,657	$ 5,827
Very Small New Hydro NY z2	$ 4,880	$ 5,027	$ 5,177	$ 5,333	$ 5,493	$ 5,657	$ 5,827
Very Small New Hydro NY z3	$ 4,880	$ 5,027	$ 5,177	$ 5,333	$ 5,493	$ 5,657	$ 5,827
Landfill Gas IC Engines NY z1	$ 2,228	$ 2,295	$ 2,364	$ 2,434	$ 2,508	$ 2,583	$ 2,660
Landfill Gas IC Engines NY z2	$ 2,440	$ 2,513	$ 2,589	$ 2,666	$ 2,746	$ 2,829	$ 2,914
Landfill Gas IC Engines NY z3	$ 3,819	$ 3,934	$ 4,052	$ 4,173	$ 4,299	$ 4,428	$ 4,560
Landfill Gas Microturbines NY z1	$ 4,641	$ 4,781	$ 4,924	$ 5,072	$ 5,224	$ 5,381	$ 5,542
Landfill Gas Microturbines NY z2	$ 4,774	$ 4,917	$ 5,065	$ 5,217	$ 5,373	$ 5,534	$ 5,700
Landfill Gas Microturbines NY z3	$ 5,145	$ 5,300	$ 5,459	$ 5,622	$ 5,791	$ 5,965	$ 6,144

Supply Details		**INSTALLED COSTS IN $2007 (input)**						
Resource Block	**Total Installed Cost (2007$/kW of rated max output)**	**Total Installed Cost (2007$/kW of rated max output)**	**Total Installed Cost (2007$/kW of rated max output)**	**Total Installed Cost (2007$/kW of rated max output)**	**Total Installed Cost (2007$/kW of rated max output)**	**Total Installed Cost (2007$/kW of rated max output)**	**Total Installed Cost (2007$/kW of rated max output)**	**Total Installed Cost (2007$/kW of rated max output)**
	2007	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Wind Large Agg NY-z2agt1	$ 2,200	$ 2,113	$ 2,071	$ 2,029	$ 1,989	$ 1,949	$ 1,910	$ 1,872
Wind Large NY-z1b1t1	$ 2,200	$ 2,113	$ 2,071	$ 2,029	$ 1,989	$ 1,949	$ 1,910	$ 1,872
Wind Large NY-z1b2t1	$ 2,200	$ 2,113	$ 2,071	$ 2,029	$ 1,989	$ 1,949	$ 1,910	$ 1,872
Wind Large NY-z1b3t1	$ 2,200	$ 2,113	$ 2,071	$ 2,029	$ 1,989	$ 1,949	$ 1,910	$ 1,872
Wind Medium NY-z1b1t1	$ 2,400	$ 2,305	$ 2,259	$ 2,214	$ 2,169	$ 2,126	$ 2,084	$ 2,042
Wind Medium NY-z1b2t1	$ 2,400	$ 2,305	$ 2,259	$ 2,214	$ 2,169	$ 2,126	$ 2,084	$ 2,042
Wind Medium NY-z1b3t1	$ 2,400	$ 2,305	$ 2,259	$ 2,214	$ 2,169	$ 2,126	$ 2,084	$ 2,042
Wind Medium NY-z2b1t1	$ 2,400	$ 2,305	$ 2,259	$ 2,214	$ 2,169	$ 2,126	$ 2,084	$ 2,042
Wind Medium NY-z2b2t1	$ 2,400	$ 2,305	$ 2,259	$ 2,214	$ 2,169	$ 2,126	$ 2,084	$ 2,042
Wind Medium NY-z2b3t1	$ 2,400	$ 2,305	$ 2,259	$ 2,214	$ 2,169	$ 2,126	$ 2,084	$ 2,042
Wind Small Agg NY-z3agt2	$ 2,800	$ 2,689	$ 2,635	$ 2,583	$ 2,531	$ 2,480	$ 2,431	$ 2,382
Wind Small NY-z1b1t1	$ 2,800	$ 2,689	$ 2,635	$ 2,583	$ 2,531	$ 2,480	$ 2,431	$ 2,382
Wind Small NY-z1b1t2	$ 2,800	$ 2,689	$ 2,635	$ 2,583	$ 2,531	$ 2,480	$ 2,431	$ 2,382
Wind Small NY-z1b2t1	$ 2,800	$ 2,689	$ 2,635	$ 2,583	$ 2,531	$ 2,480	$ 2,431	$ 2,382
Wind Small NY-z1b2t2	$ 2,800	$ 2,689	$ 2,635	$ 2,583	$ 2,531	$ 2,480	$ 2,431	$ 2,382
Wind Small NY-z1b3t1	$ 2,800	$ 2,689	$ 2,635	$ 2,583	$ 2,531	$ 2,480	$ 2,431	$ 2,382
Wind Small NY-z1b3t2	$ 2,800	$ 2,689	$ 2,635	$ 2,583	$ 2,531	$ 2,480	$ 2,431	$ 2,382
Wind Small NY-z2b1t1	$ 2,800	$ 2,689	$ 2,635	$ 2,583	$ 2,531	$ 2,480	$ 2,431	$ 2,382
Wind Small NY-z2b2t1	$ 2,800	$ 2,689	$ 2,635	$ 2,583	$ 2,531	$ 2,480	$ 2,431	$ 2,382
Wind Small NY-z3b2t1	$ 2,800	$ 2,689	$ 2,635	$ 2,583	$ 2,531	$ 2,480	$ 2,431	$ 2,382
Wind Small NY-z2b2t2	$ 2,800	$ 2,689	$ 2,635	$ 2,583	$ 2,531	$ 2,480	$ 2,431	$ 2,382
Wind Small NY-z2b3t1	$ 2,800	$ 2,689	$ 2,635	$ 2,583	$ 2,531	$ 2,480	$ 2,431	$ 2,382
Wind Small NY-z3b3t1	$ 2,800	$ 2,689	$ 2,635	$ 2,583	$ 2,531	$ 2,480	$ 2,431	$ 2,382
Wind Small NY-z2b3t2	$ 2,800	$ 2,689	$ 2,635	$ 2,583	$ 2,531	$ 2,480	$ 2,431	$ 2,382
Off-Shore Wind Lakes NY-z1	$ 4,250	$ 3,999	$ 3,879	$ 3,762	$ 3,650	$ 3,540	$ 3,434	$ 3,331
Off-Shore Wind LI NY-z3	$ 4,250	$ 3,999	$ 3,879	$ 3,762	$ 3,650	$ 3,540	$ 3,434	$ 3,331
Wind Farms Quebec	$ 2,200	$ 2,113	$ 2,071	$ 2,029	$ 1,989	$ 1,949	$ 1,910	$ 1,872
Wind Farms Ontario	$ 2,200	$ 2,113	$ 2,071	$ 2,029	$ 1,989	$ 1,949	$ 1,910	$ 1,872
Wind Farms PJM b1	$ 2,200	$ 2,113	$ 2,071	$ 2,029	$ 1,989	$ 1,949	$ 1,910	$ 1,872
Wind Farms PJM b2	$ 2,200	$ 2,113	$ 2,071	$ 2,029	$ 1,989	$ 1,949	$ 1,910	$ 1,872
Biomass CHP Existing NY z1	$ 3,300	$ 3,234	$ 3,202	$ 3,170	$ 3,138	$ 3,107	$ 3,076	$ 3,045
Biomass CHP New NY z1	$ 4,400	$ 4,312	$ 4,269	$ 4,227	$ 4,184	$ 4,143	$ 4,101	$ 4,060
Biomass Co-firing w/Coal NY-z1	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150
Biomass Stoker NY z1	$ 3,300	$ 3,234	$ 3,202	$ 3,170	$ 3,138	$ 3,107	$ 3,076	$ 3,045
Fluidized Bed Repower Existing NY z1	$ 1,200	$ 1,176	$ 1,164	$ 1,153	$ 1,141	$ 1,130	$ 1,118	$ 1,107
Fluidized Bed Repower Retire NY z1	$ 1,000	$ 980	$ 970	$ 961	$ 951	$ 941	$ 932	$ 923
Biomass CHP Existing NY z2	$ 6,050	$ 5,930	$ 5,870	$ 5,812	$ 5,753	$ 5,696	$ 5,639	$ 5,583
Biomass CHP New NY z2	$ 4,400	$ 4,312	$ 4,269	$ 4,227	$ 4,184	$ 4,143	$ 4,101	$ 4,060
Biomass Co-firing w/Coal NY-z2	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150
Biomass Stoker NY z2	$ 3,300	$ 3,234	$ 3,202	$ 3,170	$ 3,138	$ 3,107	$ 3,076	$ 3,045
Fluidized Bed Repower Existing NY z2	$ 1,200	$ 1,176	$ 1,164	$ 1,153	$ 1,141	$ 1,130	$ 1,118	$ 1,107
Fluidized Bed Repower Retire NY z2	$ 1,000	$ 980	$ 970	$ 961	$ 951	$ 941	$ 932	$ 923
Biomass CHP Existing NY z3	$ 3,300	$ 3,234	$ 3,202	$ 3,170	$ 3,138	$ 3,107	$ 3,076	$ 3,045
Biomass CHP New NY z3	$ 4,400	$ 4,312	$ 4,269	$ 4,227	$ 4,184	$ 4,143	$ 4,101	$ 4,060
Biomass Co-firing w/Coal NY-z3	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150
Biomass Stoker NY z3	$ 3,300	$ 3,234	$ 3,202	$ 3,170	$ 3,138	$ 3,107	$ 3,076	$ 3,045
Fluidized Bed Repower Existing NY z3	$ 1,200	$ 1,176	$ 1,164	$ 1,153	$ 1,141	$ 1,130	$ 1,118	$ 1,107
Fluidized Bed Repower Retire NY z3	$ 1,000	$ 980	$ 970	$ 961	$ 951	$ 941	$ 932	$ 923
Biomass Co-firing w/Coal Ontario	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150
Biomass Co-firing w/Coal PJM	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150
New Low-Impact Hydro NY z1	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500
New Low-Impact Hydro NY z2	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500
New Low-Impact Hydro NY z3	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500
New Low-Impact Hydro Quebec	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500
New Low-Impact Hydro Ontario	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500	$ 3,500
Hydro Upgrades NY z1	$ 1,900	$ 1,900	$ 1,900	$ 1,900	$ 1,900	$ 1,900	$ 1,900	$ 1,900
Hydro Upgrades NY z2	$ 1,900	$ 1,900	$ 1,900	$ 1,900	$ 1,900	$ 1,900	$ 1,900	$ 1,900
Hydro Upgrades NY z3	$ 1,900	$ 1,900	$ 1,900	$ 1,900	$ 1,900	$ 1,900	$ 1,900	$ 1,900
Hydro Upgrades Quebec	$ 1,900	$ 1,900	$ 1,900	$ 1,900	$ 1,900	$ 1,900	$ 1,900	$ 1,900
Hydro Upgrades Ontario	$ 1,900	$ 1,900	$ 1,900	$ 1,900	$ 1,900	$ 1,900	$ 1,900	$ 1,900
Very Small New Hydro NY z1	$ 4,600	$ 4,600	$ 4,600	$ 4,600	$ 4,600	$ 4,600	$ 4,600	$ 4,600
Very Small New Hydro NY z2	$ 4,600	$ 4,600	$ 4,600	$ 4,600	$ 4,600	$ 4,600	$ 4,600	$ 4,600
Very Small New Hydro NY z3	$ 4,600	$ 4,600	$ 4,600	$ 4,600	$ 4,600	$ 4,600	$ 4,600	$ 4,600
Landfill Gas IC Engines NY z1	$ 2,100	$ 2,100	$ 2,100	$ 2,100	$ 2,100	$ 2,100	$ 2,100	$ 2,100
Landfill Gas IC Engines NY z2	$ 2,300	$ 2,300	$ 2,300	$ 2,300	$ 2,300	$ 2,300	$ 2,300	$ 2,300
Landfill Gas IC Engines NY z3	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600	$ 3,600
Landfill Gas Microturbines NY z1	$ 4,375	$ 4,375	$ 4,375	$ 4,375	$ 4,375	$ 4,375	$ 4,375	$ 4,375
Landfill Gas Microturbines NY z2	$ 4,500	$ 4,500	$ 4,500	$ 4,500	$ 4,500	$ 4,500	$ 4,500	$ 4,500
Landfill Gas Microturbines NY z3	$ 4,850	$ 4,850	$ 4,850	$ 4,850	$ 4,850	$ 4,850	$ 4,850	$ 4,850

