PRELIMINARY SCOPING STATEMENT

LIGHTHOUSE WIND PROJECT
TOWNS OF SOMERSET AND YATES
NIAGARA AND ORLEANS COUNTIES, NEW YORK

RESPECTFULLY SUBMITTED

Honorable Kathleen H. Burgess
Secretary of the Commission
New York State Public Service Commission
Empire State Plaza
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Case No. 14-F-0485
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Executive Summary

Lighthouse Wind, LLC (the Applicant), a subsidiary of Apex Clean Energy Holdings, LLC (Apex), is proposing to submit an Application to construct Lighthouse Wind (Project), a major electric generating facility, under Article 10 of the Public Service Law (PSL). Applicants proposing to submit an application to construct a major electric generating facility under Article 10 must submit a Preliminary Scoping Statement (PSS). The PSS is a required pre-application procedure for major electric generating facilities applying for a Certificate of Environmental Compatibility and Public Need pursuant to Article 10 of the PSL. The purpose of the PSS is to establish the methodology, scope of studies, or program of studies to be conducted in support of an application being submitted for the Project pursuant to Article 10. The required content of the PSS is prescribed in 16 NYCRR § 1000.5.

The proposed Project is an up to 201 megawatt (MW) wind energy generating facility, primarily located on private land in the Town of Somerset, Niagara County and the Town of Yates, Orleans County, New York. The Project would interconnect to the New York State Electric & Gas Corporation (NYSEG) 345kilovolt (kV) Kintigh Substation in Somerset. The Project will consist of temporary and permanent facilities including wind turbines, access roads, buried electrical collection lines, a substation/point of interconnection with the New York State (NYS) power grid, wind measurement towers, temporary construction staging and storage areas, and an operations and maintenance facility. The design and layout of the Project is currently being determined and, as discussed in more detail below, will be based on factors such as the results of studies to be conducted pursuant to this PSS, wind resource and other data, and land control. While it is not able to be presented in the PSS, the design and layout of the Project will be presented in the Certificate Application.

The purpose of the proposed Project and the goals of the Applicant are to create a wind-powered electrical-generating facility that will provide a significant source of renewable energy to the New York State power grid. The need for the Project is established in both State and Federal policy directives for wind powered electric generating facilities. The Project will also assist in addressing the effects of climate change. These State policy goals are set forth in New York's historic Renewable Portfolio Standard (RPS) goals, and forward-looking Reforming Energy Vision and 2015 State Energy Plans. The Project would also provide significant benefit to the local community through lease revenues to participating landowners, temporary and permanent employment, increased tax revenues, and payments to other local businesses. Additionally, economic benefits are expected to be provided to the Towns of Yates and Somerset, the local school districts, and Niagara and Orleans Counties through an anticipated payment in lieu of taxes (PILOT).

The Applicant prepared a Public Involvement Program (PIP) plan in accordance with the requirements of 16 NYCRR § 1000.4. The PIP was submitted to the NYS Board on Electric Generation Siting and the Environment (Siting Board) on October 31, 2014. The Applicant has been implementing the PIP plan and conducting stakeholder outreach as well as required consulting with local, state, and federal agencies and project stakeholders. Public outreach activities have been documented by the Applicant, and bi-monthly reports have been updated and submitted to the Siting Board since the submittal of the PIP. Throughout the scoping process, during the preparation of the Certificate Application, and throughout the remainder of the Article 10 process, the Applicant will continue to implement the PIP and conduct outreach activities.

Section 2 of this document specifically addresses those resource areas which require a preliminary scope of environmental impact analysis, on the basis of reasonably available information. Resource areas with preliminary scope of analysis include:

- Land Use
- Electric System Benefits
- Public Health and Safety
- Noise and Vibration
- Cultural Resources
- Geology, Seismology and Soils
- Terrestrial Ecology and Wetlands
- Water Resources and Aquatic Ecology
- Visual Impact
- Effect on Transportation
- Effect on Communications
- Socioeconomic Effects
- Environmental Justice
- Electric and Magnetic Fields
- Project Alternatives
- Consistency with Coastal Management Policy

The Project has the potential to have adverse impacts on environmental resources, as described in the subsections of Section 2. Impacts are generally temporary (related to construction) or permanent (related to operation and maintenance) and vary depending upon affected resource. While the final layout and design of the project is not known, the range of possible impacts is presented, based upon what is currently known about the Project, the existing physical setting of the Project Study Area, and what is well understood in the wind energy industry regarding the range, extent and types of impacts that could occur from Project construction and operation. This document is not intended to describe actual impacts from the Project, which will be identified in detail in the Certificate Application. Rather, this document discusses the "potential" or "likely" impacts in order to determine the scope of studies necessary to assess those impacts, determine avoidance, minimization and/or mitigation measures, and ultimately present a Project in the Certificate Application which meets the requirements of Article 10 and the criteria for the required findings to be issued by the Siting Board.

During construction, the Project has the potential to have temporary adverse impacts on soils during the development of the equipment staging areas, the operations and maintenance (O&M) facility, and the installation of access roads, turbine foundations, permanent meteorological towers, underground electrical collection systems, and the substation/interconnection substation. Earth moving and general soil disturbance has the potential to introduce erosion and sedimentation into surface waters. Construction activities also have the potential to cause temporary impacts to wetlands and surface waters through vegetation clearing, earthwork, including trenching activities, or placement of fill in wetlands and surface waters. Indirect impacts to wetlands and surface waters may result from sedimentation and erosion caused by adjacent construction activities. Project construction may also result in temporary and permanent impacts to vegetative communities and wildlife habitat. Construction-related impacts to vegetation include clearing and, in some locations grubbing or removal of root systems. Without proper construction techniques, avoidance or mitigation, these activities have

the potential to result in loss of wildlife habitat, habitat fragmentation, increased soil erosion and sedimentation, and the introduction or spread of invasive plant species.

