
8.0 EFFECTS ON USE AND CONSERVATION OF ENERGY RESOURCES

The Project will have significant, long-term beneficial effects on the use and conservation of energy resources, particularly as a contributor to meeting international, federal, and state energy policies and initiatives.

At the federal level, the United States Department of Energy (DOE) Draft Strategic Energy Plan (August 2006) establishes as its number one strategic theme promotion of America's energy security through reliable, clean, and affordable energy. The plan prioritizes reducing our growing national demand for fossil fuel based energy sources, many of them depending on imported fuels, and promotes alternative energy development as a key element of reversing this long-term trend. At the international level, the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (February 2007) provided a status summary of the physical science base for documented climate change. The international working group preparing this report concludes that "warming of the climate system is unequivocal" based on a broadening base of scientific evidence, and that man-made greenhouse gases caused by fossil fuel based energy sources are a significant contributor to this increasing warming trend. Global emission reduction targets have been established by the United Nations Framework Convention on Climate Change and the Kyoto Protocol in response to findings such as these. Increasing the use of pollution-free renewable energy as a replacement for existing sources that contribute polluting greenhouse gases is imperative to meeting internationally established pollution reduction goals and reducing global warming.

In New York State, SEQRA requires that new electric generation projects demonstrate that they will satisfy electric generating capacity needs in a manner reasonably consistent with the most recent state energy plan. The *2002 State Energy Plan and Final Environmental Impact Statement* (Energy Plan) encompasses policies designed to keep New York at the forefront among the states in providing its citizens with fairly priced, clean, and efficient energy resources. The Project is consistent with the five broad policy objectives of the Energy Plan:

- (1) ENERGY AND TRANSPORTATION INFRASTRUCTURE SECURITY: At the federal and state level, energy policy is increasingly focused on the manner in which increasing the country's use of domestic sources of renewable energy will strengthen our country's homeland security. Wind energy is an inexhaustible, domestic resource helping reduce our dependence on imports of natural gas, oil, and other fuels, often from politically unstable countries. The American Wind Energy Association (AWEA) estimates that existing wind farms save over 13.7 million cubic feet of natural gas per day per year (AWEA 2003). Natural gas supplies in North America are being depleted and current U.S. natural gas shortfall is about 3 to 4 billion cubic feet per day. New York State is particularly susceptible to concerns over energy security as it imports 98 percent of the natural gas consumed each year, primarily from the Gulf Coast where production facilities are vulnerable to hurricane activity, but also from Canada. Maximizing the use

of indigenous energy resources reduces the market impacts attributed to political instabilities in other regions of the world or uncontrollable weather patterns that can affect access to supplies, as demonstrated most particularly in the NYSEERDA report (GE Power Systems Energy Consulting 2004), which states that the presence of 3,000 MW of wind energy in New York would reduce New York wholesale electricity prices by at least \$350 million, and up to \$540 million (see later NYS PSC estimate below) per annum. Furthermore, the Energy Information Administration reports that in 2005 a record number of gas wells were drilled in the United States for a single year and that the number of producing wells has increased every year since 2000. Despite the increase in wells, production is not increasing proportionally. While the number of gas wells increased by 17 percent in the first eight months of 2006 compared to 2005, actual production increased by only 0.8 percent (Energy Information Administration 2007).

New York State wind generation currently offsets the equivalent of burning more than 3.4 million cubic feet of gas per day. By expanding wind generation, price spikes associated with fuel supply can be reduced and gas supplies can be conserved.

Energy facilities such as nuclear power plants, liquefied natural gas (LNG) receiving terminals, and natural gas pipelines are subject to careful planning in order to reduce their accessibility and vulnerability as targets for terrorist activity. These types of energy facilities are thought to be vulnerable targets for terrorist activity, because in addition to the disruption of energy provision such an attack would cause, the associated loss of human life and property damage associated with such an attack would make a larger psychological impact on the country. Wind generating facilities do not present a good target for terrorist attacks. Wind energy facilities have no fuel supply, storage or treatment infrastructure, and the facilities themselves consist of multiple small individual generators which are spaced relatively far apart so that they cannot easily be damaged at the same time. Wind turbines are also relatively easy to replace compared to thermal power plants or LNG facilities. And if a wind farm is damaged, there is no secondary threat to the public, such as those that can come from nuclear plants (radioactive releases) and conventional power plants/infrastructure (explosions).

Finally, the proposed improvements to local transportation infrastructure in the Project Area, as described in Section 2.8, would bolster road safety and enhance the type of vehicle traffic local roadways could accommodate.

- (2) **STIMULATING SUSTAINABLE ECONOMIC GROWTH, TECHNOLOGICAL INNOVATION AND JOB GROWTH IN THE ENERGY SECTOR:** As stated in Section 2.9, the proposed Project will result in sustainable economic growth throughout the area. Short-term benefits would include a temporary increase in local employment, income from wages and contractual construction, and Project-related local purchases of construction goods and services. Long-term benefits of operating the Project would

include generation of significant additional local revenue for the towns of Arkwright and Pomfret in Chautauqua County and for the three public school districts (Pine Valley Central, Fredonia Central, and Forestville Central) through a Payment in Lieu of Taxes (PILOT) agreement for the towns of Arkwright and Pomfret through a Host Community/Mitigation Agreement, revenues for local fire districts through special district taxes, purchases of goods and services, payments to host landowners and their neighbors, and some minor economic benefits through increased tourism. Some of this economic growth could then be invested into more efficient technologies and better amenities such as schools, roads, and hospitals in the community. Host landowners and their neighbors may likely invest their income in capital projects that increase the value of their homes or farms and as such their property values. They may also likely increase purchases from local businesses (e.g., farm equipment vendors), which multiplies the value of each dollar they receive from the Project. The Project would create temporary job growth during the construction phase (approximately 250 jobs) and long-term job growth to fill the 10 to 15 positions during Project operation.