Supply Details	Operating Cost Assumptions ($2007)								
Resource Block	Technology Decline Rate (% in Real$)	Fixed O&M (2007/ kw-yr)	Variable O&M Costs (2007/ MWh)	Fuel Heat Rate (btu/kWh)	Fuel Costs (2007/ mmBtu)	Transmission (2007/MWh)	Miles from Transmission	Transmission Cost Adder (2007/kw)	PTC Eligible
Wind Large Agg NY-z2agt1	2.0%	$ 45	$ 2.00	-	-	$ -	2.5	$ 25.00	100%
Wind Large NY-z1b1t1	2.0%	$ 45	$ 2.00	-	-	$ -	2.5	$ 25.00	100%
Wind Large NY-z1b2t1	2.0%	$ 45	$ 2.00	-	-	$ -	2.5	$ 25.00	100%
Wind Large NY-z1b3t1	2.0%	$ 45	$ 2.00	-	-	$ -	2.5	$ 25.00	100%
Wind Medium NY-z1b1t1	2.0%	$ 45	$ 2.00	-	-	$ -	2.5	$ 41.67	100%
Wind Medium NY-z1b2t1	2.0%	$ 45	$ 2.00	-	-	$ -	2.5	$ 41.67	100%
Wind Medium NY-z1b3t1	2.0%	$ 45	$ 2.00	-	-	$ -	2.5	$ 41.67	100%
Wind Medium NY-z2b1t1	2.0%	$ 45	$ 2.00	-	-	$ -	2.5	$ 41.67	100%
Wind Medium NY-z2b2t1	2.0%	$ 45	$ 2.00	-	-	$ -	2.5	$ 41.67	100%
Wind Medium NY-z2b3t1	2.0%	$ 45	$ 2.00	-	-	$ -	2.5	$ 41.67	100%
Wind Small Agg NY-z3agt2	2.0%	$ 55	$ 2.00	-	-	$ -	7.5	$ 750.00	100%
Wind Small NY-z1b1t1	2.0%	$ 55	$ 2.00	-	-	$ -	2.5	$ 250.00	100%
Wind Small NY-z1b1t2	2.0%	$ 55	$ 2.00	-	-	$ -	7.5	$ 750.00	100%
Wind Small NY-z1b2t1	2.0%	$ 55	$ 2.00	-	-	$ -	2.5	$ 250.00	100%
Wind Small NY-z1b2t2	2.0%	$ 55	$ 2.00	-	-	$ -	7.5	$ 750.00	100%
Wind Small NY-z1b3t1	2.0%	$ 55	$ 2.00	-	-	$ -	2.5	$ 250.00	100%
Wind Small NY-z1b3t2	2.0%	$ 55	$ 2.00	-	-	$ -	7.5	$ 750.00	100%
Wind Small NY-z2b1t1	2.0%	$ 55	$ 2.00	-	-	$ -	2.5	$ 250.00	100%
Wind Small NY-z2b2t1	2.0%	$ 55	$ 2.00	-	-	$ -	2.5	$ 250.00	100%
Wind Small NY-z3b2t1	2.0%	$ 55	$ 2.00	-	-	$ -	2.5	$ 250.00	100%
Wind Small NY-z2b2t2	2.0%	$ 55	$ 2.00	-	-	$ -	7.5	$ 750.00	100%
Wind Small NY-z2b3t1	2.0%	$ 55	$ 2.00	-	-	$ -	2.5	$ 250.00	100%
Wind Small NY-z3b3t1	2.0%	$ 55	$ 2.00	-	-	$ -	2.5	$ 250.00	100%
Wind Small NY-z2b3t2	2.0%	$ 55	$ 2.00	-	-	$ -	7.5	$ 750.00	100%
Off-Shore Wind Lakes NY-z1	3.0%	$ 100	$ 2.00	-	-	$ -			100%
Off-Shore Wind LI NY-z3	3.0%	$ 100	$ 2.00	-	-	$ -			100%
Wind Farms Quebec	2.0%	$ 45	$ 2.00	-	-	$ 17.00			0%
Wind Farms Ontario	2.0%	$ 45	$ 2.00	-	-	$ 10.00			0%
Wind Farms PJM b1	2.0%	$ 45	$ 2.00	-	-	$ 4.00			100%
Wind Farms PJM b2	2.0%	$ 45	$ 2.00	-	-	$ 4.00			100%
Biomass CHP Existing NY z1	1.0%	$ 100	$ 12.00	17,500		$ -			0%
Biomass CHP New NY z1	1.0%	$ 100	$ 10.00	17,500		$ -			0%
Biomass Co-firing w/Coal NY-z1	0.0%	$ -	$ 5.00	11,500		$ -			0%
Biomass Stoker NY z1	1.0%	$ 100	$ 10.00	13,000		$ -			50%
Fluidized Bed Repower Existing NY z1	1.0%	$ 75	$ 10.00	13,800		$ -			50%
Fluidized Bed Repower Retire NY z1	1.0%	$ 75	$ 10.00	13,800		$ -			50%
Biomass CHP Existing NY z2	1.0%	$ 250	$ 12.00	30,000		$ -			0%
Biomass CHP New NY z2	1.0%	$ 100	$ 10.00	17,500		$ -			0%
Biomass Co-firing w/Coal NY-z2	0.0%	$ -	$ 5.00	11,500		$ -			0%
Biomass Stoker NY z2	1.0%	$ 100	$ 10.00	13,000		$ -			50%
Fluidized Bed Repower Existing NY z2	1.0%	$ 75	$ 10.00	13,800		$ -			50%
Fluidized Bed Repower Retire NY z2	1.0%	$ 75	$ 10.00	13,800		$ -			50%
Biomass CHP Existing NY z3	1.0%	$ 100	$ 12.00	17,500		$ -			0%
Biomass CHP New NY z3	1.0%	$ 100	$ 10.00	17,500		$ -			0%
Biomass Co-firing w/Coal NY-z3	0.0%	$ -	$ 5.00	11,500		$ -			0%
Biomass Stoker NY z3	1.0%	$ 100	$ 10.00	13,000		$ -			50%
Fluidized Bed Repower Existing NY z3	1.0%	$ 75	$ 10.00	13,800		$ -			50%
Fluidized Bed Repower Retire NY z3	1.0%	$ 75	$ 10.00	13,800		$ -			50%
Biomass Co-firing w/Coal Ontario	0.0%		$ 5.00	11,500	$3.50	$ 10.00			0%
Biomass Co-firing w/Coal PJM	0.0%		$ 5.00	11,500	$3.50	$ 4.00			0%
New Low-Impact Hydro NY z1	0.0%	$ 15	$ 4.00			$ -			0%
New Low-Impact Hydro NY z2	0.0%	$ 15	$ 4.00			$ -			0%
New Low-Impact Hydro NY z3	0.0%	$ 15	$ 4.00			$ -			0%
New Low-Impact Hydro Quebec	0.0%	$ 15	$ 4.00			$ 13.00			0%
New Low-Impact Hydro Ontario	0.0%	$ 15	$ 4.00			$ 9.00			0%
Hydro Upgrades NY z1	0.0%	$ 22	$ 5.00			$ -			100%
Hydro Upgrades NY z2	0.0%	$ 22	$ 5.00			$ -			100%
Hydro Upgrades NY z3	0.0%	$ 22	$ 5.00			$ -			100%
Hydro Upgrades Quebec	0.0%	$ 22	$ 5.00			$ 13.00			0%
Hydro Upgrades Ontario	0.0%	$ 22	$ 5.00			$ 9.00			0%
Very Small New Hydro NY z1	0.0%	$ 24	$ 5.00			$ -			0%
Very Small New Hydro NY z2	0.0%	$ 24	$ 5.00			$ -			0%
Very Small New Hydro NY z3	0.0%	$ 24	$ 5.00			$ -			0%
Landfill Gas IC Engines NY z1	0.0%	$ 100	$ 12.00			$ -			50%
Landfill Gas IC Engines NY z2	0.0%	$ 100	$ 12.00			$ -			50%
Landfill Gas IC Engines NY z3	0.0%	$ 100	$ 12.00			$ -			50%
Landfill Gas Microturbines NY z1	0.0%	$ 125	$ 15.00			$ -			50%
Landfill Gas Microturbines NY z2	0.0%	$ 125	$ 15.00			$ -			50%
Landfill Gas Microturbines NY z3	0.0%	$ 125	$ 15.00			$ -			50%

Supply Details	Benefits		LEVELIZED OPERATING COSTS BEFORE ANY APPLICABLE PTC						
Resource Block	Avoided Costs (2007$/MWh)	Local Economic Benefit Adder (2007$/MWh)	Total Levelized Operating Costs, $/MWh	Total Levelized Operating Costs, $/MWh	Total Levelized Operating Costs, $/MWh	Total Levelized Operating Costs, $/MWh	Total Levelized Operating Costs, $/MWh	Total Levelized Operating Costs, $/MWh	Total Levelized Operating Costs, $/MWh
			2009	2010	2011	2012	2013	2014	2015
Wind Large Agg NY-z2agt1			$ 23.67	$ 24.22	$ 24.78	$ 25.35	$ 25.93	$ 26.52	$ 27.13
Wind Large NY-z1b1t1			$ 19.42	$ 19.86	$ 20.32	$ 20.79	$ 21.27	$ 21.76	$ 22.26
Wind Large NY-z1b2t1			$ 21.47	$ 21.97	$ 22.47	$ 22.99	$ 23.52	$ 24.06	$ 24.61
Wind Large NY-z1b3t1			$ 24.10	$ 24.65	$ 25.22	$ 25.80	$ 26.39	$ 27.00	$ 27.62
Wind Medium NY-z1b1t1			$ 19.42	$ 19.86	$ 20.32	$ 20.79	$ 21.27	$ 21.76	$ 22.26
Wind Medium NY-z1b2t1			$ 21.47	$ 21.97	$ 22.47	$ 22.99	$ 23.52	$ 24.06	$ 24.61
Wind Medium NY-z1b3t1			$ 24.10	$ 24.65	$ 25.22	$ 25.80	$ 26.39	$ 27.00	$ 27.62
Wind Medium NY-z2b1t1			$ 19.42	$ 19.86	$ 20.32	$ 20.79	$ 21.27	$ 21.76	$ 22.26
Wind Medium NY-z2b2t1			$ 21.47	$ 21.97	$ 22.47	$ 22.99	$ 23.52	$ 24.06	$ 24.61
Wind Medium NY-z2b3t1			$ 24.10	$ 24.65	$ 25.22	$ 25.80	$ 26.39	$ 27.00	$ 27.62
Wind Small Agg NY-z3agt2			$ 27.26	$ 27.89	$ 28.53	$ 29.19	$ 29.86	$ 30.54	$ 31.25
Wind Small NY-z1b1t1			$ 23.19	$ 23.72	$ 24.27	$ 24.83	$ 25.40	$ 25.98	$ 26.58
Wind Small NY-z1b1t2			$ 23.19	$ 23.72	$ 24.27	$ 24.83	$ 25.40	$ 25.98	$ 26.58
Wind Small NY-z1b2t1			$ 25.70	$ 26.29	$ 26.90	$ 27.52	$ 28.15	$ 28.80	$ 29.46
Wind Small NY-z1b2t2			$ 25.70	$ 26.29	$ 26.90	$ 27.52	$ 28.15	$ 28.80	$ 29.46
Wind Small NY-z1b3t1			$ 28.91	$ 29.58	$ 30.26	$ 30.95	$ 31.66	$ 32.39	$ 33.14
Wind Small NY-z1b3t2			$ 28.91	$ 29.58	$ 30.26	$ 30.95	$ 31.66	$ 32.39	$ 33.14
Wind Small NY-z2b1t1			$ 23.19	$ 23.72	$ 24.27	$ 24.83	$ 25.40	$ 25.98	$ 26.58
Wind Small NY-z2b2t1			$ 25.70	$ 26.29	$ 26.90	$ 27.52	$ 28.15	$ 28.80	$ 29.46
Wind Small NY-z3b2t1			$ 25.70	$ 26.29	$ 26.90	$ 27.52	$ 28.15	$ 28.80	$ 29.46
Wind Small NY-z2b2t2			$ 25.70	$ 26.29	$ 26.90	$ 27.52	$ 28.15	$ 28.80	$ 29.46
Wind Small NY-z2b3t1			$ 28.91	$ 29.58	$ 30.26	$ 30.95	$ 31.66	$ 32.39	$ 33.14
Wind Small NY-z3b3t1			$ 28.91	$ 29.58	$ 30.26	$ 30.95	$ 31.66	$ 32.39	$ 33.14
Wind Small NY-z2b3t2			$ 28.91	$ 29.58	$ 30.26	$ 30.95	$ 31.66	$ 32.39	$ 33.14
Off-Shore Wind Lakes NY-z1			$ 43.49	$ 44.49	$ 45.51	$ 46.56	$ 47.63	$ 48.73	$ 49.85
Off-Shore Wind LI NY-z3			$ 41.21	$ 42.16	$ 43.13	$ 44.12	$ 45.13	$ 46.17	$ 47.23
Wind Farms Quebec		$ 4.00	$ 41.10	$ 41.65	$ 42.22	$ 42.80	$ 43.39	$ 44.00	$ 44.62
Wind Farms Ontario		$ 4.00	$ 34.10	$ 34.65	$ 35.22	$ 35.80	$ 36.39	$ 37.00	$ 37.62
Wind Farms PJM b1		$ 4.00	$ 28.10	$ 28.65	$ 29.22	$ 29.80	$ 30.39	$ 31.00	$ 31.62
Wind Farms PJM b2		$ 4.00	$ 28.10	$ 28.65	$ 29.22	$ 29.80	$ 30.39	$ 31.00	$ 31.62
Biomass CHP Existing NY z1	$ 89.57		$ 0.94	$ 1.28	$ 1.64	$ 2.19	$ 3.03	$ 3.10	$ 3.17
Biomass CHP New NY z1	$ 89.57		$ (1.50)	$ (1.22)	$ (0.92)	$ (0.42)	$ 0.36	$ 0.36	$ 0.37
Biomass Co-firing w/Coal NY-z1	$ 32.50		$ 16.67	$ 17.25	$ 17.85	$ 18.57	$ 19.49	$ 19.93	$ 20.39
Biomass Stoker NY z1			$ 86.83	$ 89.06	$ 91.36	$ 93.84	$ 96.59	$ 98.81	$ 101.08
Fluidized Bed Repower Existing NY z1			$ 86.31	$ 88.54	$ 90.84	$ 93.33	$ 96.10	$ 98.31	$ 100.57
Fluidized Bed Repower Retire NY z1			$ 86.31	$ 88.54	$ 90.84	$ 93.33	$ 96.10	$ 98.31	$ 100.57
Biomass CHP Existing NY z2	$ 180.98		$ 8.42	$ 20.00	$ 24.17	$ 28.52	$ 33.06	$ 37.80	$ 42.76
Biomass CHP New NY z2	$ 89.57		$ 20.14	$ 27.25	$ 30.04	$ 32.94	$ 35.96	$ 39.12	$ 42.40
Biomass Co-firing w/Coal NY-z2	$ 32.50		$ 29.95	$ 34.72	$ 36.84	$ 39.04	$ 41.33	$ 43.71	$ 46.18
Biomass Stoker NY z2			$ 102.91	$ 110.21	$ 114.35	$ 118.62	$ 123.04	$ 127.59	$ 132.30
Fluidized Bed Repower Existing NY z2			$ 103.37	$ 110.99	$ 115.25	$ 119.64	$ 124.18	$ 128.87	$ 133.72
Fluidized Bed Repower Retire NY z2			$ 103.37	$ 110.99	$ 115.25	$ 119.64	$ 124.18	$ 128.87	$ 133.72
Biomass CHP Existing NY z3	$ 89.57		$ 82.35	$ 141.81	$ 145.07	$ 148.41	$ 151.82	$ 155.31	$ 158.88
Biomass CHP New NY z3	$ 89.57		$ 79.90	$ 139.31	$ 142.51	$ 145.79	$ 149.14	$ 152.57	$ 156.08
Biomass Co-firing w/Coal NY-z3	$ 32.50		$ 66.62	$ 103.47	$ 105.85	$ 108.28	$ 110.77	$ 113.32	$ 115.93
Biomass Stoker NY z3			$ 148.33	$ 194.50	$ 198.98	$ 203.55	$ 208.24	$ 213.02	$ 217.92
Fluidized Bed Repower Existing NY z3			$ 150.50	$ 199.36	$ 203.94	$ 208.63	$ 213.43	$ 218.34	$ 223.36
Fluidized Bed Repower Retire NY z3			$ 150.50	$ 199.36	$ 203.94	$ 208.63	$ 213.43	$ 218.34	$ 223.36
Biomass Co-firing w/Coal Ontario	$ 32.50	$ 4.00	$ 24.55	$ 24.89	$ 25.23	$ 25.58	$ 25.94	$ 26.31	$ 26.68
Biomass Co-firing w/Coal PJM	$ 32.50	$ 4.00	$ 18.55	$ 18.89	$ 19.23	$ 19.58	$ 19.94	$ 20.31	$ 20.68
New Low-Impact Hydro NY z1			$ 9.44	$ 9.66	$ 9.88	$ 10.11	$ 10.34	$ 10.58	$ 10.82
New Low-Impact Hydro NY z2			$ 9.44	$ 9.66	$ 9.88	$ 10.11	$ 10.34	$ 10.58	$ 10.82
New Low-Impact Hydro NY z3			$ 9.44	$ 9.66	$ 9.88	$ 10.11	$ 10.34	$ 10.58	$ 10.82
New Low-Impact Hydro Quebec		$ 4.00	$ 22.08	$ 22.29	$ 22.50	$ 22.72	$ 22.94	$ 23.17	$ 23.40
New Low-Impact Hydro Ontario		$ 4.00	$ 17.02	$ 17.20	$ 17.39	$ 17.58	$ 17.78	$ 17.98	$ 18.19
Hydro Upgrades NY z1			$ 12.79	$ 13.08	$ 13.38	$ 13.69	$ 14.00	$ 14.33	$ 14.66
Hydro Upgrades NY z2			$ 12.79	$ 13.08	$ 13.38	$ 13.69	$ 14.00	$ 14.33	$ 14.66
Hydro Upgrades NY z3			$ 12.79	$ 13.08	$ 13.38	$ 13.69	$ 14.00	$ 14.33	$ 14.66
Hydro Upgrades Quebec			$ 25.25	$ 25.53	$ 25.82	$ 26.12	$ 26.42	$ 26.73	$ 27.04
Hydro Upgrades Ontario			$ 19.69	$ 19.94	$ 20.19	$ 20.45	$ 20.71	$ 20.98	$ 21.26
Very Small New Hydro NY z1			$ 17.86	$ 18.28	$ 18.70	$ 19.13	$ 19.57	$ 20.02	$ 20.48
Very Small New Hydro NY z2			$ 17.86	$ 18.28	$ 18.70	$ 19.13	$ 19.57	$ 20.02	$ 20.48
Very Small New Hydro NY z3			$ 17.86	$ 18.28	$ 18.70	$ 19.13	$ 19.57	$ 20.02	$ 20.48
Landfill Gas IC Engines NY z1			$ 31.09	$ 31.80	$ 32.53	$ 33.28	$ 34.05	$ 34.83	$ 35.63
Landfill Gas IC Engines NY z2			$ 31.09	$ 31.80	$ 32.53	$ 33.28	$ 34.05	$ 34.83	$ 35.63
Landfill Gas IC Engines NY z3			$ 31.09	$ 31.80	$ 32.53	$ 33.28	$ 34.05	$ 34.83	$ 35.63
Landfill Gas Microturbines NY z1			$ 38.86	$ 39.75	$ 40.67	$ 41.60	$ 42.56	$ 43.54	$ 44.54
Landfill Gas Microturbines NY z2			$ 38.86	$ 39.75	$ 40.67	$ 41.60	$ 42.56	$ 43.54	$ 44.54
Landfill Gas Microturbines NY z3			$ 38.86	$ 39.75	$ 40.67	$ 41.60	$ 42.56	$ 43.54	$ 44.54

