

**A Critical Evaluation of the Energy Plans and Actions Announced in April 2007  
by New York’s Governor, NYSEERDA and New York PSC**

– Contents –

	<u>Page</u>
<b>Executive Summary .....</b>	<b>1</b>
<b>I. Announcements by the Governor, NYSEERDA and NYSPSC .....</b>	<b>2</b>
A. Governor Spitzer’s Energy Plan .....	2
B. NYSEERDA and NYSPSC Announcements .....	2
<b>II. New York’s electricity supply and demand outlook as seen by the NYISO .....</b>	<b>3</b>
<b>III. Are the Plans Announced by the Governor, NYSEERDA and NYSPSC realistic and in the best interest of the people of New York? .....</b>	<b>4</b>
A. Can electricity use be reduced by 15% from projected 2015 levels as the Governor proposed? .....	4
B. Shutting down Indian Point Nuclear capacity – called for in the Governor’s “15 by 15” energy plan -- appears unlikely .....	5
C. The rationale for NY officials’ emphasis on adding wind turbines is far from clear.....	6
1. Wind turbines have little if any real capacity value that can be counted on at the times of peak electricity demand .....	6
2. Wind turbines will not replace the need for new, reliable generating capacity .....	7
D. New York officials’ plans and actions would transfer significant wealth from the pockets of taxpayers and electric customers to 3 large “wind farm” companies .....	7
1. “Wind farm” owners selected by NYSEERDA for subsidies .....	7
2. Details on \$1.274 Billion in tax breaks and subsidies for 3 “wind farm” owners ..	8
3. NY electric customers are forced to provide the money used by NYSEERDA to subsidize “wind farm” owners .....	9
E. Economic benefits and job claims made for the plans and actions announced by by the Governor, NYSEERDA and NYSPSC are unlikely to be fulfilled .....	10
1. Most “wind farm” capital investment dollars will be spent outside New York...	10
2. Only small portions of capital and operating expenses would actually produce local or state economic benefits .....	11
3. Neither construction nor operation of “wind farms” provides a significant number of jobs for local people.....	11
4. Land rental payments for “wind farms” may provide little, if any, local benefit	11

5.	There is no obvious basis for claiming that electricity produced from new generating units (wind or others) will be lower in cost for electric customers ....	11
6.	The true cost of electricity from wind is higher than claimed by the wind industry and other advocates and the value of that electricity is low.....	12.
F.	The Governor’s claim that <i>some</i> investments in energy efficient are far more cost effective than building generating units is supported by the fact that investments in <i>energy efficient light bulbs can SAVE nearly 5 TIMES more electricity in 5 YEARS than an equal investment in wind turbines will PRODUCE in 20 YEARS</i> .....	13
G.	Recently established facts about the true costs and benefits of wind energy apparently have not been taken into account by New York officials.....	14
1.	Huge (35-40 stories tall) wind turbines produce very little electricity.....	15
2.	The primary reason why “wind farms” are built is to take advantage of huge tax breaks and subsidies, not because of environmental or energy benefits .....	15
3.	The wind industry and its advocates consistently overstate the environmental benefits of wind energy .....	15
4.	Wind industry and other wind energy advocates understate or ignore adverse adverse environmental, ecological, scenic, property value and human impacts of “wind farms” .....	16
H.	The “unkindest cut” of all”: New York officials’ attempts to force huge wind turbines on the people in rural and scenic areas of Upstate and Western NY .....	17
<b>IV.</b>	<b>Conclusions .....</b>	<b>18</b>
	About the Author .....	21
	Endnotes.....	22
<b>Attachments:</b>		
A.	New York State Electricity Supply and Demand Data: Historical data for 2000-2006; Projections for 2007-2017.	
B.	Estimate of the value of Four Key Federal and New York State Tax Breaks and Subsidies that Could Flow to Owners of Nine “Wind Farms” Selected by NYSERDA for Subsidies.	

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**Executive Summary**

Recent energy policy announcements by the Governor of New York, the President of NYSERDA,<sup>1</sup> and the Chairwoman of the NY State Public Service Commission must leave many people in New York – especially in Upstate and Western New York -- wondering what their elected and appointed leaders in Albany have against them.

New York's Independent System Operator (NYISO), which manages the wholesale electric grid in NY and works to assure that electric service will be reliable, has concluded that New York will require additional generating capacity as electricity demand grows.

The Governor's focus on the challenge of providing adequate electricity for New York may be a good sign, but the steps that he and other State officials announced in April are unlikely to achieve the goals he announced. Some of those steps would not be in the best interest of the people of New York -- particularly its electric customers and taxpayers, or homeowners in many rural areas and others who enjoy the state's scenic areas. The claims of economic benefits and additional jobs, apparently assembled for the Governor by state officials, are not credible.

The costly proposals by the Governor, NYSERDA and NYSPSC to force greater use of "wind energy" are particularly puzzling. The state officials appear to be unaware of facts about wind energy that have been uncovered during the past two years – facts that contradict claims made by the wind industry and other wind advocates. For example, the officials seem unaware or unconcerned that:

- Huge wind turbines (35+ stories tall) produce very little electricity -- which electricity is low in quality and value because it is intermittent, volatile, unreliable and unlikely to be available when most needed.
- Wind turbines cannot be counted on to produce electricity at times of peak electricity demand (late summer afternoons on hot weekdays in July and August), and will not replace the need for the electric industry to add *reliable* electric generating capacity to supply increasing electric demand or replace aging generating plants.
- Huge tax breaks and subsidies for "wind farm" owners – not environmental and energy benefits – are the primary reasons that companies are eager to build wind farms.
- Wind energy advocates have greatly overstated environmental and economic benefits of wind energy and greatly understated adverse environmental, ecological, scenic, property value and human impacts.

In fact, policies and programs announced by the state officials would result in:

- Transferring nearly \$ 1.3 billion additional dollars from the pockets of ordinary electric customers and taxpayers to pockets of large "wind farm" owning companies, particularly

Noble Environmental Power (majority owned by JP Morgan Partners, LLC), Massachusetts-based UPC Wind, and Community Energy, Inc. (wholly owned by Iberdola of Spain).

- Spending billions of capital investment dollars on energy projects that produce little electricity when needed and have little favorable local economic impact.
- Undermining the property values, peace and tranquility of thousands of families in rural New York who would be forced to live in the shadows of hundreds of huge, noisy wind turbines, and destroy some of New York's beautiful scenery.

New York already has some of the nation's highest tax burdens and, except for Hawaii, the highest residential electricity prices. The steps announced by the Governor, NYSERDA and NYSPSC are likely to make the situation worse.

This brief paper reviews and evaluates key aspects of energy policies and plans announced by New York State officials, and contrasts their electricity plans with those of the New York Independent System Operator (NYISO) which is responsible for the reliability of New York's electricity grid. Both sets of plans have major implications for the people of New York.

## **I. Announcements by the Governor, NYSERDA and NYSPSC**

A. **Governor Spitzer's Energy Plan.** On April 19, 2007, New York Governor Spitzer announced his "15 by 15" plan, A Clean Energy Strategy for New York.<sup>2</sup> Among the provisions announced were:

- "Reduce electricity Use by 15 percent from forecasted levels by the year 2015..."
- "Invest \$295 million for renewable energy projects throughout the state..."
- "Create new appliance efficiency standards and set more rigorous energy building codes."<sup>3</sup>
- Create "...an expedited process that fast-tracks only clean power plant proposals, those with low or no emissions."<sup>4</sup>

The Governor also indicated that "Investing in a new generation of cleaner, more efficient power plants will also allow us to phase out older, less secure, and less environmentally sound power plants, including Indian Point."<sup>5</sup>

The Governor claimed that his proposals would provide economic benefits and create additional jobs in New York.

B. **NYSERDA and NYSPSC Announcements.** On April 19, 2007, following up on the Governor's proposals, a press release<sup>6</sup> issued by NYSERDA and the NY Public Service Commission (NYSPSC) announced that "...twenty-one electric generating facilities in New York have been selected to provide renewable energy to New York consumers in the second competitive solicitation under the Renewable Portfolio Standard (RPS) Program...[including] ten existing hydroelectric facilities that have been or will be upgraded, nine new wind facilities, and two biomass facilities. The twenty-one contract awards total approximately \$295 million and will be paid out over a 10-year period as

performance incentives... [that will] average approximately \$15 per megawatt hour.”  
(Note: \$15 per MWh = \$0.015 per kWh.)

## **II. New York’s Electricity Supply and Demand Outlook as seen by the NYISO.**<sup>7</sup>

Meanwhile, the NYISO has announced the results of its analysis of the outlook for New York’s electricity demand, supply and transmission and the actions needed to provide reasonable assurance of reliable electric service for the people of New York.<sup>8</sup> According to the recently released analyses:

- **Summer Peak Electricity Demand** – which is a critical factor in determining whether electric generating resources (“capacity”) is sufficient to provide reliable service – will grow by an average of 1.2% per year from 2006 to 2017 – from 32,992,000 kilowatts (kW) in 2006 to 37,631,000 kW in 2017. (Electricity demand is measured in kilowatts - kW or megawatts - MW)
- **Total Electricity (“energy”)** – which is measured in “kilowatt-hours” (kW) – will grow by an average of 1.35% per year from 2006 to 2017 – from 162,853,000,000 kWh in 2006 to 188,728,000,000 kWh in 2017.
- **The outlook for electricity reliability.** Based on current plans for generating capacity additions and retirements, transmission capacity increases, and electricity demand reduction efforts, existing and planned capacity is adequate to maintain reliability through 2010 but increased capacity will be needed starting in 2011.
- **Most electricity demand growth in New York City and Long Island areas.** Both peak and total electricity demand are expected to grow much more rapidly in the southeastern portion of the state than in upstate and western NY. State-wide peak demand is expected to grow by 0.9% per year during the next 10 years, with most of the growth (1.1% per year) occurring in the New York City and Long Island (1.8% per year). NYISO expects peak electricity demand to grow by an average of only 0.4% in the rest of the state.<sup>9</sup>
- **More Generating Capacity required beginning in 2011.** Even with expected imports of electricity from New Jersey to the New York City area, significant increases in generating capacity will be needed in NYC, Long Island and the 4-county area immediately north of NYC beginning in 2011 or 2012. The alternative is to build generating capacity in upstate or western NY (or perhaps in adjacent states) and add transmission line capacity to move more electricity into the NYC region.