After construction, the Project has the potential to have permanent impacts associated with the operation of the facility. Some level of wildlife displacement or disturbance, including avian and bat collision mortality is expected, which could include the potential for impacts to protected species. Other impacts to wildlife could include permanent loss of forestland and other wildlife habitat changes. The turbines will be visible from many locations within the surrounding area, but will also be fully or partially screened from viewers in many locations. The turbines will result in a perceived change in land use from some locations. Although predicted noise and shadow flicker impacts have not yet been assessed, operation of the Project has the potential to introduce some level of noise and shadow flicker on area receptors, including residences.

It is important to keep in mind that through planning and site design, some of the potential adverse environmental impacts associated with Project construction and operation can be avoided, minimized or mitigated. Additionally, during construction, the adherence to best management practices (BMPs) and standards outline in the Project's Stormwater Pollution Prevention Plan, Spill Prevention Plan, and adherence to NYS Department of Agriculture and Markets (NYSA&M) Guidelines for Agricultural Mitigation for Wind Power Projects can significantly minimize adverse impacts, particularly to soil and water resources. To the extent that adverse impacts cannot be avoided, mitigation measures can be implemented to reduce the environmental impact from the Project. However, by nature of the Project, all impacts cannot be eliminated.

The selection of a site for an economically viable wind energy project is dependent upon a number of factors. The Towns of Somerset and Yates were chosen for the Project based upon a preliminary, favorable assessment of various siting and operation criteria, including:

- strong wind resources;
- adequate access to the site;
- close proximity to an electrical system interconnect point with sufficient capacity;
- willing participant landowners with contiguous parcels large enough to support the Project;
- potential for avoidance and/or minimization of significant environmental impacts;
- relatively limited residential development in the Project area; and
- the presence of complementary land uses.

Preliminary analysis of these factors by the Applicant indicates a high probability of technical and economic viability within the Study Area.

As indicated in Sections 3, 4 and 5 of this PSS, the Applicant has identified all other state and federal permits, certifications, or other authorizations needed to construct, operate or maintain the Project. Generally, Article 10 preempts state and local procedural permitting requirements related to the construction and operation of a major electric generating facility greater than 25 MW. However, the Project is still required to receive federal approvals, including those administered by the State. The substantive requirements of state and local laws still must be complied with, unless they are set aside by the Siting Board. Compliance with the Conditions of the Article 10 Certificate, and other various federal regulations, as well as certain applicable state and local regulations addressing the siting, construction and operation of the proposed Project will serve to avoid and minimize adverse impacts.

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1. INTRODUCTION

Lighthouse Wind, LLC (the Applicant), a subsidiary of Apex Clean Energy Holdings, LLC (Apex), is proposing to submit an Application to construct Lighthouse Wind (Project), a major electric generating facility, under Article 10 of the Public Service Law (PSL). Pursuant to the rules of the New York State Board on Electric Generation Siting and the Environment (Siting Board), applicants proposing to submit an application to construct a major electric generating facility under Article 10 must submit a Preliminary Scoping Statement (PSS).

This section provides a description of the purpose of the PSS, the organization of the PSS, the planned content of the future Certificate Application, and a general overview of the Project. It also includes a summary of the Applicant's pre-application public outreach activities, which have been, and continue to be, conducted in conformance with the Project's previously reviewed and approved Public Involvement Program plan and the requirements of Article 10.

1.1 PURPOSE OF DOCUMENT

The PSS is a required pre-application procedure for major electric generating facilities applying for a Certificate of Environmental Compatibility and Public Need pursuant to Article 10 of the PSL. The purpose of the PSS is to establish the methodology, scope of studies, or program of studies to be conducted in support of an Certificate Application being submitted for the Project pursuant to the Siting Board. In essence, the PSS will serve as a roadmap for the information gathering that will be needed to support the conclusions in the Project's ultimate Certificate Application. Per the requirements in 16 NYCRR § 1000.5, the PSS is not intended to provide an environmental impact analysis of the Project, but rather is a scoping tool to convey the Applicant's proposal for the methodologies and scopes of study that will be used to evaluate any potentially adverse environmental or health effects from the construction and operation of the Project. The proposed methods and scopes for the studies identified in the PSS have been developed in consultation with relevant local, state, and federal agencies and are in accordance with industry standards and best practices.

The required content of the PSS is prescribed in 16 NYCRR § 1000.5. As outlined in these procedures, a PSS must contain as much information as is reasonably available concerning the proposed facility, including:

1. A preliminary scope of environmental impact analysis containing a brief discussion based upon:
    - The Project's existing environmental setting and location;
    - Potentially significant adverse environmental and health impacts that may occur from construction or operation activities;
    - Specific information that will be addressed in the Certificate Application to address and evaluate potential adverse impacts, including the methodologies for obtaining information;
    - Details regarding studies and monitoring for pre- and post-construction activities affecting bird and bat species;
    - Measures to avoid or minimize adverse impacts;
    - Measures to mitigate unavoidable adverse impacts, where applicable;
    - Reasonable and available alternative locations for the facility;
    - The Project's consistency with New York State (NYS) Coastal Management Program (CMP) policies;

    - A comparison of the potential preferred alternatives, considering the objectives of the Project sponsor; and
    - The demographic, economic, and physical attributes of the community, and a preliminary environmental justice evaluation.
2. Applicable state and federal permits required to construct, operate and maintain the Project;
3. Applicable state laws and regulations applicable to the Project, and a preliminary statement of compliance;
4. Relevant local laws and regulations which apply to the Project, and a preliminary statement of compliance or explanation as to why these local laws and regulation should not be applied to the Project;
5. The Applicant and its corporate structure;
6. The Applicant's property rights and interests, and planned activities to acquire land and rights of way; and
7. Any other information the applicant deems necessary.

Pursuant to 16 NYCRR 1000.5(g), within 21 days after the filing of this PSS, any person, agency or municipality may submit comments on this PSS by serving such comments on the Applicant and filing a copy with the Secretary.

