

Long Island Regional Planning Board

Draft Action Memo

July 2006

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Long Island Off Shore Wind Park

The Situation Today

The Long Island Power Authority and its partner, FLP Energy (a subsidiary of Florida Power and Light), propose erecting 40 wind turbines, each rising approximately 442.5 feet above the water, in eight square miles of ocean 3-1/2 to 5 miles off the coast from Jones Beach and Robert Moses State Park. The proposed wind park would generate 140 megawatts of electricity at its peak, enough to power approximately 44,000 homes, and has a target completion date of 2008.

As part of the purchase agreement FPL Energy will be responsible for building and maintaining the wind park and LIPA, over a 20-year agreement, will be obligated to purchase 100 percent of the power from them for a period of 20 years. To do this FPL Energy created Long Island Offshore Wind Park LLC, a wholly owned subsidiary. As a condition of the agreement, the wind park must be able to produce the power that FPL Energy proposes it will.

If approved, it would be the first off shore wind farm on coastal Long Island and the second in the United States. The other proposed U.S. project is off the coast of Cape Cod.

The two companies filed a joint application with the United States Army Corps. of Engineers, since the project is beyond the 3 mile limit of local and state jurisdiction (the proposed site is 3.7 miles southwest of Robert Moses State Park). However, the Energy Policy Act of 2005, which went into effect in August of 2005, shifted the oversight of renewable energy programs in coastal waters from the Army Corps of Engineers to the Interior Department's Minerals Management Services, which also regulates off shore drilling. Therefore, the two federal agencies overseeing development of this project are the Environmental Protection Agency, which will be studying the effects of the proposed park on a variety of factors, including the "biological, socioeconomic, and human resources" impacts of the project from "pre-construction to decommissioning," and the Department of the Interior through the Mineral Management Services (MMS). Currently the MMS is conducting public input to the proposal through two recently completed public forums and an online submission area.

The total cost of the Long Island Offshore Wind Park has not been finalized. The selection of the wind turbine manufacturer, foundation manufacturer, cable supplier, and construction contractor is still being determined.

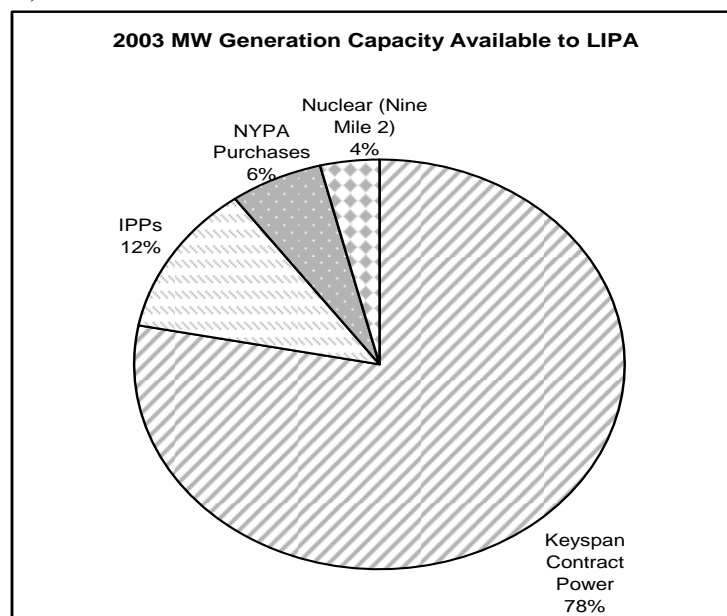
Proponents of the project include Greenpeace, WindWorks for Long Island, Renewable Energy Long Island, Long Island Neighborhood Network, and the Sierra Club.

Opponents include the Chamber of Commerce of Greater Bay Shore, Save Jones Beach, Suffolk Legislator Wayne Horsley (D-Babylon) chairman of the legislature's Economic Development, Higher Education and Energy Committee, and Laurie Ferber, conservation chairwoman of the Sierra Club's Long Island Executive Committee.