Supply Details		**CAPACITY AND WEIGHTED AVERAGE ELECTRICITY VALUE**						
Resource Block	**Factor on Capacity Value**	**Wholesale 20-year Levelized (nominal), $/MWh**	**Wholesale 20-year Levelized (nominal), $/MWh**	**Wholesale 20-year Levelized (nominal), $/MWh**	**Wholesale 20-year Levelized (nominal), $/MWh**	**Wholesale 20-year Levelized (nominal), $/MWh**	**Wholesale 20-year Levelized (nominal), $/MWh**	**Wholesale 20-year Levelized (nominal), $/MWh**
		2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Wind Large Agg NY-z2agt1	10%	$ 76.13	$ 77.25	$ 78.68	$ 80.43	$ 82.55	$ 84.96	$ 87.71
Wind Large NY-z1b1t1	10%	$ 61.40	$ 62.21	$ 63.39	$ 64.99	$ 67.03	$ 69.22	$ 71.57
Wind Large NY-z1b2t1	10%	$ 61.66	$ 62.48	$ 63.69	$ 65.30	$ 67.35	$ 69.55	$ 71.91
Wind Large NY-z1b3t1	10%	$ 61.99	$ 62.84	$ 64.06	$ 65.69	$ 67.75	$ 69.97	$ 72.34
Wind Medium NY-z1b1t1	10%	$ 61.40	$ 62.21	$ 63.39	$ 64.99	$ 67.03	$ 69.22	$ 71.57
Wind Medium NY-z1b2t1	10%	$ 61.66	$ 62.48	$ 63.69	$ 65.30	$ 67.35	$ 69.55	$ 71.91
Wind Medium NY-z1b3t1	10%	$ 61.99	$ 62.84	$ 64.06	$ 65.69	$ 67.75	$ 69.97	$ 72.34
Wind Medium NY-z2b1t1	10%	$ 75.59	$ 76.68	$ 78.07	$ 79.80	$ 81.89	$ 84.28	$ 87.02
Wind Medium NY-z2b2t1	10%	$ 75.86	$ 76.96	$ 78.37	$ 80.10	$ 82.21	$ 84.61	$ 87.35
Wind Medium NY-z2b3t1	10%	$ 76.19	$ 77.31	$ 78.74	$ 80.50	$ 82.61	$ 85.03	$ 87.78
Wind Small Agg NY-z3agt2	10%	$ 91.78	$ 93.13	$ 94.99	$ 97.42	$ 100.32	$ 103.59	$ 107.11
Wind Small NY-z1b1t1	10%	$ 61.40	$ 62.21	$ 63.39	$ 64.99	$ 67.03	$ 69.22	$ 71.57
Wind Small NY-z1b1t2	10%	$ 61.40	$ 62.21	$ 63.39	$ 64.99	$ 67.03	$ 69.22	$ 71.57
Wind Small NY-z1b2t1	10%	$ 61.66	$ 62.48	$ 63.69	$ 65.30	$ 67.35	$ 69.55	$ 71.91
Wind Small NY-z1b2t2	10%	$ 61.66	$ 62.48	$ 63.69	$ 65.30	$ 67.35	$ 69.55	$ 71.91
Wind Small NY-z1b3t1	10%	$ 61.99	$ 62.84	$ 64.06	$ 65.69	$ 67.75	$ 69.97	$ 72.34
Wind Small NY-z1b3t2	10%	$ 61.99	$ 62.84	$ 64.06	$ 65.69	$ 67.75	$ 69.97	$ 72.34
Wind Small NY-z2b1t1	10%	$ 75.59	$ 76.68	$ 78.07	$ 79.80	$ 81.89	$ 84.28	$ 87.02
Wind Small NY-z2b2t1	10%	$ 75.86	$ 76.96	$ 78.37	$ 80.10	$ 82.21	$ 84.61	$ 87.35
Wind Small NY-z3b2t1	10%	$ 91.45	$ 92.78	$ 94.64	$ 97.06	$ 99.95	$ 103.21	$ 106.72
Wind Small NY-z2b2t2	10%	$ 75.86	$ 76.96	$ 78.37	$ 80.10	$ 82.21	$ 84.61	$ 87.35
Wind Small NY-z2b3t1	10%	$ 76.19	$ 77.31	$ 78.74	$ 80.50	$ 82.61	$ 85.03	$ 87.78
Wind Small NY-z3b3t1	10%	$ 92.14	$ 93.49	$ 95.36	$ 97.80	$ 100.71	$ 103.98	$ 107.51
Wind Small NY-z2b3t2	10%	$ 76.19	$ 77.31	$ 78.74	$ 80.50	$ 82.61	$ 85.03	$ 87.78
Off-Shore Wind Lakes NY-z1	35%	$ 67.45	$ 68.63	$ 70.16	$ 72.08	$ 74.40	$ 76.83	$ 79.34
Off-Shore Wind LI NY-z3	35%	$ 102.44	$ 104.07	$ 106.22	$ 108.94	$ 112.11	$ 115.64	$ 119.41
Wind Farms Quebec	10%	$ 61.99	$ 62.84	$ 64.06	$ 65.69	$ 67.75	$ 69.97	$ 72.34
Wind Farms Ontario	10%	$ 61.99	$ 62.84	$ 64.06	$ 65.69	$ 67.75	$ 69.97	$ 72.34
Wind Farms PJM b1	10%	$ 61.99	$ 62.84	$ 64.06	$ 65.69	$ 67.75	$ 69.97	$ 72.34
Wind Farms PJM b2	10%	$ 63.59	$ 64.46	$ 65.71	$ 67.38	$ 69.49	$ 71.76	$ 74.20
Biomass CHP Existing NY z1	100%	$ 72.48	$ 73.80	$ 75.50	$ 77.60	$ 80.11	$ 82.71	$ 85.40
Biomass CHP New NY z1	100%	$ 72.48	$ 73.80	$ 75.50	$ 77.60	$ 80.11	$ 82.71	$ 85.40
Biomass Co-firing w/Coal NY-z1	100%	$ 73.22	$ 74.62	$ 76.39	$ 78.55	$ 81.10	$ 83.73	$ 86.44
Biomass Stoker NY z1	100%	$ 71.21	$ 72.49	$ 74.14	$ 76.19	$ 78.65	$ 81.21	$ 83.86
Fluidized Bed Repower Existing NY z1	100%	$ 71.21	$ 72.49	$ 74.14	$ 76.19	$ 78.65	$ 81.21	$ 83.86
Fluidized Bed Repower Retire NY z1	100%	$ 71.21	$ 72.49	$ 74.14	$ 76.19	$ 78.65	$ 81.21	$ 83.86
Biomass CHP Existing NY z2	100%	$ 86.63	$ 88.23	$ 90.13	$ 92.35	$ 94.89	$ 97.69	$ 100.74
Biomass CHP New NY z2	100%	$ 86.63	$ 88.23	$ 90.13	$ 92.35	$ 94.89	$ 97.69	$ 100.74
Biomass Co-firing w/Coal NY-z2	100%	$ 88.06	$ 89.74	$ 91.73	$ 94.02	$ 96.63	$ 99.47	$ 102.57
Biomass Stoker NY z2	100%	$ 86.05	$ 87.61	$ 89.48	$ 91.66	$ 94.18	$ 96.95	$ 99.99
Fluidized Bed Repower Existing NY z2	100%	$ 86.05	$ 87.61	$ 89.48	$ 91.66	$ 94.18	$ 96.95	$ 99.99
Fluidized Bed Repower Retire NY z2	100%	$ 86.05	$ 87.61	$ 89.48	$ 91.66	$ 94.18	$ 96.95	$ 99.99
Biomass CHP Existing NY z3	100%	$ 110.57	$ 112.37	$ 114.72	$ 117.64	$ 121.05	$ 124.82	$ 128.85
Biomass CHP New NY z3	100%	$ 110.57	$ 112.37	$ 114.72	$ 117.64	$ 121.05	$ 124.82	$ 128.85
Biomass Co-firing w/Coal NY-z3	100%	$ 119.90	$ 121.96	$ 124.56	$ 127.73	$ 131.37	$ 135.38	$ 139.62
Biomass Stoker NY z3	100%	$ 110.57	$ 112.37	$ 114.72	$ 117.64	$ 121.05	$ 124.82	$ 128.85
Fluidized Bed Repower Existing NY z3	100%	$ 109.36	$ 111.13	$ 113.45	$ 116.34	$ 119.71	$ 123.46	$ 127.45
Fluidized Bed Repower Retire NY z3	100%	$ 109.36	$ 111.13	$ 113.45	$ 116.34	$ 119.71	$ 123.46	$ 127.45
Biomass Co-firing w/Coal Ontario	100%	$ 76.33	$ 77.92	$ 79.86	$ 82.19	$ 84.89	$ 87.64	$ 90.42
Biomass Co-firing w/Coal PJM	100%	$ 74.10	$ 75.55	$ 77.37	$ 79.57	$ 82.17	$ 84.84	$ 87.56
New Low-Impact Hydro NY z1	46%	$ 67.82	$ 68.98	$ 70.52	$ 72.44	$ 74.77	$ 77.21	$ 79.74
New Low-Impact Hydro NY z2	46%	$ 82.36	$ 83.81	$ 85.56	$ 87.61	$ 90.00	$ 92.65	$ 95.57
New Low-Impact Hydro NY z3	46%	$ 103.32	$ 104.98	$ 107.15	$ 109.88	$ 113.08	$ 116.64	$ 120.44
New Low-Impact Hydro Quebec	50%	$ 67.82	$ 68.98	$ 70.52	$ 72.44	$ 74.77	$ 77.21	$ 79.74
New Low-Impact Hydro Ontario	67%	$ 67.82	$ 68.98	$ 70.52	$ 72.44	$ 74.77	$ 77.21	$ 79.74
Hydro Upgrades NY z1	46%	$ 69.33	$ 70.51	$ 72.08	$ 74.04	$ 76.42	$ 78.90	$ 81.49
Hydro Upgrades NY z2	46%	$ 84.16	$ 85.64	$ 87.42	$ 89.51	$ 91.95	$ 94.65	$ 97.64
Hydro Upgrades NY z3	46%	$ 105.42	$ 107.10	$ 109.32	$ 112.11	$ 115.38	$ 119.01	$ 122.89
Hydro Upgrades Quebec	50%	$ 69.33	$ 70.51	$ 72.08	$ 74.04	$ 76.42	$ 78.90	$ 81.49
Hydro Upgrades Ontario	67%	$ 69.33	$ 70.51	$ 72.08	$ 74.04	$ 76.42	$ 78.90	$ 81.49
Very Small New Hydro NY z1	29%	$ 67.82	$ 68.98	$ 70.52	$ 72.44	$ 74.77	$ 77.21	$ 79.74
Very Small New Hydro NY z2	29%	$ 82.36	$ 83.81	$ 85.56	$ 87.61	$ 90.00	$ 92.65	$ 95.57
Very Small New Hydro NY z3	29%	$ 103.32	$ 104.98	$ 107.15	$ 109.88	$ 113.08	$ 116.64	$ 120.44
Landfill Gas IC Engines NY z1	100%	$ 71.18	$ 72.45	$ 74.10	$ 76.15	$ 78.61	$ 81.16	$ 83.81
Landfill Gas IC Engines NY z2	100%	$ 85.99	$ 87.56	$ 89.42	$ 91.60	$ 94.12	$ 96.89	$ 99.93
Landfill Gas IC Engines NY z3	100%	$ 109.29	$ 111.06	$ 113.37	$ 116.27	$ 119.64	$ 123.38	$ 127.37
Landfill Gas Microturbines NY z1	100%	$ 71.18	$ 72.45	$ 74.10	$ 76.15	$ 78.61	$ 81.16	$ 83.81
Landfill Gas Microturbines NY z2	100%	$ 85.99	$ 87.56	$ 89.42	$ 91.60	$ 94.12	$ 96.89	$ 99.93
Landfill Gas Microturbines NY z3	100%	$ 109.29	$ 111.06	$ 113.37	$ 116.27	$ 119.64	$ 123.38	$ 127.37

Attachment 8

RENEWABLE ENERGY TASK FORCE REPORT
FEBRUARY 2008
(50 pages)

Clean, Secure Energy and Economic Growth: A Commitment to Renewable Energy and Enhanced Energy Independence

The First Report of the Renewable Energy Task Force
to Lieutenant Governor David A. Paterson
February 2008

CLEAN, SECURE ENERGY AND ECONOMIC GROWTH: A COMMITMENT TO RENEWABLE ENERGY AND ENHANCED ENERGY INDEPENDENCE

THE FIRST REPORT OF THE RENEWABLE ENERGY TASK FORCE
TO LIEUTENANT GOVERNOR DAVID A. PATERSON
FEBRUARY 2008

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SUNY College of Environmental Science and Forestry
PPM Energy
SUNY College of Environmental Science and Forestry
Alliance for Clean Energy New York

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THE CHALLENGE

As population continues to grow and technology and industrial sectors continue to advance, society has created a new form of currency, energy. This currency affects nearly every aspect of our lives, from heating our homes and businesses, to powering our i-pods and computers, to driving ourselves to work and our children to school, and the cost of manufacturing the automobiles we drive to do so. All of these activities consume energy in some capacity, and as such have become the cost of doing business. We also have become enormously dependent upon fossil fuels to deliver this energy. This dependency has come with its own costs in the form of air pollution, respiratory disease and climate change.

Renewable energy and energy efficiency provide immediate alternatives to transition away from this dependence on fossil fuels, with numerous environmental, economic and societal benefits to our citizens. Renewable energy and improved energy efficiency reduce greenhouse gas emissions and additional pollutants released from traditional fossil-fueled power sources, thereby reducing our carbon foot print and reducing public health impacts related to exposures of particulate matter and smog. They also create market opportunities for new high-tech industries to locate in New York, increasing our workforce and training opportunities as well as economic growth.

New York is home to many resources, both financial and natural, which provide the State with a unique opportunity to position itself as a national leader in promoting and generating these technologies. We are home to the largest financial and capital investment centers in the world. New York is the fourteenth windiest state in the country, and has an abundance of natural hydro power, solar and biomass potential. The challenge is to maximize these resources by crafting policies that are environmentally balanced and economically sustainable for our state.

To successfully utilize these resources and achieve energy independence requires a modification of the way we live our lives, and public acceptance that each of us can make a difference in this effort. It will require consumers, policy makers, and businesses to collaborate and move forward with the same goal in mind. There is a growing consensus and demand from our citizens and public officials that we embark on this challenge, and we do not have time to waste.

The Lieutenant Governor's Renewable Energy Task Force offers this first report as a policy "roadmap" to address these many challenges we face in reducing our dependence on fossil fuels, stimulating investment in clean energy alternatives, and move toward a Clean Energy Economy here in New York State.

EXECUTIVE SUMMARY

Background

In June 2007, Governor Spitzer asked Lieutenant Governor David A. Paterson to chair and convene the first meeting of the Renewable Energy Task Force. Comprised of 20 members, this distinguished group of experts represents the broad array of stakeholders in the renewable energy field, including renewable energy and alternative fuel industries, environmental and agricultural communities, academia, local government, energy policy, green buildings, economic development, public utilities, as well as State government entities.

The Task Force was charged with three primary goals: 1) Identify barriers in New York State to wider deployment and installation of renewable energy; 2) Recommend policies, including financial incentives to overcome those barriers to attract clean industries to economically depressed regions of the state; and, 3) Identify future market areas where additional research and development investment is necessary. Following the first meeting of the Task Force in June, it was determined the Task Force would break out into four subcommittee areas:[1]

- *Renewable Fuels*: focusing on corn-based and cellulosic ethanol, biodiesel, butanol, liquefied biogas, hydrogen, and electric-based transportation;
- *Energy Efficiency*: focusing on electric, natural gas and oil efficiency (vehicle as well as building);
- *Renewable Electricity Central Generation:* addressing generation facilities selling into the wholesale electricity market, with specific focus on wind, sustainably produced biomass, hydropower, and tidal power; and,
- *Renewable Electricity Distributed Generation*: focusing on "customer-side" applications of solar photovoltaic (PV), solar thermal, sustainable biomass, anaerobic digesters, geothermal, small wind, small hydro (including kinetic power), and fuel cells.

