

**Regional Environmental Attribute Certificate Accounting and Trading
System for New York State**

Final Report
Volume I

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ABSTRACT

This business plan, prepared under contract to the New York State Energy and Research and Development Agency (NYSERDA), identifies a viable business model for the development of a regional environmental attribute certificate accounting and trading system (REACTS) that will serve the specific needs of New York State. This system would facilitate the unique sale and purchase of environmental attributes, associated with energy sold and purchased through the spot market of the New York State Independent System Operator (NYISO), bilateral trades, and energy transacted between the NYISO and neighboring systems. The REACTS will support and satisfy the verification needs of green power products offered in New York. It will be flexible enough to easily accommodate changes to the current New York Conversion Transaction (CT) method of accounting for renewable purchases and will support the renewable market in New York by reducing many of the administrative barriers to bringing New York renewables to market.

The plan starts by estimating the size of the New York market for renewables, based on the green power market and renewable mandates in the state and region and the potential volume of business that might use REACTS. It then describes the market landscape and host of issues that need to be considered in developing a REACTS. Four business models are identified and compared according to their ability to address stakeholder concerns, fulfill the accounting needs of the market, meet the needs of the DPS in administering the environmental disclosure program, and support a healthy and liquid market for renewables in New York State. The project team then evaluated the pros and cons of each option against a series of criteria provided by NYSERDA staff, and selected the best option, a state-based renewables tracking system that is compatible with other regional systems, to meet the overall needs of the marketplace and the NYSERDA criteria. A description is given of the functional characteristics of this type of REACTS, penalties imposed to ensure the integrity of the information in the system, a marketing plan, staffing considerations, and financial requirements. Finally, the Business Plan outlines the next steps needed to gain consensus on the functional specifications of REACTS, to work on policy issues around deployment of REACTS, and to deploy the system.

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SUMMARY

This business plan, prepared under contract to the New York State Energy and Research and Development Agency (NYSERDA), identifies a viable business model for the development of a regional environmental attribute certificate accounting and trading system (REACTS) that will serve the specific needs of New York State. This system would facilitate the unique sale and purchase of environmental attributes, associated with energy sold and purchased through the spot market of the New York State Independent System Operator (NYISO), bilateral trades, and energy transacted between the NYISO and neighboring systems. The REACTS will support and satisfy the verification needs of green power products offered in New York. It will be flexible enough to easily accommodate changes to the current New York Conversion Transaction (CT) method of accounting for renewable purchases and will support the renewable market in New York by reducing many of the administrative barriers to bringing New York renewables to market.

The plan starts by estimating the size of the New York market for renewables, based on the green power market and renewable mandates in the state and region and the potential volume of business that might use REACTS. It then describes the market landscape and host of issues that need to be considered in developing a REACTS. Four business models are identified and compared according to their ability to address stakeholder concerns, fulfill the accounting needs of the market, meet the needs of the DPS in administering the environmental disclosure program, and support a healthy and liquid market for renewables in New York State. The Project Team then evaluated the pros and cons of each option against a series of criteria provided by NYSERDA staff, and selected the best option, a state-based renewables tracking system that is compatible with other regional systems, to meet the overall needs of the marketplace and the NYSERDA criteria. A description is given of the functional characteristics of this type of REACTS, penalties imposed to ensure the integrity of the information in the system, a marketing plan, staffing considerations, and financial requirements. Finally, the Business Plan outlines the next steps needed to gain consensus on the functional specifications of REACTS, to work on policy issues around deployment of REACTS, and to deploy the system.

I. INTRODUCTION

This Business Plan was written under contract to the New York State Energy and Research and Development Agency (NYSERDA) to identify a viable business model for the development of a regional environmental attribute certificate accounting and trading system (REACTS) that will serve the specific needs of New York State. This system would facilitate the unique sale and purchase of environmental attributes, associated with energy sold and purchased through the Location Based Marginal Pricing market (spot market) of the New York Independent System Operator (NYISO), bilateral trades, and energy transacted between the NYISO and neighboring systems. The REACTS will support and satisfy the verification needs of green power products offered in New York, the New York environmental disclosure requirements, and a future Renewable Portfolio Standard (RPS), should one be enacted. In addition, the REACTS will be flexible enough to easily accommodate changes to the New York Conversion Transaction (CT) method of accounting for renewable purchases out of the spot market, should New York decide to change this in the future. Finally, the REACTS will support the renewable market in New York by reducing many of the administrative barriers to bringing New York renewables to market.

The Business Plan begins by estimating the size of the New York market for renewables. We estimate the demand for New York State renewables based on the green power market and renewable mandates in the state and region. We also estimate the supply of renewables based on the current capacity and proposed new construction. The main purpose of this section is to estimate the potential volume of businesses that might use REACTS and the number of transactions that will flow through the system.

Next, we describe the current market landscape and the host of issues that need to be considered in developing a REACTS. The majority of these issues were raised during the initial stakeholder meeting and the authors have attempted to summarize their comments.¹ This section reviews each issue or problem and describes the consequence of this issue or problem for the larger renewable market and for meeting New York State goals. The key purpose for this section is to give the reader an idea of the market constraints and to lead the reader through the host of issues that need to be considered in designing a REACTS.

The fourth, fifth, and sixth sections of the paper identify four possible business models for REACTS and compare the ability of these business models to, (1) address stakeholder concerns, (2) fulfill a need in the marketplace, such that the REACTS can be financially viable, (3) help support a market for New York State renewables, and (4) meet the needs of the DPS in administering the environmental disclosure program. The Project Team tried to give an objective evaluation of the pros and cons of each Option, evaluating each Option against a series of criteria that were provided by NYSERDA staff. The Project Team have tried to show how the Options rank against each other on each of the criteria. The reason for

¹ A copy of the meeting minutes from the stakeholder meeting is found in Appendix C.

including different Options and their relative merits is because the authors recognize that different readers may not value all of the criteria equally and therefore, may want to evaluate the relative merits of each Option individually. From this discussion, the Project Team has selected the one Option that best meets the overall needs of the marketplace and of the criteria provided by NYSERDA.

Section seven and eight describe the functional specifications of the REACTS and the penalties that will be used to ensure the integrity of the information in the system. The remaining sections present the next steps to deploy the system. The Project Team recommends a two-phase approach. Section nine outlines the first phase, which is a proposed course of action for NYSERDA to work through the policy and stakeholder issues in order to deploy the REACTS. The final sections outline the deployment phase, including the technical and functional requirements, a marketing plan, staffing requirements, and financial requirements of the REACTS deployment.

II. DEMAND AND SUPPLY-SIDE ESTIMATES FOR THE NEW YORK MARKET

This section estimates the size of the NY green market from a demand-side and a supply-side perspective. The purpose is to get a rough estimate of the number of Conversion Transactions (CTs), bilateral trades outside the NYISO spot market, and renewable certificates that might be traded in the NY market and in neighboring regions that would be part of a potential REACTS system. On the demand-side, we examine the NY market as well as potential neighboring markets. On the supply side, we look at both existing and new renewable installations that could meet the potential market demand.

DEMAND-SIDE ESTIMATES OF NEW YORK RENEWABLES MARKET

The demand for renewable power in the New York market is or is expected to be composed of multiple drivers:

- 1) Green market demand from the competitive market in New York State,
- 2) New York State-government goals to supply a certain percentage of government-based loads from renewables,
- 3) Demand from regulatory programs in other states in the region that will accept New York based renewables, and
- 4) Other green market demands that might affect renewable development.

In addition, the Governor directed the Public Service Commission (PSC) to implement a renewable portfolio standard (RPS) that increases the percentage of renewables purchased in the state to 25% over ten years.

COMPETITIVE MARKET DEMAND IN NEW YORK STATE

Green Offerings by Marketers through Utilities

The demand for renewable power from consumers in the competitive New York market is expected to develop as marketers gear up their programs. Three companies, Community Energy, Green Mountain Energy (GMEC), and Sterling Planet, have started actively marketing (as of Fall 2002) green power offerings in the Niagara Mohawk (NiMo) service territory. Under this program, which is part of the Niagara Mohawk-National Grid merger settlement approved by the New York Public Service Commission (NYPSC) earlier in 2002, Niagara Mohawk customers will be able to contract through NiMo with renewable energy service providers to choose renewable sources of energy for their electricity supply. Green Mountain and Community Energy are offering 100% green products, and Sterling Planet offers products based on 50%, 75%, or 100% of a customer's usage.

Additionally, Community Energy is forging partnerships with other utility (NYSEG) and non-utility marketers (Select Energy) that allow them to start marketing new wind energy in other New York utility

service territories. Community Energy prefers these partnership arrangements with the utilities, as it allows them to more easily reach all potential customers². This latter effort has been funded, in part, through NYSERDA's green power marketing incentive program. NYSERDA will be announcing additional funding awards through the green marketing incentive program in February 2003, which will further expand the efforts into NYSEG, as well as RG&E and ConEd.

The NiMo green power offering is similar to the program in Oregon, where GMEC is marketing a green power option through the two large investor-owned utilities, PacifiCorp and Portland General Electric. Since March of 2002, GMEC has offered two green offerings; PacifiCorp and PGE have offered one other green power option since 2000. Residential participation in the PacifiCorp program is 1.1% of customers and in the PGE program is 2% of customers to date. Based on the available information, it seems that slightly over 50% of the sales are for the GMEC offerings³.

The NiMo offering is in some ways similar to utility green pricing options, except that utility green pricing programs do not typically involve a third party for the renewable energy component. Studies of utility green pricing programs show that "most green pricing programs have participation rates below 1% of customers", with public utility and smaller utilities having higher participation rates⁴.

By using both the Oregon experience and the utility green pricing experiences, we can estimate the market penetration for the NiMo program. It seems reasonable to assume that the participation rate (focusing on residential) would grow to about 1.5 or 2% of the total number of customers over approximately 3 to 5 years.

Green Offerings by Marketers Direct to Consumers

Studies have been conducted that show, in restructured markets like New York, where all consumers can choose to purchase green power, the best results are market penetration rates of 1.6 to 1.9% of customers⁵. In California, which started its restructured market in 1998, 1.7% of the customer base chose green power⁶, although incentive programs were in place that generally resulted in cost savings for those choosing green power. In Pennsylvania, which restructured its market at about the same time and has a market more closely reflecting that of New York, about 5.2% of customers have switched providers, with about 40%

² Phone conversation with Eric Blank of CEI, September 18, 2002.

³ Harris, Ned, "Powerful Choices III: A Survey of Retail Green Power Programs in the Pacific Northwest and Beyond", August 2002, Renewable Northwest Project.

⁴ Swezey, Blair and Lori Bird, "Utility Green Pricing Programs: What Defines Success", September 2001, NREL/TP.620.29831.

⁵ Ed Holt, Presentation at 6th National Green Marketing Conference, July 2001

⁶ Tim Tutt, CEC Presentation at 6th National Green Marketing Conference, July 2001 and Wiser, Bollinger, Holt, and Swezey, "Forecasting the Growth of Green Power Markets in the United States, October 2001.

choosing green, representing about 2.1% of the total amount⁷. Community Energy’s successful penetration of the commercial and educational markets in Pennsylvania has resulted in the sale of virtually all of the new wind facilities that have been installed in Pennsylvania. Commercial customers in New York could also be an important factor in driving green market demand.

Assumptions Used For This Estimate.

Using these states (OR, PA, CA) as examples of what may potentially happen in New York, we conservatively estimate that demand from consumer green market choice will reach 1.5% in the NiMo territory within 3 years, starting at 0.5% in 2003. For the remaining New York market, we estimate that market demand will reach 1.5% in 5 years, starting a quarter of this development in 2004, and building each year to reach this amount in 2007. If marketers are successful in developing partnerships with the incumbent utilities to market green power under the new NYSERDA incentive programs, this market penetration may begin in 2003 rather than 2004.

Residential sector electricity use in New York State makes up about 31% of the total usage⁸. Commercial use is about 49% and industrial about 18%. The other big use of electricity is for transportation (2%). Thus we have applied a factor of 80% of the total New York electricity sales to represent the percentage that the residential and commercial sectors represent. We assume in all instances, that the green product purchased by the end consumer is a 100% green product.

Figure 1. Green Market Demand Due to Competitive Market Development

Year	Electricity Sales: 2001 (MWh)	Green Market Demand: 2003 (MWh)	Green Market Demand: 2004 (MWh)	Green Market Demand: 2005 (MWh)	Green Market Demand: 2006 (MWh)	Green Market Demand: 2007-2010 (MWh)
NiMo Market	37,081,000	148,324	296,648	444,972	444,972	444,972
Remaining Market	119,615,000	44,856	358,845	717,690	1,076,535	1,435,380
Estimated NY Green Market Demand due to Competitive Market Development ⁹		193,180	655,493	1,162,662	1,521,507	1,880,352

⁷ John Hanger, PennFuture, Presentation at 6th National Green Marketing Conference, July 2001 and Wisner, Bollinger, Holt, and Swezey, “Forecasting the Growth of Green Power Markets in the United States, October 2001; and conversation with Peter Adels, PennFuture, September 9, 2002.

⁸ “Patterns and Trends – New York State Energy Profiles: 1986 – 2000”, NYSERDA, December 2001.