Long Island's Power System

The LIPA service territory consists of most of Nassau and Suffolk counties and the Rockaway Peninsula in Queens. It covers about 1,200 square miles, encompassing 90 percent of Long Island's total land area. LIPA delivers electricity to nearly 1.1 million customers on Long Island. In 2002, LIPA's retail sales were 18,815,722 Mega Watt Hours (MWH), of which approximately 51 percent were to commercial and industrial customers, 47 percent to residential customers and the remaining 2 percent going to railroad and other public authorities. Almost all of the residents (more than 95 percent) in the LIPA service area live in Nassau and Suffolk counties.

LIPA purchases the total capacity and energy of KeySpan's generation plants under long-term contract, which represents more than 4,000 MW of capacity per day. It also obtains power from a number of Independent Power Producers (IPPs), from an ownership interest in Nine Mile 2 and from long-term purchases with the New York Power Authority (NYPA).



Source: LIPA Energy Plan 2004-2013

In addition, LIPA has five transmission interconnections to neighboring electric systems and a High Voltage Direct Current interconnection, pending regulatory approval for full commercial operation. The interconnection facilities are used to import power from the Nine Mile 2 plant and to make purchases from other off-island resources.

Three small municipal electric systems: Freeport, Rockville Centre, and Greenport, are located within the LIPA service territory. In addition, the New York Power Authority (NYPA) provides energy, distributed by LIPA, for economic development purposes to various customers on Long Island. Both Nassau and Suffolk counties have Municipal Distribution Agencies (MDAs) that purchase power from NYPA and distribute it to businesses throughout the LIPA system.

In August of 2001 Long Island came within 85 megawatts of reaching its full electric capacity of approximately 4,600 megawatts in a day. Since that time LIPA has added roughly 1,500 megawatts of capacity, mostly from a series of small, oil-burning generators spread across Long Island and a 330 megawatt cross-Sound cable, and now has a full 6,100 megawatt daily capacity. In early August of 2006 LIPA recorded several days of record power usage of approximately 5,700 megawatts, leaving a cushion of about 400 megawatts, or 7 percent of capacity.

There are several projects in the works that will increase electric capacity still further. In 2007 the Neptune power cable, which will begin in Sayreville, N.J. and cross the Atlantic Ocean to Jones Beach, will deliver up to 660 megawatts of electric power. The Caithness power plant near Yaphank will produce 300 megawatts of electric power when it comes on line in 2008. These projects are in addition to the cluster of wind generators off Cedar Beach that will generate approximately 140 megawatts of electric power. In total, if all of these projects come on line as planned, another 1,100 megawatts per day will be available to Long Island, for a total daily electric capacity of 7,200 megawatts by the end of 2008.

According to the Energy Information Administration, LIPA charges the third-highest residential electric rates of any major utility in the continental United States, after San Diego Gas and Electric in California, and Consolidated Edison in New York City. A June 2006 report of the New York State Comptroller found that electric prices rose 21.9 percent over the 12 months ended February 2006 due to two increases in LIPA's Fuel Price Adjustment implemented on June 8 and October 8, 2005. Due to higher prices, as well as a pattern of increasing usage, this year Long Island households can expect to pay an average of \$2,000 for electricity during 2006, including \$830 in the summer, an increase of \$300 over 2005 and \$230 more than last summer. Long Island's residential electric prices have increased from an average of 12.85 cents per kilowatt hour in January 1999 to 19.69 cents per kilowatt hour in February 2006, an increase of 53.2 percent.

**LIPA's Average Residential Electric Price per Kilowatt Hour
1999 through 2005**

Year	Price	Percent Change
1999	\$13.38	N/A
2000	\$13.19	-1.3%
2001	\$13.64	3.4%
2002	\$13.88	1.7%
2003	\$14.69	5.8%
2004	\$16.03	9.1%
2005	\$17.70	10.4%

Source: Energy Information Administration, *Monthly Electric Utility Database* (Form EIA-826)

Wind Energy Primer

Wind is a form of solar energy. The terms wind energy or wind power describe the process by which the wind is used to generate mechanical power or electricity. Wind turbines convert the kinetic energy in the wind into mechanical power. This mechanical power can be used for specific tasks (such as grinding grain or pumping water) or a generator can convert this mechanical power into electricity.