Meeting regularly over several months, the Subcommittees worked to identify specific barriers that must be overcome, as well as areas in which New York has begun to develop effective strategies for meeting these goals. Other states' and countries' renewable initiatives were researched as "best practice examples." Presentations were provided by guest speakers knowledgeable in specific disciplines during subcommittee meetings, and significant issues, concerns and suggestions of stakeholders were also brought to these discussions through the respective Task Force members. In addition, each member was asked to submit a white paper outlining existing impediments and barriers to achieving these goals as well as recommended actions the State should consider to overcoming these challenges.

In September 2007, the Task Force held a public meeting at 7 World Trade Center and released their preliminary findings. In reaching these findings, dozens of recommendations were crafted by each subcommittee for consideration by the full Task Force. These recommendations

[1] Dr. Cornelius B. Murphy, Jr., Subcommittee Chair, Renewable Fuels; Ashok Gupta, Subcommittee Chair, Energy Efficiency; Carol E. Murphy, Subcommittee Chair, Central Generation; Gil Quiniones/Jenifer Becker, Subcommittee Chair, Distributed Generation.

were then vetted using the following criteria: 1) those which would generate the most renewable energy; 2) those with the most environmental benefit; and, 3) those with the least or nominal impact to ratepayers, taxpayers and consumers. Focus groups were also convened to address specific components of these recommendations: Financial Impact, Legislative and Regulatory Impact, and Workforce-Economic-Research Development/Public Education and Outreach.

This first report of the Renewable Energy Task Force reflects the findings and recommendations from these subcommittee and focus group meetings and has the consensus of the Task Force Members. The Task Force will continue its meetings and will be releasing subsequent reports as it begins implementation of these recommendations, and continues to identify methods and goals to increase renewable energy generation. The final report of the Task Force is due December 2008.

FINDINGS

The following are highlights of the Task Force's findings.

Renewable Portfolio Standard (RPS)

- A key driver in developing new renewable energy projects in the United States is the Renewable Portfolio Standard (RPS), a market-based policy that requires electric utilities and/or state entities to gradually increase their use of renewable energy resources. Current RPS funding of $782 million is not sufficient to meet New York's goal to obtain 25 percent of its electricity from renewable sources by 2013 and the timeline for the RPS program is not consistent with the State's long-term goals. New York's RPS is the State's largest and most significant policy for supporting increased renewable energy. Maintaining a firm commitment to its implementation will provide investors with confidence in New York's commitment to promoting renewable energy and promote a more robust marketplace for continued renewable energy development in the State.

Renewable Fuels

- The current shortage of widely accepted environmental and public health data relative to emissions and land use impacts associated with renewable fuel use in stationary and mobile applications, makes it difficult for policy makers to identify those specific renewable fuels which will prove to be most environmentally sustainable.
- No single renewable fuel can provide for all of New York's energy needs; state policies should be crafted that enhance environmental and economic performance from a range of fuels which optimize the state's resources.

Financial Incentives/Economic Development

- Financing renewable energy projects is often difficult, involving tax credits at both the state and federal levels, which vary depending upon many factors.
- The State has an opportunity to initiate long-term incentive programs, which will reduce risk and encourage investment in New York's solar industry.

Research and Development

- Long-term commitment to research and development will help develop and commercialize additional emerging renewable energy technologies as supported by existing state agencies and authorities to deliver reliable, clean energy to New York. Market development programs provide commercialization opportunities for products developed and tested by New York State research institutions and companies.

Oil Efficiency in Buildings

- Oil use in buildings in New York reached approximately 480 trillion BTU's annually, or 3.2 billion gallons, more than any state in the nation. Oil heating has been identified as a sector where short-term efficiency gains and benefits can be achieved.

Low Income Housing

- More than seven million New Yorkers, an estimated 2.9 million households, have incomes below 80 percent of the state median income (SMI) and are eligible to receive some form of public housing assistance. An estimated 2.2 million of these households have incomes below 60 percent of SMI and are eligible for energy and weatherization assistance. Most existing affordable rental housing renovations and new construction are built on a first-cost, least-cost basis, rather than life-cycle basis, resulting in high energy usage and waste. There is currently insufficient funding to serve all of these households.

Education, Green Jobs and Workforce Development

- A strong well-trained work force which can design, install and maintain renewable energy and fuel systems is paramount to the successful implementation and promotion of these technologies in New York. In addition, public education is critical for acceptance and awareness of these technologies.

Net Metering and Connecting Renewables to the Power Grid

- Because New York's law applies only to small residential customers, there are limited opportunities for non-residential customers to install on-site renewable generation and take advantage of net metering.
- Current utility interconnection procedures can be barriers to increased adoption of clean, on–site generation. Delays in responding to interconnection requests, issues surrounding network system connectivity, and obtaining permit approvals have, in some instances, collectively resulted in deterred investment in clean on-site generation.

Predictability and Coordination of State Policies/State Leadership

- New York must be committed to long-term renewable energy policy and should consistently administer that policy. Changes in regulations/rules and uncertain funding commitments can derail the development of renewable sources seeking to locate in New York. State entities directly involved in renewable development or review processes must ensure policies and programs are consistent and reinforce economic and environmental goals.
- "Leadership by Example" by State government is critical to help spur the acceptance of and investment in renewable energy technologies and energy efficiency. An evaluation of state facilities for their potential use of renewable technologies would demonstrate a strong commitment to our citizens, the private sector and other levels of government, and could help support advancement and greater use of renewable energy.

Local Governments/Municipalities

- Renewable energy installers and potential owners face a patchwork of widely differing local government permitting requirements as well as home owner association (HOA) restrictions, which create hurdles to the efficient and widespread installation of renewable energy systems such as PV, solar thermal and small wind.

SUMMARY RECOMMENDATIONS

The Task Force determined the 16 recommendations contained in this report are integral to a comprehensive policy Roadmap to move New York towards greater renewable energy development and greater energy independence. The following five recommendations comprise the central elements of this Roadmap.

- **Re-Commit to Meeting the State's Renewable Portfolio Standard Goal and Evaluate Raising Renewable Energy Target:**
  To instill investor confidence in the future renewable power markets in New York, and to ensure the State meets its renewable energy goals, full funding should be provided for the RPS program. The revised cost study currently underway at the Department of Public Service should provide the information necessary for the Public Service Commission to expeditiously authorize the collection of all funding needed to achieve New York's RPS goals.

- **Enhance and Expand New York's Existing Net Metering Law:**
  Net metering is a simple, low-cost program that allows electricity customers who operate their own on-site distributed generators to deliver excess power to their local utility, which then distributes it to other customers. New York's current net metering law contains size limitations and customer class exclusions that limit the growth of the renewable energy market in multiple ways. The Task Force calls for the Legislature to pass a new net-metering law this year to allow net metering for all customer classes where appropriate; increase size for projects eligible for net metering; and require detailed annual reporting by electric power companies to the PSC.

- **Invest in Clean Energy Businesses for Economic Growth:**
  New York currently invests in clean-tech industry initiatives through NYSERDA and the Empire State Development Corporation. In order to support New York's national leadership in clean-tech business growth, the State should continue to enhance and expand these collaborative clean-tech initiatives. The state should increase its funding commitment by a minimum of $400 million over four years through financial incentives to support technology clusters. In addition, the State should: increase opportunities for Minority and Women-Owned Businesses and businesses located in disadvantaged communities; enter into long-term state contracts for transportation and space heating fuels; and review public pension fund investment guidelines and state and local tax policies to stimulate investment.

- **Build a Sustainable Market for Solar Energy in New York State:**
  The Task Force recommends a comprehensive set of programs to address market needs along with an investment in public/private research to ensure that New York continues to capture the economic benefits of solar energy. Programs will focus on: creating incentives for solar system manufacturers to develop and distribute their products in New York; promoting cost-efficient systems; creating well-paying solar installation jobs; and creating incentives for both homeowners and businesses to choose solar photovoltaic and solar thermal energy. To jumpstart the growth of the solar industry in New York, the State should set a goal to install 100 MW of solar photovoltaic and 1,100 solar thermal systems statewide by 2011.

- **Develop a Strategy to Reap the Benefits of New York's Wind Energy Potential:** Wind energy offers the opportunity for clean, renewable power to be generated in New York State. The Task Force recommends that the state commit to realizing the potential of wind energy by addressing local siting and permitting issues, and conducting studies to address transmission and infrastructure limitations. New York has the most wind energy development potential in the northeast and mid-Atlantic region. The more than 5,000 MW of wind energy that has applied for interconnection to the grid shows the industry's interest in and commitment to New York, and the State should support project development and interconnection efforts.

Adherence to the following additional recommendations is essential to the comprehensive, fully-integrated implementation of the State's Roadmap to greater renewable energy development:

- **Develop Both a Renewable Fuels Roadmap and a Sustainable Biomass Feedstock Study:** The Task force believes that current state policy on renewable fuels is not adequate and that no single renewable fuel will answer the increasing energy needs of the State. New York should address critical concerns regarding the specific fuels we may use – both to solve our energy mandates, and to prioritize environmental, land-use and health concerns in policy-decision making. As a result of the Task Force initiative, the state is proceeding with an RFP for the development of the renewable fuels roadmap and feedstock study.

- **Expand Training Programs to Sustain a Green Collar Workforce:** Renewable energy research, development, and installation are emerging job growth sectors. We recommend that the State align and expand existing accredited training programs to recruit and develop an abundant supply of highly skilled workers who can design, install and maintain renewable energy and energy efficiency systems across the state. The state departments and agencies that provide workforce training programs – Department of Labor, NYSERDA, SUNY, and others – should collaboratively and immediately conduct an inventory of existing programs, and streamline or develop programs to suit the needs of the state's growing renewable energy sector. Governor Spitzer included $2 million in his Executive Budget for green collar workforce solar training at community colleges across New York.

- **Improve Overall Agency Consistency and Coordination:** The State should consider reconstituting the State Energy Planning Board to facilitate consistent policy and program implementation.

- **Use Creative Financing to Promote Investment in the Renewable Energy Industry:** The Task Force recommends that the State explore all alternative-financing mechanisms available to support its renewable energy and efficiency goals, such as a Clean Energy Bond Act initiative; and investment and production tax credits.

- **Expand Research and Development efforts for Renewable Energy:** The Task Force recommends that the state fund research for solar, bio-fuels, small wind, Combined Heat and Power/efficiency demonstrations, grid interconnection, energy storage, and end-use efficiency technologies by implementing multi-year research programs.

Included in this recommendation is the establishment of a Center for Advanced Technology, with a focus on the development and enhancement of processes and products involving renewable energy and bio fuel systems.

- **Reclaim a Leadership Role Through Building and Product Energy Performance:**
  A comprehensive building and product efficiency program in New York, combined with updated energy codes and low-income affordable housing programs, will provide a competitive advantage to New York as well as increased environmental and economic benefits.

- **Encourage the Use of Advanced Metering and Smart-Grid Technology:**
  The Public Service Commission should accelerate the implementation of advanced metering policies, which will allow consumers to remotely control their electric use, provide time sensitive monitoring of electricity use, and use price signals to increase consumer awareness of electricity use and reduce peak electricity consumption.

- **Build on Public and Private Educational Programs:**
  The role of education is critical in bringing about the transformational changes in, and public acceptance of, the clean energy sector. The State needs an aggressive statewide consumer educational campaign to increase market awareness.

- **Facilitate Interconnection Processes for Renewable Distributed Generation:**
  The Public Service Commission and the Long Island Power Authority should explore a more streamlined, transparent interconnection process for renewable distributed generation installations.

- **Expand Purchases of Renewable Energy by Local Governments:**
  In order to facilitate the utilization of green power at all levels of government, the State should identify and address any statutory or regulatory barriers to municipal government purchases of green power.

- **Create a Vehicle Efficiency/Vehicle Miles Traveled Working Group:**
  New York should create an interagency working group to develop a strategy to reduce vehicle miles traveled and increase vehicle efficiency, including through the greater use of car pooling.

INTRODUCTION

A CLEAN ENERGY GOAL

As we witness historic rising costs of oil, increasing unrest in oil producing countries, and an impending climate crisis, we are on the cusp of a revolutionary change in how we must view and use energy. While renewable energy technologies can be more expensive than conventional sources in the first instance, the environmental, economic growth, and public health benefits from their use justify the public investment. New York must take immediate steps to preserve its leadership in this movement, attracting these industries in-state to reap both the environmental and economic benefits of these technologies.

In light of this, New York State should move toward a Clean Energy Economy, with the vision of being a world-class leader in clean and efficient energy technology. The Governor and the Lt. Governor have articulated a goal of spurring the "innovation economy" in New York State. The clean energy sector will play a vital role in this vision. New York's businesses and institutions should produce the technology that can be exported throughout the world. Our citizens should have access to clean, efficient, reliable and affordable energy products and services, and be at the forefront of the transition towards a more environmentally sustainable energy future.

To fully realize this vision, New York will need to build upon its already comprehensive set of programs to enhance and transform the marketplace through appropriate policy initiatives, financial incentives, and consumer awareness, as well as continued investments in infrastructure and technology improvements. A comprehensive "repackaging" of existing programs combined with new and aggressive clean energy policy initiatives can put New York on an International stage with the most ambitious Clean Energy Goal in the world. This will require increased capital and R&D investments as well as better strategies for commercialization at the federal and state levels and by the private sector.

The benefits of these clean energy sector investments will be three-fold through: 1) economic growth opportunities throughout the state; 2) enhanced energy security and reduced volatility in energy prices, and, 3) reduced greenhouse gas emissions.

New York, as a large economy and an influential player on the national and world stage, has an important leadership role to play as we fulfill our obligations to future generations. Using our resources and intellectual capital to encourage development and adoption of clean power technologies is paramount for the state's environment, energy and economy.

The energy efficiency goals articulated in the Governor's "15x15" initiative are ambitious, and are necessary components of the transformation of our energy system in order to stabilize the climate and provide enhanced energy security. However, even with aggressive efficiency measures, New York needs to continue and expand its commitment to renewable energy.

Advancing renewable energy offers significant opportunities for New York to improve energy security and reliability as well as to create new businesses and jobs while reducing the public health and environmental impacts of energy use. Over the long-term, the potential for a range of renewable energy resources which are cost-competitive and can displace conventional

generation is expected to grow significantly. From the roofs of suburban office parks to the facades of skyscrapers to the acres of upstate farms, there are numerous opportunities to generate energy from clean, renewable sources. To keep pace with market trends and reduce our dependence on foreign energy sources, the State must address the significant challenges to greater use of renewable resources.

SECTION ONE
RENEWABLE PORTFOLIO STANDARD (RPS)

A key driver in developing new renewable energy projects in the United States is the Renewable Portfolio Standard (RPS), a market-based policy that requires electric utilities and/or state entities to gradually increase their use of renewable energy resources. Currently 25 states and the District of Columbia have enacted RPS policies that are collectively projected to result in more than 67,000 megawatts of new renewable energy capacity by 2020.[2]

In 2004, the New York State Public Service Commission (PSC) ordered implementation of an RPS to increase the amount of renewable power used in New York. Current RPS goals call for expanding the State's use of renewable resources from the then existing amount of approximately 19 percent (almost entirely from large-scale hydropower) to at least 25 percent by 2013. NYSERDA was designated by the PSC as the central procurement administrator for the RPS Program. To date, nearly 30 percent of this goal has been satisfied through NYSERDA contracts, state agency compliance with Executive Order 111,[3] and voluntary green power purchases by consumers.[4]

In the original instituting Order for the RPS, the Public Service Commission specified an annual collection schedule lasting through 2013 and totaling approximately $741.3 million.[5] Major investor-owned utilities collect these funds from ratepayers, and these funds are administered by NYSERDA for the purpose of achieving the RPS targets. Combined with estimated interest earnings of approximately $40.7 million, total specified collections and estimated interest is approximately $782 million. To date, approximately $574.5 million has been committed to projects, leaving approximately $207.5 million of the currently specified collections available for future program activity. Based on these estimates and commitments, the current RPS funding of $782 million will not be sufficient to meet New York's targeted 2013 goal.