⁹ NYISO 2002 Load and Capacity Data (“Gold Book”)

STATE GOVERNMENT REQUIREMENT UNDER EO111 PURCHASE OF RENEWABLE ENERGY

Under Executive Order 111, Governor Pataki established a requirement that state agencies commit to purchase energy generated by renewable energy sources. The requirement is to purchase renewable energy equal to 10% of annual electricity consumption by 2005, rising to 20% by 2010. A study conducted by Sustainable Energy Advantage¹⁰ estimated the impact from this executive order as shown below in Figure 2. At this point, the demand shown for 2002 is unlikely to materialize, but is shown here as represented in the referenced study.

Figure 2. Green Market Demand to Meet EO111 State Procurement Requirement

Year	2002 (MWh)	2003 (MWh)	2004 (MWh)	2005 (MWh)	2006 (MWh)	2010 (MWh)
Estimates of Demand	400,000	628,333	856,667	1,085,000	1,225,000	1,400,000

ADDITIONAL REGULATORY DEMAND OF NY BASED RENEWABLE GENERATION

Additional demand for New York generated renewable energy is based on renewable portfolio standard (RPS) requirements in the New England and Mid-Atlantic region. In New England, RPS requirements exist in Maine, Massachusetts, and Connecticut, and in the Mid-Atlantic region, RPS requirements exist in New Jersey. In Pennsylvania, an RPS applies to competitive default service in the PECO territory only; a state-wide RPS may be considered under the new state administration in Pennsylvania.

The New England RPS' are expected to have minimal impacts on New York because of the structure of the RPS programs and the restrictions on imports to the New England ISO. The RPS requirement in Maine¹¹ is structured such that sufficient resources in Maine can satisfy the RPS for many years to come. The PUC rules implementing the RPS requirement in Connecticut currently exempt over 95% of the load, making it essentially null. Although the RPS requirement in Massachusetts could allow New York resources to satisfy part of the requirement, the difficulty of scheduling generation from New York into the New England ISO make it unlikely that any New York renewables will be used to satisfy the MA RPS in the near term, absent a change in the import rules. Although there may be a need for non-MA renewables to meet the RPS-derived load in Massachusetts, it may be easier for suppliers to pay the 5-cents/kWh alternative compliance payment to the MA Renewable Energy Trust Fund.¹² Importing renewables into the New England ISO currently requires an hourly scheduling of energy, making it particularly difficult for

¹⁰ "Cost Estimate of N.Y. Executive Order 111 Renewable Energy Purchase Provisions: Executive Summary", Prepared for NYSERDA Under P.O. No. 4175, Sustainable Energy Advantage, Robert C. Grace, et.al, October 23, 2001.

¹¹ Bob Grace, Ryan Wisner, Mark Bollinger, "Responses to Second Set of RPS Questions", Memorandum to NYSERDA, May 5, 2002.

¹² Ibid.

New York based wind facilities to meet this requirement. Efforts are underway to remove this hourly matching requirement. At this point however, mainly due to the relative lack of demand for NY renewables, we are not projecting any impact of New England demand on New York renewables supply.

In the Mid-Atlantic region, state RPS programs may eventually have significant impacts on the New York market. There is a possibility that New Jersey based demand for renewables could be met by some New York based renewables, as New Jersey allows imports from states where a competitive market exists. However, according to a study done by Grace et al., “sufficient merchant renewables (existing landfill gas and recently constructed wind) are in place to meet the fairly low initial Class 1 percentages. There is currently sufficient existing supply to meet the standard; this situation will begin to change in earnest in 2006 and 2007, when the standard begins to accelerate.”¹³ Starting in 2006, the percentage of Class I renewables (photovoltaics, wind, landfill methane, sustainable biomass, geothermal) increases by a half-percent per year, which will significantly increase demand from these renewable sources. Nearly all renewable energy demand in Pennsylvania is expected to come from the fairly successful competitive market, which is developing PA-based in-state renewables to meet in-state demand.

Therefore, up until 2006, we expect no demand from the Mid-Atlantic States for New York based renewables. Starting in 2006, we show a growing demand in New Jersey, and project that 25% of the NJ demand will be met by NY renewables, as shown in Figure 3 below.

Figure 3. NJ RPS Demand for Renewables Supplied by New York Renewables

Year	2002 (MWh)	2003 (MWh)	2004 (MWh)	2005 (MWh)	2006 (MWh)	2010 (MWh)
Estimate of NJ Demand	2,166,106	2,182,568	2,199,156	2,215,869	2,604,828	4,219,164
Demand Met by NJ Sources	2,166,106	2,182,568	2,199,156	2,215,869	1,953,621	3,164,373
Demand Met by NY Sources	-	-	-	-	651,207	1,054,791
Total NJ Retail Sales	72,203,531	72,752,278	73,305,195	73,862,315	74,423,668	76,712,071

RENEWABLE MARKET DEMAND FROM OTHER REGIONS

Other programs that could affect renewable energy demand in New York include utility green pricing programs and corporate purchases. Corporate purchases have taken place in New York, as evidenced by Kinko’s purchase of green certificates from the Madison wind plant.¹⁴

As discussed above, we do not expect significant demand for New York resources from the PJM or New England green markets from utility green pricing programs or corporate purchases. For the PJM area, there

¹³ *ibid.*

¹⁴ Announced August 3, 2000. See www.purewind.net.

are sufficient green resources to meet the need initially, although we expect this to change around 2006. For New England, there are sufficient green resources to meet the immediate need, as well as barriers to importing out-of-pool renewables.

DEMAND FROM A RENEWABLE PORTFOLIO STANDARD

The implementation of a renewable portfolio standard in New York will have the greatest impact on renewable demand in the long term. The Governor’s proposal is to increase the renewable usage to 25% within the next ten years. The current percentage of renewable usage in the state is 17% (including large hydro), which would suggest that an additional 8% needs to be added before 2013. If we assume that new renewable purchases by all load-serving entities are increased by 1% per year starting in 2004, the additional 8% will be reached by the end of 2011. It is expected that this would not be restricted to only New York-based renewables, but would allow participation from neighboring ISOs (New England, PJM, and Ontario). The impact of an RPS on renewable demand in New York is projected as shown in Figure 4 below. It is assumed that the percentage requirement is applied against the previous year’s sales (e.g. 2004 RPS purchases are based on 2003 electricity sales and so on.)

Figure 4. Projected Demand from a New York Renewable Portfolio Standard

Year	2004 (GWh)	2005 (GWh)	2006 (GWh)	2007 (GWh)	2008 (GWh)	2009 (GWh)	2010 (GWh)	2011 (GWh)
New York State Electricity Sales ¹⁵	159,058	159,854	160,653	161,456	162,263	163,075	163,890	164,709
RPS Percentage	1%	2%	3%	4%	5%	6%	7%	8%
Renewable Demand Due to RPS	1,583	3,181	4,796	6,426	8,073	9,736	11,415	13,111

DEMAND-SIDE SUMMARY

In summary, the projected demand from the different options described above for New York-based renewables is shown in Figure 5 below. It is assumed that the programs in place in the competitive market and for implementation of EO111 will continue in 2003, but that the requirements of EO111 will be covered by the implementation of the RPS in 2004. Continued demand will exist from the competitive green market, as marketers continue their programs and customers continue to choose products with a high percentage of renewables. However, the contribution from the competitive market has been reduced by 50% (as compared to the impact without an RPS) to reflect the impact of utilities focusing on RPS implementation, rather than cooperative programs with marketers. Demand from the NY RPS will continue as shown.

¹⁵ Assume 0.5% growth in electricity sales per year, based on growth of electricity consumption in last 10 years (Patterns and Trends: New York State Energy Profiles: 1986-2000; NYSERDA)

Figure 5. Projected Demand for New York Based Renewables

Year	2003 (GWh)	2004 (GWh)	2005 (GWh)	2006 (GWh)	2010 (GWh)
Competitive Green Market Demand	193	655	1,163	1,522	1,880
EO111 Demand	628	857	1,085	1,225	1,400
NJ RPS Demand	0	0	0	651	1,055
Total Projected Demand w/o RPS	822	1,512	2,248	3,398	4,335
OR					
RPS-Based Demand	0	1,583	3,181	4,796	11,415
Competitive Green Market Demand	193	328	581	761	940
EO111 Demand	628	0	0	0	0
NJ RPS Demand	0	0	0	651	1,055
Total Projected Demand (w/RPS)	822	1,910	3,762	6,208	13,410

SUPPLY SIDE ESTIMATES OF NEW YORK MARKET

The supply of renewables in New York State consists of a number of existing sites as well as planned future renewables development. We look at both existing and planned renewables, as all of these are potential users of the REACTS system. Hydro developments are not included in these estimates.

Figure 6. Currently Operating Renewable Energy Facilities in New York State¹⁶

Facilities	Biomass	Landfill Gas	Hydro	PV	Wind	Total
Number of Operating Facilities by Technology	n/a	16	216	52	4	288
Total Installed Capacity (MW) by Technology	138	25	5,492.6	1.3	48.1	5705

Wind energy is the technology where the most activity is currently focused. NYSERDA has made estimates of additional wind development expected in the state. This projection has been updated by a recent announcement of \$17 million of funding for specific wind projects. The projected additions are shown in Figure 7 below.

¹⁶ Sources: www.eren.doe.gov/state_energy/states_utilitygenerationtable.cfm?state=NY for hydro, PV and wind data in chart; EO111 report, estimated that 25% of available capacity could be used for meeting EO111 requirement, which would result in about 138 MW of biomass capacity; U.S. EPA's Landfill Methane Outreach Program (LMOP) listing of landfill facilities in New York State. The EO111 report shows current landfill capacity as 46 MW and the EPA list shows 70.7. A NYSERDA study found that about 25 MW of landfill is actually viable. For our estimates, we start in 2002 with 25 MW, building to 37 MW by 2005.

Figure 7. Estimates of Planned Wind Development in New York State

Additional MW in Year	2003 (MW)	2004 (MW)	2005 (MW)
NYSERDA Estimate	316.5	235	0

We expect that not all of the planned wind projects will be developed, as this has been the case in other parts of the country where wind developments have been planned. Projects get delayed, or cancelled due to financing, marketing issues, and cost issues. Therefore, our projection assumes that half of the planned wind development shown above will be developed in the years shown.

The estimate of current and planned renewable capacity (in MW) and energy (in MWh) is shown in Figure 8 below. To convert MW into MWh, capacity factors of 30% for wind, 85% for landfill gas, and 87% for biomass are assumed¹⁷.

Figure 8. Renewable Resource Supply Estimates for New York State

Capacity in Year	2002 (MW)	2003 (MW)	2004 (MW)	2005 (MW)	2010 (MW)
Wind	48.1	205.6	323.1	323.1	405.6
Landfill Methane	25	30	33	37	50
Biomass	138.7	138.7	160	200	200
Total	211.8	374.3	516.1	560.1	655.6

Output in Year	2002 (MWh)	2003 (MWh)	2004 (MWh)	2005 (MWh)	2010 (MWh)
Wind	126,407	540,317	849,107	849,107	1,065,917
Landfill Methane	186,150	223,380	245,718	275,502	372,300
Biomass	1,057,060	1,057,060	1,219,392	1,524,240	1,524,240
Total	1,369,617	1,820,757	2,314,217	2,648,849	2,962,457

Although there is much uncertainty in both the demand and supply estimates, based on the projected demand, shown in Figure 5 and the projected supply shown in Figure 8, it appears that there is sufficient renewable supply in New York state to meet the native demand through 2004, following either the current market structure or with the implementation of an RPS. However beyond that, demand exceeds native supply, which should spur additional renewable development in New York and/or encourage imports of renewables into the state. This is shown below in Figure 9. For this reason, it is important that the REACTS be compatible with other regions.

¹⁷ These are the same capacity factors used in the EO111 report.

Figure 9. Supply and Demand Estimates for New York State Renewables

Year	2003 (GWh)	2004 (GWh)	2005 (GWh)	2010 (GWh)
Total Projected Demand (w/o RPS)	822	1,512	2,248	4,335
Total Projected Demand (w/RPS)	822	1,910	3,762	13,410
Total Projected Supply	1,821	2,314	2,649	2,962
In-State Supply Shortfall (w/o RPS)	-	-	-	1,373
In-State Supply Shortfall (w/RPS)	-	-	1,114	10,448

III. BACKGROUND ON RETAIL TRACKING SYSTEMS

Several states and voluntary initiatives employ the use of tracking systems to verify information related to retail electricity or certificate sales. These include Texas, New England, Wisconsin, and Nevada.¹⁸ Efforts are also underway in the Mid-Atlantic, California, and the Western Electricity Coordinating Council region to develop certificate tracking systems. There are two primary types of retail tracking systems, contract path and certificates-based systems. Contract path tracking systems are generally associated with transactions where the energy and attributes remain bundled together. In contrast, the defining characteristic of certificate tracking systems is the unbundling of electricity attributes from energy flow and the automation of transactions involving these certificates. In general, these certificates representing the beneficial attributes of renewable generation are referred to as Tradable Renewable Certificates (TRCs). For a more detailed description of these types of tracking systems see Appendix A.

TRACKING RENEWABLE ELECTRICITY IN NEW YORK

The NY Public Service Commission (NYPSC) requires all retail electricity suppliers to provide their customers with an environmental disclosure statement showing the characteristics of their electricity mix. The Department of Public Services (DPS) administers this program and is responsible for developing the disclosure label based on information provided to the DPS from the New York Independent System Operator (ISO). Retail suppliers that want to differentiate their product or portfolio mix from the New York Independent System Operator (NYISO) mix must use a bilateral electricity contract or a conversion transaction (CT) to remove their purchases from the residual NYISO mix. This ensures that no electricity is double counted on the New York disclosure label. The bilateral transactions are reported by the NYISO to the NYDPS. The CT mechanism, however, requires that both the buyer and seller of the electricity file a claim to the DPS identifying a quantity of electricity from a specific generator that should be removed from the NYISO residual mix and attributed to the buyer's portfolio. CTs must be executed each quarter in accordance with New York's quarterly disclosure requirement.