NYISO has described what is needed to maintain reliability beyond 2010 in terms of “compensatory MWs” which could be satisfied by either additional generating capacity, demand management or transmission additions;<sup>10</sup> specifically:

- |                       |                         |
|-----------------------|-------------------------|
| • 2011: 750 MW        | • 2014: 1250 – 1500 MW  |
| • 2012: 500 – 750 MW  | • 2015: 1500 MW         |
| • 2013: 750 – 1000 MW | • 2016: 1750 to 2000 MW |

**III. Are the Plans Announced by the Governor, NYSEERDA and NYSPSC realistic and in the best interest of the people of New York?**

Clearly, the energy and related economic and environmental plans and actions announced by the Governor, NYSEERDA and NYSPSC have important implications for New York’s citizens, consumers and taxpayers. Also, as explained in more detail in the pages that follow, the plans and actions dealing with wind energy announced by State officials have far reaching implications for all of New York’s electric customers and taxpayers, particularly, the citizens and homeowners in areas where huge wind turbines would be built. The pages that follow evaluate several controversial aspects of the Governor’s announced energy plans and actions.

**A. Can electricity use be reduced by 15% from projected 2015 levels as the Governor proposed?**

The plans announced by the State Officials seem to show a far different perspective about the outlook for electricity demand and supply than those announced by the experts in electric reliability represented by the New York Independent System Operator (NYISO).

One of the Governor’s proposals calls for reducing “electricity consumption by 15 percent below the forecasted level in 2015.” He described this as “the most aggressive target in the nation.”

Attachment A is a compilation of estimates from New York and federal data sources on recent history and projections of New York electric generating capacity, electric generation, peak electricity demand, and electricity sales are helpful in evaluating the Governor’s plan.

The table below excerpts data from Attachment A. It shows several measures of how a 15% reduction would compare with the actual situation in 2006 and with various projections for 2015. The data on electricity *sales* is the closest available measure of electricity *consumption* – which is the term used when the Governor announced his “15 by 15” energy plan.

	Summer Peak Demand (MW)	Capability Requirements (MW) assuming 16.5% Reserve	Electricity Generation (MWh)	Electricity Sales (MWh)
Actual 2006	32,992	38,436	162,853,000	145,510,000
2015 Forecast	36,749	42,813	183,544,000	173,310,000
2015 forecast minus 15%	31,237	36,391	156,012,000	147,313,500
The first three columns are based on NYISO data; the last column on US EIA Data				

The Governor’s apparent target for 2015 electricity consumption (sales) for 2015 (147,313,500 MW) is slightly above actual sales reported for 2006 by US EIA

(145,510,000 MW). Reduction of 15% from the other 2015 measures shown would be well below 2006 based on actual data shown by NYISO.

Clearly, 15% reductions would be extremely aggressive and are probably unattainable unless New York experiences a very substantial economic downturn -- particularly in New York City metropolitan area and Long Island, which account for a large share of the state's electricity demand and where electricity demand is growing most rapidly.

The absolute differences between the NYISO forecasts and the 15% reductions are a further illustration of the aggressiveness of any 15% reduction goal.

When assessing the feasibility of the Governor's plan, it is important to keep in mind that most energy efficiency and conservation measures require up front investments by energy users, often with higher costs in order to gain energy efficiency. The higher cost can be recovered quickly in some cases (e.g., compact fluorescent light bulbs), but take a long time in other cases. Also, as US DOE appliance standards studies show, many people will never be able to recover the higher cost of more energy efficient appliances through energy savings. Also, typically slow turnover of energy using appliances and equipment tends to delay energy savings. Efficiency gains from new building construction are even slower.

Because of extraordinarily high electricity prices, New York electric customers would be able to recover the higher cost of more efficient appliances faster than electric customers in states with lower electric prices. Average residential electricity prices in New York during 2006 were 16.69 cents per kWh – 60% higher than the US national average of 10.4 cents per kWh.<sup>11</sup>

Finally, paying more money for energy efficient appliances or equipment means that consumers and business have less money to spend for other purposes. This causes an economic drag on those sectors where money would otherwise have been spent – a consideration that apparently has been overlooked by New York officials when estimating the economic impact of energy efficiency and conservation measures.

**B. Shutting down Indian Point unclear capacity – called for in the Governor's "15 by 15" energy plan – appears unlikely.**

In his April 19, 2007, '15 x 15" energy statement, Governor Spitzer indicated that, "Investing in a new generation of cleaner, more efficient power plans will also allow us to phase out the use of older, less secure, and less environmentally sound power plants, *including Indian Point.*"<sup>12</sup> (Emphasis added.)

Actually, shutting down Indian Point nuclear units seems highly unlikely for several reasons.

First, according to NYISO, in 2006, the two Indian Point nuclear units' summer capability of 2,058.1 MW accounted for 5.4% of New York's 38,436 MW capability requirement. While accounting for only 5.4% of the State's summer generating capability, the two units

during 2006 produced 16,940,499 megawatt-hours (MWh) of electricity which was 10.4% of the 162,853,000 MWh of electricity generated in or imported into the state during 2006.<sup>13</sup> (Both units operated at high capacity factors.)

Second, the Governor-NYSERDA-NYSPSC actions are focused almost exclusively on wind energy; specifically, about 828 MW out of the 880 MW<sup>14</sup> that NYISERDA has selected for subsidies. In fact, wind turbines could not replace reliable generating units such as those at Indian Point because electricity generated by wind turbines is intermittent, volatile, unreliable and unlikely to be available when electricity demand reaches peak levels.

Further, replacing the Indian Point nuclear units is not contemplated in the plans developed by the NYISO and described in Part II, above. If these units were shut down, an additional 2,000 MW of *reliable* generating capacity would have to be added – over and above the requirements identified by NYISO. In fact, replacing the electricity generated by the Indian Point nuclear units would require adding base-load generating capacity equivalent to ten 250 MW gas-fired generating units or five 500 MW coal-fired units. Those units would have to operate at an average 77% capacity factor.

**C. The rationale for New York officials' emphasis on adding wind turbines is far from clear.**

Clearly, NY State officials are taking extraordinary actions to encourage the construction of large numbers of wind turbines in rural areas of New York. However, the rationale and justification for doing this is far from clear.

Apart from the high true environmental, economic, scenic and property value costs of wind energy compared to minimal environmental and energy benefits (discussed below), the State officials' plans seem out of step with NYISO's forecasts of the need for reliable generating capability and generation. Specifically:

- 1. Wind turbines have little if any real capacity value that can be counted on at times of peak electricity demand;** i.e., in late afternoon on hot weekdays in July and August. In fact, wind turbines produce electricity only when the wind is blowing in the right speed range – starting up around 6 miles per hour (mph), reaching rated capacity around 30 MPH, and cutting out around 55 MPH.

NYISO planning documents assume, “based on the NYISERDA wind study,”<sup>15</sup> that wind turbines should be credited with a summer capacity value equal to 10% of their rated or “nameplate” capacity. Apparently this is more a “political” assumption rather than a decision based on data and sound technical judgments. As data in the reports prepared for NYISERDA by GE show, there is no assurance that wind turbines will produce ANY electricity during THE time of peak electricity demand. In fact, the GE-conducted, NYISERDA-sponsored study<sup>16</sup> referred to by NYISO glosses over the real risk that there will be *little or no output* from wind turbines by relying on hourly

averages and periods of peak demand rather than THE actual time of peak demand which is a more realistic and exacting constraint.

The GE report's "slight of hand" is "justified" by assuming that the difference between the arbitrarily assigned capacity value of 10% and actual value (less than 5%) is handled by assuming the difference can be handled by the system's capability *reserve* requirement (currently set at 16.5%).

During the summer of 2006, both California and Texas learned that wind turbines provide little electricity during the time of peak electricity demand. For example, the President of the California ISO testified that, "The contribution of the wind resources at the time of peak was less than 5% of total wind installed capacity."<sup>17</sup>

**2. Wind turbines will not replace the need for new, reliable generating capacity.**

According to NYISO, additional *reliable* generating capacity will have to be added in order to satisfy *increases in summer peak electricity demand and/or replace retired generating capacity*. The Governor's "15 by 15" energy plan does not seem to recognize that *reliable* capacity will have to be added whether or not wind turbines are built. The plan ignores the fact that wind turbines are most likely to produce electricity at night and in winter months when winds tend to be strong but are unlikely to be producing on hot weekday summer late afternoons in July and August when NY electricity demand is at its peak. It is those summer peaks that define the amount of *reliable* generating capacity that must be available.

**D. New York officials' plans and actions would transfer significant wealth from pockets of taxpayers and electric customers to 3 large "wind farm" owning companies.**

Quite likely, few people in New York realize that the actions announced on April 19, 2007, by the Governor, NYSEDA and NYSPSC would pave the way for transferring nearly \$1.3 billion from the pockets of taxpayers and electric customers to 3 companies via four of the key tax breaks and subsidies available for those companies. (Detail below.)