The cost to achieve RPS program targets has exceeded specified collections for a number of reasons. Specified collections in the original Order were approximately half of the expected program costs as estimated at the time. The Public Service Commission, in an Order dated December 14, 2004, acknowledged that post-2013 collections would be required and indicated that a decision on establishing such collections would be deferred until the program was well under-way and more knowledge of program costs became known. In addition, unprecedented demand for wind turbines and the increased prices of raw materials necessary for their fabrication and project construction have significantly increased, thereby rendering program collections less effective. The Public Service Commission is currently conducting a cost study to assess the future needs to adequately fund the RPS.

A comprehensive assessment by the Public Service Commission of New York's RPS is scheduled for 2009. There are some aspects of the RPS which the Commission should consider

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[2] Lori Bird and Elizabeth Lokey. Interaction of Compliance and Voluntary Renewable Energy Markets, Technical Report NREL/TP-670-42096, October 2007.

[3] In August, 2007, Governor Spitzer reconvened the Executive Order 111 Advisory Council to address the use of renewables and energy efficiency at state agencies and authorities and their compliance with the Order.

[4] Does not include commitments associated with the third RPS Main-Tier procurement which was underway as of the publication date of this report.

[5] Order Regarding Retail Renewable Portfolio Standard, Case 03-E-0188.

revising during this assessment. These include increasing the target and setting goals beyond 2013, evaluating whether to raise the RPS surcharge in order to meet RPS goals, reevaluating the commercial and industrial customer exemption, as well as aligning New York's renewable energy certificate tracking system to that of neighboring states.

Thus far, New York's Renewable Portfolio Standard has been the State's primary vehicle of increasing the amount of renewable energy use. As other states across the nation enact their own renewable portfolio programs and "energy independence" incentives, New York must keep pace. As we compete in regional energy markets, New York needs to continue attracting private investment dollars, the additional instate energy infrastructure, environmental benefits and the economic boost that comes from clean-tech investment. By leveraging existing resources and the will of a growing renewable energy sector, New York can be a leader in this arena.

Renewable Energy Certificates (RECs) and Attribute Tracking

Electricity from renewable resources can be purchased from utilities or electric service providers and charged as part of a customer's electricity bill as "green power." Generally, this renewable electricity is not delivered to the customer's location, but rather generated and supplied to the grid that serves all customers in the region. In essence, green power customers pay for the benefit of displacing other conventional sources from the regional electric grid. Renewable Energy Certificates (RECs) carry the non-electricity attributes of such renewable power, such as avoided SOx, NOx and CO2 emissions which would be generated from the use of fossil fuel sources, as well as economic benefits. For each megawatt hour of renewable energy generated, one REC is created. In this sense, purchasing RECs has the same general environmental benefit as purchasing renewable electricity directly.

RECs are often central to the implementation of an RPS program. They are a flexible market instrument, playing a key role in stimulating the development of renewable energy, and assist in achieving articulated targets as well as determining compliance within an RPS program. These RECs can be bundled with commodity electricity and sold in the wholesale market, frequently used by utilities and marketers to sell green power to retail customers. RECs can also be "unbundled" and sold separately from commodity electricity, from a variety of renewable energy sources throughout the country and sold to customers nationally, or in a particular region to local customers.[6]

It is very important to track and verify the sale of RECs in order to ensure the credibility of the REC market. Since RECs are used to supply a large portion of programs in which electric suppliers have teamed with green power marketers, it can be difficult to distinguish REC products from other green power offerings. This is particularly true when REC products are supplied from renewable sources located in the same region in which they are marketed.[7]

[6] More than 20 companies offer certificate-based green power products to retail customers via the Internet, and a number of other companies market RECs solely to commercial and industrial customers: http://www.eere.energy.gov/greenpower/markets/certificates.shtml?page=1.
[7] Green Power Marketing in the United States: A Status Report (Tenth Edition); Lori Bird, Leila Dagher, and Blair Swezey; Technical Report NREL/TP-670-42502 December 2007.

Without tracking and verification, issues arise such as "double counting" the benefits of a REC, or using a single REC for more than one purpose by a single owner.

New York's current "tracking system" is the Environmental Disclosure Label (EDL) and conversion transaction system, designed to provide retail electric consumers with information regarding the generating fuel mix and air emission characteristics of the energy consumed in New York State. Attributes associated with renewable energy generation under this current program remain "bundled." This existing "conversion transaction" system for environmental disclosure labels was never intended to serve as a basis for tracking and trading RECs.

In a 2006 Order, the Public Service Commission found that unbundling energy from its environmental attributes, and marketing both energy and environmental attributes separately to customers could provide generators with greater market access and improve market liquidity.[8] Unbundling would also reduce financial risks to generators by allowing them to enter into multi-year RPS contracts for the sale of environmental attributes (RECs) to NYSERDA while simultaneously entering contracts for the sale of energy with load serving entities and/or end-use customers. The Commission also found that New York's EDL program could be successfully modified to accommodate unbundling and requested that NYSERDA and Department of Public Service staff issue a request for proposals to develop an attribute tracking system. The Order contemplated an automated electronic transaction system for attributes or RECs, similar to and compatible with, tracking systems in place in surrounding market regions. These REC tracking systems are flexible, transparent, and establish ownership of attributes, preventing double-counting of RECs for compliance purposes.

Since RECs are typically created once a generator sells a unit of energy into the grid, one of the challenges of a REC tracking system is how to accommodate smaller distributed renewable energy systems that do not sell energy into the grid. If such systems were allowed to participate in the REC market, this would provide an additional incentive for renewable distributed generation.

➢ RE-COMMIT TO MEETING THE STATE'S RENEWABLE PORTFOLIO STANDARD GOAL AND EVALUATE FEASIBILITY OF EXPANDING FUTURE TARGET

To instill investor confidence in the future renewable power markets in New York, and to ensure the State meets its renewable energy goals, additional funds must be provided for the RPS program. To date, the RPS has successfully attracted private investments and economic activity throughout upstate. Under the current RPS program, New York State has committed nearly $574.5 million towards renewable energy projects. The economic benefits associated with this new capacity will approach $1 billion over the next 20 years, excluding the impact of any economic spill-over or multiplier effects or energy price suppression effects.

[8]Order Recognizing Environmental Attributes and Allowing Participation of Projects with Physical Bilateral Contracts, Case 03-E-0188.

A renewed commitment to achieving the RPS should include the following:

- The revised cost study of the RPS now underway at the Department of Public Service should provide the information necessary for the Public Service Commission to expeditiously authorize the collection of all funding needed for full achievement of New York's RPS goals for both the main and customer-sited tiers of the RPS.
- The Public Service Commission should examine the feasibility and costs of expanding the RPS target from 25 percent to 30 percent by 2015.
- The State should support, as an interim goal, the installation of 100 MW of solar photovoltaic systems across New York by 2011. At that time, New York should examine whether and to what extent further incentives or other policy measures will be necessary to drive down the cost of solar energy, with the ultimate aim of achieving parity with retail price by 2017.
- State agencies and authorities should fully comply with and renew their commitment to achieving the ambitious goals of Executive Order 111, which will result in approximately 285 MW of renewable energy by 2010. State agencies and authorities should work closely with the New York Power Authority, the Dormitory Authority and NYSERDA to secure appropriate funding to meet this goal. The Long Island Power Authority should continue its commitment to contributing to the goal by working with municipalities, schools and other institutional customers.
- The New York Power Authority and Long Island Power Authority should continue their efforts to contribute to the RPS goal by encouraging their customers to incorporate renewable energy as part of a diversified energy supply portfolio.
- The State should develop an integrated companion tracking system to account for Renewable Energy Certificates (RECs) for distributed renewable generation technologies located on the customer side of the meter with the wholesale generation attribute tracking system currently being developed to support a regional REC market. This should be designed by NYSERDA, the Department of Public Service and the New York Independent Systems Operator by year-end 2008.

SECTION TWO
INCREASING OUR COMMITMENT TO PRIORITY RENEWABLE ENERGY SECTORS

New York State should lead the nation in developing renewable power sources. Wind power, solar energy and biofuels will all play a role in New York's energy future. While some clear obstacles exist to their quick and widespread deployment, including technological, regulatory and cost concerns, governmental policy at both the state and federal levels can help rather than impede market development. For example, the failure of the federal government to enact renewable tax credits for periods longer than a year or two has severely limited options to increase the manufacturing base for select renewable technologies here in New York.

It is essential that New York demonstrate its long-term commitment to the expansion of solar and wind power and biofuel production, and the growth of these industries in New York State. This will require carefully balanced and crafted policy initiatives to promote industry sectors, while simultaneously creating clean, diverse and reliable energy systems. Achieving our clean energy goals will improve New York's economy and environment, and will improve public health.

Solar Photovoltaic (PV) and Solar Thermal Development

The State should develop an aggressive solar PV and solar thermal program with the long-term objective of driving solar system costs towards parity with grid supplied electricity by the end of the next decade.

Lessons can be learned from the operation of solar incentive programs in New York, across the country, and globally. Meeting a goal of high market penetration will require multiple approaches to program implementation. Incentive programs, for both solar PV and solar thermal, should build on this experience and implement initiatives meeting the following principles: (1) Installation of high quality systems by qualified installers; (2) Promotion of systems that deliver high amounts of energy per incentive dollar provided; and (3) Comprehensive programs that bring solar installations together with investments in energy efficiency.

The principal barrier to widespread adoption of solar PV and solar thermal is its high cost which puts it out of reach for most residential and commercial customers. The State will need to provide market-pull mechanisms to help accelerate the movement to cost parity with the grid. The State has an opportunity to move to long-term incentive programs, which will reduce risk and encourage investment in the New York solar industry.

Solar thermal technology to heat water for both domestic and heating purposes is one of the oldest and most established renewable energy technologies available. It is also often the only viable renewable energy technology on many multifamily buildings. Solar thermal technology, while capable of providing significant energy, environmental and other benefits, is less frequently used in the United States than in other parts of the world to reduce the consumption of fossil fuels. This technology, as a replacement for fuels used to heat water and for space heating, has advanced over the last few years and should be aggressively pursued. As with

other solar technologies, barriers must be overcome regarding the deployment of solar thermal and the growth of the industry in New York. Without incentives, homeowners and businesses are reluctant to tackle the up-front costs of installing such systems.

➢ BUILD A SUSTAINABLE MARKET FOR SOLAR ENERGY IN NEW YORK STATE

New York supports environmentally sustainable and reliable energy systems that have the added benefits of supporting job growth in new and emerging technologies. Building an energy market with emphasis on renewable energy resources requires coordinated and sustained state policies and an environment conducive to investment.

State commitment to a comprehensive solar energy program will help mitigate energy price volatility in load pocket areas, and serve as a catalyst for economic development. By investing in a comprehensive program to establish a sustainable market for solar energy, New York State will build a foundation for other clean, distributed energy technologies.

Both public support and private investment are required to address the full range of technological and business growth issues and the long-term commitment to the development of solar energy technology, markets and workforce. The Task Force recommends a comprehensive set of programs to address market needs along with an investment in public/private research to insure that New York continues to capture the economic benefits of solar energy.

- **Market-pull mechanisms through incentives**: While costs are forecast to decrease over the next decade, the economics of solar will likely remain a barrier in the short-term, requiring that the State provide financial incentives and other support to businesses and residences to cost-share the initial capital investment. The State should support the installation of 100 MW of solar photovoltaic systems (as funded through an expanded RPS) and 1,100 solar thermal systems across New York by 2011.
- **Educate and train the labor force:** State support for workforce development and training is necessary to meet the needs of the growing solar design, manufacturing, installation, and maintenance markets in the State. New York should establish and expand existing training programs at public and private colleges and universities throughout the State. (See also Section 4.)
- **Expand and create solar energy business enterprises:** The confluence of policy, technology, and environmental conditions are drawing significant private investment in clean energy. The State should target programs that reward business innovation and stimulate the creation of new solar technology manufacturing capabilities in New York. Encouraging investments in early-stage start-up companies is an important component of this plan.
- **Invest for the future through research**: New York should build on the competitive advantage of our scientific and academic research institutions and help expand their role in renewable energy technology development. Investments in public/private research partnerships will serve as a strong foundation for future economic growth.

- **State agency leadership:** State agencies and authorities, including the New York Power Authority and the Long Island Power Authority, should cooperate and collaborate with one another to achieve their respective share of the RPS and Executive Order 111 goals, including a commitment equivalent to other state programs to foster solar PV and solar thermal technologies.

Wind Power Development

Wind power has recently experienced unprecedented growth in the United States. The American Wind Energy Association recently reported wind power development increased 45 percent in 2007.[9] During this period more than 5,000 MW of wind power were installed, with industry investments totaling $9 billion.[10] Project developers reported that the surge in demand for wind energy caused wind turbines sales to reach capacity.

According to the study, New York ranked 11th in the country for installed capacity through 2007. With market demand increasing at such dramatic rates, New York must take the necessary steps to increase its installed wind capacity. It must also take steps to attract manufacturing facilities to capture the full economic growth potential of this emerging industry.

Wind energy offers the opportunity for clean, renewable power to be generated in New York State. With the support of the RPS, it is anticipated that more than 1,000 MW of wind power generation will be up and operating in 2008. In addition to the environmental, public health and energy security benefits of this clean energy, these projects bring economic benefits to the local community. New York's RPS could support approximately 3,000 MW of wind power; more than 5,000 MW have applied for interconnection to the grid (a first step in the project development and interconnection process).

Increasing wind power development produces significant local economic benefits. Permanent jobs are created and host communities realize other economic benefits in the form of payments in lieu of taxes ("PILOT") agreements and other compensation. Specifically, landowners receive lease payments associated with the use of their land and compensation for various goods and services that are purchased during the development cycle.

Any large-scale generation and construction project may face local opposition, and siting wind facilities are no different. This opposition sometimes references historic preservation, environmental and aesthetic concerns. State and local authorities that share responsibility for, and/or have an interest or stake in, environmental assessment and permitting of new wind power generating facilities should work with stakeholders to establish and convey clear principles and methodologies or processes that will be applied consistently across the state. While NYSERDA, the Department of Environmental Conservation and the Department of Public Service have provided numerous resources to aid local authorities in their understanding

[9] Installations in the last quarter of 2007 alone surpassed the amount installed in all of 2006, from 2,454 MW to 2,930 MW. Cumulatively, these new projects account for approximately 30 percent of all new power-producing capacity brought on-line in the United States during 2007, providing the equivalent of enough power generation for 1.5 million homes. AWEA also estimates installation capacity during 2008 could meet the 2007 record. AWEA 2007 Market Report, January 2008.
[10] AWEA 2007 Market Report, January 2008.

of wind power and inform permitting authorities of the unique aspects of wind power, the time, costs, and most importantly, the uncertainty involved in securing permits, can frustrate project developers.

Fully realizing the potential of wind energy requires careful consideration of local siting and permitting issues, studies that address transmission and infrastructure limitations and, as with solar, a focused effort to capture the workforce development and business growth opportunities of a growing market.

➢ DEVELOP A STRATEGY TO REAP THE BENEFITS OF NEW YORK'S WIND ENERGY POTENTIAL

The following recommendations will facilitate further wind energy development in New York State.