NY's CT system is somewhat of a hybrid between these contract path and certificate tracking systems. It is a contract path system in that it uses contracts to establish ownership of energy and to verify the CT transaction. It also requires a third party review, conducted by the PSC, to verify the transfer of the ownership of the energy through the filing of a CT. However, the CT part of the NY system is very similar to a certificate sale since it does not follow actual energy flows and, generally, will apply only to renewable resources. Under a CT, a generator selling energy into the spot market may sell the attributes associated with that energy to an entity that is purchasing an equivalent amount of energy during a calendar quarter from the spot market. As a practical matter, this allows a limited amount of "unbundling" of the generation attribute from the underlying electricity contract. However, the conversion transaction system does not

¹⁸ Wisconsin and Nevada systems are under development.

specifically establish a distinct secondary market for unbundled attributes, and unbundled TRCs not meeting conversion transaction requirements are not recognized.

Based on rough estimates provided by the DPS, it cost the State approximately \$40,000 in software development costs, paid to the NY ISO to modify their dataset for DPS use in determining the spot market mix. In addition, ongoing staff costs of 1.5 FTE have so far been required to implement the disclosure and CT system. Today, there are very few CTs occurring and the implementation costs could rise with increased complexity of transactions (for example, if the need arose to develop a method for subtracting emissions offsets). However, DPS staff do not believe that increasing complexity will create any additional incremental costs to the State as any additional tasks would be performed by existing employees.¹⁹

STAKEHOLDER CONCERNS WITH THE CURRENT CT TRACKING SYSTEM

At the request of NYSERDA, CRS organized a stakeholder meeting in June 2002 to establish what their concerns with the current NY state CT system were. The stakeholder group was composed of a broad range of participants from utilities, marketing companies, state agencies, environmental groups, and non-governmental organizations.

New York's disclosure tracking system has functioned properly during the last couple of years, and the allowance for CTs has provided some flexibility to market participants. Despite this, stakeholders during the meeting expressed a number of concerns about the present tracking system and New York's renewable and retail markets more generally. While many of the concerns expressed with respect to the CT approach are real and serious impediments for suppliers that are interested in selling green power in New York, it is important to acknowledge that these issues are overshadowed by more fundamental problems with the retail electricity market in the State. In addition, many of the issues raised relate to the ability of suppliers to sell TRCs in New York in general, and are not specifically problems with the CT system per se.

Stakeholder concerns regarding the present tracking system in New York include:

- Record Keeping and Administration of CTs
- No Direct Sale of TRCs
- Liquidity in Long Term and Short Term Markets
- Disaggregated Emissions
- Quarterly Settlement Period
- Compatibility with Other Neighboring Regions

¹⁹ Conversation with K. Bala, New York Public Service Commission on November 19, 2002.

Record Keeping and Administration of CTs

Summary of Issue.

The DPS currently requires that the generator selling a CT identify the ultimate load serving entity (LSE) that has purchased the CT. Likewise, an LSE that buys a CT must identify the generator that created the CT. The two filings to the DPS must match for the CT to be completed. This was reported as an administrative burden for market participants because the LSE may not know who the generator is and vice versa. There are often brokers and other parties involved with any given power purchase, or generation attribute transaction. In many instances, the broker may not want to disclose to the LSE who the generator is for competitive reasons. Current requirements by the DPS would disallow such confidentiality.

Consequence.

At present, with few CT transactions taking place, this concern is unlikely to be of primary importance. DPS staff has stated their commitment to iron out any discrepancies that exist, and there is not yet a major network of brokers and intermediaries.

As the renewable energy market develops in New York and there are many more transactions, it will be increasingly difficult for market participants and for the DPS to get the information necessary to make this system work. Discrepancies that were identified and fixed by the DPS in the past may in the future result in the disqualification of executed CT transactions. The result is that: (1) it will cost somewhat more to sell green power in New York due to higher administrative costs; and (2) there is a greater risk to market participants that their CTs will not be completed as intended. This creates a less favorable and more burdensome business environment for renewable suppliers.

No Direct Sale of TRCs

Summary of Issue.

The current New York system, including the CT method of tracking, does not allow separation of attributes from energy, either for direct attribute sales within New York from New York generation, or direct sales of attributes outside of the state. The method for determining the spot market mix for the disclosure program has no mechanism to subtract out TRCs that are sold off separately. Therefore, the sale of TRCs separate from energy would result in double-counting of the TRCs- once in the residual mix calculation, and once by the customer who would be purchasing the TRCs.

Currently, the only three renewable energy marketers in New York have built their business models around the use and sale of renewable attributes or TRCs. This business model has proven successful in

neighboring states. In Pennsylvania, a majority of market demand for new wind energy has come from non-residential end-use customers purchasing TRCs. This has been the primary driver for the construction of three of the four wind farms in that state. Because retail electricity choice has been slow to develop in New York, it is unlikely under the current regulatory environment that there will be an active market within New York for renewables under typical retail electricity supplier arrangements. However, if TRCs could be used in New York more readily, it would be much easier for new companies to enter the New York renewable market and sell renewables in the form of TRCs to the large untapped non-residential sector. TRC marketing can be a significant driver for construction of new renewable facilities. An active and effectively working renewables market can also be a major stimulus for the competitive retail market for small customers. From conversations with NYPSC, creating a competitive market for small customers is a priority for this agency.

Second, if new renewable development is a goal for New York, then changes need to be made to allow NY-based renewables to meet renewable market demand both inside and outside of the state. “Seams” problems between the NYISO and other ISOs, have become one of the biggest issues in restructuring. The Federal Energy Regulatory Commission (FERC) has issued a Standard Market Design Notice of Proposed Rulemaking trying to resolve these seams issues and other market problems internal to ISOs. Currently, the rules governing imports to New England make it very difficult for New York renewables to be sold into the New England market. This is unfortunate because three of the New England states have RPS requirements that could be satisfied by New York renewables. Although this is not exclusively a problem with NY market rules or with the CT accounting approach in particular, the incompatibility between the NY CT approach and the NEPOOL Generation Information System (GIS) approach is one area that could be improved. If NY instituted a more flexible system that allowed the broader separation of attributes, and established a compatible accounting system such that the data needs of neighboring regions were met, it would enhance the market opportunities for NY renewables outside of the state. Although some of these points are not exclusively issues with the CT system, if the PSC were to change its method of accounting for the residual mix on the disclosure label, and allow the direct sales of TRCs, the CT approach would also have to be modified to track the sale of TRCs separately. This issue may be eliminated if NEPOOL Markets Committee relaxes its import restrictions, as is being currently discussed

Consequence.

As discussed above, the present disclosure rules limit the market potential for NY renewables because suppliers simply cannot access regional, national or international TRC and emissions markets. The two renewable marketers in NY have found ways to work within the existing rules to avoid double counting but the process has been cumbersome as the following examples indicate.

One way to avoid double counting is to partner with an existing load-serving ESCO so that their attributes are accounted for on the NY disclosure label. This approach has several downsides: (1) it makes renewable marketers subject to the demands of LSEs, (2) it adds administrative costs to an already premium-priced product, and (3) it requires that the marketers enter into multiple agreements if they want to sell green power in more than one service territory (the non-regulated/non-utility LSEs can serve any service territory in the state).

A second way marketers avoid double counting on the disclosure label is to export the energy and attributes and then re-import the attributes alone into NY. This convoluted approach may only be practical and cost effective for large companies that trade a lot of power every day and may prevent smaller renewable marketers from engaging in this practice.

A third way to tap into the retail market for renewables is to encourage consumers to donate to a fund for new renewable construction. National experience with donation programs indicates that they are much less palatable to potential customers than selling TRCs or renewable electricity directly, and are not likely to create a huge demand for renewables. Perhaps more importantly, the renewables are never subtracted from the New York mix used on the disclosure label, which may lead New York utility customers to believe that their purchase is supporting renewables when it is not. Although the purchase of these “charitable payments” for renewables actually supports the renewables industry, they are much less saleable than TRCs.

Liquidity in Long Term and Short Term Markets

Summary of Issue.

Healthy markets require liquidity in both the short- and long-term. The current CT system in New York has little liquidity. According to the DPS, there are on average only about 4-5 CTs recorded each quarter. Lack of retail choice and the resulting lack of demand for CTs in New York is the principal cause of this non-liquidity. However, design features of the CT system itself also reduce liquidity. Record keeping and administrative requirements currently in place will limit secondary trade in CTs. PSC rules challenge the ability of a New York renewable generator to sell TRCs to customers in New York or outside of the state. Quarterly settlement systems may also reduce trade²⁰. With few markets in which to dispose of their attributes, renewable generators find few buyers for their output. This may change in the future as a result of NYSERDA’s renewable education and marketing assistance programs.

²⁰ This is an important issue that is discussed more fully below.

Consequence.

With few buyers of New York renewable generation or TRCs, short-term markets for renewable electricity will be limited. Perhaps more importantly, long-term markets for renewable generation will be stymied which will limit the ability of renewable generators to build production in the state. Consider a green power marketer interested in purchasing renewable generation in New York to serve green power demand in the State. Not knowing the level of customer demand for renewable energy, and aware of the fact that New York TRCs cannot be sold within or outside of the state, the green power marketer would be better off purchasing renewable energy in short term markets (even if at higher cost) than signing a long-term contract for renewable generation. However, long-term contracts for renewable generation are exactly what is needed to stimulate the construction of new renewable energy facilities. If, on the other hand, there were in- and out-of-state TRC markets in which to dispose of “excess” renewables, this green power marketer might be more willing to engage in a long-term contract. Thus, long-term contracting for renewable generation may be discouraged by the current system.

Disaggregated Emissions

Summary of Issue.

Another concern expressed by stakeholders is the ability for the DPS to account for disaggregated emissions. There is much talk in the renewable community about the potential for renewables to participate in national and global emissions markets. Although there are few instances of such trading occurring today, many feel that this market will develop over time and that renewables will be given emissions allowances or credits that could be disaggregated from TRCs or bundled renewable electricity and sold into secondary emissions markets. New York has indicated that it may provide NO_x allowances to some renewable generators. If this does occur, these emissions allowances/credits may need to be accounted for in the emissions portion of the New York disclosure label. The issue here is that the current CT system – and disclosure system more broadly – is not designed to track this level of emissions information or to provide the level of security needed to ensure that all CT transactions are “whole” (that is, contain all generation attributes, including emissions credits). While these design features could be added to the current system, they would require further reliance on attestations and complex contract-based tracking, and would not provide “water-tight” tracking that ensures no double counting.

Consequence.

The issue with disaggregating emissions, while perhaps not an immediate threat, is a real possibility that could result in the double counting of emissions on the New York disclosure label. Without being able to disaggregate emissions, New York generators could be at a disadvantage relative to other generators outside of New York. In the long run, this could stymie the development of new renewable energy facilities in New York

Compatibility with Other Neighboring Regions

Summary of Issue.

There are two key issues related to compatibility with other regions: prevention of double counting, and ability for the New York CT system to interact with neighboring systems. The double counting concern is more of a DPS concern that was voiced during the disclosure proceedings than a stakeholder concern per se. The interaction of the CT system with neighboring systems is both a concern of market participants and regulators alike.

Double Counting: The best way to prevent double counting is to establish a mandatory tracking system for all energy attributes. Although there are ways for New York suppliers to sell renewable attributes separately today without causing double-counting on the NY disclosure label (as noted in the discussion above under “No Direct Sales of TRCs”) these methods are more difficult, add administrative costs, impede liquidity, and may be prohibitively expensive, especially for smaller suppliers. The second issue related to double counting is the ability for NY and neighboring regions to track attribute imports and exports that are occurring today and will increasingly occur in the future. Establishing an electronic system that can communicate with the systems of neighboring regions is important for the future renewable market.

Compatibility with NEPOOL GIS: The NEPOOL GIS system is a certificate based tracking system that issues and tracks attributes from all electricity generation occurring in and delivering power to the NE Power Pool. In order to export energy from NY into the NEPOOL GIS, there has to be a unit contract, confirmation through the use of a NERC tag that the energy was generated and flowed into NE, and some proof that the attributes were not otherwise sold. If the energy does not have a unit contract, the energy will be assigned a state/regional average mix. Imports to NE must be scheduled and demonstrated on an hourly basis. The importer must demonstrate an “actual” flow that is a bilateral financial contract. NE will not allow a CT because it does not consider them to represent “revenue quality data.”²¹ This is a function of the emissions averaging that occurs with the current NY system. In addition, CTs are not unit specific and do not document an hourly flow as they are settled quarterly. Even if New York had a GIS system today that was unit specific, New York GIS certificates would not be allowed in the NEPOOL GIS due to the hourly flow requirement and the emissions averaging, exactly the problem that we have today. Thus, a REACTS system could be established that would provide other market benefits, but it cannot fundamentally change the key problem with imports to New England.

²¹ Jean Hopkins comments in the referenced stakeholder meeting on June 24, 2002.

Reciprocity and System Interaction: There is also an issue with regards to reciprocity. Since NY does not recognize unbundled attributes, there is a question as to whether NEPOOL GIS certificates could be exported to NY, and if so, how. This issue and the ones above are not exclusively related to CT's and the current NY disclosure tracking system, rather they are more related to the technical tracking rules of the NEPOOL GIS. The development of a certificate-based tracking system for NY will not solve all of these issues alone, and some changes would need to be made in New England to accommodate any system that New York uses.