A wind turbine works the opposite of a fan. Instead of using electricity to make wind, like a fan, wind turbines use wind to make electricity. The wind turns the blades, which spin a shaft, which connects to a generator and makes electricity.

In 2005, worldwide capacity of wind-powered generators was 58,982 megawatts, their production making up less than 1 percent of world-wide electricity use. Although still a relatively minor source of electricity for most countries, it accounts for 23 percent of electricity use in Denmark, 6 percent in Germany and around 8 percent in Spain. Globally, wind power generation more than quadrupled between 1999 and 2005.

Advantages of Wind Turbines

Wind energy is fueled by the wind, so it's a clean fuel source. The proposed offshore wind park helps LIPA to comply with the NYS Renewable Portfolio Standard which mandates that 25 percent of the electricity produced in New York State come from renewable resources by the year 2013.

Wind energy is a domestic source of energy, produced in the United States. The nation's wind supply is abundant.

Wind energy is one of the lowest priced renewable energy technologies available today, costing between 4 and 6 cents per kilowatt-hour, depending upon the wind resource and project financing. The initial cost of generation from the Long Island Off Shore Wind Park project may be more than conventional fossil generation because of up-front capital

costs. However, as the wind park requires no fuel to operate and fuel costs continue to rise, wind energy could be a less costly alternative to fossil fuels.

Wind power is intermittent, but most electric grid systems can handle a certain percent of wind power without needing additional backup generation. Having considered the seasonal winds and intermittent operations, LIPA has forecasted it will have adequate power supply capacity to allow the Wind Park to operate as an important component of the local energy mix into the foreseeable future.

Disadvantages

Depending on how energetic a wind site is, the wind farm may or may not be cost competitive. Even though the cost of wind power has decreased dramatically in the past 10 years, the technology requires a higher initial investment than fossil-fueled generators.

The major challenge to using wind as a source of power is that the wind is intermittent and it does not always blow when electricity is needed. Wind energy cannot be stored (unless expensive batteries are used), and not all winds can be harnessed to meet the timing of electricity demands.

What happens in practice, therefore, is that as the power output from wind varies, part-loaded conventional plants, which must be there anyway to provide response (due to continuously changing demand) and reserve, adjust their output to compensate. These “peaking units” burn costly fuel and are very expensive to run in the long term.

A U.S. Department of Energy estimate of cost for wind energy production was 4.5 cents per kilowatt hour at ideal sites. However, the total cost of wind power might be around 6-7 cents per kilowatt hour when the production tax credit, accelerated depreciation and other more subtle cost items are factored in.

The fluctuation in wind power requires more frequent load ramping of “spinning reserve” plants to maintain grid system frequency. This can force operators to run conventional plants below optimal thermal efficiency resulting in greater emissions.

Because wind plants may not generate at full output during peak hours, wind plants have less capacity value to the system than most fossil fuel plants. Wind plants also do not contribute operating reserves or other ancillary services valued by the grid.

Although wind power plants have relatively little impact on the environment compared to other conventional power plants, there is some concern over the noise produced by the rotor blades, aesthetic (visual) impacts, and birds have been killed by flying into wind turbine rotors.

Staff Recommendation for LIRPB Board Action

Justification: Energy supply and management effects both Nassau and Suffolk counties and comes under the purview of the LIRPB's functions as outlined in Resolution #1 2005 of the Nassau-Suffolk Regional Planning Board (14th Resolved Clause, section (g) "Energy Planning") and the LIRPB's founding legislation of 1965 (Ordinance No. 6 of 1965 Nassau County Board of Supervisors Section 3, part (b) "analysis of economic base land use, fiscal problems and public utilities" and Resolution No. 36 of 1965 Suffolk County Board of Directors Section 3, part (b) "Perform planning work, including but not limited to studies of . . . public utilities."

The Long Island Power Authority serves the Nassau-Suffolk region almost exclusively. Thus energy needs on Long Island are managed and planned for regionally.