- **Incentives for off-shore wind development:** The potential of New York's off-shore wind resources is approximately 5,000 MW. Off-shore installations have proven their feasibility in Europe and a number of companies are anxious to replicate that success here in the United States. While these projects are often difficult to site and more costly than on-shore projects, they have higher capacity factors and are situated closer to high load areas. Given the continuing rise in fossil fuel prices, investing in wind provides for greater stability in energy prices. The State should review the possibilities for siting wind off the shores of the Great Lakes and Long Island.
- **Community wind:** The RPS facilitates development of large grid-connected wind projects as well as smaller, single turbine, behind-the-meter installations. However, there is increasing interest in so-called "community wind" projects where projects under 10 MW in size are owned in part or whole by local institutions. Helping communities build wind facilities may require a separate program under the RPS.
- **Building in-state supporting infrastructure:**
  Manufacturing Facilities: New York has the most wind energy development potential in the northeast and mid-Atlantic region, and it has the transportation networks (rail and ship) and labor force required to support the manufacture of wind components and facilities. The wind industry is experiencing a shortage of turbines and a number of manufacturers have already announced or constructed new factories within the United States. Aggressive efforts should be made to attract renewable energy product and equipment manufacturers and research labs to New York through economic mechanisms such as development grants, investment and production tax credits, and other tax abatement.

  Workforce Development: The State should establish a collaborative wind research and training center to support the construction, operation and maintenance requirements of the wind industry. This center could be developed as a public/private partnership with existing university or industry endeavors in the clean energy arena. In addition, NYSERDA should expand the existing programs for installer certification to cover certification of workers for

construction, operation and maintenance jobs for large-scale, grid-connected wind energy projects.

- **Facilitate permitting:** State agencies must strive to minimize, to the extent possible, the regulatory risk that affects the pace, scope and scale of wind energy development by enunciating long-term goals and eliminating regulatory impediments. Agencies must ensure that their policies and programs are consistent and mutually reinforce the goal of economically and environmentally sound wind energy development. Enactment of an Article X power plant siting law that includes wind should be a priority for New York.
- **Transmission issues:** New York transmission owners should reassess the need for electricity transmission and distribution system upgrades to support wind development and interconnection.

Renewable Fuels Development

Climate change, the depletion of petroleum resources, and energy security all contribute to the mandate that we find alternatives to traditional energy. At the same time, we must recognize that demand for energy is growing. New York State can be a leader in addressing these challenges in the area of renewable fuels.

The Task Force recognizes that policy initiatives involving the planning, building and implementing of a renewable fuels future for New York is complex. New York needs to address critical concerns regarding the specific fuels we may be using not only to make progress in meeting our future energy demands, but to position environmental, land-use and health concerns in the forefront in policy decision making.

New York consumes great quantities of petroleum to power our transportation system, to heat our buildings and to generate power. In 2006, the use of gasoline as a transportation fuel accounted for approximately 45 percent of New York's petroleum consumption, and the use of distillate fuel oil for heating oil and transportation fuels (diesel) accounted for an additional 28 percent of this consumption. [11] Since all of these fuels are imported to New York, a substantial portion of the energy expenditures in New York is directed out of state. A carefully crafted renewable fuel policy can reduce this loss, enhance the environment, and create economic opportunities for New Yorkers.

There are costs and benefits associated with each renewable fuel. By virtue of current technology, and state and federal tax policies, our renewable fuels infrastructure has been based largely on corn-to-ethanol and soybean-to-biodiesel production. With nearly 400 million gallons of corn-based ethanol and agriculture-based biodiesel capacity either in the planning or construction phase, these fuels have served as the starting point. However, the renewable fuels now available may not be as effective or beneficial as those available in the future.

The Task Force believes that current state policy on renewable fuels is not adequate and that no single renewable fuel will answer the increasing energy needs of New York. Rather, New York State needs policies based on the best environmental and economic performance of fuels that

[11] NYSERDA Patterns and Trends, January 2008

will optimize New York's resources. Renewable fuel production is particularly important to the agricultural and forestry industries in New York, and good policy decisions could ensure that these industries will benefit from expanded market opportunities.

New York first needs to assess critical environmental, capacity, technology, efficiency, and economic issues for renewable fuels. Of particular concern is the current shortage of widely accepted environmental and public health data relative to emissions and land use impacts associated with renewable fuel use in stationary and mobile applications. Environmental impacts particularly on local water and air quality, the land use impact from diversion of crops and the larger impact on the agricultural industry in light of food production to fuel production, must be examined. The assessment should provide policy makers with a better understanding of the possible consequences that increased use of renewable fuels may have on the environment and public health, and it should put forth a plan to mitigate impacts and create a national standard for production and use of such fuels.

It is also the consensus of the Task Force that New York should consider renewable fuels development on a continuum. The recent enactment of the federal Energy Independence and Security Act of 2007 increased the renewable fuel standard significantly, calling for this increase to be derived from advanced biofuels with specific carve-outs for cellulosic ethanol and biomass-based diesel. With this new mandate and the increase in the number of proposed facilities here in New York, there is a need to move expeditiously with assessing the appropriate policy, financial incentives, and economic development strategy. Biofuels producers are looking beyond grain-based production in order to capitalize on New York's more than two million acres of unproductive and marginal farmland with the potential for growing dedicated energy crops for cellulosic biofuels production. In addition, New York State has over 18.5 million acres of timberland that are being renewed at a rate greater than 3:1, meaning that low-grade timber can be harvested in a sustainable manner for producing energy.

As the development of cellulosic ethanol technology advances, New York should be prepared to transition from corn-based ethanol to a more environmentally sustainable source of renewable fuel within the next three to five years. This research is currently underway at several major research institutions right here in New York, focusing on regionally available feedstocks. In the short-term, New York should continue to support development of a robust distribution network for renewable fuels, which will serve as the foundation for a future in-state bio-refinery industry. As we prepare for this transition, New York should encourage construction of only those renewable fuel facilities that can demonstrate their processes will move us toward carbon neutrality. New York should move toward using performance-based standards and incentives that use competition to get the most out of renewable fuels.

If done properly, renewable fuels have the potential to play an important part in New York's economic future. The successful demonstration of renewable fuel production from dedicated cellulosic feedstocks such as willow, grasses and northern hardwoods for ethanol or less intensively farmed crops, such as soybeans for biodiesel production, will provide the potential for New York State to be one of the nation's leaders in the renewable fuel industry.

➢ **DEVELOP BOTH A RENEWABLE FUELS ROADMAP AND A SUSTAINABLE BIOMASS FEEDSTOCK STUDY**

The State should develop a Renewable Fuels Roadmap, with input from industry, environmentalists, academia and government.

The Roadmap should explore:

- The life-cycle environmental consequences including all upstream emissions and land use impacts (which are not part of current assessments) of expanding the development and deployment of renewable fuels;
- The development of best practices for supplying feedstocks on a sustainable basis;
- The current industrial and research base in New York that can participate in the renewable fuels market;
- The distribution infrastructure to bring fuels to market;
- An assessment of workforce and training needs;
- The financial resources necessary to build a sustainable renewable fuels industry; and,
- The economic development benefits to rural and agricultural regions of the State.

The State should also study sustainable biomass feedstocks to develop a detailed baseline of:

- The health, environmental (including air quality and climate impacts), and land use effects of the production and use of renewable fuels, the metrics of sustainable management, and models and measurement tools to assess management;
- Land use and resource condition, standing biomass and suitability for future bio-energy crops;
- Feedstock supply including identification, techniques for planting, harvesting, production, storage, transportation, and processing.

Increasing Economic Growth Through Clean-Tech Investment

The expansion of the renewable energy industry is highly correlated to the creation and maintenance of long-term markets and the support of incentives provided by state policy. Many states are now aggressively and successfully pursuing these industries by creating markets for clean energy, offering tax incentives to manufacturers and to developers, promoting the installation of new generation capacity, and funding these initiatives with grants, loans and bond funds.

Creative investment initiatives such as pension funds are widely being leveraged to increase investments in clean energy markets. For example, the California Public Employees' Retirement System (CalPERS) has committed $400 million to clean energy and technology investments,

concentrating on energy, water and material technologies, including products and services that reduce carbon emissions, conserve natural resources and improve energy efficiency.[12] The New York City Investment Fund's January 2007 report recommends that at least $150 million of the public pension fund should be invested in clean tech industries.[13]

New York should match these efforts to attract renewable energy product and equipment manufacturers in-state. Innovative financing mechanisms such as new State bonding initiatives and public pension fund investments, coupled with economic development grants, investment and production tax credits and other tax abatement incentives, will provide New York with the opportunity to effectively compete with other states and achieve significant growth in market penetration.

➢ INVEST IN CLEAN ENERGY BUSINESSES FOR ECONOMIC GROWTH

New York should align and expand existing state programs to invest in the clean energy sector through integrated public/private partnerships to increase renewable energy business activity in New York. The Task Force recommends the following initiatives:

- The State, through NYSERDA and the Empire State Development Corporation, currently invests in clean-tech industry initiatives. In order to position New York as a national leader in clean-tech business growth, we must continue to support, enhance and expand these collaborative clean-tech initiatives. New York should increase its funding commitment to these initiatives by a minimum of $400 million over four years through financial incentives to support technology clusters;
- The State should increase opportunities for Minority and Women-owned Business Enterprises and businesses located in disadvantaged communities via use of public funding requirements;
- The NYS Office of the Comptroller should review existing public pension fund investment guidelines and target modifications to foster increased investment in renewable energy industries while maintaining overall fund integrity;
- The State should examine state tax policies and work with local entities to review and coordinate tax policies necessary to stimulate investment (examples include: production tax credits for cellulosic-ethanol and biodiesel; tax credits for growing eligible feedstocks); and,
- The State should also consider entering into long-term contracts for transportation and space heating fuels to promote the use of biofuels.

[12] CalPERS Commits $400 Million Each to Cleantech, Emerging Market Ventures; Press Release, February 21, 2007.
[13] Cleantech: A New Engine of Economic Growth for New York State, January 2007; New York City Investment Fund; A Partnership for New York City Organization.

➢ USE CREATIVE FINANCING TO PROMOTE INVESTMENT IN THE RENEWABLE ENERGY INDUSTRY

- New York should explore all alternative financing mechanisms available to support its renewable energy/efficiency goals, including expanding the use of creative financing and innovative bonding initiatives, and introducing a Clean Energy Bond Act initiative to increase clean energy adoption statewide.

Increase National Leadership in Research and Development

The State's long term commitment to increased funding for research and development will help develop and commercialize additional emerging renewable energy technologies to deliver new supplies of reliable, clean energy. An important companion to technology research is the support of efforts to evaluate the environmental and economic performance of the programs. Market development programs provide commercialization opportunities for products developed and tested by New York research institutions and companies. NYSERDA shares the risk of product development and field-testing for innovative clean energy technologies as part of a broader power systems technology program.

The Task Force has focused on a few technologies that are of special interest to New York. There are "emerging" technologies that will likely become technically and economically mature within the next three years. Some of these technologies include, but are not limited to: combined heat and power (CHP), anaerobic digestion, kinetic hydro, bio-diesel and geothermal heat pumps. Further, there are projects at the research and development stage that will mature within the next five to ten years, including cellulosic ethanol, electrical energy storage, superconducting power cables, and heat pump water heaters.

New York is home to several public and private institutions that are leaders in the field of environmental and scientific research. Many of these institutions are currently exploring innovative ways of optimizing the use of our natural resources in environmentally sustainable methods. Increasing the support available to these institutions as well as attracting additional R&D to the state will further expand this resource base and increase our competitive advantage at the national level.

New York should expand research, demonstration and commercialization of all renewable energy sectors in the State to accelerate the introduction of emerging technologies. To ensure that New York's investments are being used most effectively, the success of these initiatives should be measured by periodic assessments of technologies ready for commercialization, as well as the number of new clean energy companies brought into New York. Support levels should be awarded based on these assessments, focusing on those technologies with the most positive impact and achievable results to enhance market development. Demonstration programs can typically produce results and information for both consumers and policy makers within one to two years of funding support. The benefits of these long-term investments will be realized over several years.

➢ EXPAND RESEARCH AND DEVELOPMENT EFFORTS FOR RENEWABLE ENERGY

The State should target additional research funding for solar, bio-fuels, small wind, CHP/Efficiency demonstrations, grid interconnection, energy storage and end use efficiency technologies by implementing multi-year research programs to:

- Research the environmental impacts, public health effects, system reliability and performance of renewable energy and energy efficiency technologies for buildings and transportation;
- Support technology development, process improvement, demonstration, and commercialization to help New York State firms increase their competitive advantages in technologies such as kinetic hydropower, energy storage, grid interconnection, and end-use efficiency;
- Support academic and industry research to foster intellectual collaboration in the development of renewable energy and end-use efficiency technologies;
- Establish a Center for Advanced Technology (CAT) with a focus on the development and enhancement of processes and products involving renewable energy and bio fuel systems; and,
- Provide to the Executive and Legislature annual reports on the progress of public and private investment in the development and commercialization of renewable technologies and industries.

SECTION THREE
ENHANCE EFFICIENCY IN BUILDINGS, CONSUMER PRODUCTS, PETROLEUM AND TRANSPORTATION

Strategies to improve energy efficiency are paramount to any overarching clean energy policy. At the onset of its creation, the Task Force was asked to identify potential measures to assist the State in achieving its "15 by 15" initiative. To that end, the Renewable Energy Task Force has concluded that energy efficiency should be viewed as the "first" energy source and certainly a renewable resource. The cleanest, most affordable kilowatt hour is the one not generated. Conservation of energy is imperative as technologies for renewable sources advance and come on-line. All cost-effective energy efficiency should be harvested and doing so will improve grid reliability, make New York more competitive by reducing energy costs, create new jobs by keeping energy dollars in-state and reduce emissions which adversely impact public health and cause global warming.

Building Efficiency, Energy Codes and Low-Income Housing

On-site consumption of energy in residential and commercial buildings accounts for a majority of the greenhouse gas emissions in New York.[14] This sector represents a key target area in which implementing green technology improvements can have dramatic and immediate results. Improving building performance operations through energy efficiency and weatherization efforts will provide immediate economic results. It will reduce overall net energy consumption, thereby reducing demand on over-burdened electrical grid systems. Reducing energy usage lowers consumer bills saving both taxpayers and rate payers money.

Decreasing emissions of particulate matter and the use of environmentally friendly building materials will reduce public health impacts by minimizing effects on acute respiratory diseases. Improving oil efficiency and incorporating green features and low-impact materials into building designs will provide public health as well as environmental and economic benefits. Most importantly, reducing our energy consumption will decrease greenhouse gas emissions, helping to curb the international challenge of climate change.

The New York State Energy Conservation Construction Code (Energy Code) is mandatory across New York State for all new construction and substantial renovation of residential and commercial buildings. The Energy Code is a component of the broad health and life safety buildings code and is linked to the International Energy Code Council (IECC) documents and update cycles for residential buildings, as well as the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) standards for commercial buildings. The NYS Department of State (DOS) administers and supports the Energy Code, while local municipalities and their code officials enforce it. Updates to the Energy Code must meet requirements set forth in Article 11 of the Energy Law. Any proposed changes to the Energy Code must be cost effective over a ten-year simple payback period.

[14] These buildings account for approximately 40 percent of New York's greenhouse gas emissions. If electricity used by these buildings but generated off-site is included, these buildings represent approximately 64 percent of New York's greenhouse gas emissions. NYSERDA estimates, using average retail electricity prices reported in Patterns and Trends, January 2008.

Just updated and now in effect , the 2007 Energy Code for commercial buildings is based upon the 2003 IECC and ASHRAE Standard 90.1-2001. There is currently a proposal to the Codes Council to amend the commercial standards to be based upon the 2006 IECC, which references ASHRAE 90.1-2004. Adopting the 2006 IECC commercial standards would save New Yorkers approximately $18.5 million in 2009 (the first full year in which it would be in effect) and eliminate 148 million pounds of CO2 in that year.[15] Furthermore, ASHRAE 90.1-2004 has been determined to provide cost-effective updates to the commercial standards of the Energy Code, with no increased costs to achieve compliance. Depending upon building type, adoption of these standards would provide energy use savings of between 3 and 10 percent over the 2007 Energy Code.[16] Training of code enforcement officials and enforcement of these codes will also ensure New York fully benefits from implementing these aggressive energy codes.