After the stakeholder meeting, NY DPS staff indicated that they would work to resolve seams issues through negotiation with the NEPOOL GIS decision-makers. The problem with relying on this approach is that the import requirements benefit local New England market participants who have voting power over this and other decisions and who have little incentive to change it. The parties most interested in reducing barriers between the two regions, namely the regulators, are not the same people with voting and decision making authority. Moreover, the FERC filing to merge the ISO-NE and the NYISO into one regional body has been withdrawn. This could have paved the way for a single GIS because it would have ensured that many of the seams and data compatibility issues would be resolved. However, despite the failed merger, there appears to be significant work around improving compatibility and reciprocity in the Northeast. A working group has been established to resolve seams issues between NE-ISO, NY ISO and PJM ISO. If the barriers described above are removed, then New York will need to develop a more sophisticated tracking system to interact with the NEPOOL GIS.

Consequence.

As with the other issues above, the chief consequence of not addressing these compatibility issues is that the added costs will make NY renewable power more expensive, ultimately limiting the market opportunities for NY renewables. In addition, since no regulatory body is monitoring the sale of TRCs to end-use customers, there is the potential for NY generators to covertly sell their TRCs outside of the state, which would result in double counting of the renewable attributes on the state disclosure label. Finally, probably the biggest consequence of not working to address these issues now is the lost opportunity to create a certificate tracking and trading regime in the Northeast while the market design issues are being discussed and investments are being made at the ISO level.

Summary of Issues and Consequences

Since New York's market rules are not particularly favorable to new market entrants and retail choice has been slow to develop, it is particularly important that administrative barriers are removed and green power markets are not further restricted. Since renewable energy is already priced higher than conventional power, adding administrative costs and reducing out-of-state market opportunities only serve to further disadvantage New York renewables.

Some would argue that the current CT approach is not adequate to track the separation of attributes that is occurring already within New York. Although suppliers have found legal ways to work within the system, the CT approach does not accommodate or regulate the TRC market that is active today. There are no safeguards in place to prevent an unscrupulous supplier from selling their renewable generation into the spot market and selling their TRCs to another party, for example, an end-use customer or a TRC marketer outside of the state. An added advantage of the certificate based tracking system is that it can easily track the information DPS needs to meet its disclosure mandate as well as monitor general TRC transactions to prevent double counting. A certificates based system can also be designed to handle secondary characteristics tracking, such as emissions. If NY stays with the CT system, allowing attributes to be unbundled from energy for the purposes of attributes sales within the state, then rebundled with energy for delivery to an in-state customer, would be a way for NY to partially participate in certificate based systems, but still preserve the CT approach. If a tracking system was developed for the region, NY generators and retailers could participate in this system and avoid some of the potential double-counting problems noted above.

ADVANTAGES OF RETAIL CERTIFICATE TRACKING SYSTEMS

The separate sale of attributes or TRCs from generic electricity allows the market to internalize renewable energy's externality costs. Though the primary focus has been on capturing the value of the environmental externalities of renewables, the TRC premium can also capture some of the economic development and technology diversity benefits as well as any social benefits. The separation of the electricity portion from the social and environmental assets means that to the extent renewables cost somewhat more than other types of electricity, the incremental premium can be collected from a larger population of people than just the local utility customer.

This diversification of the revenue stream available to developers of renewable generating facilities opens the door to multiple funding sources for new project development. It is particularly useful when local renewable resource sites have been exhausted while local demand for renewable resources remains strong (either through mandated, voluntary programs, or private company efforts). TRCs also allow individual consumers, small or large, to financially express their preference for renewable energy independent of the preferences of their state government or utility.

TRCs allow the simplicity of selling the electricity output of a renewable energy facility into the local wholesale grid for whatever the local price. The renewable resource premium, as represented by the TRC, is then marketed without the complications often accompanying electricity sales (e.g. transmission line constraints, regulatory barriers, utility opposition, etc.).

IV. DISCUSSION OF POTENTIAL BUSINESS MODELS

The Project Team considered several different options for an attribute tracking and verification system for New York. The Team specifically looked at ways that a REACTS could address the stakeholder concerns voiced in the meeting, bearing in mind other issues like compatibility with New York rules, financial viability (volume of use), and general knowledge of the New York market. The analysis and comparison of the different business models was based on the criteria and goals provided by NYSERDA in the Scope of Work. These goals include: compatibility with the current New York system and regulations, future changes to that system, compatibility with neighboring regions, ability to function in large markets, verification and compliance with NY PSC and other disclosure requirements, consumer confidence and credibility, and overall financial viability. The Team came up with four possible options discussed below.

OPTION 1: GIS SYSTEM

Overview of Option 1

This option would develop a state-wide certificate-based generation accounting and trading system, or a Generation Information System (GIS), which would account for various attributes of energy transactions in the NYISO to verify compliance with power content disclosure statements and calculate the residual mix for the State. Similar to the NEPOOL GIS, this system would track all energy transactions in the state, including non-renewable generation, and separate the energy from the attributes. Every generator and load serving entity would be required to participate in the system. Market participants located outside of the NYISO Control Area could voluntarily participate in the New York GIS system. This New York GIS system would be developed by an independent party, and it would not be an extension of the NEPOOL GIS which is discussed in Option 4.

Certificates are issued to generators based on their meter reads, with one certificate equal to one MWh of generation. Certificates would have unique serial numbers, and could contain a variety of information as needed by NY DPS or market participants. LSEs would use the NY GIS to acquire certificates to match load and to obtain the environmental mix they need for their customers, separate from their energy purchases. In order to facilitate the renewables market, annual settlement periods of certificates would occur, although hourly settlement of energy trades would continue as currently done. Transfer of certificates would be done bilaterally between buyers and sellers, with both parties agreeing to the transfer within the GIS system. Retirement of certificates would occur when the certificate was delivered to an end-use customer or sold outside of the NYISO. The advantage of this system is that it would facilitate trade between New York and New England assuming that the system is designed to meet the NE requirements and NE agrees to accept trades through the NY GIS.

Compatibility with Current NY Rules and Regulations

This system requires a complete change of the current New York rules and regulations, but would satisfy a number of the concerns with the current CT process. It would also provide a “water-tight” verification system if New York changed the rules regarding the separation of renewable attributes. This Option would require complete unbundling of energy and certificates. If New England made changes to their rules regarding matching energy flows with unit contracts, this system would allow the seamless transfer of information to the NEPOOL GIS. It would also help build the New York renewables market as it would be easier to track movement of New York based certificates within the state and those transferred out of state. A reserve account could be set up, as in New England, in order to remove attributes from the state mix to correctly determine the residual mix. More accurate determination of emissions, as required by DPS, would occur with this type of system.

Mandatory vs. Voluntary

This system would be mandatory for all generators and load-serving entities in New York.

Financial Viability

Because this system would track all energy transactions in New York State, and would be mandatory with associated fees to recover start-up and operational costs, it may provide a financially viable business alone. The financial data has been omitted in the public version of this document.

OPTION 2: SIMPLE CT ACCOUNTING SYSTEM

Overview of Option 2

This option would automate the current CT tracking system. Functionally, it would work similar to other certificate tracking systems in that meter data would be electronically transferred into a central database maintained by the system administrator. A unique serial number would be issued for every CT; each CT represents one MWh.²² The CT could track a variety of information as needed by the NY DPS or market participants, similar to certificates.

The CTs would be issued and automatically credited to those generators’ accounts that indicate a desire to receive and use CTs. If the generator wanted to sell the CTs, they would arrange the sale privately and register the transfer of CTs with the database administrator. Any party purchasing electricity from the NY ISO spot market and also purchasing CTs would also have an account as would any brokers or other third parties that are selling CT’s. The buyer of the CT would have to accept the transfer in order for it to be recorded. Once both parties have agreed to the transfer, the database administrator will debit the generators

²² Right now a CT represents a packet of energy, so this would break up CTs into MWh denominations.

account and credit the buyer's account. The buyer could then resell the CT and so on, until the CT is ultimately retired by the ultimate LSE that is using the CT on their disclosure label. The design rules for retirement can be dictated by the state, but generally would occur when the energy was sold to an end use customer and claimed on a disclosure label, or was sold outside of the state (hence exported out of the NY system. The database administrator will also verify that the LSE has not retired CTs in excess of their spot market purchases. Finally, the system would be designed to be compatible with the NEPOOL GIS so that information can be transferred between systems.

Compatibility with Current NY Rules and Regulations

As mentioned above, this system simply automates the current CT tracking method. It would be entirely compatible with current New York rules and regulations. It has a number of advantages over the current CT approach. It would reduce the administrative burden on generators and marketers by identifying the ultimate purchaser or seller of the CT. It would protect the privacy of brokers on deals they make reselling renewable electricity. It would also be much easier for DPS to administer the disclosure label going forward because it could track emissions credits and other information that may be needed and obtained more easily through an automated system. In addition, if the New York rules changed later on to allow certificates to be sold separately from energy, this system could accommodate this change easily.

Mandatory vs. Voluntary

This system would be mandatory for any LSE, generator, or broker that wanted to buy, sell or trade CTs.

Financial Viability

Because there are currently only about 4-6 CTs per quarter, this option does not represent a viable business opportunity on its own. The Project Team sees two possible funding mechanisms to bring this option to life. The first is to use the NYSERDA money earmarked for deployment to develop the software and allow DPS to administer the system. The administration of the system would, over the long run, be less expensive than the current system assuming that CT trade increases, would be more functional and would reduce barriers and costs for renewable suppliers and marketers.

OPTION 3: STATE-WIDE RENEWABLES-ONLY TRACKING SYSTEM

Overview of Option 3

This option would be similar to the GIS system described in Option 1, but simpler and less expensive as it would only track attributes from renewable resources. Option 3 will provide the same functionality as required by Option 2, but would be compatible with the requirements of adjoining regions to allow New York resources to be traded in New England, PJM, and Ontario. This business model would be predicated on eventually expanding this attribute tracking system to a broader regional, national or international

market. This system would have as its primary business the issuing and tracking of renewable certificates in New York. Additional investment and liquidity could come from implementing this in areas of the country that are not otherwise served by a certificate tracking system although the initial efforts will be focused exclusively on New York. It would have as a component of its primary business the ability to do the CT tracking as described in Option 2. These two components of the business would be compatible because the tracking mechanism is essentially the same whether you are tracking CTs or disaggregated environmental attributes.

Compatibility with Current NY Rules and Regulations

This business would be entirely compatible with current New York rules and regulations. As with Option 2, this system could accommodate a future rule change that allowed certificates to be sold separately from energy or implementation of an RPS.

Mandatory vs. Voluntary

This business would be mandatory for all New York renewable energy transactions.

Financial Viability

The financial data has been omitted in the public version of this document.

OPTION 4: EXPAND THE NEPOOL GIS SYSTEM TO ACCOMMODATE NEW YORK

Overview of Option 4

Another possible approach is to work with NEPOOL and the NEPOOL GIS Administrator (the APX) to expand the NEPOOL GIS system to accommodate New York. This Option would essentially perform the same functions as Option 1 – a comprehensive GIS system that tracks all energy attributes. The key difference is that the cost would presumably be significantly less as compared with Option 1.

The NEPOOL GIS was designed with scalability so that functionally speaking, it would be able to serve a larger market. Enlarging the NEPOOL GIS to track all generation in New York would be possible. The primary issue related to enlarging the NEPOOL GIS is with data transfer- namely ensuring that the information from the NY ISO is of uniform quality and configuration to allow seamless transfer into the NEPOOL GIS. The NY ISO and ISO NE have been working on data uniformity as a part of their discussions to create a Northeast RTO, though these seams issues are significant.

Compatibility with Current NY Rules and Regulations

An expansion of the NEPOOL GIS would require significant rule changes as in Option 1.

Mandatory vs. Voluntary

This system would be mandatory for all generators and load-serving entities in New York.

Financial Viability

The contract that the NEPOOL has with the GIS Administrator contemplates the expansion of the NEPOOL GIS to accommodate other states. There is a clause in the contract with the GIS Administrator that if the system is expanded to other regions, NEPOOL will be credited with the administration costs, indicating that these costs would be shared between the states. The Project Team was not privy to cost information from the APX for expanding the NEPOOL GIS to accommodate NY. The financial data has been omitted in the public version of this document.

OTHER OPTIONS THAT WERE CONSIDERED

The Team also considered other combinations of functions and administrators that we will discuss only briefly here. None of these options were considered viable and were eliminated early on. The first was expanding Option 2 above to include all spot market transactions, so that all energy sold over the New York spot market had a CT associated with it. If a supplier did not purchase any CTs, they would be assigned the residual mix left over. The benefit of this approach is that it might drive suppliers to use and purchase CTs more readily, potentially creating more product differentiation, which would give consumers more selection in types of products. The reason this option was eliminated is because the Team did not feel that it would in any fundamental way improve the market demand for green power, nor would it add any more benefits to market participants above and beyond the simpler approach described in Option 2. In sum, this would add more costs with only minor benefits to New York or market participants.

The Team also considered other options related to the expansion of the NEPOOL GIS system. For example, we discussed the ability of the NEPOOL GIS to be expanded on a partial basis, either to perform the CT accounting as described in Option 2 to accommodate voluntary TRC trades and accounting. After discussing this possibility with the NEPOOL GIS project manager, we eliminated this option because it would essentially require the development of a new system that could interface with the NEPOOL GIS. This does not confer any advantage or cost savings over Option 2.