The nearly \$1.3 billion in tax breaks and subsidies is in addition to income the 3 companies would receive for electricity produced by the "wind farms." If the "wind farms" achieve a 28% capacity factor and were able to sell the electricity to electric utilities for \$0.03 per kWh, they would receive additional income of over \$600 million over 10 years. If sold at \$0.05 per kWh, the additional income would exceed \$1 billion over 10 years. However, the *value of tax breaks and subsidies would still exceed the value of the income from selling the electricity!*

Tax breaks are used by large corporations to offset tax liability from other operations or are traded to other companies who can use tax credits to shelter otherwise taxable income.

- 1. "Wind farms" selected by NYSEDA for subsidies.** According to the NYSEDA-NYSPSC April 19, 2007, press release, nine "wind farms" owned by three companies have been selected to receive payments from NYSEDA over the next 10 years:

- Noble Environmental Power, which is majority owned by JP Morgan Partners, LLC (JPMP).<sup>18</sup> Noble owns 5 of the 9 wind projects, with the 5 totaling 511 megawatts (MW) of generating capacity.<sup>19</sup>
- UPC Wind, which owns all or part of 3 projects totaling about 180 MW.
- Community Energy, Inc., owned by Iberdola of Spain, which owns a project with capacity reported as 136 MW.

The following table shows project names, ownership, planned County location, and reported generating capacity of the “wind farm” projects to be subsidized by NYSERDA.<sup>20</sup> Legally, “ownership” of the various “wind farms” may be in single asset Limited Liability Companies (LLCs) that are wholly owned by the “owners” listed below. The generating capacities shown in the table are those provided by NYSERDA.<sup>21</sup> In some cases they differ from capacities shown on company web sites and environmental impact statements.

“Wind Farm” Name	Owner	Location (County)	Reported Generating capacity <sup>22</sup>
Noble Bliss “Wind Park” <sup>23</sup>	Noble Environmental	Wyoming	100.5 MW
Noble Chateaugay “Wind Park” <sup>24</sup>	Noble Environmental	Franklin	127.5 MW
Noble Altona “Wind Park” <sup>25</sup>	Noble Environmental	Clinton	102.0 MW
Noble Clinton “Wind Park” <sup>25</sup>	Noble Environmental	Clinton	100.5 MW
Noble “Ellenburg “Wind Park” <sup>25</sup>	Noble Environmental	Clinton	81.0 MW
Dutch Hill “Wind Farm” <sup>26</sup>	UPC Wind	Steuben	42.5 MW
Cohocton “Wind Farm” <sup>27</sup>	UPC Wind	Steuben	82.5 MW
“Wind Farm” Prattsburg <sup>28</sup>	UPC Wind Partners, LLC & Global Wind Harvest, LLC	Steuben	55.5 MW
Jordanville “Wind Farm” <sup>29</sup>	Community Energy/Iberdola	Herkimer	136 MW
Total			828.0 MW

- 2. Details on the \$1.274 billion in tax breaks and subsidies for 3 “wind farm” companies.** Wind industry lobbyists and advocates have been very successful in getting federal and state government officials to provide huge tax breaks and subsidies for “wind farm” owners. The subsidies come in many forms, including Renewable Portfolio Standards (RPS), and mandated or volunteered “green energy” purchases, that create artificial, high priced “markets” for the benefit of “wind farm” and other renewable energy producers.

Attachment B shows the enormous potential flow of tax breaks and subsidies to the 3 companies that own the 9 planned “wind farms” selected by NYSERDA.

These tax shelters and other payments are, in effect, transfers of wealth (money) from the pockets of ordinary taxpayers and electric customers to the “wind farm” owners. Specifically:

- Federal, state, and local tax breaks shift tax burden from “wind farm” owners to ordinary taxpayers who do not have tax shelters available to them to reduce their federal and state income taxes.

- “Charges” added to electric bills – such as NY’s “System Benefit Charge” take money from electric customers that NYSERDA will hand to “wind farm” owners.

Attachment B provides rough estimates of monetary value of benefits that could flow to the owners of the 9 “wind farms” over 10 years from just four federal and state tax breaks and subsidies; i.e.:

- The federal wind Production Tax Credit of \$0.02 per kWh for electricity produced during the first 10 years of wind turbine operation.
- The federal 5-year double declining balance accelerated depreciation (“5-yr 200% DB”) which permits depreciating – that is, deducting from otherwise taxable income -- “wind farm” capital costs in the first 6 tax years.
- The deduction from New York state corporate income tax liability the same accelerated depreciation amount that is deducted at the federal level.
- The \$0.015 per kWh subsidy payments for 10 years announced on April 19, 2007, by NYSERDA-NYSPSC.

As indicated above, these tax breaks and subsidies are in addition to income the “wind farm” owners would received from the sale of electricity produced by the “wind farm.”

The following table summarizes the estimates from Attachment B of the first 10-years of potential tax break and subsidy income and, in the last column, an estimate of the income from sale of electricity for each of the three companies for the 9 “wind farms” picked for subsidies by NYSERDA – if the electricity is sold for \$0.03 per kWh.

Company	Wind farms	MW of capacity	Value of 3 tax breaks & NYSERDA Subsidy	Potential Income from sale of electricity at \$0.03/kwh
Noble Wind (JP Morgan Part.)	5	511.5	\$ 786,932,520	\$ 376,382,160
UPC Wind	3	180.5	\$ 277,695,640	\$ 132,819,120
Iberdola/Community Energy	<u>1</u>	<u>136</u>	<u>\$ 209,233,280</u>	<u>\$ 100,074,240</u>
Totals	9	828	\$1,273,861,440	\$ 609,275,520

3. **NY electric customers are forced to provide the money used by NYSERDA to subsidize “wind farm” owners.** Lost in the enthusiastic NYSERDA-NYSPSC support for the Governor’s energy plan is the fact that the money NYSERDA will give to “wind farm” and other “renewable energy” project owners is extracted from New York’s electric customers via a “surcharge” added to their monthly electricity bills.

Starting in 1996, the NYSPSC began imposing a so-called “system benefit charge” (SBC) on customers of investor-owned electric utilities. Substantively, it’s hard to distinguish the “SBC” from a “tax” except that it wasn’t approved by the state legislature. Apparently, the SBC collected \$234 million initially (1998-2001). The NYSPSC extended the SBC through 2006 and increased annual funding from \$78 million to \$150 million, and in 2005 extended the program through June 30, 2011 and

increased annual funding from \$150 million to \$175 million.<sup>30</sup> The “surcharge” was 1.42% of customers’ bills in 2004, with the percentage subject to adjustment.

In total, it appears that the SBC will collect more than \$1.85 billion from electric customers if allowed to continue through 2011.<sup>31</sup>

The addition of the “system benefit charge” to electric customers’ monthly bills -- \$175 million annually -- and sent to NYSERDA means that there is \$175 million less available each year for electric customers to spend locally for food, clothing, shelter, education, medical care and other purposes (or for savings). Instead of having the money available to help local economies, the money is sent to Albany and then handed to “wind farm” owners.

**E. Economic benefits and job claims made for the plans and actions announced by the Governor, NYSERDA and NYSPSC are unlikely to be fulfilled.**

Unfortunately, it appears that the Governor has not been well served by staff who have developed claims about the economic benefits and jobs that would be produced by the “15 by 15” energy plan. The Governor’s statement<sup>32</sup> included such claims as the following for the “15 by 15” program: “...drive down energy bills”; lead to “...thousands of new jobs fueled by a new industry born of clean power”; “...drive the technology market for wind generators”; “...lower energy bills...[allowing]... New York’s businesses to spend less on energy and more on innovation – helping us both to retain the jobs we’ve got and attract new ones”; and NYSERDA-NYSPSC “...contract awards total[ing] approximately \$295 million...will attract private investment of approximately \$1.4 billion – all of it Upstate.”

Bold claims like these are not uncommon in statements made by federal and state political leaders. However, little information is available thus far that justifies the claims. The claims appear significantly overstated and some are based on a basic and fundamental misunderstanding of the potential economic impact of the actions and proposals that were announced. Examples are listed below.

A truly objective assessment of the potential economic benefits to the people in the State of New York from the projects selected by NYSERDA/NYSPSC is likely to show that those benefits are even less than the \$295 million in payments that are to be made to the “wind farm and other renewable energy project owners from the “System Benefit Charge” funds.

**1. Most “wind farm” capital investment dollars will be spent outside New York.**

Only a small part of the \$1.4 billion in expected capital investment for “wind farms” and other renewable energy projects would actually be spent in New York and provide potential economic benefit for the people of New York.

In the case of “wind farms” (which would account for about \$1.3 billion of the \$1.4 billion in promised subsidies), an overwhelming share of capital spending – at least 75% -- would be for the wind turbines and towers.<sup>33</sup> The turbines and, likely, the

towers and many of other components – perhaps even the cement -- would be produced elsewhere. In at least one project, the turbines may be imported into the U.S.

Unfortunately, failure to recognize that capital costs spent elsewhere do *not* produce a local economic benefit is a common error in studies and “models” that purport to show local or state economic benefits of “wind farms.”<sup>34</sup>

- 2. Only small portions of capital and operating expenses would actually produce local or state economic benefits.** Only that portion of expenses that are compensation for *value added locally or within NY* can legitimately be counted as providing potential local or state economic benefits. Again, failure to recognize this economic “fact of life” often leads to overestimating of economic benefits.<sup>35</sup>

To illustrate, consider the local economic benefits of a gallon of gasoline purchased at a local service station for \$3. The overwhelming share of that \$3 goes to the producer of the crude oil, the refiner, and the transporter of that gasoline up to the point it arrives at the state border. Only the value added within the state (e.g., remaining transport, storage, handling, and delivery to the customer, including associated labor and profits (if by an in-state company) can be expected to provide in-state economic benefits.