1.2 CONTENT OF APPLICATION

This PSS is organized to follow the order and requirements of 16 NYCRR § 1000.5 (l)(1) through (8), as summarized above. Section 2 of this document specifically addresses those resource areas which require a preliminary scope of environmental impact analysis, on the basis of reasonably available information. Resources appear in the order they are presented as required exhibits for the Certificate Application in the regulations at 16 NYCRR 1001.1 et. seq. However, each application exhibit does not require scoping, as the content of each is specifically prescribed in 16 NYCRR § 1001.1 through 1001.41. Though this content is not specifically 'scoped' in the PSS, it will be presented in its entirety in the future Certificate Application in accordance with the respective exhibit requirements in Part 1001. The exhibits which do not require scoping include:

- Exhibit 1: General Requirements
- Exhibit 2: Overview and Public Involvement
- Exhibit 3: Location of Facilities
- Exhibit 6: Wind Power Facilities
- Exhibit 8: Electric System Production Modeling
- Exhibit 10: Consistency with Energy Planning Objectives
- Exhibit 11: Preliminary Design Drawings
- Exhibit 12: Construction
- Exhibit 13: Real Property
- Exhibit 14: Cost of Facilities
- Exhibit 18: Safety and Security
- Exhibit 29: Site Restoration and Decommissioning
- Exhibit 33: Other Applications and Filings
- Exhibit 34: Electric Interconnection

Generally, the Certificate Application will contain all of the general requirements and specific requirements for each exhibit as described in 16 NYCRR §1001.1 through 1001.41, as applicable. Due to the nature of wind powered generating facilities, certain exhibits do not apply. It is assumed that the following exhibits do not apply:

- Exhibit 7: Natural Gas Power Facilities
- Exhibit 16: Pollution Control Facilities
- Exhibit 17: Air Emissions
- Exhibit 30: Nuclear Facilities
- Exhibit 36: Gas Interconnection
- Exhibit 37: Back-up Fuel
- Exhibit 38: Water Interconnection
- Exhibit 39: Wastewater Interconnection
- Exhibit 40: Telecommunications Interconnection
- Exhibit 41: Applications to Modify or Build Adjacent

Those Certificate Application exhibits which require studies to support the evidence presented in the Application are discussed herein and are the focus of this document. As stated above, Section 2 of the PSS presents a preliminary scope of environmental impact analysis for resource areas which require it, based upon that information which is currently available at this preliminary stage of Project development. For ease of reference, Table 1 indicates the relationship between the exhibits that will be included in the Certificate Application and the environmental impact analyses proposed in Section 2 of this PSS.

Table 1. Preliminary Scope of Analysis PSS Section Reference

Application Exhibit	**PSS Section that Addresses Preliminary Scope of Environmental Impact Analysis**
Exhibit 4: Land Use	2.2 Land Use
Exhibit 5: Electric System Effects	2.3 Electric System Effects
Exhibit 9: Alternatives	2.18 Alternatives Evaluation; 2.20 Benefit of the Preferred Alternative
Exhibit 15: Public Health and Safety	2.4 Public Health and Safety
Exhibit 19: Noise and Vibration	2.6 Noise and Vibration
Exhibit 20: Cultural Resources	2.7 Cultural Resources
Exhibit 21: Geology, Seismology and Soils	2.8 Geology, Seismology and Soils
Exhibit 22: Terrestrial Ecology and Wetlands	2.9 Terrestrial Ecology and Wetlands
Exhibit 23: Water Resources and Aquatic Ecology	2.10 Water Resources and Aquatic Ecology
Exhibit 24: Visual Impacts	2.11 Visual Impacts
Exhibit 25: Effect on Transportation	2.12 Effect on Transportation
Exhibit 26: Effect on Communications	2.13 Effect on Communications
Exhibit 27: Socioeconomic Effects	2.14 Socioeconomic Effects
Exhibit 28: Environmental Justice	2.15 Environmental Justice

Application Exhibit	PSS Section that Addresses Preliminary Scope of Environmental Impact Analysis
Exhibit 35: Electric and Magnetic Fields	2.17 Electric and Magnetic Fields

Finally, this PSS provides a discussion of the applicable state and federal permits required to construct, operate, and maintain the project; state laws and regulations applicable to the Project with a preliminary statement of compliance; and relevant local laws and regulations which apply to the Project with either a preliminary statement of compliance or an explanation as to why these local laws and regulations should not be applied to the Project. These items are described in Sections 3, 4, and 5 of this PSS, respectively, based upon presently available information. The Certificate Application will provide all of the requirements of 16 NYCRR §1001.31 and 1001.32 (Exhibits 31 and 32), including a list of all local and state ordinances, laws, permits, authorizations, and standards applicable to the construction and operation of the Project (including all ancillary facilities) and their procedural and substantive requirements. Exhibit 31 will include the Applicant's requests that the Siting Board waive substantive local requirements, as applicable, in accordance with 16 NYCRR § 1001.31(e).

1.3 DESCRIPTION OF THE PROPOSED FACILITY

As presently envisioned, the proposed Project is a 201 megawatt (MW) wind energy generating facility located on private land in the Town of Somerset, Niagara County and the Town of Yates, Orleans County, New York. The Project would interconnect to the NYSEG 345 kilovolt (kV) Kintigh Substation in Somerset. Figure 1 (Project Locus) illustrates the Project's location in context with the region.

The Project will consist of temporary and permanent facilities including wind turbines, access roads, buried electrical collection lines, a substation/point of interconnection with the NYS power grid, wind measurement towers, temporary construction staging and storage areas, and an operations and maintenance facility. The design and layout of the Project is currently being determined and, as discussed in more detail below, will be based on factors such as the results of studies to be conducted pursuant to this PSS, wind resource and other data, and land control. While it is not able to be presented in the PSS, the design and layout of the Project will be presented in the Certificate Application. The scale and location of facilities will be based upon key design factors, including but not limited to: 1) optimal wind resource, 2) landowner participation; 3) minimization of potentially significant environmental impacts; 4) constructability; 5) local, state, and federal laws, regulations and guidelines; and 6) public input.