V. COMPARISON OF THE DIFFERENT BUSINESS MODELS

The four business models described earlier are analyzed and compared here based on the criteria and stated goals provided by NYSERDA in the Scope of Work. These include:

- Compatibility with current disclosure rules and ability to accommodate potential future changes to NY disclosure rules,
- Compatibility with other existing, proposed or pending tracking systems,
- Compatibility with NY policy objectives (i.e. EO 111, SBC programs, green market building initiatives),
- Ability to enable energy trading in as large a market as possible (i.e. addresses cross-border barriers),
- Ability to fulfill the verification and compliance requirements of the NY PSC state disclosure label and other regulatory and private programs (e.g. Green-e, future RPS),
- Consumer confidence and credibility, and
- Financial viability.

COMPATIBILITY WITH NY CT RULES AND POTENTIAL FUTURE RULES

The four proposed business models have varying levels of flexibility and adaptability. Of the four models, Option 3 has the most flexibility to accommodate current disclosure rules in New York, and potential changes in those rules that would allow the unbundling of TRCs. Option 3 can also serve an accounting and tracking function if an RPS is implemented. Option 1 and 4 are not compatible with New York's current disclosure rule and are only viable options if renewable attributes are allowed to be sold separately from energy. Option 2 is viable under the current regulatory environment, but would not be adaptable to a regulatory environment that allowed a separation of attributes without significant design changes. As contemplated, only Option 3 would be fully compatible with the current prohibition on the separation of renewable attributes from energy, and flexible enough to adapt to potential future changes to this rule.

COMPATIBILITY WITH OTHER EXISTING, PROPOSED OR PENDING TRACKING SYSTEMS

Currently in the US, TX and NEPOOL GIS are the only two operational and automated certificate tracking systems (just for renewable energy in Texas, and for all generation in New England). Wisconsin's system will be operating in February 2003, and a system is being proposed for the Western States. New Jersey (and the broader PJM) is currently working with the system operators to develop state disclosure labels and has not identified how it will verify the RPS requirement for disclosure and RPS purposes, but is considering a more flexible certificate-based system. Though a final determination has not been made, the NJ Board of Public Utilities (BPU) appears to favor a hybrid contract path – certificate-tracking approach over a pure certificates system.

In Ontario, the Ministry of Energy, Science & Technology (MEST) is responsible for implementing a system to verify the province's disclosure label. Although MEST has not received approval on their conceptual plan yet, they are in favor of a centralized database maintained by the Independent Market Operator but completely independent of the systems used for wholesale and retail settlement. The system would allow retailers to self-report differentiated transactions and would verify these retail claims. The system would allow unbundling of energy and attribute transactions as long as that power can be attributed to a specific generating source, and is verified by the tracking system to be sold only once.²³

In addition, there are several initiatives underway to track certificates in Europe, Australia and Japan.

Of the four business models, Options 1 and 3 offer the most potential to be compatible with other tracking systems in the US and in Europe. The primary reason for this is that because these two systems would be newly developed, they can be designed to accommodate the information needed to allow seamless transfer of information between existing certificate (and non-certificate) tracking systems. Option 4 would be compatible with the NEPOOL GIS, but this system appears likely to remain isolated from other systems in terms of imports and exports of certificates, primarily because of the import requirement described above and the fact that there is not that much new renewable generation in New England available for export. If certificates could be imported into the NEPOOL GIS, without delivered energy, then NEPOOL GIS should be able to interact with other certificate systems fairly easily. It is unclear whether the NEPOOL GIS will be encouraged or required to change this requirement as a part of the discussions on the seams issues between New York and New England ISOs, or for other reasons.

COMPATIBILITY WITH NEW YORK STATE'S POLICY OBJECTIVES

New York State's policy objectives as they relate to this project can be summarized as wanting to support a retail market for renewable electricity products in New York, to support the development and sale of New York state renewable generation, and to support the larger regional renewable energy market. In particular, the REACTS design should support not only New York's disclosure regulations, but also other New York policies such as the EO 111, and the renewable generation and market building initiatives that have been funded by System Benefits Charge monies.

Looking at the desire to support these policy objectives and assuming that the rules allowed it, the three Business Options that allow renewable attributes to be tracked and traded separately from electricity within New York and in the broader region offer the most promise in helping New York meet these policy objectives. As described in Section III above, the ability to sell renewable certificates separately from electricity and in different geographic regions vastly expands the market opportunities for renewable

²³ Grace, Robert, Sustainable Energy Advantage, LLC. "Transacting Generation Attributes Across Market Boundaries: Compatible Information Systems and the Treatment of Imports and Exports," June 2002.

generators. Certificates also provide a much easier way for large commercial customers to support renewable electricity. As we have seen in Pennsylvania, this customer class can be a sizable driver for new renewable development. Finally, a successful renewable market can help increase competition in the marketplace, especially for small customers, another broader policy objective of NYSERDA and DPS. In addition, this is the easiest method for verifying compliance with an RPS.

Option 2 provides only a small advantage to the current CT system in that it does help ease the administrative burdens on renewable providers and generators, and it maintains confidentiality for third party CT brokers and resellers. These are two real benefits of Option 2 that will help lower costs for market participants. However, Option 2 would not greatly expand the market opportunities for New York based renewable generation.

Options 1 and 4 are more-or-less equal in their ability to meet the aforementioned policy objectives, but there are some differences in how they would accomplish these goals. In addition to cost differences between Option 1 and 4 described above, there may also be differences with regards to control of the system. The rulemaking for the NEPOOL GIS is controlled by the NEPOOL Markets Committee, which is comprised of New England market participants. New England regulators are not members of this Committee and therefore do not have voting rights, though they do have significant leverage over the process because they are allowing the GIS to fulfill regulatory reporting requirements.²⁴ To expand the NEPOOL GIS, the NEPOOL Markets Committees would have to cede some decision-making authority to New York, if not officially in the form of voting participation, in an informal way. Reaching an agreement about how such authority would be ceded could in itself be a rather long negotiation process. Second, making the changes to the NEPOOL GIS that would be necessary to accommodate New York could also be quite a long negotiation process. Clearly, with joint decision-making, New York would have less control over changes to the system. So, although we project that these two Options as envisioned now would fulfill roughly the same function, the ability for Option 4 to meet all of New York's policy objectives is contingent on the ability of New York to negotiate the features it wants with the NEPOOL Markets Committee. Option 1 has fewer unknowns and it will be easier to design the system the way New York wants, and to design in features and functions that ensure that policy objectives are met.

Option 3 holds the most promise for supporting the New York RPS as well as the larger regional renewables market because of its flexibility and adaptability. The intent is that Option 3 will be compatible with the needs of New Jersey and the PJM more broadly, as well as other states, such as Michigan and Ohio. Because it would track renewable certificates from New York and, eventually, other regions, it would provide the most benefit to the New York renewables industry and has the least likelihood to create

²⁴ From interview with Bob Ludlow, Director of Strategic Initiatives ISO New England, August 20, 2002.

inter-regional barriers. A broadly developed system will facilitate market liquidity and will most likely be the most cost-effective way for individual states to meet tracking and verification needs.

ABILITY TO ADDRESS CROSS-BORDER MARKET ISSUES AND NEEDS

As noted earlier, many of the Northeast's cross-border issues that were identified at the stakeholder meeting are related to restrictions NEPOOL has for imports into their system, namely that all imports into the GIS must correspond with unit contracts and must match energy deliveries on a hourly basis. None of the tracking systems contemplated here can solve this problem of incompatibility between New York and New England, primarily because this is not fundamentally a tracking issue, but a market barrier issue. If, however, this requirement is changed through either the FERC RTO discussions or through agreements between NY DPS and New England regulators, then all of the business models could be configured to interface with the NEPOOL GIS. The ability to track TRCs that are sold separately is one of the primary market and consumer protection needs in the region right now. Clearly Options 1,3 and 4 can handle this for New York, but only Option 3 might address this need for the larger region, including the PJM, Ontario, and neighboring Midwestern states.

ABILITY TO MEET VERIFICATION NEEDS

All of the Options provide some verification benefits. All Options will allow DPS to easily verify product claims for environmental disclosure purposes and to verify compliance with an RPS, should one be developed. Options 1, 3, and 4 will be able to automatically calculate the New York system mix as they would be fully integrated with the NY ISO, whereas with Option 2, the DPS will use data from NY ISO to calculate the spot market mix for LSEs. Only Option 3 has the ability to meet many of the tracking and verification needs of other states and generators outside of New York. This is an important feature because it fills a need in the Northeast that may attract matching funding from other states for deployment.

The Executive Order 111 also has some verification needs. The Order requires that ten percent of the overall electricity usage from buildings owned, leased, or operated by State agencies and other affected entities be met with renewable technologies by 2005. There are two levels at which verification should occur - to verify that the State agencies are buying the requisite amount of renewable electricity (retail level verification), and that suppliers are purchasing and delivering the renewable electricity per their contract with the State (wholesale level verification). Options 1 and 4 would be able to perform these two functions with some minor accommodation to the system, namely, the state agencies would have to register as an account holder and would require their LSEs to transfer the certificates into their accounts. Options 2 and 3 could functionally manage this verification, though to set it up would require a special arrangement with the REACTS Administrator because normally REACTS would track only wholesale transactions for New York, not retail.

Option 3 best fulfills the broader renewable market need for a verification and tracking service for TRC transactions. Although Options 1 and 4 could do this to a certain extent, the geographic scope limits the ability for these options to serve this need adequately. In addition, Option 4 is currently unable to track the separation of emissions attributes from the TRC. Although there is very little need for this today, many market participants and traders believe that the separate sale of emission attributes will become more prevalent in the future. Option 2 has the least potential to fulfill the need for comprehensive TRC tracking in New York or the surrounding regions.

CREDIBILITY AND CONSUMER CONFIDENCE

From a credibility and consumer confidence perspective, all of the proposed systems provide credibility to the renewable energy market within New York. Option 3 has the added benefit of increasing credibility to the larger TRC market by providing a tracking system to issue unique serial numbers for TRCs generated both inside and outside of New York and to track the wholesale sales of such TRCs. This is an important feature because the ability of New York to sell its TRCs outside of the region is somewhat contingent on consumer confidence in TRCs, which will be more strongly supported if TRCs sales are pervasive.

FINANCIAL VIABILITY

Option 1 is viable because of mandatory fees and guaranteed throughput, but is more expensive to New York State and New York market participants than Option 4 from a software development perspective. Although the Project Team is not privy to precise numbers related to the costs to expand the NEPOOL GIS, our rough estimate indicates that it would be less expensive to expand the NEPOOL GIS than it would be to build a separate GIS for New York. However, there are some large unknowns about the costs of negotiating the expansion of the NEPOOL GIS, making changes to the decision-making, and general questions of control. So, although the system development costs are lower, the overall costs to implement Option 4 are dependent on the ability to reach consensus with the NEPOOL Markets Committee on a number of issues.

Option 2 has little private revenue possibilities because few trades are expected in the near term, so it would need to be fully funded by NYSERDA and DPS. However, the amount of funding needed is less than the deployment costs earmarked by NYSERDA for REACTS and the ongoing costs are comparable to the current costs for implementing the CT system. Therefore, from a total cost perspective, Option 2 would cost the State less and would address a few of the current problems identified by stakeholders.

Option 3 has slightly larger financial needs, and is viable with the implementation of a NY-based RPS and /or with additional contributions from other states or private investors.

CONCLUSIONS ON THE COMPARATIVE ADVANTAGES OF THE FOUR OPTIONS

Each of the four options has its merits and drawbacks. Option 2 is the best choice only if New York wants an inexpensive system that provides limited near term benefits, and does not expect the rules regarding the separation of energy and attributes to change. Option 4 is the best choice if New York anticipates that the rules will change and is willing to cede some control over decision-making and possibly make some compromises with regards to functionality to New England for a lower cost to the State. Option 1 is best only if a PSC rule change allows it, and NE-GIS Market Committee is unwilling to expand the NEPOOL GIS, or the expansion will come at a great cost, or if control issues are a major concern.

The Project Team chose Option 3 as the best Option for the REACTS business plan because it fulfills New York's short term and long term needs, regardless of whether the PSC changes its rule or not. Option 3 also best serves the verification needs of the State and the renewables industry more broadly. It has a greater ability than other Options to interact with other tracking systems that are running now or are being contemplated for the future. It also has the most likelihood to be able to serve the regulatory and accounting needs of NJ and the greater PJM, as well as a New York RPS program. Because this system will serve the larger market, it will be able to attract funding from other states and foundations which will make it easier for the contractor to meet NYSERDA's cost sharing requirement for the deployment phase. Finally, Option 3 is best for improving market liquidity because it will serve the largest geographic area and therefore will have fewer seams issues than a patchwork of smaller systems that are loosely interconnected.

VI. FUNCTIONAL SPECIFICATIONS OF REACTS

The Project Team feels that Option 3 best serves the needs of New York and the broader region and has the most financial viability. This next section and the remainder of the report will discuss the functional specifications of Option 3, the costs, and the next steps that NYSERDA should consider to achieve deployment.

REACTS will automate the CT tracking for New York, but this will only be one component of the whole business. The REACTS will initially be set up to automate and streamline the current CT system as well as bilateral trades outside of the NYISO spot market, and will also be able to track separate attribute transactions in anticipation of New York allowing this in the future. It will also be designed to handle the verification requirements of a New York RPS, should one be implemented. Therefore, some of the features and functions of the REACTS described below are not directly related to the current NY CT program, but anticipate the functionality that will be required for New York's RPS and the interface between other regional programs for which the REACTS will be compatible.