- 3. Neither construction nor operation of “wind farms” provides a significant number of jobs for local people.** Experience has shown that most of the jobs associated with building a “wind farm” and associated facilities (e.g., towers, turbines, blades, cabling and electronic controls, substations and transmission lines) – particularly the higher skilled and paying jobs – are filled by people imported from outside the local area where the “wind farm” is built.<sup>36</sup> Jobs that may be filled by local people include truck drivers, some heavy equipment operators, and laborers. Also, all the construction jobs are short term since the total construction project may take 6 months or less or perhaps a year for very large projects. “Indirect” jobs that are created (e.g., restaurants, hotels) are also short term. “Multipliers” are often used by advocates of particular policies or projects who wish to artificially inflate potential economic benefits and job creation expectations.
- 4. Land rental payments for “wind farms” may provide little, if any, local benefit.** Wind energy developers and other advocates often claim local economic benefit due to payments made to landowners that permit turbines on their property, and/or payments to neighboring property owners to give up any right to complain about noise or other nuisance impacts, or to sue developers. This may be a valid claim – but only if the money is spent for or invested in something that has a true local benefit. There would be little local benefit if the money is spent or invested elsewhere. Payments to absentee landowners, for example, are unlikely to provide local economic benefits.
- 5. There is no obvious basis for claiming that electricity produced from new generating units – wind or otherwise – will be lower in cost for electric customers.** Capital costs for new generating units are almost certainly to be higher than the depreciated cost of existing units – particularly those that are expected to be retired. In

some cases, new units may be more efficient (e.g., new combined-cycle gas turbine units vs. old oil or gas-fired steam generating units) but not sufficiently to offset the higher capital cost of new units.

Certainly there is no basis for concluding that electricity produced from “renewable” energy such as wind, solar, and biomass will be lower in cost. If that were true, there would be no need for either (a) massive subsidies now provided for wind, solar, and biomass, (b) electric company programs permitting customers to pay premium to get electricity produced from “renewables,” or (c) renewable portfolio standards (RPS) that force electric distribution companies to buy electricity at above market prices from producers of “green” electricity.

The only potential basis for suggesting that electric bills might be lower is if substantial energy conservation measures are taken by electric customers or they purchase energy efficient products that use less electricity. In either case, front end investments are required which will, at least in early years, offset any savings from reduced electricity use (i.e., fewer kilowatt-hours).

**6. The true cost of electricity from wind is higher than claimed by the wind industry and other advocates and the value of that electricity is low.** For several reasons, the true cost of electricity from wind is much higher than “wind farm” owners and other advocates admit. Among the true costs that they seek to ignore are:

- The cost of huge tax breaks and subsidies received by “wind farm” owners. These real costs are shifted to taxpayers and electric customers and “hidden” in their tax and monthly electric bills.
- The cost of providing “back up” electric generation and reserves from reliable generating units which must always be immediately available to compensate for the intermittence, volatility, and unreliability of electricity from wind turbines.

Often overlooked is the fact that the true value of the electricity produced by wind turbines is less than the value of electricity produced from reliable generating plants that can be called upon whenever needed. As pointed out earlier, electricity from wind turbines is most likely to be produced at night and in winter months, not on hot weekday late afternoons in July and August when electricity demand is at peak levels – and the true value of the electricity is highest.

Also, few people – even energy professionals – seem to recognize that claims about costs of electricity per kilowatt-hour (kWh) made by the wind industry and other wind advocates are specious. Such claims inevitably are based on assumptions (i.e., guesses) about such critical factors as:

- The useful life of the wind turbine.
- Capacity factors during that lifetime (i.e., how much electricity will actually be produced)
- Operating, maintenance, repair and replacement costs during the useful life.

For example, wind industry officials and advocates often assume that turbines will have a useful life of 20, 25 or 30 years and that they will have capacity factors of 25%, 30% or higher. They then estimate the total capital and other costs for the useful life and divide that cost number by the expected kWh of production during the assumed useful life. The result is an estimate of “levelized” cost per kWh.

In fact, there are no reliable data available on either the useful life of turbines now being installed or on their output over their potential life. Few if any of the turbines of the type now being installed have operating experience of more than 3 or 4 years. If, to continue the example, the turbine really has a useful life of only 10 years rather than an assumed 20 years, the actual cost per kWh will be nearly twice that claimed by wind industry advocates

Unfortunately, officials from organizations such as the US Department of Energy and the National Renewable Energy “Laboratory” (NREL) – both staffed and operated by people paid from tax dollars – have participated in spreading false and misleading information about the cost of electricity from wind energy.

**F. The Governor’s claim that some energy efficiency investments are far more cost effective than building some generating units is supported by the fact that investments in energy efficient light bulbs can SAVE nearly 5 TIMES as much electricity in 5 YEARS than an equal investment in wind turbines will PRODUCE in 20 YEARS.**

Not all investments in energy efficiency and conservation are cost effective and not all will actually permit electric customers to recover the higher cost of buying an energy efficient product in a reasonable period of time. However, it is very clear that energy efficient compact fluorescent light bulbs avoid the use of significant amounts of electricity.

Furthermore, as shown below, simple arithmetic demonstrates conclusively that investments in energy efficient light bulbs can SAVE 5 times more electricity in 5 years than an equal investment in wind turbines will produce in 20 years.

**The Example:**

- **Step 1: Calculating the amount of electricity saved (i.e., not produced, transmitted, or used) by using energy efficient light bulbs:**
  - Home improvement stores now sell compact fluorescent light bulbs for \$2 or less. Manufacturers (e.g., *Sylvania*) say that the bulbs have an 8,000 hour life and use 13 watts of electricity to provide light equivalent to a 60-watt incandescent bulb.
  - Each of these bulbs used in place of a 60-watt incandescent bulb would avoid the use of 47 watt-hours of electricity for each hour in use. Using one energy efficient bulb in place of an incandescent bulb for an average of 4 hours per day over 365 days would avoid the use of 68,620 watt-hours (68.620 kWh) each year.

- At the advertised price, \$1,500,000 could purchase 750,000 of the energy efficient light bulbs. Over 1 year, those 750,000 light bulbs could *avoid* the use of 51,465,000 kWh of electricity, and over 5 years could avoid using a total of 257,325,000 kWh. (The arithmetic: 47 watt-hours x 4 hours x 365 days x 750,000 bulbs x 5 years = 257,325,000,000 watt-hours or 257,325,000 kWh.)
- **Step 2: Calculating the amount of electricity that might be produced with a wind turbine:**
  - The capital cost of a wind turbine is about \$1,600,000 per megawatt (MW) of generating capacity.<sup>37</sup> (While current turbine cost may be higher the conservative assumption of \$1,500,000 will suffice for this example.)
  - Simple arithmetic shows that a 1 MW (or 1,000 kilowatt -- kW) wind turbine could produce 2,628,000 kilowatt-hours (kWh) of electricity in 1 year *if* it were able to achieve a 30% capacity factor. (The arithmetic: 1,000 kW x 8760 hours per year x .30% = 2,628,000 kWh), and that it might produce 26,280,000 kWh in 10 years (if it lasts that long – which no one knows since none of these turbines has operated that long) or 52,560,000 kWh in 20 years.
- **Step 3: Economic conclusion from above.** *\$1.5 million spent for energy efficient light bulbs could avoid the use of 257,325,000 kWh of electricity over 5 years -- which is nearly 5 times the 52,560,000 kWh of electricity that a \$1,500,000 wind turbine might be able to produce in 20 years!*
- **Step 4: Environmental Conclusion from above.** Avoiding the need to produce and transmit 257,325,000 kWh would be a lot better for the environment than building a wind turbine and providing the transmission line capacity to move that electricity to electric customers.

**G. Recently established facts about the true costs and benefits of wind energy apparently have not yet been taken into account by New York officials.**

For the past decade or more the wind industry and other wind energy advocates have overestimated the environmental, energy and economic benefits of wind energy and greatly understated the true environmental, ecological, economic, scenic and property value costs.

Unfortunately, they have been very successful and have misled the public, media and many government officials. They have created a “popular wisdom” about wind energy that doesn’t square with the facts and they have succeeded in getting federal and state political leaders to give the industry hundreds of millions in tax benefits, other subsidies including “Renewable Portfolio Standards,” and highly favorable regulatory rulings. As a result, current federal and state wind energy policies:

- Transfer hundreds of millions of dollars annually from the pockets of ordinary electric customers and taxpayers to pockets of large “wind farm” owning companies such as

Noble Environmental Power (majority owned by JP Morgan Partners, LLC), UPC Wind, FPL Energy, AES, Invenergy, and foreign corporations such as Iberdola, Gamesa, EDF, Shell and BP.

- Spending billions of capital investment dollars on energy projects (“wind farms”) that produce little electricity and have little favorable local economic impact.
- Threaten the property values, peace and tranquility of families in rural areas who are forced to live in the shadows of huge wind turbines.
- Decimate mountain ridges and vistas and other areas of scenic beauty.
- Add a variety of environmental and ecological insults, such as bird and bat kills, wildlife habitat destruction, noise, shadow flicker, and more.

Fortunately, during the past 2 or 3 years, work done by citizen groups and a few government officials (particularly in areas of the US and other countries where “wind farms” have been proposed or built) have uncovered previously unreported facts about the *true costs and benefits* of wind energy. These facts are only beginning to be recognized and reported in the media.<sup>38</sup> Some of those well-documented facts have already been discussed above. Others that seem not to have been adequately considered by New York officials include the following:

1. **Huge (35-40 stories tall) wind turbines produce very little electricity.** As shown in attachment B, the 9 costly “wind farms” selected by NYSERDA for subsidies would produce 2,030,918,400 kilowatt-hours (kWh) of electricity annually *if* they could achieve a 28% capacity factor. That may sound like a lot of electricity but:
  - That amount is equal to 1.2% of the 167,440,000,000 kWh of electricity that NYISO forecasts will need to be available in 2008 to serve NY electric customers.
  - It is less than would be produced annually by a *reliable* base-load 300 megawatt (MW) load generating unit.