Further, in order for affordable housing policies to be effective, necessary public and private financial investment is needed to implement energy efficiency measures in affordable housing projects. More than seven million New Yorkers, an estimated 2.9 million households, have incomes below 80 percent of state median income (SMI) and are eligible to receive some form of public housing assistance.[17] Almost 2.2 million of these households have incomes below 60 percent of SMI and are eligible for energy assistance and weatherization programs.[18] Most low-income households live in older housing, often with inadequate insulation, vast air leakage, and inefficient heating systems and appliances. Sharp rises in residential energy prices have greatly increased the cost of housing and utilities for low-income households, especially the elderly and others with relatively fixed incomes. Without effective financial investment, lower income households and operators of affordable housing lack the necessary resources to address energy efficiency on their own.

Oil Efficiency

Energy consumption of fuel oil in buildings in New York State is substantial. Based on a three-year average, consumption reached approximately 480 trillion BTU's annually, or 3.2 billion gallons, more than any other state in the nation.[19] This energy use for the purpose of heating has been identified as a sector where improvement and benefits can be achieved in a fairly short time. When compared to some energy efficiency efforts which take many years or decades to establish, the infrastructure to address the building community and New York State facilities currently exists and can be implemented immediately.

Petroleum products are not a standard commodity produced in New York State, with 89 percent of the supply purchased from other states and foreign countries, which then must be transported via water and roadways.[20] Paying for a commodity from outside of New York State in this magnitude means billions of dollars are being funneled away from our economy. The recent historic mark of $100 per barrel magnifies this financial impact to New York. This is

[15] NYSERDA estimates, using average retail electricity prices reported in Patterns and Trends, January 2008.
[16] Analysis of Energy Saving Impacts of ASHRAE 90.1-2004 for the State of New York, prepared by Pacific Northwest National Laboratory, August 2007
[17] United States Census Bureau, American Community Survey, 2006 (Washington, D.C., 2006) http://www.census.gov/acs.
[18] Ibid.
[19] NYSERDA Patterns and Trends, January 2008.
[20] NYSERDA Patterns and Trends, January 2008.

money that could be kept in New York to support the in-state production of cleaner fuel technology such as bio-heat (similar to biodiesel) and support the State's economy. Additionally programs could be funded with this money to target a greater number of energy efficient construction projects and the manufacturing of high efficient equipment and systems. Based on oil usage data in New York State in 2006, 30 million tons of CO2 were released into the atmosphere by oil combustion in buildings.

The amount of energy that buildings consume associated with oil can be reduced through energy efficient rehab/renovation and new construction techniques, thereby reducing New York State's dependence on this product. This coupled with alternatives and additives to oil such as bio-heat, solar thermal water heating and dual-fuel capabilities creates a buffer from price spikes and fuel shortages. New York should also work collaboratively with the refining industry to stage the market development and supply of Ultra Low Sulfur fuel oil which will reduce particulate matter emissions from oil combustion.

Through the efforts of NYSERDA, New York continues to have some oil programs underway that target new and existing buildings in all sectors. Other programs include researching the use of Ultra Low Sulfur heating oil, support and development of the manufacturing of high efficient oil-fired equipment, oil equipment Clean and Tune program, and minimal sector based programs (i.e., Home Performance with ENERGY STAR® program). Additionally, the NYS Department of Housing and Community Renewal administers the Weatherization Assistance Program, which provides energy efficiency improvements to low-income New York residents. Further significant efforts to offset and avoid the financial and environmental impact of oil use will need to be implemented immediately.

Efficiency Standards for Consumer Products

Product standards (point-of-sale at the state level and point-of manufacture at the national level) offer a significant opportunity for cost-effectively decreasing energy use in New York. State standards also have been effective for framing national policy discussion, leading to strong national standards. When a national standard is established, states are preempted from enforcing state-level standards for the same product unless the federal government grants them a waiver from preemption. Currently, New York does not have any waivers from national standards. Generally state standards are established for products only where national standards do not exist. States may want to establish standards for products where national standards are out-of-date or not appropriate and seek waivers. In related activities, in order to decrease the State's energy use, New York has established energy efficiency purchasing standards and applied them to equipment purchased by state agencies in 18 product areas.[21]

In 2005, New York amended its Energy Law to authorize the development of appliance and equipment energy efficiency standards for 13 of the 14 product areas not regulated by federal law. Subsequently, Congress established federal standards for 10 of the 14 products,

[21] Article 5-108-a of New York's Energy Law calls for minimum energy efficiency standards for the following eighteen appliances and energy using products purchased by or for the state: fluorescent lamp ballasts, central air conditioners, room air conditioners, package terminal air conditioners, heat pumps, electric motors, refrigerators, freezers, refrigerator-freezers, water heaters, lamps, luminaries, dishwashers, clothes washers, clothes dryers, furnaces, boilers and chillers.

preempting State standards in these areas. New York is in the process of establishing standards through the regulatory process for the one remaining product in the 2005 law. As part of this effort, New York has participated with other states in developing a multi-state certification system. Also, New York is considering establishing efficiency standards for a number of additional products. Standards for one of the products, residential furnaces, would require a waiver of preemption from the federal government.

Enhancing product standards will also have significant environmental and public health benefits. By 2015, improved product standards resulting from State and federal legislative and regulatory activities could help remove more than 970,000 metric tons of CO2 annually, the equivalent of removing more than 780,000 automobiles from the road. [22]

Standards are likely to have the greatest impact if New York pursues activity at both the state and federal levels. Since many product markets are national, or even international, broader standards at the national level make sense. Historically, state activity has been critical to convincing the federal government to act and in helping identify appropriate standards levels for the federal government to consider.

Combined Heat and Power (CHP)

As its name implies, "cogeneration" or "combined heat and power" are integrated energy systems that create two forms of useful energy – electricity and heat – from a single source of fuel. In a combined heat and power application, the heat that would otherwise be dissipated from the on-site generator is recovered to provide the building's hot water or steam. In industrial applications, the heat can be used directly in the manufacturing process. Advances in "thermally activated technologies" have opened new markets for CHP where there is an on-site need for cooling (e.g., commercial office space) or humidity control (e.g., supermarkets).

As of 2004, New York State has approximately 5,795 MW of CHP installed capacity, most of which is at industrial sites.[23] Going forward, there is a technical potential for approximately 8,500 MW of new CHP over the next decade.[24] Approximately three-quarters of the remaining potential are in commercial office space, healthcare facilities, schools and other institutional buildings. Modeling forecasts in a Base Case scenario estimate 764 MW of CHP could be installed in New York State by the year 2012, whereas in the Accelerated Case scenario market penetration reaches nearly 2,200 MW during the same time frame.[25]

Due to its efficiency, CHP has been shown to reduce electricity use and net natural gas imports. Capturing the useful waste heat and utilizing it to displace existing, less-efficient gas

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[22] Based on projections of electric energy savings identified in the preliminary letter report, entitled "New York State Agencies and Authorities Energy Efficiency Programs", submitted to the Public Service Commission by NYSERDA on November 30, 2007, on behalf of the Clean Energy Collaborative under PSC Case 07-M-0548, and natural gas energy savings, prorated to 2015, identified in "Leading the Way: Continued Opportunities for New State Appliance and Equipment Efficiency Standards", Report Number ASAP-6/ACEEE-AO62, and the associated New York State summary of the "State-by-State Energy, Economic and Environmental Benefits from New Appliance and Equipment Efficiency Standards", Steven Nadel et al., published March 2006.

[23] Combined Heat and Power Installation Database; Energy and Environmental Analysis Inc., 1655 Fort Myer Drive, Arlington, VA 22209, http://www.eea-inc.com/chpdata/States/NY.html. Content Last Updated: 10/18/2007.

[24] NYSERDA, Combined Heat and Power Market Potential in New York State (2002).

[25] Ibid.

consumption at a facility conserves natural gas. Also, due to line losses apparent in a utility distribution system, generating electricity at the site enables greater electrical efficiency. All these efficiencies also result in net reduced natural gas imports to the state. The creation of a sustainable market for CHP is of critical importance to the economy and the environment. In addition, NYSERDA estimates that, under accelerated CHP penetration rates, over $800 million in user benefits (net present value) will be realized, 316 trillion BTU of energy will be saved, and 3.9 million tons of CO2 will be avoided annually.[26] In addition, CHP provides an expanded opportunity for economic development through distributed energy equipment and components production, engineering, construction, maintenance and project development.

➢ RECLAIM A LEADERSHIP ROLE THROUGH BUILDING AND PRODUCT ENERGY PERFORMANCE

A comprehensive building and product efficiency program in New York, combined with updated energy codes and low-income affordable housing programs, will provide a competitive advantage to New York as well as increased environmental and economic benefits. Where appropriate, New York should recommend legislation and where administratively possible implement initiatives to:

For Building Efficiency:

- Require benchmarking and/or energy audits of all residential and commercial buildings at the time of occupancy or upon a change in ownership or tenancy;
- Require periodic retro-commissioning of large commercial buildings;
- Expedite the Energy Code update process to better synchronize with the IECC process and schedule;
- Adopt IECC 2006, which incorporates ASHRAE 90.1-2004 for commercial buildings as soon as possible;
- Expand the application of the Energy Code to a larger portion of renovations and equipment replacements; and,
- Identify the necessary resources for training, enforcement, and regular review of potential code updates.

For Oil Efficiency: Establish a new Oil Efficiency Program for New York that would support energy use assessments, commercialization of energy-efficient heating equipment, efficient building construction and renovation. Funding of the program should be consistent with the funding levels for gas efficiency programs when expressed on a BTU basis. The Task Force will work with industry representatives to identify a long-term strategy to provide efficiency to this sector, and develop a reliable funding source. Once a funding source is secured, the State should implement a pilot oil efficiency program.

[26] Ibid.

For Efficiency Standards for Consumer Products: Pursue aggressive State product standards and pass legislation to establish a "best practices" program that will provide for a systematic and timely update to product standards. In addition, revise the Division of Housing and Community Renewal's Major Capital Improvements (MCI) requirements to only allow:

- For appliances or equipment for which an Energy Star rating applies, the installation of such appliances or equipment that are Energy Star certified; or
- When an Energy Star rating does not apply, the installation of appliances or equipment that meet an alternative standard developed by NYSERDA where feasible.

For Combined Heat and Power (CHP): Expand CHP applications in key target markets including schools, hospitals and institutions, supermarkets, colleges and universities, and commercial and industrial district energy parks. The State should also expedite the promulgation of distributed generation air permitting rules that recognize the combined thermal and electrical efficiency of such integrated energy systems and review utility standby rate design.

For Affordable Housing: Initiate the formation of an interagency working group to include the Office of Temporary Disability Assistance, the Housing Finance Agency, the Division of Housing and Community Renewal, the Department of Public Service, NYSERDA, the Office for the Aging, the Department of State, the Long Island Power Authority and the New York Power Authority. The working group should collaborate to increase energy efficiency in the low-income sector through improved and expanded program coordination, joint delivery with renewables, and implementation of best practices.

Petroleum and Transportation Efficiency

New York State is currently dependent on petroleum for a majority of its transportation needs. In 2006, the State's transportation sector was responsible for 38 percent of greenhouse gas production and 72 percent of petroleum use, the single largest sector in either category.[27] The combustion of fuel in the transportation sector also contributes to regional air pollution, helping to place New York City on the U.S. Environmental Protection Agency's non-attainment list for ozone, PM10, and PM2.5.

There has historically been little interest in improving energy efficiency in the light-duty vehicle market. Consequently, vehicle performance improvements have dominated the technological landscape. However, in December 2007, Congress passed and President Bush signed the Energy Independence and Security Act of 2007, which increases vehicle fuel economy standards for the first time in 30 years. While this Act is a starting point for higher levels of efficiency in automobiles, it is just that, a starting point. There are several steps New York can take to achieve greater system and product efficiency, which will further reduce our petroleum consumption while simultaneously reducing greenhouse gas and particulate matter emissions.

New York is unique in its use and dependence on taxis, transit buses, subways, and commuter rail and ferries. System improvements in more efficient public transportation can dramatically

[27] NYSERDA Patterns and Trends, January 2008

reduce energy use and carbon emissions. For example, capture and use of regenerative braking energy from electrified subway cars can reduce energy consumption used for traction power and reduce power costs by up to 30 percent. Energy storage systems can improve this by several percent, while at the same time also improving the overall system voltage levels.[28]

Dynamometer testing has shown a 20 percent fuel savings can be achieved on the NYC taxi cycle with low cost idle stop technology currently in development.[29] Traffic light signal upgrades at state and municipal-owned lights would alleviate time wasted at traffic signals, which result in tens of thousands of idling vehicle hours, wasting fuel and generating emissions.[30] Improvements in product efficiency, such as hybrid-electric drive trains, low rolling resistant tires, and engine idling reduction technologies would also reduce petroleum use per mile traveled.

Increasing support and public awareness of public transportation, in all areas of the State, will also be integral to New York reducing its energy usage. Innovative strategies to promote the use of public transportation, such as "Pay As You Drive" insurance programs, the use of "fee-bate systems" to encourage consumer purchasing of fuel efficient vehicles, and the facilitation of intermodal transportation options such as incentives or reduced fares for "Park 'n Ride" participation will provide much needed assistance to meet New York's transportation needs.

Recently, vehicle efficiency has improved through hybridization using expensive batteries. As battery costs decrease and battery life-cycle improves, the amount of electric storage capacity on-board commercially available vehicles will increase. Continued support of battery research and development is critical to transportation sector efficiency.

New York State should build upon existing policies and programs to further promote the efficient use of petroleum in the transportation sector. For example, New York law already prohibits heavy duty engine idling for more than five consecutive minutes. In addition, in 2004 New York was the first state to propose regulations that adopt California's aggressive greenhouse gas emissions regulations, which would effectively increase the fuel economy of vehicles in the State. Through NYSERDA, the State is also funding transportation efficiency projects in a variety of areas, including policy analysis, product development, and field validation.

[28]Louis T. Klauder and Associates, "New York City Transit Traction Power System Study and Energy Storage System Analysis"; Contract 4500117064 Final Report, April 20, 2007; Study co-funded by the New York Power Authority and New York State Energy Research and Development Authority.
[29]Idle stop prototype systems developed under two separate NYSERDA projects both demonstrated this effect under closely controlled dynamometer test procedures. Savings are less in driving cycles with fewer stop-go cycles.
[30]USDOT Report , Intelligent Transportation Systems for Traffic Systems Control, Deployment Benefits and Lesson Learned , www://its.dot.gov./ipodocs/reports

➢ VEHICLE EFFICIENCY/VEHICLE MILES TRAVELED WORKING GROUP

New York should initiate an interagency working group headed by the NYS Department of Environmental Conservation, with collaboration by the NYS Department of Transportation, NYSERDA, the Metropolitan Transportation Authority, the New York/New Jersey Port Authority, the Office of General Services, and other appropriate state entities to develop a strategy to reduce vehicle miles traveled (VMT) and increase vehicle efficiency. Such strategy should consider:

For Vehicle Miles Traveled:

- Development of an integrated plan to achieve a statewide target of a 10 percent reduction in Vehicle Miles Traveled (VMT) from projected levels in 10 years. Such a plan should consider, among other strategies, the facilitation of intermodal transportation options and support of local initiatives, incorporation of incentives for LEED-ND, and use of Location Efficient Mortgages.

For Vehicle Efficiency:

- The establishment of tire efficiency standards, development of a revenue neutral fee-based system and support of advanced technologies.

SECTION FOUR
CREATING A GREEN COLLAR WORKFORCE

The development of a successful clean energy economy in New York State will require a well-trained clean energy workforce to design, install and maintain these new technology systems. The quality of workforce training and maintenance of skilled industry jobs will be a key component in attracting clean-tech companies and building robust markets for renewable energy and energy efficiency technologies.

According to the National Association of Energy Services Companies, investments in the training of just building maintenance workers, superintendents, and engineers could improve the operations of sophisticated heating and cooling systems by as much as 10 percent. These small improvements would save millions of dollars in energy costs each year in large public, industrial, and commercial buildings.

There are two main reasons why renewable energy technologies offer an economic advantage: (1) they are labor-intensive, so they generally create more jobs per dollar invested than conventional electricity generation technologies, and (2) they use primarily indigenous resources, so most of the energy dollars can be kept at home.