Given turbine market conditions and rapidly evolving technologies, the Applicant has not yet selected a turbine manufacturer for the Project. The Certificate Application will describe the characteristics of an anticipated turbine model that may ultimately be selected. Based upon the requested interconnection (201 MW), and currently available turbine technology, it is anticipated that the Project will consist of up to 71 turbines. For example, if the Applicant ultimately selects a 3.3 MW turbine, 61 turbines would be built. However, if a smaller generating capacity turbine is selected, such as if a 2.85 MW turbine, then 71 turbines will be built. The Certificate Application will clearly illustrate all turbine locations, as well as the location and dimensions of all alternate Project facilities.

1.4 LOCATION AND ENVIRONMENTAL SETTING OF THE PROPOSED FACILITY

The current area within which the Applicant proposes to host components of the Project is located within an area of 24,000 acres in northeastern Niagara County and northwestern Orleans County, including portions of the Towns of Somerset and Yates, as illustrated in Figure 2 (Project Site). Because the exact locations of Project facilities have not yet been determined, this is considered the Study Area, and throughout the PSS is referred to as the Project site. The Project site lies approximately 25 miles northeast of the City of Buffalo, 38 miles west of the City of Rochester, and 9 miles northeast of the City of Lockport. The Project site is situated parallel to approximately 12 miles of Lake Ontario shoreline and extends approximately 3-4 miles south of the lake. The Study Area includes all parcels where the Applicant is gauging landowner interest in Project participation and exploring layout alternatives. It should be noted that as the Project layout is developed and landowner agreements are secured, the resulting or ultimate Project site will encompass a smaller subset of the parcels currently defined within the currently considered Study Area or Project site.

The Project site encompasses an area with a variety of land uses, ranging from agricultural or rural residential, to forestland, to lakefront/lakeshore which is seasonal recreational and residential in character. Interspersed throughout the Project area are industrial uses such as an active CSX-owned railroad and Somerset Operating power plant (formerly known as the Kintigh Generating Station), as well as a roadway system network. Residential, commercial, and industrial development is concentrated in nearby villages and hamlets, as well as scattered along major transportation corridors and the lake shore.

The northern boundary of the Study Area lies adjacent to approximately 12 miles of Lake Ontario shoreline. From Lake Ontario, the Study Area extends inland approximately 3-4 miles. Land use within is generally mixed, and includes agricultural, rural residential, and lakefront, seasonal recreational and residential land uses. Topography is largely flat with relatively shallow entrenchment of streams that typically flow northeast before emptying into Lake Ontario. Small farm ponds make up the remainder of waterbodies found within the Project site. The major plant communities within the Study Area are associated with agricultural, forested, grassland and shrub/scrub cover types. The remainder of the Project site is disturbed/developed land with minimal, or highly managed, plant communities (e.g., roads, road shoulders, industrial sites, lawns). The existing setting of the planned facility is described in greater detail in Section 2, below.

1.5 PROJECT PURPOSE, NEED AND BENEFIT

The purpose of the proposed Project is to create a wind-powered electrical-generating facility that will provide a significant source of renewable energy to the New York State power grid.

The need for the Project is established in both State and Federal policy directives for wind powered generating facilities and addressing the effects of climate change. New York policy specifically addresses the threat imposed by climate change. In 2004, New York established a Renewable Portfolio Standard (RPS) which initially called for an increase in renewable energy used in the State to 25% by the year 2013 (New York Public Service Commission, 2004). In 2010, the New York Public Service Commission (PSC) expanded the RPS target to 30% by 2015. To address initiatives beyond 2015 Governor Andrew M. Cuomo launched New York's new energy policy, Reforming the Energy Vision (REV), which calls for the transition to an integrated energy network able to combine the benefits of a centralized grid with clean,

locally generated power (PSC, 2015). To further the State's commitment to renewable energy, the New York State Energy Research and Development Authority (NYSERDA) has proposed a comprehensive Clean Energy Fund (CEF). The CEF is part of the REV initiative, a 10-year $5 billion funding program to support clean energy market development and innovation and to secure renewable energy resources as part of New York's clean energy future. The Lighthouse Wind project would be compatible with the REV initiative and the State's commitment to renewable energy goals.

Further, through the 2015 State Energy Plan, New York has committed to achieving a 40% reduction in greenhouse gas emissions (from 1990 levels) by 2030 and an 80% reduction in reducing total carbon emissions by 2050. The Plan also calls for 50% of generation of electricity to come from renewable energy sources by 2030. According to the Plan, "Renewable Energy sources, such as wind, will play a vital role in reducing electricity price volatility and curbing carbon emissions." The Lighthouse Wind project is compatible with the objectives of the State Energy Plan.

The need for the Project is also supported through federal energy policy directives. In 2013, President Obama announced the Climate Action Plan which provides a national plan for addressing the challenges of climate change. In 2015, the Environmental Protection Agency (EPA) established the first ever restrictions on carbon pollution from power plants, the largest source of unregulated CO2 emissions in the U.S. Through the EPA's Clean Power Plan, it states, "With abundant clean energy solutions available, and building on the leadership of states and local governments, we can make continued progress in reducing power plant pollution to improve public health and the environment while supplying the reliable, affordable power needed for economic growth. By doing so, we will continue to drive American leadership in clean energy technologies" (Executive Office of the President, 2013).

The Project will have a nameplate capacity of up to 201 MW and is expected to generate enough electricity to meet the average annual consumption of approximately 53,000 households, based on average annual electric consumption 7.2 megawatt hours (MWh) for New York State (EIA, 2014). The electric power generated from the facility would emit no pollutants or greenhouse gases to the atmosphere.