- (3) **INCREASING ENERGY DIVERSITY, INCLUDING RENEWABLE BASED ENERGY:** The proposed Project would facilitate compliance with the PSC "Order Approving Renewable Portfolio Standard Policy," issued on the 24th of September 2004. This Order calls for an increase in renewable energy used in the state from a then-level of 19 percent to 25 percent by the year 2013. The Project's nameplate capacity will be a maximum of 79.9 MW. Assuming that the average house in western New York consumes approximately 6 MWh of electric energy per year, and assuming the Project averages approximately 30 percent of its nameplate generating capacity, this is enough energy to support approximately 35,000 homes in New York State (on an average annual basis). The Project will add to and diversify the state's sources of power generation, accommodate growing power demand through the use of a renewable resource (wind), and will displace some of the state's older, less efficient, and dirtier sources of power.

Because in New York State the prevailing price for electricity depends on the cost of running the most expensive power plant needed to meet demand—often plants burning natural gas—higher prices for natural gas translate into higher prices for electricity as well. Wind can displace the use of natural gas for power generation, suppressing spot prices. While these price suppression benefits are most significant during peak demand periods in the summer, wind generation also accrues benefits to consumers in the winter. Reduced demand for natural gas to generate electricity in the winter benefits heating customers using natural gas.

The heavy reliance on natural gas for both heating and generating electricity leaves both systems susceptible to volatility due to any number of unpredictable events that affect

natural gas prices or supplies. This was most recently seen in 2005 when hurricanes Katrina and Rita damaged natural gas production facilities in the Gulf Coast. The New York State Department of Public Service predicted as much as a 35 percent increase in the price of delivered electricity, on top of 30 to 45 percent heating bill increases. An unusually mild winter that suppressed heating demand kept bills lower than predicted.

But the competition for the use of natural gas to meet heating demands, as well as electric generation, continues to grow. The NYISO anticipates winter peak demand for electricity to increase by more than 800 MW by 2013. Increased wind generation to meet that demand can preserve gas supplies for heating and limit both electric and heating price volatility.

- (4) **PROMOTING AND ACHIEVING A CLEANER AND HEALTHIER ENVIRONMENT:** Wind power offsets energy from other polluting sources. That is important because electric generation is the largest industrial source of air emissions in New York State. When wind projects generate electricity, fuel at other power plants is not burned. NYSERDA found that if wind energy supplied 10 percent (3,300 MW) of the state's peak electricity demand, 65 percent of the energy it displaced would come from natural gas, 15 percent from coal, 10 percent from oil, and 10 percent from electricity imports. This equates to an annual displacement of 4.1 million tons of carbon dioxide, 9,900 tons of sulfur dioxide, and 3,800 tons of nitrogen oxides. Annually, the New Grange Project would displace roughly 89,000 tons of CO₂, 450 tons of SO₂, and 100 tons of NO_x.

Wind energy requires no mining, drilling, or transportation of fuel, and does not generate radioactive or other hazardous or polluting wastes. To generate the same amount of electricity as a single 1.5-MW wind turbine for 20 years would require burning 79,830 pounds of coal or 125,580 barrels of oil. Assuming an installed nameplate capacity of 79.9 MW, the Project can offset the equivalent of 4.25 million pounds of coal or 6.69 million barrels of oil over 20 years.

According to the New York State Renewable Portfolio Standard Performance Report (NYSERDA 2007), the total new renewable capacity planned to be installed in New York by the end of 2008 is 1,184 MW. These renewable sources (including two biomass facilities) will provide potential reductions of 2,200 tons of nitrogen oxides, 4,900 tons of sulfur oxides, and 1.5 million tons of carbon dioxide per year¹. Additionally, as of January 29, 2008, the NYISO queue listed 7,805 MW of proposed wind energy projects in the state, nearly 435 MW of which are proposed for Chautauqua County, including the New Grange Wind Farm. While not all of these projects will be successfully permitted and built over the next few years, the quantity of potential wind power developments in

¹ The estimates for emissions come from NYSERDA and are based on the planned capacity additions.



the queue further demonstrates the commitment to renewable energy in the state and a trend towards a cleaner, healthier environment.

- (5) ENSURING EQUITY, FAIRNESS, and CONSUMER PROTECTIONS: Wind power is a good hedge against energy inflation, which is important to energy consumers. Once a wind generating facility is built, the cost of energy is known and not subject to the extreme volatility of fossil fuel markets. Adding wind power in New York will reduce demand for and therefore the price of natural gas. Because natural gas plants generally set the market price for electricity in New York, lower gas prices lead to lower electricity prices. The New York State PSC estimates that the addition of this level of wind power to New York's electric grid can save approximately \$540 million per year in wholesale energy costs by lowering the market-clearing price for electricity. Another analysis performed by the Union of Concerned Scientists found that switching 10 percent of our electricity to clean energy sources by 2020 could save consumers as much as \$13 to 18 billion over 20 years, due to lower natural gas prices and higher renewable electricity consumption.