Also, the 828 MW of *capacity* (nameplate) may sound like a lot but, because of its intermittence and unreliability, little if any of that capacity is likely to be available *at the time electricity demand reaches the peak of 33,871 MW forecast by NYISO for 2008 – or the 39,460 MW that NYISO indicates will be needed to maintain reliability.*

2. **The primary reason why “wind farms” are being built is to take advantage of huge tax breaks and subsidies – not because of environmental or energy benefits.** Some large “wind farm” owning corporations are using the tax shelter benefits of their “wind farms” to sharply reduce or eliminate all or their federal income tax liability, including liability associated with their multi-billion dollar non-wind operations.<sup>39</sup>
3. **The wind industry and its advocates consistently overstate the environmental benefits of wind energy.** The principal claim made on behalf of wind energy is that it will lead to reduced emissions from generating units powered by fossil fuels: coal, oil and natural gas. In fact, this claim is false in many respects and misleading in others. Specifically:
  - a. Emissions of sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), and particulates from fossil-fuel generating units have already been reduced substantially and more

reductions will occur (regardless of wind energy) as a result of air quality requirements already in law; installation of emission control equipment; repowering or replacement of older units using more efficient technology that releases fewer emissions.

- b. Industry calculations grossly overstate emissions *displacement* because claims are based on:
- Old emission numbers, not current or future, declining emission numbers.
  - Erroneous assumptions that electricity from coal-fired units will be displaced when, in most cases, any electricity that is displaced will be from lower-emitting gas-fired units.
  - False assumption that a kWh of electricity produced from a wind turbine will always displace emissions associated with a kWh from a fossil fueled unit. This assumption is false because the output from wind turbines is inherently intermittent, volatile and unreliable. Therefore, some reliable (“dispatchable”) generating unit(s) must always be immediately available to “back up” or compensate for the unreliable wind turbine output. The generating unit(s) serving in the backup role will have to be running at less than full capacity and efficiency or be in “spinning reserve”<sup>40</sup> mode. In both such cases, fossil fueled units will be giving off emissions that are not displaced by the electricity from a wind turbine.
- c. Even more important, under the “cap and trade” rules in effect in New York and surrounding states, any emissions of SO<sub>2</sub> or NO<sub>x</sub> from a fossil fueled unit that actually are displaced permits the owner of the displaced unit to sell that emission credit or use it elsewhere. Therefore, any SO<sub>2</sub> or NO<sub>x</sub> emission that might be *displaced is not avoided*.

The unavoidable conclusion is that emission reduction claims made on behalf of wind energy are overstated and should not be trusted by the public, media or government officials.

4. **Wind industry and other wind energy advocates understate or ignore adverse environmental, ecological, scenic, property value, and human impacts of “wind farms.”** The adverse impacts are becoming increasingly well documented and, gradually, are being reported in the media. Such documentation cannot be presented in a paper of this length but web sites are readily available that provide information that can be reviewed. Two of the growing number of web sites that provide facts about wind energy are:

- National Wind-Watch: <http://www.wind-watch.org/>
- Industrial Wind Action Group: <http://www.windaction.org/>

Visits to these sites permit direct access to many documents and also provide links to many other sites around the world that post information and research about wind energy and its effects. Among the adverse effects are:

- Bird and bat kills and interference with migration pathways.

- Destruction or interference with wildlife habitat.
- Clearing of trees and other vegetation, land and stream disturbance, resulting storm water damage and sedimentation associated with installation of towers, turbines, cables, substations, transmission lines, and access roads.
- Noise, which is being recognized increasingly as a serious problem for people living on neighboring properties. (A growing number of articles from doctors are claiming adverse human health effects of noise associated with wind turbines.)
- Shadow flicker from rotating blades, principally at sun up and sun down.
- Disruption of communications and aircraft control measures.
- Potential blade throw and, more importantly, ice throw from turbine blades in colder areas.
- Unsightly, flashing aircraft warning lights on turbine towers.

Two increasingly recognized and seemingly intractable problems resulting from “wind farms” are their:

- Adverse scenic impact when turbines are placed on mountain ridges, hills and other scenic vistas, or close to areas that have been set aside because of their natural beauty and unique ecological characteristics.
- Adverse impact on property values and the tranquility of people living on property near wind turbines. The wind industry has sought to claim that wind turbines do not have adverse effects on neighbors and their property values. Studies cited by wind energy advocates have been discredited for a variety of reasons, including their deficient methodologies. Failure to recognize and acknowledge that huge wind turbines located near homes adversely affect residents and their property values defies common sense.

#### **H. The “unkindest cut” of all: New York officials’ attempts to force huge wind turbines on the people in rural and scenic areas of Upstate and Western New York.**

Under the plans announced by State officials, the people living in rural, scenic areas of New York will be expected to bear the significant adverse environmental, ecological and property value costs of building “wind farms” and/or hosting other electric generating capacity to serve the New York City region. People in rural areas may also be asked to accept the construction of additional transmission line capacity in their areas, particularly to serve “wind farms.”

Apparently State officials simply do not understand – or have chosen to ignore -- the adverse environmental, ecological, scenic, property value, and human impacts that “wind farms” have in areas where “wind farms” are built. This is indicated by the Governor’s statement – which seems to suggest proudly rather than apologetically – that all of the “wind farms” would be located “Upstate.”<sup>41</sup>

Perhaps it would be necessary to build one of the huge wind turbines -- which often exceed 400 feet in height, with blades that have a sweep about equal to the length and wingspan of a 747 aircraft – on the grounds of the State Capitol Building in Albany before New York

political leaders develop will begin to understand the impact they are planning to impose on citizens in Upstate and Western New York.

A wind turbine such as those being planned by “wind farm” developers subsidized by NYSERDA would stand about 200 feet or 20 stories above the top of highest finial on the 220 foot State Capitol Building!

Perhaps the wind turbines and transmission lines should be built next to the political leaders’ homes, next to their recreation or retirement properties, or in their favorite scenic areas.

The sheer size of the structures – not to mention the noise and other adverse impacts – might give political leaders some appreciation of the impact that dozens of wind turbines have on the people who find themselves forced to live in the vicinity of the huge machines and on the scenic vistas in the picturesque areas of the State where “wind farms” are planned. Only then, would the leaders begin to understand the impact on real people whose tranquility they should respect, and the impact on the property values in areas where wind turbines dominate the landscape.

To date, courageous local government officials in some towns have learned of the adverse impacts and have acted to slow or prevent locating “wind farms” within their towns so as to protect their citizens from the assaults. In other areas, local government officials – some, perhaps hoping that they or their families could profit from the projects – have joined with the developers in efforts to overcome local opposition.

Some local government officials have even favored allowing “wind farm” owners to escape property taxes and, instead, provide relatively short term “payments in lieu of taxes” (PILOTs). These may seem attractive to some local politicians with a short term perspective but ignore the long term adverse impacts and costs.

State officials who are seeking to pass legislation that would permit state override of local government zoning and permitting are a serious threat to the interests of many people in New York.

#### **IV. Conclusions**

In summary, a review of the plans presented by New York State officials and the NYISO reveals many troublesome issues, including the following:

1. State Officials’ announced plans for dealing with electricity supply and demand challenges do not seem to “add up.” Without a severe economic downturn in the New York City and Long Island areas, it is highly unlikely that electricity consumption can be reduced from current levels, let alone cut 15% below levels forecast for 2015.
2. There is a curious lack of truly objective economic analysis of the proposed actions. There is clear evidence that potential economic benefits and job creation are

overstated. The expectation that new generating capacity will result in lower electricity prices is also unrealistic.

3. The Governor's statement makes clear that he recognizes that New York's very high tax burdens and electricity prices are stunting economic growth and job preservation, particularly in Upstate and Western New York and contributing to the flight of industry and young people from New York to areas where such costs are lower. However, the announced plans are unlikely to help slow these trends.
4. One step that could be taken immediately is to discontinue the NYSPSC-imposed "system benefit charge" that drains \$175 million per year from local economies. That action would reduce monthly electric bills and leave more money for spending locally to create local jobs through the state. More than ample tax breaks and subsidies are already available from other sources for "wind farms" and other renewable energy sources – without the need for \$295 million in subsidies planned by NYSERDA, using funds from the SBC.
5. New York has few practical choices in providing *reliable* electric generating capacity to supply increasing electricity demand or replace aging electric generating plants. *Wind simply is not a source for reliable generating capacity.* New York is fortunate in already getting about 17.6% of its in-state electric generation from hydropower and another 1.4% from biomass (2005 data).<sup>42</sup> Reducing dependence on nuclear energy (28.9%), oil (16.4%) and coal (14.0%) will, as a practical matter, leave increased use of natural gas (already 21.7%) as the only serious alternative.
6. Electricity prices in New York are almost certain to stay at near record levels unless the SBC is discontinued and/or natural gas and oil prices moderate. Proposed "Renewable Portfolio Standards" are almost certain to force electricity prices even higher because the true costs of electricity from wind and other "renewables" is higher than the cost of electricity from "traditional" sources.
7. The adverse impacts that huge wind turbines and "wind farms" have on scenic beauty, the sanctity of citizens' homes, and on property values in rural areas of New York seems unrecognized in the halls of political power.
8. There appears to be a strong bias in favor of "wind farm" developers and owners in NYSERDA and NYSPSC and even in some local governments. The interests of citizens, consumers and taxpayers apparently are not nearly as well represented in the halls of political power and in state agencies as are the wind and other renewable energy industries and their lobbyists, developers and owners.
9. State government officials need to become better informed about the true "winners" and "losers" when "wind farms" are proposed or constructed. They should take actions to protect and assist the potential "losers" who cannot adequately defend themselves. It's clear that the big "winners" are the "wind farm" developers and owners. Small "winners" – but at the expense of their neighbors – are the landowners who lease land

for wind turbines. The “big losers” are (1) the taxpayers and electric customers who bear the higher cost of electricity from wind and the tax burden shifted to them from “wind farm” owners, and (2) the neighbors who are forced to live in the shadows and with the sounds of huge wind turbines.