The Project's economic benefits to its host communities will be significant, including lease revenues to participating landowners, temporary and permanent employment, increased tax revenues, and payments to other local businesses. Additionally, economic benefits are expected to be provided to the Towns of Yates and Somerset, the local school districts, and Niagara and Orleans Counties through an anticipated payment in lieu of taxes (PILOT). The direct payments to the local taxing jurisdictions are expected to total at least $1.5 million per year, potentially for up to 30 years, based on a 201 MW project. Lease payments to participating landowners who own land in the proposed Project area would total over $1 million per year for the life of the Project. The proposed Project will have positive impacts through employment opportunities, specifically by generating temporary construction employment. During construction, it is anticipated that at least 300 full time equivalent construction jobs will be involved in the construction of the Project. In addition, operation of the Project will generate full-time jobs, such as wind turbine technicians and a site manager. During operations, it is anticipated that up to 13 local, full time positions will be required throughout the operation of the Project. The Project will also result in increased revenues to county and local municipality tax bases, payments to the local hospitality industry, and purchase of local supplies and goods.

1.6 PUBLIC OUTREACH

The Applicant prepared a Public Involvement Program (PIP) plan in accordance with the requirements of 16 NYCRR § 1000.4. The PIP was submitted to the Siting Board on October 31, 2014. Following the receipt of comments on the PIP, the PIP was updated, finalized, and filed by the Applicant on December 31, 2014. An additional update to the PIP was filed January 15, 2015 that made updates to stakeholder information based upon changes in elected and appointed officials. The PIP and all other submissions under Article 10 are available online at http://www.lighthousewind.com/article10_submissions.

Additionally, hard copies of the PIP are available at four different document repositories in the general Project area. These include the Village of Barker Library, the Village of Lyndonville Library, the Town Hall of Somerset, and the Town Hall of Yates. Finally, a copy of the PIP is available at the Project office, located at 8691 Main Street, Barker, NY, 14012.

Based on the mandates of the PIP, which incorporates the requirements of Article 10, the Applicant has conducted the requisite consultations with local, state, and federal agencies and Project stakeholders. Public outreach activities have been documented by the Applicant, and bi-monthly reports have been updated and submitted to the Siting Board since January of 2015. Throughout the scoping process, during the preparation of the Certificate Application, and throughout the remainder of the Article 10 process, the Applicant will continue to implement the PIP and conduct outreach activities. The PIP will also be discussed in Exhibit 2 of the Certificate Application, pursuant to the requirements of 16 NYCRR § 1001.2.

Prior to and following the submittal of the PIP, the Applicant has:

- Hosted 3 open houses in Project Study Area. The first occurred on October 10, 2014 at the Barker Fire Department in Somerset, Niagara County. The second occurred on December 9, 2014 at the Yates Town Hall in Lyndonville, Orleans County. The third occurred on April 1, 2015 at the Barker Fire Department in Somerset, Niagara County.
- Regularly sent informational mailings to a mailing list of over 4,000 households in the Study Area.
- Held numerous stakeholder meetings, as described in the submitted PIP event log trackers.
- Actively updated lighthousewind.com.
- Launched and regularly updated a Project Facebook page, starting in July 2015.
- Opened an office in the Project Study Area in April 2015. The office is located at 8691 Main Street, Barker, NY, 14012. Office hours are posted in storefront, on lighthousewind.com, and on Facebook.
- Hired a local employee in July 2015 to assist with staffing the office, PIP activities, and Project development.
- Attended local town and county meetings to provide updates and answer questions.

Public involvement activities and stakeholder identification are ongoing. These activities will continue to be described in the event tracking logs, which are submitted on a bi-monthly basis to the PSC. Those logs, to date, are attached as Appendix A.

The contact information for Project stakeholders is:
lighthousewind@ apexcleanenergy.com
(716) 562-4262
310 4th Street NE, Suite 200
Charlottesville, VA, 22902

The Applicant maintains a Project specific website. All feedback and questions submitted through the website are recorded.. Interested parties may submit feedback through the Lighthouse Wind website on the "Get Involved" page (http://www.lighthousewind.com/get_involved), the "Share Feedback" page (http://www.lighthousewind.com/share_feedback), or the "Contact Us" page (http://www.lighthousewind.com/feedback). Questions about the Project can be sent via email to info@lighthousewind.com, via United States Postal Service to P.O. Box 223, Barker, NY, 14012, or via phone at (716) 562-4262.

2. PRELIMINARY SCOPE OF ENVIRONMENTAL IMPACT ANALYSIS

In accordance with the requirements of 16 NYCRR § 1000.5 (l)(2), this section provides a preliminary scope of an environmental impact analysis containing a brief discussion, on the basis of reasonably available information for each of the categories outlined in 16 NYCRR § 1000.5 (l)(2)(i) through (xii), as applicable. Generally these are presented in order of the resource categories, as outlined in Table 1 of this PSS, above.

2.1 LAND USE

2.1.1 Existing Setting

The current Study Area for the Project consists of 1,050 parcels of privately-owned land totaling approximately 24,000 acres. The Study Area is situated on approximately 12.5 miles of Lake Ontario shoreline and extends approximately 4.5 miles south of the lake. The Project site encompasses an area with a variety of land uses, ranging from agricultural or rural residential, to lakefront/lakeshore, seasonal recreational and residential in character. The dominant land use in the Study Area is agricultural consisting of active row crops, hayfields and pastureland. Residential, commercial, and industrial development is concentrated in nearby villages and hamlets as well as scattered along major transportation corridors and the lake shore. Interspersed through the Project area are industrial uses such as an active CSX-owned railroad and the Somerset Operating power plant (formerly Kintigh Generating Station), as well as a roadway system network. The Somerset Generating Station is located on approximately 1,100 acres between Lake Road and Lake Ontario in the northwestern portion of the Study Area. This facility is a 675 MW electric generating facility that combusts coal and petroleum coke as its primary fuels. Emissions from this facility exit through a main stack that is over 600 feet tall and an auxiliary stack that is 300 feet tall. The site also includes a number of auxiliary buildings, storage silos, a coal pile, waste ponds, and an on-site waste landfill.