REACTS will be a stand-alone database separate from the information systems maintained by the NY ISO, PJM, or other system operators. It will however rely on the electronic transmission of data from these databases or from meter data that are sent electronically directly from a generator.

DEFINING THE ENVIRONMENTAL ATTRIBUTES FOR TRADING AND TRACKING

The REACTS system will be designed to broadly anticipate possible future needs of the market, for example to verify TRC sales, RPS compliance (e.g. New York, New Jersey), or to determine the fuel or emissions portfolio on a disclosure label. Therefore, REACTS will track the following attributes:

- Company Name
- Company Address
- Company phone
- Company fax
- Company email
- Company contact person name
- Generating unit ID number²⁵
- Fuel Source (see expanded drop down menu on Fuel type options in Appendix B)
- Technology Types
- Capacity of facility
- Vintage (day, month, and year commercially operational)

²⁵ For simplicity and to prevent confusion, REACTS will attempt to use existing identifiers for generators, such as an EIA number, FERC Form 1 number. Alternatively, REACTS could use the same identification system employed by NEPOOL GIS for identifying generators if applicable.

Time and date of generation
Fate of emissions offsets²⁶
SO_x emissions
NO_x emissions
CO₂ emissions
Mercury emissions
PM-10 emissions
Eligibility for Green-e certified products
Union Labor
Public Support²⁷

Only those items required to meet New York's needs will initially be implemented, including any information needed for New York renewables to be transferred into or tracked by other tracking systems in existence today. The REACTS will include placeholders for additional information that may be required for other states or programs in the future.

ACCOUNT HOLDER REGISTRATION

Any party interested in buying, selling or trading certificates in the REACTS may establish an account with the REACTS. To establish an account, the party will use the web-based interface to enter data relating to its company name, address, company telephone, company fax, contact person name, contact person phone number and email address. Additionally, some type of credit registration will be included to ensure payment of transaction charges.

GENERATOR REGISTRATION

Any generator that wants to register the certificates from their generating unit with the REACTS must register the generating unit with the REACTS System Administrator. To qualify for registration, the generating Account Holder must (1) agree that the entire output from the registered generating unit will be tracked through REACTS and REACTS will be the sole certificate issuer for that output, (2) agree to notify the REACTS of any and all sales or transfers of REACTS issued certificates, and (3) not be registered with any other certificate tracking system for the purposes of issuing certificates from that generating unit.²⁸

²⁶ This field will identify if any emissions offsets been sold off separately and if so, which ones.

²⁷ By public support we mean any state or federal subsidies that the generating facility has received, including direct grants, financing incentive, and tax rebates. This is necessary if attributes are to be traded in international markets.

²⁸ Generators may have accounts with other certificate tracking systems for the purposes of transferring and trading certificates, but only the REACTS can issues certificates for a single generator.

To register, the qualifying generator and or an agent of the generator will use the web-based interface to enter data relating to its company name, address, company telephone, company fax, contact person name, contact person phone number and email address.

In addition, the generator must provide the following information relating to their generating unit:

Generating unit ID number

Fuel Source (see expanded drop down menu on Fuel type options in Appendix B)

Technology Types

Capacity of facility

Vintage (day, month, and year commercially operational)

Fate of emissions offsets

SO_x emissions*

NO_x emissions*

CO₂ emissions*

* = Mandatory only for NY generators and for any generators that plan to sell their electricity into the NY spot market for the purposes of converting to a CT.

Multi-Fuel Generation Units

If there are multi-fuel generation units that want to participate in the REACTS, the REACTS will identify the best method for registration of the generation unit depending on the needs of the particular generator. For example, if the generating unit needs to track the output from each fuel type separately, there will be a provision for them to register the output from each fuel type separately, but the burden of demonstrating how much of the output came from each fuel type will be on the generator. Verification by a third-party source (e.g. testing lab) regarding the annual percentage of the total output due to each fuel type will be required.

Vintage of the Facility

Upon initial registration, and updated as necessary, each REACTS renewable generator must supply the day, month and year the generating unit it registered initially achieved commercial operation and, if applicable, the day, month and year of the commercial operation of any subsequent repowering (including any addition to capacity associated with such repowering). Generators will be sent annual copies of their registration information allowing them to update any of this information in the REACTS database. If applicable, state-based certification as a qualified renewable generator will also be tracked.

VERIFICATION OF GENERATION REGISTRATION INFORMATION

The REACTS will verify registration information with information from the NY ISO and other system operators and with EIA, FERC, and EPA databases. If needed, the REACTS can perform random spot

checks annually of registered generators. The REACTS Administrator will work with both the NYISO and NYDPS to ensure consistent and accurate information on generators.

CREATION OF CERTIFICATES

The REACTS Administrator shall produce an electronic Certificate for each MWh of renewable energy generated by those generation units that have (1) registered with the REACTS Administrator, and (2) have provided the REACTS Administrator with meter data as required under Section VI: Sources of Data.

Certificates will be created quarterly for New York participants. The system will be also be able to issue certificates monthly, if needed for users outside of the NY CT system. The certificates will be issued during the quarter or month in which the REACTS administrator receives the meter data (which may or may not be the same quarter or month that the generation occurred).

Certificates will have a unique serial number. Each Certificate will denote the time, day, month, and year in which the associated energy was generated, as is required by market participants to comply with regulatory mandates or customer demands.

No Certificate will be issued for a partial MWh. Generators may aggregate multiple months of energy in order to report meter data for a whole MWh of energy generation to the REACTS Administrator.

Upon the creation of Certificates each quarter, the REACTS Administrator shall deposit such Certificates into the generator(s) account.

CERTIFICATE FIELDS

The following fields will be associated with each unique certificate serial number in the database. In the database, each certificate will have a placeholder for each of the mandatory fields listed:

- Unique serial number
- Generating unit ID number²⁹
- Fuel Source (see expanded drop down menu on Fuel type options)
- Technology Types
- Capacity of facility
- Vintage (day, month, and year commercially operational)
- Certificate ownership share (for multiple owners of a single generator)
- Time and date of generation
- Fate of emissions offsets

²⁹ The generating unit ID will be associated with the main database to identify fuel source, technology type, capacity of facility, and vintage.

Only these mandatory fields will be filled in for all certificates in the database.

In addition to the mandatory fields, the generator may also provide information in the following optional fields:

- SO_x emissions*
- NO_x emissions*
- CO₂ emissions*
- Mercury emissions
- PM-10 emissions
- Eligibility for Green-e certified products
- Union Labor
- Public Support

* = These fields will be mandatory for NY generators and any other generator that is planning to sell their electricity into the NY spot market for the purposes of converting to CTs.

The optional information may be necessary for various state or voluntary programs or requirements. Therefore, if a generator chooses not to list this information, it will not be tracked in the system and the resulting certificates may not be eligible for such programs.

SOURCES OF DATA

As a general matter, wherever possible, the REACTS will rely upon settlement data obtained from NYISO or the local System Operator that has been adjusted for losses. Since the REACTS is being set up for New York, we are assuming that for the purposes of tracking CTs and their associated energy, the REACTS will have a cooperative agreement with the NYISO and DPS to get this information. As the system is expanded to other areas, the REACTS will also work with other system operators to develop similar cooperative agreements. In the event that settlement data are not available, the REACTS will accept electronically transferred meter data. With the latter, the REACTS will adjust for line losses using market settlement methodology. Finally, REACTS will make provisions to accept generation information from very small systems, for certificate aggregators, or from systems that are not able to electronically transfer information.

Source of Emissions Information

If the generator wishes to include information about the generating unit's emissions in the optional fields³⁰, the generator shall provide to the REACTS Administrator data in pounds per month for the generation period. The emissions information must be from either (1) year-round continuous emissions monitoring (CEM) reporting to the EPA, subject to the monitoring provisions of 40 C.F.R. Part 75, or (2) emissions

³⁰ New York generators will be required to report emission information needed for the disclosure label

reporting to a state or local environmental regulatory agency, or (3) actual emissions from the generation unit based on measurements taken by a qualified testing company and processed by a state certified lab, or, (4) and emissions estimate. If an emissions estimate is used, the generator must note that it was an estimate and not actual emissions.

Emissions figures for new or retrofitted generating units shall be projected based on peer units until such time as actual data becomes available for such generating unit; if a generating unit's emissions figures are projected based on peer units, that fact and the name and location of the peer unit shall be provided to the REACTS Administrator by the generator.

For cogeneration units, all emissions data provided shall be based solely on the emissions attributable to the energy output of such generating unit and shall not reflect emissions attributable to the steam output of such generating unit.

Multi-Fuel Generation Units

Each generator is responsible for providing the REACTS Administrator with the applicable generating unit's primary and, if applicable, additional fuel sources according to the fuel source fields listed in Appendix B upon its initial registration.

Each generator that has registered a generating unit with multi-fuel capability will submit to the REACTS Administrator information reflecting the proportion of output per fuel type, by MWh or Btu output, used by the unit during each quarter (or month if outside of NY). Such information shall be used to allocate Certificates for such multi-fuel generating units. Each certificate issued for a generating unit with multi-fuel capability will reflect only one fuel source.

If the generator wants to include emissions information for the multi-fuel generation unit, the requirements for emissions reporting must be fulfilled for each fuel type, or alternatively, if both fuels are renewable, the generator may use the average emissions.

Updating Data

Generator-specific information must be updated within 1 month of the change of circumstances, such as fuel type, emissions factor etc. To update the information, the generator must log onto the REACTS interactive website and make the necessary change. This information will not be effective until confirmed by the REACTS Administrator. Penalties for not updating generator information within one month of the change are described under the Penalties Section VII.

INTERACTION OF THE REACTS WITH NEW YORK CONVERSION TRANSACTIONS

New York market participants that wish to complete a CT must establish a REACTS account. Generators must also register with the REACTS as described above. When a REACTS Account Holder wishes to initiate a CT, they will schedule the transaction with the NYISO and will initiate a transfer of the certificates with the REACTS Administrator as indicated below. On a quarterly basis, the REACTS Administrator will communicate with the NYISO so that all CTs that have been traded in the quarter through the REACTS system are subtracted from the state spot market mix, and the CTs are recorded with the NYISO. The REACTS Administrator will confirm with the NYISO that all CTs had energy associated with them. At the end of each quarter, the REACTS Administrator will produce a report for the NYDPS on the number of CTs occurring each quarter for disclosure purposes as well as bilateral trades outside of the spot market.

INITIAL ASSIGNMENT OF CERTIFICATES

The person or entity holding legal title to a particular generating unit shall be deemed to be the REACTS Generator for that unit, and each Certificate for such unit shall initially be assigned to such person or entity, without prejudice to which person or entity is the owner of such Certificate for other purposes. Certificates for jointly owned units or units in which multiple Account Holders have an entitlement shall initially be assigned to the lead Participant or lead owner of such unit, as reflected in the information recorded with the REACTS Administrator at the time of generator registration.

TRANSFER OF CERTIFICATES OR CTS BETWEEN REACTS ACCOUNT HOLDERS

REACTS Account Holders may transfer Certificates or CTs to other REACTS Account Holders at any time. Account Holders transferring such Certificates or CTs shall reflect such transfer in the REACTS by indicating in a designated screen in the interactive REACTS website that such Certificate or CT has been transferred and selecting the transferee. In turn and in a similar fashion, the Certificate or CT transferee shall confirm the transfer in a designated screen in the REACTS interactive website. The transferring Account Holder may cancel any Certificate or CT transfer before such transfer has been confirmed by the transferee by withdrawing the transfer in a designated screen on the website. The transfer of any Certificate or CT shall only be registered in the REACTS upon the electronic notification by both the transferor and the transferee. Account Holders may designate one or more agents for purposes of transfers and acceptances of transfers of Certificates or CTs by creating logins for them. If a CT is being transferred the REACTS Administrator must also confirm with the NYISO that a commensurate amount of energy is also scheduled and sold.

RETIREMENT OF CERTIFICATES OR CT'S

CTs will be retired from the REACTS when they have been used on a New York disclosure label. If, at the end of each quarter, there are remaining CTs that have been generated, but have not been transferred to a

New York LSE, the REACTS administrator will retire them from the system and notify the NYDPS so that those attributes may be included in the New York spot market mix calculation. If, in the future, the NYDPS allows CTs to be held for more than one quarter in the generator's account, the REACTS system would be able to accommodate such a future change. This would allow generators more than one quarter to sell their CTs.

In general, certificates shall be retired by the REACTS under four circumstances: (1) the certificate is exported to a Compatible Tracking System, (2) the certificate is counted on a state disclosure label and/or the certificate is used to meet the retail load of a load serving entity (3) the certificate is used to meet the regulatory requirements of a state, such as an RPS, and (4) the certificate is sold as a part of a TRC-only product.

All REACTS account holders are required to notify the REACTS administrator when one of these conditions has been met and the certificate has been "used." When the REACTS Administrator receives this notification, the certificates will be withdrawn from the account and retired. The penalty for not notifying the REACTS Administrator is described below under the Penalties: Section VII. In addition to working with Compatible System Administrators, the REACTS Administrator will work with state regulators and ISO's to verify the information provided by Account Holders related certificates used for retail load, disclosure, regulatory requirements and TRC sales.