10. State government officials could help. Anecdotal evidence suggests that aggressive “wind farm” developers are imposing onerous lease, contract and easement terms on – and requiring pledges of silence from – landowners that allow turbines on their land. Some neighbors are being asked to accept small payment to give up their rights to complain or file suit when they are adversely impacted. The State could provide financial assistance to permit landowners (and their neighbors) to obtain objective legal advice and to preserve their right to challenge onerous terms in the courts. State officials could also provide financial assistance to local governments to obtain qualified and objective assistance in evaluating proposals and environmental impact statements from “wind farm” developers and owners. State officials should also assure that “open meeting” and conflict of interest statutes are adequate to protect citizens’ rights and that these statutes are strictly enforced. Local and state government officials should not be permitted to have a role in reviewing or approving contracts, zoning or permits if they or members of their family have a financial interest in a proposed “wind farm” or other energy project.

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**Attachments:**

- A. New York State Electricity Supply and Demand Data: Historical data for 2000-2006; Projections for 2007-2017.
- C. Estimate of the value of Four Key Federal and New York State Tax Breaks and Subsidies that Could Flow to Owners of Nine “Wind Farms” Selected by NYSERDA for Subsidies.

## About the Author

GLENN R. SCHLEEDE, a former New Yorker now living in Virginia, is semi-retired after working on energy and related matters in government and the private sector for over 30 years. He now devotes a large share of his time to *self-initiated and self-financed* research, analysis and writing about (a) government policies and programs that are detrimental to consumers and taxpayers, and (b) government or private sector activities that are presented to the media, public and government officials in a false or misleading way.

From 1992 until September 2003, Schleede maintained a consulting practice, Energy Market and Policy Analysis, Inc. (EMPA), providing analysis of energy markets and policies. During that time he worked primarily on natural gas and electricity issues.

Prior to forming EMPA, Schleede was Vice President of New England Electric System (NEES), Westborough, MA, and President of its fuels subsidiary, New England Energy Incorporated. His time with NEES included responsibilities for procurement and transportation of coal, natural gas and oil for NEES facilities, NEES's oil and gas exploration and coal shipping ventures, and NEES economic planning and budgeting functions.

Previously, Schleede was Executive Associate Director of the U.S. Office of Management and Budget (1981), Senior VP of the National Coal Association in Washington (1977-1981) and Associate Director (Energy and Science) of the White House Domestic Council (1973-1977). He also held career service positions in the U.S. OMB and the U.S. Atomic Energy Commission. He has a BA degree from Gustavus Adolphus College and an MA from the University of Minnesota and is a graduate of Harvard Business School's Advanced Management Program.

Schleede is the author of many papers and reports on energy matters. His articles appear in various publications and/or are covered in the energy trade press. He does not have his own web site but, with his permission, his papers are often posted in full text by various public policy groups' web sites.

Since 2001, Schleede has analyzed and written extensively about wind energy. His wind energy analysis and his factual and often critical writing about wind energy have earned him the enmity of the wind industry and its advocates. Schleede has been a frequent target of ad hominem attacks by officials from the wind industry and federal and state government officials, contractors, and lobbyists who work on behalf of the wind industry. Their attacks seldom deal with the substantive issues he raises.

## Endnotes:

- <sup>1</sup> NYSERDA – New York State Energy Research & Development Authority
- <sup>2</sup> NY Governor Spitzer’s “15 by 15” Plan, <http://www.ny.gov/governor/keydocs/CleanEnergySpeech-final.pdf>
- <sup>3</sup> Press release, *New State Plan Sets Goals for Reducing Energy Costs, Curbing Pollution and Addressing Global Climate Change*, April 19, 2007. <http://www.ny.gov/governor/press/0419071.html>
- <sup>4</sup> Gov. Spitzer’s energy statement, April 19, 2007, p. 5. <http://www.ny.gov/governor/keydocs/CleanEnergySpeech-final.pdf>
- <sup>5</sup> *Ibid.*, p. 6.
- <sup>6</sup> Press Release, NYSERDA & NYS PSC, “New York’s Continued Commitment to Clean Renewable Energy Could Foster \$1.4 billion of Investments in New York,” April 19, 2007 [http://www.nyserda.org/Press\\_Releases/PressRelease.asp?i=151&d=2007](http://www.nyserda.org/Press_Releases/PressRelease.asp?i=151&d=2007)
- <sup>7</sup> “The New York Independent System Operator (NYISO) – [www.nyiso.com](http://www.nyiso.com) – is a federally regulated, 501© (3) not-for-profit corporation established in 1999 to facilitate the restructuring of New York’s electric industry. The NYISO operates the state’s high-voltage electric transmission system and administers the state’s wholesale electric markets.”
- <sup>8</sup> NYISO, *Comprehensive Reliability Planning Process (CRPP) 2007 Reliability Needs Assessment*, March 16, 2007; *Power Trends 2007*, May 3, 2007; *2007 Load & Capacity Data*. (See web addresses in endnotes below.)
- <sup>9</sup> NYISO, *Power Trends 2007*, May 3, 2007, p. 8. Table 3. [http://www.nyiso.com/public/webdocs/newsroom/whats\\_new/nyiso\\_ptrends07\\_final.pdf](http://www.nyiso.com/public/webdocs/newsroom/whats_new/nyiso_ptrends07_final.pdf)
- <sup>10</sup> NYISO, 2007 Reliability Needs Assessment, March 16, 2007, pp. 14-17. [http://www.nyiso.com/public/webdocs/services/planning/reliability\\_assessments/2004\\_planning\\_trans\\_report/2007\\_RNA.pdf](http://www.nyiso.com/public/webdocs/services/planning/reliability_assessments/2004_planning_trans_report/2007_RNA.pdf)
- <sup>11</sup> US Energy Information Administration (EIA), *Electric Power Monthly*, March 2007, Table 5.6b.
- <sup>12</sup> Gov. Spitzer’s April 19, 2007, statement, p. 6. <http://www.ny.gov/governor/keydocs/CleanEnergySpeech-final.pdf>
- <sup>13</sup> NYISO, “Gold Book” (2007 Load & Capacity Data), pp. 22 & 49. NYISO plans contemplate maintaining an installed reserve margin of 16.5% above expected summer peak demand (in kW) but that reserve amount is subject to change with future conditions. [http://www.nyiso.com/public/webdocs/services/planning/planning\\_data\\_reference\\_documents/2007\\_GoldBook\\_PUBLIC.pdf](http://www.nyiso.com/public/webdocs/services/planning/planning_data_reference_documents/2007_GoldBook_PUBLIC.pdf)
- <sup>14</sup> NYSERDA also would provide subsidies to owners of 2 biomass projects totaling 45 MW and 10 hydro projects totaling 8.02 MW. Email from Mr. Kevin Hale, NYSERDA, June 8, 2007
- <sup>15</sup> *Ibid.* p. 58.
- <sup>16</sup> GE Power Systems Energy Consulting reports prepared for NYSERDA: *The Effects of Integrating Wind Power on Transmission System Planning, Reliability, and Operations*, Phase 1, February 2, 2004; Phase 2, March 4, 2005.
- <sup>17</sup> Mansour, Yakout, CA ISO President & CEO, Prepared statement for the California State senate Committee on Government Operations, August 9, 2006, p. 4.
- <sup>18</sup> Noble Environmental Power press release, June 1, 2006. <http://www.noblepower.com/pressroom/documents/06-09-01NEP-JPMP-CCMP.pdf>
- <sup>19</sup> <http://www.noblepower.com/pressroom/documents/07-04-19NEP-NYSERDAPressRelease.pdf>
- <sup>20</sup> NYSERDA-NYPSC Press Release, op. cit., April 19, 2007; NYSERDA email, Mr. Kevin Hale, June 8, 2007.
- <sup>21</sup> Email from Mr. Kevin Hale, NYSERDA, June 8, 2007.
- <sup>22</sup> These capacity numbers are based on NYSERDA and company documents but the numbers may change.
- <sup>23</sup> <http://www.nobleenvironmentalpower.com/our-projects/bliss/documents/NEPBlissFEIS-TofCont-Sec1.6-G.pdf>
- <sup>24</sup> <http://www.nobleenvironmentalpower.com/our-projects/Chateaugay/documents/NEPChateaugayScopingDocRev6Final-Q.pdf>
- <sup>25</sup> <http://www.nobleenvironmentalpower.com/our-projects/documents/NEP-ClintonCoFEIS-TofC-Summary-G.pdf>
- <sup>26</sup> <http://www.dutchhillwind.com/PDFs/DEIS/Dutch%20Hill%20Final%20DEIS%20.pdf>
- <sup>27</sup> [http://www.cohoctonwind.com/PDFs/Supplemental/TextDividers/SEIS\\_12-18-06.pdf](http://www.cohoctonwind.com/PDFs/Supplemental/TextDividers/SEIS_12-18-06.pdf)
- <sup>28</sup> <http://www.prattsburghwind.com/about.php>; <http://www.upcwind.com/projects-prattsburgh.php>; [http://www.windfarmprattsburgh.com/DEIS/WindFarm%20Prattsburgh/DEIS%20Text/DEIS\\_Final-06-22-06.pdf](http://www.windfarmprattsburgh.com/DEIS/WindFarm%20Prattsburgh/DEIS%20Text/DEIS_Final-06-22-06.pdf)
- <sup>29</sup> Community Energy, Inc. web site: [http://www.newwindenergy.com/nwe\\_about\\_cei.html](http://www.newwindenergy.com/nwe_about_cei.html) ; June 4, 2007, email from Chairman of the Planning Board, Town of Warren, New York.