In general, lakefront property in the vicinity of the Study Area is developed, private property with limited public access. Within the Town of Somerset, the zoning designation for waterfront properties is primarily Residential Lake Shore (RLS). The permitted principal use in this zone is single-family dwellings. Cluster residential development and certain accessory structures are permitted with a special use permit. Within the Town of Yates, waterfront properties are generally zoned as Waterfront Residential (WR). Permitted uses include one and two family dwellings and aesthetic ponds. Multiple family dwellings, essential services and utilities, bed and breakfast inns, and farm ponds require a special use permit in the WR zone.

Recreational activities in and around the Project site generally occur in undeveloped natural settings such as forests, fields, or on the water. Passive and active recreational activities include boating, bicycling, camping, bird watching, hunting, and fishing. Few public snowmobile trails are mapped near the Study Area. The nearest runs adjacent to the Oak Orchard River between Oak Orchard and Waterport, approximately 5 miles southeast of the Study Area. Nearby recreational areas include sites such as the Golden Hill State Park, Hartland Swamp Wildlife Management Area (WMA), Krull County Park, Somerset Town Park, Lakeside Beach State Park, Johnson Creek, Eighteen Mile Creek and other local campgrounds and parks.

Golden Hill State Park is approximately 511 acres and is located within the Project site on the shore of Lake Ontario. The park offers picnic tables with pavilions, a playground and playing fields, recreation programs, a nature trail, hiking and biking, fishing and ice fishing, a boat launch, seasonal small game and waterfowl hunting, a campground with tent and trailer sites, ice skating, cross-country skiing, snowmobiling and disc golf. The Thirty Mile Lighthouse, decommissioned by the U.S. Coast Guard in 1958, is part of the park and is available for rental.

Lakeside Beach State Park is approximately 743 acres and is located approximately 5 miles east of the Project site. This park offers 274 campsites, four miles of hiking and biking trails, fishing along the lake front, picnic grounds, a disc golf course and playing fields. Winter activities at the park include hiking, cross-country skiing, and snowmobiling.

2.1.1.1 Comprehensive Plans

Both the Town of Somerset and western Orleans County (including the Town of Yates) have adopted comprehensive plans to guide future development.

Town of Somerset
The development goals laid out in the Town of Somerset comprehensive plan include:

1. Maintain the rural and agricultural character of the town.
2. Achieve a pattern of development which minimizes travel time, adheres to smart growth principles and establishes a high standard of design. The comprehensive plan lists energy as one of the industries the Town and Village could support and which projects must target in order to receive approval or funding.
3. Meet the housing needs of the community by providing a variety of choices in new housing and encouraging the improvement of existing housing.
4. Protect important environmental resources from adverse effects.
5. Provide high quality community facilities and services at an acceptable cost to the local taxpayer.
6. Provide for the future movement of traffic through the town at a safe and efficient manner.
7. Create a vital and sustainable economy for the Town of Somerset that provides a strong tax base and jobs for our citizens.

Currently, the Town of Somerset is largely a rural, agricultural community and the goals of the comprehensive plan largely indicate the desire to preserve those characteristics. Alternative energy is cited in the comprehensive plan as an option for the Town to explore. To this end, the Town has developed supplemental regulations regarding commercial wind-energy conversion systems, which are discussed in Section 5.

Orleans County (Town of Yates)
The western Orleans County comprehensive plan outlines an overall mission to:

- Preserve and enhance the community's rural, small town characteristics, natural beauty, cultural and natural resources, agricultural base, and residential neighborhoods;

- Revitalize the commercial cores of the villages and stimulate appropriate types of diverse economic development consistent with retaining the community's small town, rural character; and
- Sustain an environment of increased intergovernmental coordination and cooperation.

The plan goes on to list specific goals related to the following areas:

- General Land Use
- Farmland and Agriculture
- Village Revitalization
- Neighborhood Preservation
- Economic and Industrial Development
- Environmental Protection
- Intergovernmental Cooperation / Consolidation of Services
- Transportation and Parking
- Public Utilities and Services

The General Land Use section of the comprehensive plan lists the following goals:

- Encourage new commercial and industrial development in and adjacent to existing villages and hamlets.
- Retain the character of existing villages and hamlets.
- Retain the rural character of the countryside.
- Provide for new housing development in and around the villages and hamlets.
- Ensure the consistency of zoning regulations across municipalities.

While the comprehensive plan provides little discussion of energy development goals, the Town of Yates has developed a local law governing wind energy facilities (see Section 5). This law allows for the consideration of the effective and efficient use of the Town's wind energy resource, providing some indication of the anticipated compatibility of wind energy with local land uses.

2.1.1.2 Agricultural Districts

Two designated Agricultural Districts, established pursuant to the NYS Agriculture and Markets Law, exist within the Project site. These Agricultural Districts (Niagara County District 2 and Orleans County District 1) make up approximately 73 percent (17,506 acres) of the Project site.

The 2012 Census of Agriculture indicates that 760 farms occupied 142,818 acres in Niagara County (average size = 188 acres) and 487 farms occupied 135,090 acres in Orleans County (average size = 277 acres). That accounts for approximately 42.7 percent of Niagara County and 53.9 percent of Orleans County.

In Niagara County, 107,352 acres of harvested cropland; 6,113 acres of pastureland; 9,524 acres of farmsteads, homes, buildings, livestock facilities, ponds, roads, and wastelands; 9,725 acres of woodlands; and 10,104 acres of other cropland were reported by the Census of Agriculture. In Orleans County 101,275 acres of harvested cropland; 5,713 acres of pastureland; 7,100 acres of farmsteads,

homes, buildings, livestock facilities, ponds, roads, and wastelands; 13,666 acres of woodlands; and 7,336 acres of other cropland were reported.

2.1.1.3 Zoning

Local zoning ordinances are discussed in Section 5.

2.1.1.4 Local Waterfront Revitalization Programs

The applicable Local Waterfront Revitalization Programs (LWRPs) are discussed in Section 2.16.