IMPORTING CERTIFICATES INTO THE REACTS

Certificates may only be imported into the REACTS from a compatible certificate tracking system. Prior to any imports, the REACTS Administrator will have to develop a protocol for transferring certificates between the REACTS and another certificate tracking system. The importing of certificates may be subject to state restrictions. After agreements have been reached with other tracking systems, REACTS will post a list of Compatible Systems on their interactive website. As other tracking systems develop, REACTS will strive for compatibility. This compatibility will be based on minimum standards to ensure the security and integrity of the certificate information and reciprocity of certificate transfer.

To import certificates into the REACTS, the account holder that wishes to import the certificates must notify the REACTS Administrator of the desire to import certificates. The account holder must identify the name and account information of the party that is exporting the certificates from one of the Compatible Systems. The REACTS will communicate with the Administrator of the Compatible System and arrange for a transfer of certificates. Such a transfer will involve the transfer of the certificate from the exporting System, and, if necessary, the issuance of a new certificate serial number from the REACTS. This will effectively remove the certificate from the Compatible System and will create a new certificate in the REACTS. The imported certificate will not lose its designation as originating in the other system. The

generation location will identify the original issuing body for all Certificates as there can only be one certificate issuing body per geographic region.

The REACTS Administrator will ensure the retirement of the certificates from the Compatible System by establishing a protocol for such retirement with the System Administrator of the Compatible System.

To import a CT, the generator must schedule power to be imported into the NY spot market. To transfer this CT to another party, the transferor must follow the protocol described below for transferring certificates and CTs.

EXPORTING CERTIFICATES OR CTS FROM REACTS

Certificates and CTs can only be exported to a Compatible System, for which REACTS has an established protocol for transferring information between systems. To export certificates from REACTS to a Compatible System, the REACTS account holder wishing to export the certificates (transferor) must notify the REACTS administrator of the serial numbers of the certificates it wishes to export. It must also provide the name and account holder information of the party in the Compatible System that is receiving the export (transferee). The REACTS Administrator will contact the Compatible System Administrator and notify them of the desire to export certificates to their system. The transfer will not be completed until both account holders and both tracking System Administrators have approved it. If CTs are being exported, the NYISO must also be notified to ensure that the commensurate amount of energy is also exported.

REPORTING AND PUBLICLY AVAILABLE INFORMATION

The REACTS will report to the NYDPS the number of CTs that occur each quarter and the generator and LSE associated with each CT.³¹ The REACTS will also work with the NY DPS and market participants to fulfill any other reporting needs, including bilateral trades outside of the NYISO spot market and verification for the Green-e Certification Program. In addition, the REACTS will provide a database of information for all account holders including:

- Company Name
- Company Address
- Company phone
- Company fax
- Company email
- Company contact person name

In addition, for registered generating units:

³¹ It is assumed that for New York purposes, each CT represents a flow of energy as well.

Generating unit ID number
Fuel Source (see expanded drop down menu on Fuel type options)
Technology Types
Capacity of facility
Vintage (year commercially operational)
SOx emissions
NOx emissions
CO2 emissions
Mercury emissions
PM-10 emissions
Eligibility for Green-e certified products
Union Labor
Public Support

REACTS will not disclose any information about the number or type of certificates issued or traded except in aggregate. No specific information about the trading activity or ownership of certificates will be released to any third party unless the Account Holder first authorizes it. The exception to this rule is that the REACTS reserves the right to exchange confidential information with other Compatible System Administrators or regulatory bodies for verification or tracking purposes.

ENERGY TRADING

The REACTS will not host an energy or certificate trading exchange, because of a potential conflict of interest. However, the REACTS will host a certificates trading bulletin board. Account Holders will be able to log-on to the Bulletin Board and post any certificates that they wish to trade. Sellers and buyers will contact each other outside of the REACTS system to negotiate the terms of the trade. Once terms have been negotiated, such transfer will be recorded with the REACTS as described above under transferring certificates.

VII. PENALTIES FOR MISREPRESENTATION

The REACTS will be designed to prevent the possibility of any false or erroneous information from entering the REACTS as a first line of defense against misrepresentation. There are at least six areas where information could be misrepresented:

- Misrepresentation of information supplied during the generation registration, such as type of fuel, technology type, operation start-up date, emissions information, etc.
- Misrepresentation of information supplied during the account registration, such as information pertaining to the account holder
- Quantity of MWh generated
- Misrepresentation related to CTs
- Misrepresentation or omission of information related to the amount of certificates sold to end use customers (i.e. voluntary retirement)
- Misrepresentation or omission of information pertaining to the sale of TRCs outside of the system (i.e. sales that are not recorded in the REACTS)

The key method for preventing misrepresentation is by ensuring that only accurate and true information is entered into the system. For example, when a generator or account holder registers, they will be required to review the information before it is recorded. The generator information will be double checked against available databases for accuracy. In addition, generators will be asked to update their information quarterly. The REACTS will confirm all information related to CTs with the NYISO to ensure that energy was scheduled according to the CT. It will be very difficult to misrepresent the quantity of MWh generated because that information will in most cases come directly from a meter or an ISO. Penalties will be used as a deterrent to prevent information from being misrepresented, or omitted.

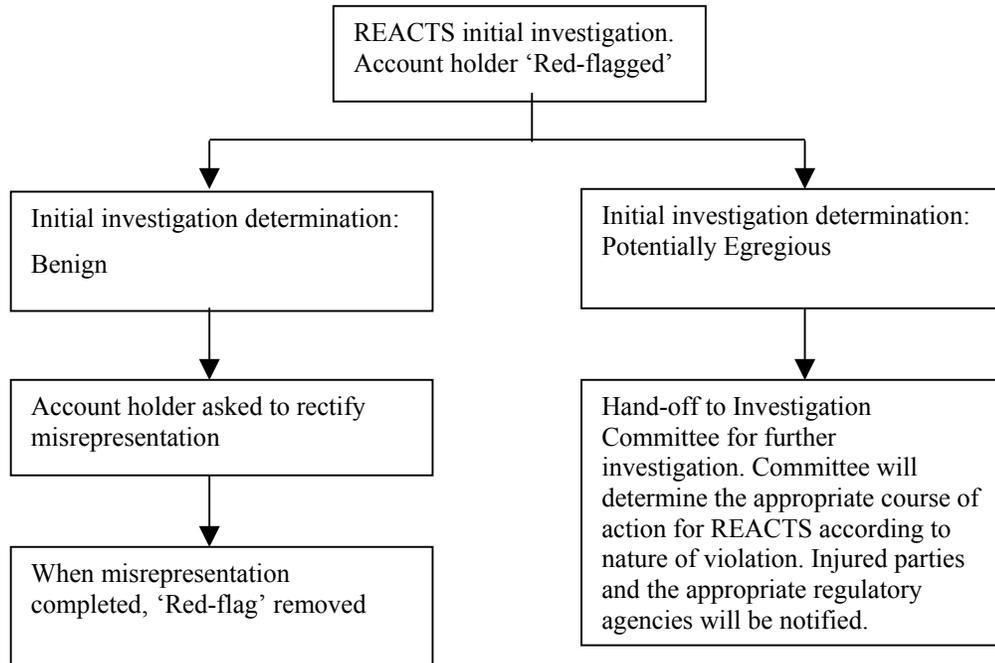
The following penalties will be used to deter and enforce the integrity of the information in the REACTS:

- Notification of the nature of the misrepresentation or omission to parties that the account holder has transacted within the past year
- Notification of appropriate regulatory authority, e.g. PUC, Attorney's General, Federal Trade Commission, Better Business Bureau, or environmental agency, depending on the nature of the misrepresentation or omission
- "Red-flag" the account (identify the account as being under investigation by the REACTS Administrator)
- Expulsion from REACTS

The REACTS Administrator will conduct an initial investigation. If the REACTS Administrator determines that the misrepresentation is benign, the REACTS Administrator will work with the Account Holder to swiftly rectify the information. A "benign" misrepresentation or omission is one in which there is no clear

intent to defraud and where there is no financial impact from the misrepresentation. Some examples might include a typographical error, and honest misrepresentation of company information that has no financial impact, etc. If the misrepresentation or omission is potentially egregious, the case will be referred to an Investigation Committee for further investigation. An “egregious” misrepresentation or omission is one with potential financial or other injurious impacts to other market participants or a potential to defraud. This Committee will be comprised of three non-competitive and impartial market participants and/or regulators. The Committee will investigate the incident more fully in order to make a determination of the appropriate course of action or penalty according to the seriousness of the misrepresentation. The intent is to refer any probable cases of fraud to the appropriate regulatory agency and to notify potentially injured parties of the misrepresentation or omission. The Committee is not charged with judging whether or not the misrepresentation or omission is unlawful or fraudulent. The REACTS Administrator will work with regulatory agencies to establish a cooperative agreement so that cases referred by REACTS are investigated and responded to promptly.

Figure 11. REACTS Process for Handling Misrepresentations or Omissions



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APPENDIX A: TYPES OF RETAIL TRACKING SYSTEMS

CONTRACT PATH SYSTEMS

Contract path systems use bilateral contracts and receipts, usually going back to the generator, to verify the quantity and characteristics of the electricity purchased. Generally, a company's product or portfolio mix is considered to be a sum of its energy contracts. Nearly all contract path systems are characterized by a third party review, usually an auditor, of sworn attestations, contract receipts and other proof of generation and transfer of ownership (e.g. between a generator, intermediary, or final marketer). Meter data is sometimes used to verify such attestations and contracts.

Contract path tracking systems can be used to verify the retail sale of attributes, although they are much more cumbersome and are considered a much less secure way to verify attributes sales and other attribute-only transactions. For this reason, contract path tracking systems are generally associated with transactions where the energy and attributes remain bundled together. For example, Green-e uses a contract path tracking methodology to verify renewable electricity products.

CERTIFICATE-BASED SYSTEM

The primary differentiating characteristic of certificate systems from contract path systems is that under certificate systems, data transfers are typically automated and do not require a manual review of contracts to establish generation attribute ownership. Certificate-based tracking systems usually rely on the electronic transfer of generation data into a central database as proof of output. Certificate tracking systems issue a certificate, usually identified by a unique serial number or other identifier, for each increment of renewable or other generation that is recorded. Generally, tracking certificates is part of an automated system that verifies proof of energy purchases by establishing ownership or title to renewable certificates. In every case to date, certificate based systems have been developed and implemented so that certificates can be "unbundled" and sold separate from electricity. Thus, another defining characteristic of certificate tracking systems is the unbundling of electricity attributes from energy flow.³²

³² It should be noted that ISO's typically also use an automated system to track energy flows at a wholesale level. These systems are conceptually similar to a certificate tracking systems in that meter data is electronically transferred to a central database. The NYISO for example, tracks energy flows in this way. One key difference between certificate tracking systems and energy tracking systems is that energy tracking systems track incoming (generation meter) and outgoing (customer meter) flows, whereas certificate tracking systems usually track only incoming flows to determine the number of certificates that are issued. Once certificates are issued, they can be traded and transferred regardless of the actual energy flow. Instead of tracking outgoing flows by meter use, certificate systems typically retire certificates when they are used to meet customer load, to meet a regulatory requirement such as an RPS, or are exported out of the system. In this way certificate systems are able to track all certificates generated and "used" to ensure that no one certificate is "used" more than once (double-counting). Typically, a certificate is "used" when it is noted on a disclosure label or used to meet retail load, used for a regulatory purpose, such as an RPS, exported out of the system, or otherwise retired (e.g. if it expires per PUC/ISO rules).

Because certificate based systems are highly automated, they have greater flexibility and expandability to track many different characteristics of the energy attributes or electricity generator. It is important to note that the New England Generator Information System (NEGIS) is designed to meet New England's special needs, but that not all certificates systems have the same design features as the NEPOOL GIS. There are many different design variations that determine how certificates are transferred between parties, how certificates are imported or exported, and how system mix is determined and balanced based on certificate withdrawals.

APPENDIX B: FUEL TYPES DROP DOWN MENU

Fuel Types

Biodiesel – 100% neat
Biodiesel – Less than 100% neat
Biogas- landfill gas
Biogas- digester gas
Biomass – municipal solid waste
Biomass- dedicated energy crop
Biomass– Animal waste, animal litter or any other animal derived fuel
Biomass- Clean wood waste, mill residues, or land clearing debris
Biomass- Plant based agricultural, food process, or other plant based biomass
Biomass- Forestry derived fuel
Biomass-Other
Coal
Composite
Efficient resource
Ethanol
Fuel cell – Renewable fuels sources
Fuel cell - Other
Geothermal
Jet
Methanol
Natural gas
Nuclear fuel
Oil
Pumped Storage
Solar- Thermal
Solar- Photovoltaic
Waste Oil
Water- Hydropower- Low Impact Hydropower certified
Water - Hydropower- Post 1986 FERC relicensed
Water- Hydropower – greater than or equal to 100 MW capacity
Water – Hydropower- less than 30 MW capacity
Water – Hydropower - Other
Water- Thermal
Water –Wave onshore
Water- wave offshore
Water- Tidal onshore
Water- Tidal offshore
Wind- Onshore
Wind-Offshore

Nuclear Waste Measurement methodology

Per Ohio PUC requirements
Per Illinois PUC requirements
Per Michigan PUC requirements

APPENDIX C: MINUTES FROM THE NEW YORK STAKEHOLDER MEETING JUNE 24, 2002

Exploring Options for a Regional Environmental Attribute Accounting and Trading Systems for New York

Stakeholder Meeting Notes* June 24, 2002 9:30 – 4:30

Participants

In Attendance: Bob Ludlow (ISO New England), Muir Davis (PG&E NEG), Jean Hopkins (PG&E NEG), Thomas Rienzo (NY DPS), Tom Rawls (GME), Bunli Yang (E4 Inc.), K. Bala (NY DPS), Bill Moore (Atlantic Renewable), Bob Grace (Sustainable Energy Advantage), Brent Beerley (CEI), Mike Sheehan (NY DEC), Jeff Peterson (NYSERDA), John Saintcross (NYSERDA), Meredith Wingate (CRS), Larry DeWitt (for CRS), Jennifer Harvey (NYSERDA)

On Phone: Stephanie Prosen (Ontario Ministry of Energy), Kevin Lum-Yip (Ontario Ministry of Energy), Peter Blom (Con Ed Solutions), Matthew Lehman (CRS), Gabe Petlin (CRS), Ryan Wisner (for CRS), Jan Pepper (for CRS), Linda Nowicki (NJ PSC), Enrique Garcia, (CO2E)

Opening Remarks

John Saintcross set the stage for the meeting. NYSEDA wants to help create a green market in New York and is interested in exploring the best way to increase the market opportunities for New York based renewables. The purpose of this meeting is to hear from NY Stakeholders their views on the ideal characteristics of an environmental attribute accounting system that serves New York and the broader region. Two contractors are looking at this issue: CRS and APX. The two contractors were selected each because of their unique qualifications.