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<sup>30</sup> [http://www.dsireusa.org/library/includes/printincentive.cfm?incentive\\_code=NY11R](http://www.dsireusa.org/library/includes/printincentive.cfm?incentive_code=NY11R) and <http://www.dps.state.ny.us/03e0188.htm>

<sup>31</sup> Not all the money is used for subsidy payments. NYSERDA budget documents indicate, for example, that during FY 2006-07, 10% of total SBC collections was spent for salaries and overhead (\$12,231,000 for salaries alone). <http://www.nysesda.org/pdfs/Governance/Fiscal%20Year%202006-07%20Revised%20Budget%20Approved%20September%2025,%202006.pdf>

<sup>32</sup> Gov. Spitzer's statement, April 19, 2007. <http://www.ny.gov/governor/keydocs/CleanEnergySpeech-final.pdf>

<sup>33</sup> U.S. Dept. of Energy, Energy Efficiency and Renewable Energy, "Annual Report on U.S. Wind Power Installation, Cost and Performance Trends: 2006, May 2007, pp. 15-16. <http://www.nrel.gov/docs/fy07osti/41435.pdf>

<sup>34</sup> Errors and Excesses in the NREL's JEDI-WIM Model that Provides Estimates of the State or Local Economic Impact of "Wind Farms," April 8, 2004. <http://www.windaction.org/documents/104>

<sup>35</sup> Ibid.

<sup>36</sup> Iowa Department of Natural Resources, *Top of Iowa Wind Farm Case Study*, July 2003.

<http://www.state.ia.us/dnr/energy/MAIN/PROGRAMS/WIND/documents/topofiaWindFarmCaseStudy.pdf>

<sup>37</sup> U.S. Dept. of Energy, Energy Efficiency and Renewable Energy, "annual Report on U.S. Wind Power Installation, Cost and Performance Trends: 2006, May 2007, pp. 15-16. <http://www.nrel.gov/docs/fy07osti/41435.pdf>

<sup>38</sup> For example, Wald, Matthew L, "Wind energy turns out to have a complication: reliability," International Herald Tribune, December 28, 2006, <http://www.ihf.com/articles/2006/12/28/business/wind.php>  
The story also appeared in the New York Times.

<sup>39</sup> See "Big Money Discovers the Huge Tax Breaks and Subsidies for Wind Energy," April 14, 2005.

<http://www.wind-watch.org/documents/big-money-discovers-huge-tax-breaks-and-subsidies-for-wind-energy/>

<sup>40</sup> That is, running and synchronized with the electric grid but not inputting power to the grid.

<sup>41</sup> Governor's energy statement, Op cit., p. 6.

<sup>42</sup> US Energy Information Administration, State Electricity Profiles 2005, Table 5, p. 163.

**Attachment A: New York State Electricity Supply and Demand Data: Historical data for 2000-2006; Projections for 2007-2017**

This table includes data from a variety of sources (identified in footnotes). The various sources use different terms and data protocols with the result that data may not be comparable from year to year and column to column. Therefore, data should be regarded as estimates. Data are not readily available to fill all cells in the table.

							Summer Peak & Capability						
NY Electric Generating Capacity, Purchases, Sales, Loads Interruptible and Resource Capability -- in Megawatts (MW) or 1,000 Kilowatts (kW)							Requirements in Megawatts (MW) or 1,000 kilowatts (kW)		Electric Generation, Imports, Delivered to Ultimate Customers & Apparent "Line Losses" in Megawatt hours (MWh) or 1,000 Kilowatt-hours (kWh)				
Net			Capacity		Loads		Capability					Electricity	
Summer			Delivery		Capable		Requirements					Sales	
Electric			Rights (UDR)		of being		Assuming		In-State			Net	
Generating			from Adjoining		Interrupted		16.5%		Electric			Electricity	
Year	Capacity <sup>a</sup>	Purchases <sup>b</sup>	Sales <sup>b</sup>	Control Areas <sup>a,b</sup>	(SCR) <sup>a</sup>	Capability <sup>a</sup>	Demand <sup>c</sup>	Reserve <sup>a,b</sup>	Generation <sup>d</sup>	Imports <sup>e</sup>	Available <sup>f</sup>	Customers <sup>g</sup>	Losses <sup>h</sup>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(7)	(8)	(9)	(10)	(11)
<b>History</b>													
2000	35,613								138,079,075	18,557,000	156,636,075	142,027,000	9.3%
2001	35,653								143,914,559	12,872,000	156,786,559	144,181,000	8.0%
2002	36,041						30,664		139,591,689	19,153,000	158,744,689	147,440,000	7.1%
2003	36,696						30,333		137,643,316	20,371,000	158,014,316	144,045,000	8.8%
2004	37,842						28,433		137,964,793	22,464,000	160,428,793	145,082,000	9.6%
2005	39,172						32,027		146,887,419	21,291,000	168,178,419	150,148,000	10.7%
2006							32,992	38,436			162,853,000	145,510,000	10.6%
<b>Projections</b>													
2007	39,107	130	(273)	990	1,080	41,034	33,447	38,966			165,214,000	149,160,000	9.7%
2008	38,740	50	(273)	990	1,080	40,587	33,871	39,460			167,440,000	155,310,000	7.2%
2009	39,080	50	(273)	990	1,080	40,927	34,300	39,960			169,470,000	157,320,000	7.2%
2010	38,719	50	(263)	990	1,080	40,576	34,734	40,465			171,744,000	158,750,000	7.6%
2011	38,719	50	(263)	990	1,080	40,576	35,141	40,939			174,032,000	161,540,000	7.2%
2012	38,719	50	(263)	990	1,080	40,576	35,566	41,434			176,615,000	166,890,000	5.5%
2013	38,719	50	(263)	990	1,080	40,576	35,962	41,896			178,759,000	166,450,000	6.9%
2014	38,719		(263)	990	1,080	40,526	36,366	42,366			181,126,000	168,420,000	7.0%
2015	38,719		(263)	990	1,080	40,526	36,749	42,813			183,544,000	173,310,000	5.6%
<b>Gov. Spitzer's apparent target in "sales" column. All #'s 15% below projections.</b>							<b>31,237</b>	<b>36,391</b>			<b>156,012,400</b>	<b>147,313,500</b>	
2016	38,719		(263)	990	1,080	40,526	37,141	43,269			186,256,000	174,990,000	6.0%
2017	38,719		(263)	990	1,080	40,526	37,631	43,840			188,726,000	175,270,000	7.1%
<b>Footnotes:</b>													
a. Years 1990-2005: US EIA, State Energy Profiles 2005, page 162, Table 4. <a href="http://www.eia.doe.gov/cneaf/electricity/st_profiles/sep2005.pdf">http://www.eia.doe.gov/cneaf/electricity/st_profiles/sep2005.pdf</a>													
a. Years 2007-2016: NYISO, Comprehensive Planning Process (CRP), 2007 Reliability Needs Assessment, March 16, 2007, p.8, Table 4.3. and 2007 Load & Capacity Data, page 62, Table V - 2. Includes projected additions of 310 MW and 500 MW, respectively, in 2008 and 2009; rerating increases of 300 MW in each year 2007 - 2010													
b. Year 2007-2016: NYISO 2007 Load & Capacity Data, p.62.													
c. Years 2002-2005, NY Energy Coordinating Working Group, State Energy Plan - 2005 Annual Report and Activities Update, March 2006, p. 10													
c. Years 2006 - 2017: NY ISO, 2007 Load & Capacity Data, page 4, Base Case.													
d. Years 2000 - 2005: US EIA, State Energy Profiles 2005, page 163, Table 5. <a href="http://www.eia.doe.gov/cneaf/electricity/st_profiles/sep2005.pdf">http://www.eia.doe.gov/cneaf/electricity/st_profiles/sep2005.pdf</a>													
e. Years 2000 - 2005: NYSEDA, Patterns and Trends; New York State Energy Profiles: 1991-2005, January 2007, p.12, Table 2-1a.													
f. Years 2000-2005: Sum of two previous columns.													
f. Years 2006-2017: NYISO, 2007, Load & Capacity Data, Page 4, Table I-1 (Base Case).													
g. Years 2000 --2005: US EIA State Energy Profiles 2005, page 164, Table 8.													
g. Years 2006-2017: US EIA, Annual Energy Outlook 2007, Supplementary Table 67 Electric Power Projections for EMM Region, Northeast Power Coordinating Council, New York.													
h. The Percentages in this column are merely a calculation that attempts to quantify the amount of electricity "lost" during transmission and distribution; i.e., between electric generating units and delivery to ultimate customers. The percentages for years 2007-2017 are almost certainly too low. They are particularly suspect because they are based on projections from two different sources that use different methods to develop projections: NYISO and EIA.													

**Attachment B**

**Estimates of the Value of Four Key Federal and New York Tax Breaks & Subsidies That Could Flow to Owners of Nine "Wind farms" Selected by NYSERDA to receive Payments**

NOTE THAT THE ESTIMATES BELOW DO NOT INCLUDE INCOME RECEIVED BY THE WIND FARM OWNER FOR ELECTRICITY THAT IS PRODUCED. IF THAT ELECTRICITY WERE SOLD FOR \$0.03 PER KWH, THE THREE COMPANIES WOULD RECEIVE AN ADDITIONAL \$ 62,730,360 PER YEAR IN INCOME. OR, OVER TEN YEARS: \$ 627,303,600 THE ESTIMATES BY COMPANY ARE SHOWN AT THE BOTTOM OF THE SECOND PAGE.