2.1.2 Potentially Significant Adverse Impacts

While the Project is expected to be largely compatible with the land uses in and around the Project site, based on provisions of the Comprehensive Plan and zoning laws, construction and operation could potentially result in some impacts. The significance of these impacts is discussed below.

2.1.2.1 Construction

Temporary land use impacts will result from construction of access roads, staging areas, turbine work spaces, installation of buried electrical interconnect, and local roadway improvements. These activities will require clearing and grading, movement of heavy equipment, and trenching and excavation. It is expected that these impacts will occur primarily on agricultural land and could include damage to growing crops, damage to fences or gates, damage to drain tile lines, or temporarily restricted access to fields.

Further impacts to agricultural land uses may occur because of temporary impacts such as erosion, topsoil mixing, and soil compaction. Short-term erosion may occur as a result of the removal of vegetation during clearing and grading activities and the subsequent exposure of topsoil to wind and precipitation. If not properly managed, topsoil could be mixed with less fertile substrate soils and introduced to a number of large stones and rocks (greater than 4 inches in diameter) during grading, trenching and excavation activities. Vehicular traffic may result in soil compaction, particularly in cultivated fields and where soils are poorly drained. However, it is anticipated that these impacts would be avoided or greatly minimized through the implementation of BMPs and measures applied in accordance with New York State Agriculture and Markets (NYSA&M) guidelines.

Similar impacts may occur on properties with active timber harvesting programs. All of these impacts would be confined to the properties of participating landowners. The placement of buried interconnect in or along local roadways may temporarily disrupt traffic flow and use of these roads. Construction of the Project is not expected to result in any other land use impacts outside of the Project site.

2.1.2.2 Operation

Project operation will result in the conversion of a relatively small total area to wind energy related uses. This area will include permanent access roads, wind turbines, substation, met tower(s) and operations/maintenance facilities. Any potential visual or noise impacts to land uses are described in

Sections 2.9 and 2.4, respectively. Additional land use impacts during operation should be minimal and would generally be associated with maintenance and repair activities.

It is expected that the Project will operate in compliance with local zoning ordinances and that the Project may, through lease payments, allow some lands to remain in agricultural production that otherwise may not. This would support the goals expressed in the comprehensive plans for the Town of Somerset and western Orleans County. As seen at other wind farms in New York State, wind energy is becoming a key component in the modern agricultural landscape. Wind projects provide a potential means of reversing the trend of farm abandonment and preserving the rural/agricultural character of many areas. In this way, a wind project use is not only compatible with the existing land uses in much of the Project area, but also enhances the existing land uses by increasing the productive value of land per acre, while coexisting with ongoing agricultural use of those acres, and aiding landowners in making continued agricultural use of those areas more financially sustainable.

2.1.3 Extent and Quality of Information Required

To adequately address and evaluate potential adverse impacts to land use, the Applicant will, at a minimum, address all of the requirements of the Certificate Application contained within 16 NYCRR § 1001.4 (a)-(p) (Exhibit 4).

Mapping and assessments of land use impacts will be consistent with 16 NYCRR §1001.4 and will include the following data:

- Tax parcel data with land use classifications from the county governments.
- Locations of existing electric, gas, and telecommunication facilities from the PSC.
- Zoning maps from the Towns of Somerset and Yates, and adjoining municipalities as appropriate.
- Coastal area boundary from the New York State Department of State (NYSDOS).
- Agricultural district boundaries from the NYSA&M.
- Flood-prone areas from FEMA.
- Recreational and historical areas from the NYS GIS Clearinghouse.
- Up-to-date aerial imagery from NYS Orthos Online.
- The location of any nearby scenic byways, Scenic Areas of Statewide Significance, critical environmental areas, cultural and visual resources (also discussed in Section 2.9)
- Locations of civic, institutional, and recreational facilities, including schools, parks, etc.
- Transit hubs and airports
- An assessment of nearby existing, permitted, and future proposed land uses within the Project area

The scope of the land use assessment will continue to be further refined based on agency and stakeholder meetings. The Applicant held an initial meeting with representatives from NYS Parks on July 14, 2015, which was also attended by members the NYS Department of Public Service (DPS) and NYS Department of Environmental Conservation (NYSDEC). Initial concerns centered on possible noise and visual impacts to land use at recreational areas such as Golden Hill State Park and Lakeside Beach State Park. Noise and visual impacts are discussed in Sections 2.4 and 2.9, respectively. Cultural resources are discussed in Section 2.5. Further meetings are expected with these agencies as well as local residents

and representatives, NYSA&M, NYSDOS, NYS Department of Health (NYSDOH), and the NYS Historic Preservation Office (SHPO).

2.1.4 Avoidance and Minimization of Adverse Impacts

Adverse impacts to land use will be minimized or avoided through careful siting of Project components. This will include siting turbines so as to minimize the loss of active agricultural land and interference with agricultural operations, recreation, and other existing land uses. The Applicant will adhere to the *Siting Goals* section of the NYSA&M *Guidelines for Agricultural Mitigation for Wind Power Projects* (2013) and will continue to consult with NYSA&M to refine the Project layout in agricultural areas. In all areas, the Project will utilize previously disturbed areas for turbines, access roads, and interconnect routes to the maximum extent possible. This will likely include the enhancement of a large number of access roads, which will ultimately benefit existing land uses. The Applicant will continue to work closely with landowners regarding the design of the Project to avoid or minimize impacts to existing land uses.

