7.0 ALTERNATIVES ANALYSIS

7.1 Geographic Scope and Primary Project Criteria

The analysis of alternative geographic locations for a wind energy electrical-generating facility must be limited in scope to a degree that makes sense. For the purposes of this alternatives analysis, the geographic scope under consideration is within the boundaries of the Towns of Cape Vincent and Lyme in Jefferson County, New York. Alternatives analysis outside of this geographic area cannot be valid because the potential impacts of an alternative outside the proposed geographic area would be speculative in nature and the equivalent of the no action alternative.

The primary criteria for siting the SLW Project included the following:

- Adequate wind speeds to support an economic project;
- Proximity to a transmission line that can transport energy generated by a project;
- Ability to build a project in compliance with applicable local, state, and federal laws and regulations; and
- Ability to build a project without significant adverse impacts.

7.2 Assessment of Electric Generation Technologies

The types of wind turbine generators being considered for this Project are all MW-class, three-bladed, upwind designs with proven track records. The final choice of turbine would be decided by two additional factors:

1. **Cost of Energy** – Various model turbines perform differently in different conditions. A project location's meteorological characteristics, such as wind speed, distribution and shear, can indicate the selection of one type of turbine over another.

2. **Turbine Availability** – Because of the recent public support for generating a homegrown, clean, renewable industry, there is currently a shortage of all MW class, three-bladed, upwind turbines.

The primary difference in turbines that generate greater MWs is rotor blade length. Older wind turbine models had smaller average rotor diameter, but the newer, more efficient generation of turbines have a much higher average rotor diameter. The productivity of a turbine is directly related to the size of the rotor swept area. As a result turbines that have longer blades tend to be relatively more productive.

7.3 No Action Alternative

SEQRA requires consideration of the "no action" alternative. In the case of the SLW Project, the no action alternative assumes that the Project area would continue as active agricultural land, forest, and rural residential property. The “no action” alternative would have no impact on current land use or zoning. It would maintain environmental, socioeconomic and energy-generating conditions as they currently exist.

If the “no action” alternative were selected, no wind energy generating facility and ancillary Project facilities would be built in the Project area. As a result, none of the minor environmental impacts associated with Project construction and operation would occur.

Conversely, if the “no action” alternative were selected, no socioeconomic benefits would accrue to the area. The local economy and community would not benefit from income from construction jobs, lease payments to the landowners, annual tax revenues or PILOT payments.

In addition, if the “no action” alternative were selected, the benefits of adding approximately 136 MW of clean, renewable energy to New York State's energy mix would be lost. There would be no offset of the State's reliance on fossil-fuel-fired generators, which contribute to acid rain, smog, green house gases, and other environmental problems.

If the “no action” alternative were selected, other Project benefits would also be lost, such as lost potential tourism to the Towns of Cape Vincent and Lyme.

Based upon the above and given the short-term and relatively minor nature of anticipated impacts of the SLW Project, and the significant economic benefits that the Project would generate, the “no action” alternative is not a preferred alternative.

7.4 Alternative Project Site Analysis

Various Project layout alternatives were considered and rejected during the Project siting process. The proposed conceptual Project layout (see Figure 2-1) is the result of an iterative meteorological, environmental, and engineering analysis of the best locations for Project facilities in the Towns of Cape Vincent and Lyme. As stated above, the primary criteria for siting the SLW Project included the following:

- **Adequate wind speeds to support an economic project:** In order to find the most efficient turbine sites for generating electricity, SLW used computer models that combined wind resource data from meteorological towers in the Project area, long-term

weather data, topography, and environmental factors. Wind turbines create turbulence, or wake, immediately downstream of the rotor. Wake can interfere with the operation of neighboring wind turbines, creating extra wear and tear, and decreasing their efficiency for producing electricity. Using computer models, SLW ensured that turbines were spaced correctly so as to avoid wake losses and turbulence and optimize energy creation.

- **Proximity to a transmission line that can transport energy generated by a project:** The SLW Project would be interconnected with the 115 kV transmission line owned by National Grid in the Town of Lyme.

- **Ability to build a project in compliance with applicable local, state, and federal laws and regulations:** For example, the turbine locations were selected to maintain a buffer of approximately 615 feet from the center of proposed turbine foundations and a buffer of 1,200 feet from the nearest outer wall of existing occupied residence. In many cases, SLW more than doubled the required setback from residences required by law. The turbine buffers minimize the visual and sound effects of the turbines on local residences. The turbine locations were also selected to maintain a minimum buffer from existing road rights-of-way. The minimum buffer, as measured from the centerline of the tower foundation, are at least 615 feet from all roads.

- **Ability to build a project without significant adverse impacts:** For example, turbine and access road locations were adjusted to avoid wetland areas.

Few other areas in the State of New York have as strong and reliable wind as the mouth of the St. Lawrence River. This, in combination with the sparse population, and dominant agricultural and managed land use, make the Towns of Cape Vincent and Lyme suitable for development of a large-scale wind power project. The current project layout is sited so as to maximize the productivity of the proposed wind energy project by using the most energetic (windy) sites along with the land where wind turbines would have the least environmental or residential impact. Areas to the north and west are within prohibited municipal districts and a significantly greater extent of wetlands near the coast of Lake Ontario (west) and the St. Lawrence River (north), as well as greater population densities (Village of Cape Vincent to the north. Thus, relocating the Project elsewhere within the Towns of Cape Vincent and Lyme would reduce its economic viability, and potentially increase its environmental and socioeconomic impacts,.

The same factors that make the Project site desirable were considered in siting individual turbines. Individual turbines were sited in a manner that sought to minimize or avoid adverse

environmental impacts while maximizing the utilization of wind resources and, as a result, the commercial viability of the proposed Project. The proposed wind turbines and associated facilities on the site have been located so as to minimize loss of active agricultural land and/or interference with agricultural operations. Turbines have also been sited to minimize impacts to forests, wetlands, adjacent landowners and local municipal districts (e.g., Riverfront, Lake).

Project components of alternative size and number were considered. A project of significantly more, or fewer, turbines would pose challenges to the technical or economic feasibility of the Project. If the proposed number of turbines were significantly reduced, the economic feasibility of the Project would be jeopardized and the maximum benefit of the available wind resource would not be realized.

The Project Applicant is doing business in a wholesale electric market that is highly competitive and extremely price-sensitive. Commercial wind farms produce two products: 1) the commodity electric energy, and 2) Renewable Energy Certificates (RECs) that convey the "environmental attributes" that are generated with each unit of electricity produced from renewable energy sources. The power produced is sold directly to the power grid through an hourly auction, essentially guaranteeing that the lowest price always wins, and assuring New York rate-payers the most competitive electricity rates). The emphasis of this "merchant" market place is on low-cost. As a result, for a wind power project to be economically feasible, and maintain its financial commitments designated within the PILOT and applicable host community agreements, it must be able to sell its electricity in the merchant market place. The high fixed costs of developing and constructing wind energy projects dictate that the larger a project can be, the more competitive it is likely to be. Given the increased competition from in-state wind projects, SLW has concluded that a significantly smaller project is less likely to be economically feasible.

Alternatively, a larger project would result in location of wind turbine towers in areas that are less productive, and force installation of more turbines in areas with larger and more abundant natural resources (e.g., wetlands). Further, SLW has concluded that the transmission line on which the Project would interconnect has limited capacity, which limits a larger project.