Staff Findings: The LIRPB's *Energy Plan for Long Island, New York* of 1991 identifies energy conservation, an increased supply of natural gas, and increased hydroelectricity from the North to address Long Island energy problems. The plan does state that wind energy can "make a contribution to Long Island's energy supply which would be particularly useful if it coincided with summer peak loads" (p. 71). The plan identified the south shore of Long Island as one of the better wind regimes in New York State, but it also noted that this source of energy must be coupled with a fuel-burning generator, or an expensive battery storage, to be dependable.

There are many unknowns about this project, primarily the capital costs that will be sunk into it. Details about the winning bid from FPL Energy have not been revealed. At this time there is no definitive measurement of the turbine cost by either FPL Energy or LIPA. The standard rate for a land-based wind turbine is \$1,000/kW. These turbines are estimated to create 3.7 megawatts of electricity and a megawatt is 1,000 kilowatts. Consequently the turbines could cost approx. \$3.7 million per turbine, or \$148 million. But wind turbine technology for off shore locations is not advanced. The price will certainly be higher than most land-based wind farms. Suffolk County Legislator Wayne Horsley suggested at a recent meeting of the U.S. Mineral Management Service at Babylon High School that the turbines, towers, and substations could cost approximately \$400 million dollars to install.

It is not certain what kind of review will be conducted for this project. LIPA is moving ahead in the licensing project before the MMS has developed its evaluation guidelines. Authority over renewable energy projects used to be the domain of the Army Corps. of Engineers. But the Energy Policy Act of 2005 gave this oversight function to MMS. LIPA's Off Shore Wind Park project and the controversial wind park proposed by Cape Wind for Nantucket Sound were permitted to proceed with licensing because of a provision in the law that exempted projects already put out to bid or where a test facility had already been built. This potentially less stringent review process might not include updated review requirements on where wind parks are sited, if and when neighboring states must be consulted, and transparency in the bidding project.

Despite these unknowns, the Long Island Power Authority is going ahead with its plans, which will effect visitors to Jones Beach and Robert Moses State Parks, coastal communities, south shore homeowners, beach visitors, fishermen, boaters, surfers, and the environment. The primary motivation appears to be the Renewable Portfolio Standard (RPS) that New York began in 2006, requiring that 25 percent of the state's power come from renewables by 2013 (18 percent already comes from large hydro projects).

Staff Recommendation

As a “first of its kind” this proposal is more of an experiment than it is a power generation project, and there are indications that it might be rushed. Indeed, the United States Department of Energy recently entered into an agreement with General Electric to develop the next generation of wind turbines that are taller, can generate more power at cheaper rates, and have the ability to be placed in waters further offshore (up to 15 miles), out of view from land. This technology is expected to take three to four years to be developed.

Winergy, a small Shirley-based firm, proposes to install three 3.6 megawatt wind turbines on 200 acres just off Plum Island. Two of the turbines will be on steel cylinder monopole foundations that are industry standards. A third will be on a newly developed jackup barge with three telescoping legs. Unlike monopole installations, the barge-based turbine will be mobile and can be towed back to shore for repair or maintenance, a huge cost savings. Winergy hopes ultimately to place these mobile structures 20 miles offshore, in depths up to 150 feet.

Due to the provisions of the Energy Policy Act of 2005, which exempt this project from stringent regulatory review, it is imperative that the MMS make public its standards for wind farm siting and review before approval is given. MMS says it will enforce the National Environmental Protection Act for this project just as it would any other, but it should fast track the adoption of evaluation guidelines.

In the absence of this, it is imperative that New York State protect the interests of ratepayers and act to make a determination on this project. First, the New York State Public Service Commission should require LIPA to immediately release all of the information regarding this project, including financial information pertaining to capital costs. Secondly, once this information is known, the New York State Energy Research and Development Agency, and all of the members of the former New York State Energy Planning Board (which after the lapse of Article 6 of the New York State Energy Law and Energy Planning Board Regulations became the Energy Coordinating Working Group), including the New York State Department of Environmental Conservation, the New York State Department of State, the New York State Department of Transportation, the New York State Public Service Commission, and the New York State Department of Economic Development, should conduct a feasibility study of this project, including economic, environmental, and social/cultural impacts.

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