Presentation: Tom Rienzo, NY DPS.

See attached presentation.

Comments on the NY Conversion Transaction (CT) System and Disclosure Program

- According to the rules for creating CTs, the generator and end use retailer are required to have matching CT reports in order for them to be validated by the DPS. Stakeholders indicated that this was a problem because there are usually intermediary transactions, and this information usually does not get back to the generator. The DPS staff said that they are committed to track down the information to make sure all numbers match up, although stakeholders were concerned that this could get extremely complicated and, despite good intentions, could be difficult for the DPS to perform this task. Ultimately, the rules are written such that it is the generators and LSEs' responsibility to report. Also, wholesalers and LSEs may not want to divulge to generators to whom they are reselling power. Middlemen have been important players in other green markets and so this is likely to be an obstacle to

* Meeting notes are organized by agenda topics and the key issues are summarized such that the notes do not necessarily reflect the main points in the order they were made in the meeting

liquidity of the market. There was a feeling among some stakeholders that with some small changes to the reporting requirements, this problem could be fixed.

- Because of the way the NY rules are set up, there are many reasons why a generator would sell their power into the spot market instead of through bilateral contracts. Roughly half of the energy in NY is transacted through the spot market. There have only been a handful of conversion transactions so far.
- The NY disclosure label is calculated based on a 12-month rolling average. The label is released about 6-7 months after the customer is served the energy.
- The current NY quarterly settlement required by the state disclosure program creates problems for renewable marketers. Because of the intermittency of renewable resources, it is very difficult to sell a 100% renewable product, even though the marketer may purchase enough renewables to cover 100% of the load over a year. It would require a Commission level change in the rules to rectify this.
- There was a concern that the state disclosure system did not adequately take into consideration the difference between energy contracted and energy delivered. The DPS said that they had a methodology for accounting for difference between energy contracted and energy delivered, though they did not go into details of how this was done.
- There was an issue raised about imports from and exports to New England. This was discussed in more detail later.

Presentation: Bob Ludlow: ISO New England

See attached presentation

Comments on the NEPOOL GIS Program as It Relates to New York

- The NEPOOL GIS system maintains a conservation of attributes such that the accounting system has the same number of attributes as load at end of day. There are two exceptions to this, reserve certificates and generation under 5 MW. Reserve certificates effectively export certificates from the GIS system, but the purchaser has to be identified by system. Putting certificates in the reserve account removes those attributes from the residual mix calculation.
- APX is administrator of the NEPOOL GIS and the NE ISO functions in oversight capacity.
- In order to import certificates, there are five requirements: (1) there has to be a unit contract, (2) the importing facility has to be eligible for a NE RPS; (3) the energy/attributes have to be from an adjacent control area, (4) there has to be confirmation through the use of a NERC tag that the energy was generated and flowed into NE, and (5) some proof that the attributes were not otherwise sold. If the energy does not have a unit contract, the energy will be assigned a state/regional average mix.
- Importing renewable energy has been a very contentious issue in NE. Imports must be scheduled and demonstrated on an hourly basis. The importer must demonstrate an “actual” flow that is a bilateral financial contract. NE won’t allow a CT because it does not consider this to be unit specific. Another issue is that NE does not recognize NY data as being of sufficient quality to include in their GIS. The

NERC tag requirement was also problematic because it was apparently impossible for PG&E NEG to acquire a NERC tag for the Madison wind facility.

- There was also a discussion about the reciprocity of the import problem. Since NY does recognize attributes, there was some issue as to whether reserve certificates could be exported to NY. DPS staff seemed to think that they would be able to accommodate this type of transaction, but there were some seams issues that needed to be worked out. This discussion was somewhat hopeful in that there was a commitment by NY DPS to work with NE regulators to try to resolve these and other seams issues.
- Quarterly settlement was identified as a major issue in New England. Similar to New York, this can penalize intermittent renewables. NEPOOL GIS instituted quarterly settlement because of state disclosure laws.

Update on the PJM Generation Attribute Tracking System (GATS) User Group: Brent Beerley, Community Energy

The PJM GATS User Group was formed by marketers and environmentalists to gain support for a certificates-based tracking system in PJM. The group has been meeting monthly for the past year. It is comprised of mostly stakeholders in PJM. The main driver for the development of a GATS has been compliance with NJ's RPS and disclosure regulation. MD has a similar disclosure policy, and the other states have lesser requirements. The main purpose of the GATS, as envisioned thus far, is to ensure compliance with RPS, calculate the disclosure labels, and create consumer confidence in green power market. The GATS User Group has come to the end of Phase 1- PJM has released labels to all LSEs. However, there were several data problems with the labels and now there is widespread agreement among market participants that the existing system doesn't work.

The User Group is now at a critical juncture. PJM indicated that they are not interested in developing a GIS-type of accounting system. There are other impediments as well. MD lawyers are saying there is no provision for attribute trading within MD rules. Some NJ regulators are concerned that LSEs will be able to hide their true mix through a residual mix calculation. This might be possible partly because other states in PJM do not have disclosure requirements, and partly because of the divestiture requirement in NJ deregulation. It was noted that the residual mix calculation is a design feature in the NEPOOL GIS (which doesn't have the same market conditions), but a system for PJM could be designed to eliminate this problem. Another issue is cost and who would pay for the development of a GIS system.

With regards to import/exports, NJ RPS renewables have to be delivered into PJM or NY ISO, though these rules are still "interim" and final rules have not come out. PJM has said that it wants to maintain contract-path but possibly with ex post trading of CTs or some other similar mechanism.

Update on Ontario, Bunli Yang, E4 and Stephanie Prosen, Ontario Ministry of Energy

Ontario has been looking into a GIS type of accounting system for attributes. The market is structured such that distribution companies in Ontario have to buy and sell all their power at spot and there is no forward

contracting. If retailer wants to sell attributes, they must purchase attributes separately. All distribution companies are issued a system mix disclosure label. If you have a product for which you wish to make claims, you have to apply to the government for a new label. How the information gets transferred in to be the basis of the claim is uncertain.

Bunli felt that the “greenwashing” issue raised in NJ could potentially be an issue for Ontario as well. Ontario is still working on the design of an accounting system. They are considering compiling data monthly but having an annual aggregation and settlement.

Discussion of Presentations and Regional Issues

Some of the discussion during this agenda item was captured in the section above.

- Although having a disclosure label is an important tool in a green market, getting disclosure right doesn't make a green market. New York has some serious fundamental problems with market rules that need to be changed before there will be a green market. e.g. getting default price right.
- Switching customers is really tough and the sale of the attributes separate from the energy is important to the growth of the green market. Currently attributes are being accounted for the in the default mix. Marketers need a way for customers to be able to buy the attributes from a particular facility. The ideal system is a GIS-type of accounting system where attributes can be sold and traded independently. It is very difficult to get customers to switch electricity suppliers and marketers want the ability to bundle the attributes and energy at point of customers such that certificates are reflected on the disclosure label. One regulatory fix was suggested for DPS to set up a reserve account, similar to NE's, so that attributes could be removed from state mix.
- The inability to sell attributes separately is hurting marketers' sales to large C&I customers. These customers are hesitant to sign contracts when they find out that the attributes purchases won't be recognized by the state and won't be reflected on their product label. They are also concerned about their title to the attributes and this uncertainty may prevent them from signing long-term contracts. These complications make it difficult to make a green sale in New York.
- Some marketers indicated that selling attributes to other parts of the US or internationally isn't a big part of their business, but they would like the flexibility to have that option because the market may develop in that direction.
- Stakeholders thought there was a willingness on the part of NE regulators to work with NY DPS to reduce seams problems. New England regulators have said in the past that they want imports and exports to and from New York to be possible, but market participants in New England have devised some of the GIS rules to protect local generation. New England regulators do not have a vote in the decision to change the GIS rules.
- There were a couple of suggestions to reduce some seams issues that emerged from the discussion:

- NE should remove the requirement for a NERC tag because it is a prospective tag and wind is exempt from that requirement.
- NE should remove the unit contract requirement because this requirement is impossible for wind generators selling into the spot market.
- NY should work to resolve with NE regulators seams issues, including how to transfer a CT into the NEPOOL GIS and how to transfer attributes or attributes plus energy into New York. Pat Stanton from MA DOER was identified as the key person that NY DPS should contact.

Summary of Issues Related to Conversion Transactions

- CT approach does not allow separation of attributes from energy, either for direct attributes sales within NY State from NY State generation, or direct sales of attributes outside of the state. This is a big impediment to the development of a New York renewable market.
- Generators do not always know who the final buyer of their electricity is, yet they are required to report it to DPS to verify their CTs. As the market develops, it will be extremely costly and difficult for generators to comply with this system, and for DPS to track down the information.
- The NY disclosure label contains emissions information, yet DPS' system for calculating emissions is not designed to accommodate any complications in the emissions profile that could result from sale of emissions allowances or emissions benefits from renewable generators (i.e. disaggregating emissions benefits from attribute).
- The quarterly settlement makes it impossible for a supplier to sell a 100% wind product. It would be preferable to be able to average annually.
- The CT approach is not recognized by New England, and New England's attribute system is not acceptable to NY.
- The NEPOOL GIS will not accept NY ISO data; NE wants an hour to hour match of energy transaction to be able to ensure that there is incremental energy flow resulting in the backing down of conventional generation in New England.
- NY ISO data collection does not adequately handle situations when there are differences between energy contracted for and energy actually delivered.
- To the extent REACTS system serves larger market (e.g. PJM or Ontario), it is important that the attributes of generation assets of LSEs are allocated to the LSE such that there is no "greenwashing."
- The green market potential for New York is extremely small because of poor market rules.

Stakeholder Input on the Optimal Functional Specifications of a New York REACTS

- There were mixed comments on the question of whether REACTS should include tracking and trading. Some marketers favored an independent tracking system that was separate from trading because of impartiality of system. It was noted that most regulators are uncomfortable operating a trading platform. At least one person felt that it would be most beneficial to add a trading platform that allows long term pricing and contracting. For example, REACTS could host an exchange that posts buy and

sell prices like a commodity exchange for CTs or RECS. In order to do this, there needs to be product standardization to establish liquidity and volume in a market.

- On the question of who would administer the REACTS, it was felt that it would be best if the regulators designed the system, in conjunction with market participants, but an impartial private or public entity should run the system
- The REACTS should have an easy to use interface- a web-based interface like ERCOT and NEPOOL GIS that is easy to access and use.
- NY disclosure tracks direct emissions, not net emissions. A GIS-like accounting system can be set up to track emissions so that the NY disclosure label is accurately reporting net emissions, instead of direct emissions which may be misleading.
- The best source of generation data is from the NY ISO simply because it is cheaper to have one source of data and the accounting for losses are consistent.
- Ideally, REACTS would show a clear chain of ownership of attributes so that buyers and customers have free and clear title to attributes.
- On the question of voluntary vs. mandatory participation, the group thought that mandatory participation by all generators was the best. But if REACTS were a voluntary system, then there should be an “all-in” requirement for generators.
- Costs: NEPOOL GIS has a volumetric fee of 1 cent/MWh plus start-up and annual administrative fees (\$200,000/year for 5 years). It has cost NY DPS about \$40,000 to develop the disclosure label approach plus 1.25 FTE to implement it today. It will require more staff time if some of the changes to the disclosure were implemented.

Summary of Optimal Characteristics of REACTS from Stakeholder Meeting

- Allows attributes to be separated from energy and either rebundled with energy (current market rules) or retired from accounting system if sold independent of energy
- Smooths the administrative burden from CT reporting of buyers/sellers
- Supports long term price setting and contracting
- Allows reciprocal trade with New England (i.e. Provides data needed to allow trade with New England; can accept GIS-formatted attributes from New England and convert to CT)
- Provides better way for DPS to meet disclosure requirements given complexities of marketplace
Would track enough information on attributes to support a variety of regulatory programs/requirements as well as market needs

Establishes free and clear property rights to attributes as they are bought and sold and is reflected in the state disclosure label

- Can track emissions characteristics to ensure that double counting/double selling is not occurring and that certificates are “whole”

- Maximizes liquidity- brings buyers and sellers together
- Maximizes volume- ideally is mandatory (but this would require a change of rules), second best is voluntary but all-in requirement
- Uses NY ISO data
- Is run and administered by an impartial public or private entity