According to a 2007 report released by the American Solar Energy Society, renewable energy industries today amount to nearly $1 trillion in revenue in the United States, generating more than $150 billion in tax revenue at the federal, state and local levels.[31] The report indicates that, by 2030 the renewable energy and energy efficiency industries could create 40 million jobs, and generate up to $4.5 trillion in revenue in the United States.[32] This will only be achieved, however, through adequate public policy initiatives (including a renewable portfolio standard), renewable energy incentives, public education, and research and development. These jobs will not be just engineering-related, but will include millions of new manufacturing, construction, accounting and management positions. Solar, wind, ethanol, fuel cells and energy efficiency are likely to be the largest areas of growth within the industry.

While the potential for growth in this sector is tremendous and could provide literally hundreds of thousands of new jobs, there are challenges which need to be addressed. A 2006 study from the National Renewable Energy Lab (NREL) identified the shortage of skills and training as a leading non-technical barrier to renewable energy and energy efficiency growth. The Study identified a number of critical unmet training needs, including lack of reliable installation, maintenance, and inspection services, the shortage of key technical and manufacturing skills, and failure of the educational system to provide adequate training in new technologies.[33] The American Public Power Association estimates half of current utility workers will retire within the next decade, leaving the United States without enough trained new workers to fill their places. In addition, the number of high school graduates with technical training has declined by 35 percent over the last decade, which further exacerbates this trend.[34]

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[31] Renewable Energy and Energy Efficiency: Economic Drivers for the 21st Century; American Solar Energy Society, 2007.
[32] Ibid.
[33] R. Margolis and J. Zuboy, Non-technical Barriers to Solar Energy Use: Review of Recent Literature, National Renewable Energy Lab, September 2006 (NREL/TP-520-40166).
[34] Workforce Planning for Public Power Utilities: Ensuring Resources to Meet Projected Needs, American Public Power Association, 2005.

The NYS Office of the State Comptroller estimates that the production of renewable energy to meet the State's RPS goal could generate up to 43,000 new jobs here in-state.[35] New York has begun to take steps to train a clean energy sector workforce through NYSERDA and select academic institutions.[36] However, if New York is going to bolster its energy efficiency and renewable energy initiatives to meet our set goals, the State must simultaneously bolster its effort to rapidly increase this sector to adequately meet both near- and long-term future demands. In addition, training initiatives within the state should be done through a collaborative effort to utilize training curriculums, existing facilities, ensure consistent training quality standards, and to track the workforce sector to identify those areas where more attention is needed.

➢ EXPAND TRAINING PROGRAMS TO SUSTAIN A GREEN COLLAR WORKFORCE

The State should align and expand existing accredited training programs to recruit and develop an abundant supply of highly skilled workers who can design, install and maintain renewable energy and energy efficiency systems in New York. A skilled workforce, combined with other quality assurance measures, will reinforce public trust of these technologies. The steps needed to accomplish this include:

- Directing the Department of Labor, with collaboration from NYSERDA, the State Education Department (SED), the State University of New York (SUNY) and the City University of New York (CUNY), and other appropriate entities, to immediately undertake an inventory of existing workforce training programs and streamline such efforts to utilize existing resources in the most optimal manner;
- Expanding existing NYSERDA programs for installer certification to maintenance and operation of large-scale renewables and additional small scale renewable technologies such as small wind, solar thermal, biomass and anaerobic digestion systems;
- Providing resources for New York's universities, community colleges, and other accredited training organizations to establish curriculum and training programs to re-train the existing workforce and to develop the skills of students entering the job market;
- Identifying strategies and best practices for retaining qualified green collar workers;
- Targeting residents of disadvantaged communities and MBE/WBE's; and,
- Directing the Department of Labor, with collaboration from NYSERDA, SUNY and CUNY, and other appropriate entities, to annually report to the Executive and the Legislature on green market workforce trends.

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[35] Energizing the Future: The Benefits of Renewable Energy for New York State, New York State Office of the State Comptroller, March 2005 (Report 12-2005).

[36] NYSERDA has programs for PV installer certification and curriculum accreditation, Energy Smart Students Program, and a $10 million Renewable Energy Technology Manufacturing Incentive Program. SUNY Delhi, SUNY Farmingdale, Hudson Valley Community College, and Bronx Community College offer PV training/installation workshops. HVCC provides the baseline training for the Building Performance Institute's (BPI) Building Analyst; Envelope, Heating, and Cooling Professional certifications; the HERS Rater certification process, basic computer training, trade-related math skills and sales/marketing training.

SECTION FIVE
CRITICAL PUBLIC POLICY INITIATIVES

Generating more renewable energy in New York will require significant investments and a signal from New York that the state is serious about welcoming these industries. Financial incentives will be key to this market growth. However, these incentives will have little impact unless accompanied by the removal of other barriers that impede the development of these industries in New York. Several of these policy initiatives can be implemented with little or no financial impact to the State.

Net Metering

Net metering is a simple, low-cost, method of encouraging customer investment in distributed renewable energy technologies. Net metering applies in cases where customers operate their own on-site distributed generators, thereby displacing some of their electricity requirements that would otherwise need to be procured and delivered by the local utility. At discrete times, these distributed generators may be capable of producing more energy than can be fully used on-site. This "excess" energy is essentially delivered back to the local utility, who then effectively delivers it to other customers on the grid. Essentially a customer's meter spins both forward, when it is drawing power from the grid, and backward, when exporting excess power from on-site generation. The meter is reset to zero annually (when the electric provider either bills for the net energy used or possibly pays the customer the wholesale power rate for net energy sent onto the grid). This arrangement is currently supported by the utilities' existing electric tariffs, wherein displacement of the customer's on-site loads are credited at the average volumetric tariff rate and excess generation is credited at the utility's applicable buy-back tariff rate, either a monthly average or an hourly market-based commodity service rate.

However, New York's current net metering law contains size limitations and customer class exclusions which limit the growth of the renewable energy market. For example, solar energy net metering applies only to small residential customers, limiting the cost-effectiveness of solar electric systems for entire classes, including commercial and institutional customers, typically with large buildings which could reap the benefits of such installations. Such limitations inhibit the widespread installation of large-size systems and they handicap our existing renewable energy industries who must compete against businesses from other states with more advantageous and generous policies.

> ➢ **ENHANCE AND EXPAND NEW YORK'S EXISTING NET METERING LAW**

New York State should enact a new net-metering law which:

- Allows net metering for all customer classes where appropriate, including residential, agricultural, commercial, industrial, municipal and non-profit;
- Increases the size for projects eligible for net metering up to 2 MW for specified renewable technology types;

- Provides for the periodic review and assessment of interconnection standards for net metered energy by the Public Service Commission; and,
- Requires detailed annual reporting by electric power companies to the Public Service Commission on net metering.

The State should also better market net metering opportunities and benefits to customers. This can be accomplished through a more targeted outreach campaign by the PSC and utilities.

Advanced "Smart-Grid" Technologies

As demand for electricity continues to grow across all sectors and electric transmission, distribution, and generation infrastructures become strained and difficult to expand, other initiatives will be required in order to maintain grid reliability. Existing infrastructure can be more fully utilized and electric energy reduced when electric end users are more informed of both time sensitive consumption and pricing of electricity. Smart-Grid technologies, which include the ability to remotely control consumer electric use, can also enhance the efficiency of the grid system. In order to achieve efficiencies in using the grid, advanced metering with time sensitive monitoring of electricity use and price signals in residential and commercial/ industrial customers will need to be implemented.

The State's largest customers already utilize advanced meters, which record electric usage on an hourly basis, that are then billed at hourly prices in response to the Public Service Commission 2006 Hourly Pricing Order. In 2006, the Public Service Commission directed New York utilities to file comprehensive plans for the development and deployment of advanced metering systems, where feasible and cost-effective, for the benefit of all customers. Utilities filed their advanced metering plans during the first quarter of 2007 and are currently being evaluated. NYSERDA currently offers interval meter incentives for multifamily buildings, as well as for commercial and industrial facilities participating in demand response programs by the New York Independent System Operator (NYISO) and utilities.

Advanced metering and smart-grid technologies will result in awareness of electric use and pricing, and reduce electricity peak consumption, which will mean less reliance on higher polluting power plants and reduced ozone levels. In addition, greater deployment of such technology will aid in the development of a more robust metering services industry, which will provide competition for utility metering services and which could aid in the development of a business model for ancillary services, such as data monitoring and tracking. Demand reduction capabilities and energy savings would provide a more reliable grid system in an economic climate where reliable electric power has become more and more critical. It is estimated that the use of advanced metering could result in up to a 20 percent reduction in energy use and up to a 10 percent reduction in peak load.

To advance the wider use of smart meters for mass market customers, it will be necessary to demonstrate positive net benefits. In addition, there are consumer challenges regarding the acceptance of dynamic electric pricing and implementation and use of the technology, as well as regarding the education of residential customers on the benefits of advanced metering/time-of-use rates.

➢ ENCOURAGE THE USE OF ADVANCED METERING AND SMART-GRID TECHNOLOGY

New York State should develop and move forward a plan to accelerate the comprehensive deployment of advanced metering throughout the State, which would not only enable increased participation in New York's demand response programs, but also provide information and feedback options for end-users, creating a powerful usage reduction tool in the mass market – an informed consumer with an energy use "dashboard."

- The Public Service Commission should accelerate the implementation of advanced metering policies, schedules and procedures to promote the rapid development of advanced metering by utilities and the further development of a variety of business models to provide advanced metering services in all sectors.

Utility Interconnection

At times, clean distributed generation installations can face a burdensome utility interconnection process, often involving a lengthy review and approval process. Issues of connecting to network systems and obtaining permit approvals through lengthy SEQRA review are also impediments to installation. The disincentives of large up-front costs in obtaining permits and approvals are barriers that must be eliminated to promote the adoption of renewable distributed generation. Utilities must ensure interconnection requests are handled in a timely manner and at reasonable costs.

➢ FACILITATE INTERCONNECTION PROCESSES FOR RENEWABLE DISTRIBUTED GENERATION

- The Public Service Commission and the Long Island Power Authority should explore a more streamlined, transparent interconnection process for renewable distributed generation installations. The process should be web-based and allow applicants to view the status of their applications. The state should help to identify solutions to overcome technical and other barriers to effective and timely interconnection.

Program Commitment and Coordination

The further development of renewable energy resources in New York will require significant, long-term commitments from private developers, financial institutions and the communities in which such facilities are located. New York must administer its renewable program giving full recognition that any sign of a faltering commitment to the program, whether real or perceived by the market, could derail the development of renewable resources in New York. For programs where significant, long-term financial commitments are necessary, uncertainty in policy and regulation will be their undoing.

➢ IMPROVE OVERALL AGENCY CONSISTENCY AND COORDINATION

It is imperative that those State entities directly involved in renewable resource development, or which have review responsibilities, ensure their policies and programs are consistent.

- The State should consider reconstituting the State Energy Planning Board (formerly under Article 6 of the State Energy Law) to facilitate this objective. In addition, the Board should conduct a comprehensive review of regulatory policies and practices to ensure the mutual goal of economically and environmentally sound renewable energy siting decision making is met and global climate change impacts are factored into the decision making process.

Empower Local Governments and Municipalities

Local Governments and Municipalities can play a critical role, becoming a key part of the solution to achieving the goals outlined in New York's clean energy agenda. Empowering these communities to purchase green power contracts will assist in the long-term goal of reducing energy costs, lowering greenhouse gas emissions, and promoting the concept of environmentally sustainable practices.

However, municipalities wishing to purchase green power are often reluctant to do so because of conflicting signals from the state as to whether this is permissible under current state "low bid" law, since green power typically costs more. Removing this barrier could serve to boost the market for green power both directly through municipal purchase, and indirectly as municipalities can serve as leadership models for the broader community and help raise public awareness.

➢ EXPAND PURCHASES OF RENEWABLE ENERGY BY LOCAL GOVERNMENTS

- The State should identify and address any statutory or regulatory barriers to municipal government purchases of green power. Specific guidance should be provided to allow a municipality the option to specify green power and conventional power as separate commodities.

Public Awareness and Educational Outreach

The renewable energy market is, in many ways, at its infancy in terms of breaking through public acceptance and knowledge base of its use. It is only over the course of the last few years that the majority of the general public has begun to fully understand the negative impacts of relying on fossil fuels. As often is the case, it takes dramatic events, such as rapidly increasing oil costs or the irrefutable evidence of advanced climate change, to force us to seek a change from the status quo. The role of education is critical in bringing about the transformational changes in, and public acceptance of, the clean energy sector.

New York has invested in public education on energy issues through the New York Energy Smart Communities Program. The Program presents energy seminars to local residents, small businesses, farmers, and others to increase awareness of opportunities to reduce energy consumption and green energy programs. However, confusion, misconceptions and skepticism of both energy efficiency programs and the reliability of green power sources still exist. New York has set ambitious goals through recently announced energy efficiency, green building, and increased renewable energy initiatives. To achieve these goals, it is imperative for New York to create an aggressive, statewide consumer education campaign, targeting K-12 education, as well as behavior-change messaging targeted at adults.

The Task Force believes the best place to begin this education and awareness for a sustainable environment is with school children and teachers. Sound practices taught as part of a comprehensive state-mandated K-12 curriculum incorporating climate change, green technologies, environmental sustainability and smart growth, will have a profound impact not only on furthering their secondary education, but further instilling the message within their communities.

In addition, an aggressive message campaign is needed to target the adult community. Consumers face barriers to energy efficiency and renewables through the lack of effective communication regarding available products and their cost effectiveness, as well as their overall net gain in terms of reducing energy costs and associated environmental benefits. Aggressive consumer education and better marketing will help to reduce consumer frustration and improve customer acceptance.

Local and municipal governments can play a vital role in promoting these initiatives, yet face similar awareness hurdles. Municipalities seeking to mandate advanced energy efficient and green building practices in new construction often have to learn from other municipalities as well as other states. This process is slow, inefficient, and can be confusing or discouraging to builders and contractors who promote and take advantage of these technologies. In addition, municipalities are often unaware of existing alternative funding mechanisms. Assisting them to identify and understand these mechanisms could help them take advantage of energy efficiency and renewable energy investments, such as bonding, bundling photovoltaics in energy performance contracts, power purchase agreements, and using clean fuel vehicles by their governments.

➢ BUILD ON PUBLIC AND PRIVATE EDUCATIONAL PROGRAMS

The State should build on the successful public and private renewable energy educational programs currently available by establishing an aggressive, statewide consumer education campaign to increase market awareness through:

- Directing the State Education Department (SED), in collaboration with NYSERDA, to develop and implement a K-12 education initiative introducing the concepts of renewable energy, climate change and sustainability;

- A consumer messaging campaign targeting renewable energy, conservation, energy efficiency, and consumer choice purchasing options;
- Development of a public education and promotional program to support the transition to renewable fuels;
- Coordinating campaigns within existing state promotional programs; and,
- Developing guidance for local municipalities by directing the New York State Department of State to lead an interagency effort to create a comprehensive toolkit for municipalities to help them promote the installation of renewable energy technologies and promote statewide consistency. This toolkit should include, among other resources, planning guidelines to encourage renewables in site design, model approaches for new construction, and model ordinances that will eliminate unreasonable barriers and protect resource access.

FUTURE VISION

Ours is a frank and urgent call for change in the way we consume and generate our energy. With our energy prices soaring, the security risks of petroleum dependence more prominent than ever, and the visible evidence of advanced climate change across the world, New York faces compelling reasons to put renewable technologies to use in large scale. As outlined throughout this report New York State has significant opportunities to advance these technologies, which will in turn improve our energy security, the reliability of our current energy infrastructure, and create numerous new business opportunities and green collar jobs of every level. Removing the barriers identified in this report will help to ensure these opportunities are not lost.

If our society is to begin addressing these critical challenges we face, New York must begin transitioning away from relying on conventional energy sources. Rather, we need to adequately educate our citizens to use and accept renewable resources as an integral part of a solution.

Transitioning our energy sources will take time, and this transition will not come without controversy. Further, no proposal outlined within this report will be the single solution for meeting this challenge. Taken together, however, these recommendations do provide a comprehensive strategy for New York to move forward with a new, stronger and brighter vision – *a clean energy vision*.

As the Task Force continues, we look forward to working collaboratively with all stakeholders involved to achieve this vision.