**The estimates below cover only the following four tax breaks and subsidies:**

1. The Federal wind "Production Tax Credit" which allows "wind farm" owners to deduct from the federal corporate income tax liability \$0.02 per kilowatt-hour (kWh) of electricity produced from wind energy during the first ten years of operations.
2. The Federal 5-year double declining balance (5-yr 200% DB) depreciation deduction for the capital cost of wind generation equipment under the IRS Modified Accelerated Cost Recovery System (MACRS). The depreciations actually occur during 6 tax years: 20% of capital cost in the 1st tax year, 32% in the second, 19.2% in the 3rd, 11.52% in the 4th and 5th and 5.76% in the 6th. The actual reduction in tax liability is the organizations marginal tax rate, usually 35%, of the depreciation deduction. (see IRS Pub. 946.)
3. Since New York's corporate franchise tax begins with a corporation's Federal Taxable Income, which already reflects the accelerated depreciation deduction, the corporation's NY tax liability is reduced by NY's marginal corporate tax rate of 7.5%. (See Instructions for NY Tax Form CT-3)
4. Payments of \$0.015 per kWh over 10 years to be made to "wind farm" owners by NYSERDA. (See NYSERDA-NYSPSC Press Release, April 19, 2007)

**For purposes of these rough estimates, the following assumptions are made:**

1. Electric generating capacities for the "wind farms" are those shown below which are taken primarily from recent documents posted by respective companies. These may not be the very latest "official" capacities.
2. All nine "wind farms" will be able to achieve annual capacity factors of 28%.
3. The depreciable capital cost of the "wind farms" will be \$1,600 per kilowatt (kW) of capacity.

**Calculation of Estimated Values of four key Tax Breaks and subsidies:**

Tax Break or Subsidy	Capacity in Kilowatts (kW)	Estimated Capital Cost Assuming \$1,600 per Kilowatt (kW)	Est. Annual Elec. Generation Assuming 28% Capacity Factor in Kilowatt-hours (kWh)	Value of 4 key Tax Breaks and Subsidies by year										
				Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	10-Yr. Total
<b>Five "Wind Farms" Planned by Noble Environmental Power (Majority-owned by JP Morgan Partners)</b>														
<b>Noble-JPMP Altoona "Wind Park"</b>	102,000	163,200,000	250,185,600											
Reduced Federal Tax Liability due to Production Tax Credit				\$ 5,003,712	\$ 5,003,712	\$ 5,003,712	\$ 5,003,712	\$ 5,003,712	\$ 5,003,712	\$ 5,003,712	\$ 5,003,712	\$ 5,003,712	\$ 5,003,712	\$ 50,037,120
Reduced Federal Tax Liability due to Accelerated Depreciation				\$ 11,424,000	\$ 18,278,400	\$ 10,967,040	\$ 6,580,224	\$ 6,580,224	\$ 3,290,112					\$ 57,120,000
Reduced State Tax Liability due to Accelerated Depreciation				\$ 2,448,000	\$ 3,916,800	\$ 2,350,080	\$ 1,410,048	\$ 1,410,048	\$ 705,024					\$ 12,240,000
Payment from NYSERDA				\$ 3,752,784	\$ 3,752,784	\$ 3,752,784	\$ 3,752,784	\$ 3,752,784	\$ 3,752,784	\$ 3,752,784	\$ 3,752,784	\$ 3,752,784	\$ 3,752,784	\$ 37,527,840
Total for 4 key measures				\$ 22,628,496	\$ 30,951,696	\$ 22,073,616	\$ 16,746,768	\$ 16,746,768	\$ 12,751,632	\$ 8,756,496	\$ 8,756,496	\$ 8,756,496	\$ 8,756,496	\$ 156,924,960
<b>Noble-JPMP Clinton "Wind Park"</b>	100,500	160,800,000	246,506,400											
Reduced Federal Tax Liability due to Production Tax Credit				\$ 4,930,128	\$ 4,930,128	\$ 4,930,128	\$ 4,930,128	\$ 4,930,128	\$ 4,930,128	\$ 4,930,128	\$ 4,930,128	\$ 4,930,128	\$ 4,930,128	\$ 49,301,280
Reduced Federal Tax Liability due to Accelerated Depreciation				\$ 11,256,000	\$ 18,009,600	\$ 10,805,760	\$ 6,483,456	\$ 6,483,456	\$ 3,241,728					\$ 56,280,000
Reduce State Tax Liability due to Accelerated Depreciation				\$ 2,412,000	\$ 3,859,200	\$ 2,315,520	\$ 1,389,312	\$ 1,389,312	\$ 694,656					\$ 12,060,000
Payment from NYSERDA				\$ 3,697,596	\$ 3,697,596	\$ 3,697,596	\$ 3,697,596	\$ 3,697,596	\$ 3,697,596	\$ 3,697,596	\$ 3,697,596	\$ 3,697,596	\$ 3,697,596	\$ 36,975,960
Total for 4 key measures				\$ 22,295,724	\$ 30,496,524	\$ 21,749,004	\$ 16,500,492	\$ 16,500,492	\$ 12,564,108	\$ 8,627,724	\$ 8,627,724	\$ 8,627,724	\$ 8,627,724	\$ 154,617,240
<b>Noble-JPMP Ellenburg "Wind Park"</b>	79,500	127,200,000	194,997,600											
Reduced Federal Tax Liability due to Production Tax Credit				\$ 3,899,952	\$ 3,899,952	\$ 3,899,952	\$ 3,899,952	\$ 3,899,952	\$ 3,899,952	\$ 3,899,952	\$ 3,899,952	\$ 3,899,952	\$ 3,899,952	\$ 38,999,520
Reduced Federal Tax Liability due to Accelerated Depreciation				\$ 8,904,000	\$ 14,246,400	\$ 8,547,840	\$ 5,128,704	\$ 5,128,704	\$ 2,564,352					\$ 44,520,000
Reduce State Tax Liability due to Accelerated Depreciation				\$ 1,908,000	\$ 3,052,800	\$ 1,831,680	\$ 1,099,008	\$ 1,099,008	\$ 549,504					\$ 9,540,000
Payment from NYSERDA				\$ 2,924,964	\$ 2,924,964	\$ 2,924,964	\$ 2,924,964	\$ 2,924,964	\$ 2,924,964	\$ 2,924,964	\$ 2,924,964	\$ 2,924,964	\$ 2,924,964	\$ 29,249,640
Total for 4 key measures				\$ 17,636,916	\$ 24,124,116	\$ 17,204,436	\$ 13,052,628	\$ 13,052,628	\$ 9,938,772	\$ 6,824,916	\$ 6,824,916	\$ 6,824,916	\$ 6,824,916	\$ 122,309,160
<b>Noble-JPMP Chateaugay "Wind Park"</b>	129,000	206,400,000	316,411,200											
Reduced Federal Tax Liability due to Production Tax Credit				\$ 6,328,224	\$ 6,328,224	\$ 6,328,224	\$ 6,328,224	\$ 6,328,224	\$ 6,328,224	\$ 6,328,224	\$ 6,328,224	\$ 6,328,224	\$ 6,328,224	\$ 63,282,240
Reduced Federal Tax Liability due to Accelerated Depreciation				\$ 14,448,000	\$ 23,116,800	\$ 13,870,080	\$ 8,322,048	\$ 8,322,048	\$ 4,161,024					\$ 72,240,000
Reduce State Tax Liability due to Accelerated Depreciation				\$ 3,096,000	\$ 4,953,600	\$ 2,972,160	\$ 1,783,296	\$ 1,783,296	\$ 891,648					\$ 15,480,000
Payment from NYSERDA				\$ 4,746,168	\$ 4,746,168	\$ 4,746,168	\$ 4,746,168	\$ 4,746,168	\$ 4,746,168	\$ 4,746,168	\$ 4,746,168	\$ 4,746,168	\$ 4,746,168	\$ 47,461,680
Total for 4 key measures				\$ 28,618,392	\$ 39,144,792	\$ 27,916,632	\$ 21,179,736	\$ 21,179,736	\$ 16,127,064	\$ 11,074,392	\$ 11,074,392	\$ 11,074,392	\$ 11,074,392	\$ 198,463,920
<b>Noble-JPMP Bliss "Wind Park"</b>	100,500	160,800,000	246,506,400											
Reduced Federal Tax Liability due to Production Tax Credit				\$ 4,930,128	\$ 4,930,128	\$ 4,930,128	\$ 4,930,128	\$ 4,930,128	\$ 4,930,128	\$ 4,930,128	\$ 4,930,128	\$ 4,930,128	\$ 4,930,128	\$ 49,301,280
Reduced Federal Tax Liability due to Accelerated Depreciation				\$ 11,256,000	\$ 18,009,600	\$ 10,805,760	\$ 6,483,456	\$ 6,483,456	\$ 3,241,728					\$ 56,280,000
Reduce State Tax Liability due to Accelerated Depreciation				\$ 2,412,000	\$ 3,859,200	\$ 2,315,520	\$ 1,389,312	\$ 1,389,312	\$ 694,656					\$ 12,060,000
Payment from NYSERDA				\$ 3,697,596	\$ 3,697,596	\$ 3,697,596	\$ 3,697,596	\$ 3,697,596	\$ 3,697,596	\$ 3,697,596	\$ 3,697,596	\$ 3,697,596	\$ 3,697,596	\$ 36,975,960
Total for 4 key measures				\$ 22,295,724	\$ 30,496,524	\$ 21,749,004	\$ 16,500,492	\$ 16,500,492	\$ 12,564,108	\$ 8,627,724	\$ 8,627,724	\$ 8,627,724	\$ 8,627,724	\$ 154,617,240
<b>TOTALS FOR NOBLE-JPMorgan Part.</b>	511,500	818,400,000	1,254,607,200	\$ 113,475,252	\$ 155,213,652	\$ 110,692,692	\$ 83,980,116	\$ 83,980,116	\$ 63,945,684	\$ 43,911,252	\$ 43,911,252	\$ 43,911,252	\$ 43,911,252	\$ 786,932,520