2.1.5 Proposed Measures to Mitigate Unavoidable Impacts

Land that is temporarily disturbed during Project construction will be restored to its original conditions as soon as practicable using techniques described in the *Restoration Requirements* section of the NYSA&M *Guidelines for Agricultural Mitigation for Wind Power Projects* and Stormwater Pollution Prevention Plan to be developed for the Project. The NYSA&M guidelines include the following restoration requirements:

- All disturbed agricultural areas will be decompacted to a depth of 18 inches.
- Rocks that are 4 inches or larger in size will be removed from the soil surface.
- Subsoil decompaction and topsoil replacement should not occur after October 1 unless approved by the landowner in consultation with NYSA&M.
- Access roads will be regraded to allow for farm equipment crossing and to restore original surface drainage patterns.
- All disturbed agricultural areas will be restored in consultation with the landowner.
- Any damaged surface or subsurface drainage structures will be repaired to as close to presconstruction conditions as possible, unless removal is part of the Project design.
- Any surface or subsurface drainage problems will be corrected with the appropriate mitigation.
- Restoration practices will occur when favorable topsoil/subsoil conditions exist (i.e. when soils are not excessively saturated).
- All construction debris will be removed following restoration.

Operation of the Project will result in the conversion of some land to wind energy uses. The converted area will have a small footprint relative to the overall Project area, and will be generally compatible with existing land uses. As stated in a NYSERDA's 2009 *New York State Wind Energy Toolkit*, "Generally, wind energy projects are compatible with agricultural land uses and may help farmers who lease land to wind developers preserve their farms by providing them a supplemental income. Because wind turbines physically occupy only a small fraction of the land, most of the leased land remains available for planting and grazing." In order to mitigate any potential impacts to land use, the following measures will be considered:

- Limit permanent access road widths to a maximum of 20 feet or less, and where possible, follow hedgerows and field edges to minimize loss of agricultural land.
- Cross agricultural fields on ridge tops and other high ground to minimize cut and fill as well as potential drainage problems.
- Avoid disturbance of surface and subsurface drainage features (ditches, diversions, tile lines, etc.), wherever feasible.
- Minimize vehicular access to turbine sites in agricultural fields until topsoil has been stripped and permanent access roads have been constructed.
- Minimize stripping of topsoil or passage of cranes across agricultural fields during saturated conditions when such actions would damage agricultural soils, or utilize matting as necessary.
- Avoid blocking of surface water drainage because of road or installation or stockpiled topsoil.
- Maintain access roads throughout construction so as to allow continued use/crossing by farmers and farm machinery.
- Temporarily fence/secure around open excavation areas in active pastureland to protect livestock.
- Dispose of excess concrete outside of agricultural fields in appropriate designated or approved areas). Under no circumstances shall excess concrete be buried or left on the surface in active agricultural areas.
- Wash concrete trucks, if necessary, outside of active agricultural areas in locations approved by the environmental monitor.
- Stabilize and restore disturbed areas in accordance with the requirements of the Project Stormwater Pollution Prevention Plan (SWPPP) and NYSA&M *Guidelines for Agricultural Mitigation for Wind Power Projects.*
- Remove and dispose of all construction debris offsite at the completion of restoration.
- Compensate owners for damaged/lost crops.

2.2 ELECTRIC SYSTEM EFFECTS

The Applicant has proposed interconnecting the Lighthouse Wind Project to the New York State Transmission System (NYSTS). The proposed Point of Interconnection (POI) is at the NYSEG Kintigh 345 kV Substation; therefore NYSEG is the Connecting Transmission Owner (CTO) for this Project. The Project will be located in Niagara and Orleans Counties and is expected to have a maximum potential generating capacity of 201 MW.

The New York Independent System Operator (NYISO) has conducted an Interconnection Feasibility Study (the Study) for the Project in accordance with the Applicable Reliability Standards set forth under Attachments X of the NYISO Open Access Transmission Tariff (OATT). The Interconnection Feasibility Study is a high level evaluation of the configuration at the POI and local system impacts, preceding an Interconnection System Reliability Impact Study (SRIS).

The Feasibility Study includes power flow and short circuit analysis, both with and without the Project, to determine the incremental impact of the Project on the system. The Study also included performing the NYISO Test Procedure for Evaluating Power Factor Requirements for the Project. The Study was performed under the NYISO's Minimum Interconnection Standard (MIS), which is designed to ensure reliable access by the proposed Project to the NYSTS.

The results are based on specific system conditions, study assumptions, and dispatch patterns modeled in the study cases. The 2018 summer peak system representation from the NYISO Class Year 2012 Annual Transmission Baseline Assessment (ATBA) (CY12 ATBA) was used, with the Project added to this case. It is the difference between these two cases (CY12 ATBA without the Project, and with the Project) that establishes a snapshot of the incremental impact on the system caused by the Project and the corresponding dispatch.

The SRIS for the Project is underway with NYISO. The SRIS will be based on the system representation in the 2020 power flow base cases from the NYISO Class Year 2015 ATBA. The Study will be conducted using the power flow, stability, and short circuit Base Cases developed by the NYISO, and will include the representation of proposed projects that have already been cost allocated, up to and including Class Year 2012. In accordance with 16 NYCRR§ 1001.5, Exhibit 5 of the Certificate Application will describe the impact of the proposed facility on reliability in the State in greater detail.

The Certificate Application will provide an estimate of the increase or decrease in the total transfer capacity across each affected interface. If a forecasted reduction in transfer capability across affected interfaces violates reliability requirements, the discussion will include an evaluation of reasonable corrective measures that could be employed to mitigate or eliminate said reduction.

The facility and interconnection will be designed in accordance with applicable standards, codes, and guidelines. Such standards include (but are not limited to):

- ANSI - American National Standards Institute,
- IEEE - Institute of Electrical and Electronic Engineers,
- ASTM - American Society for Testing and Materials,
- OSHA - Occupational Safety and Health Administration,
- NESC - National Electrical Safety Code,
- ASCE – American Society of Civil Engineers,
- NEC – National Electric Code,
- NERC – North American Electric Reliability Council,
- NPCC - Northeast Power Coordinating Council, Inc.,
- NYSRC - New York State Reliability Council,
- Building Code of New York State,

The Certificate Application will provide the type certification for the wind turbine model to be installed at the proposed facility. This submittal will also include any supporting documents issued by the certifying organization.

Turbine commissioning will occur once the wind turbines and substation are fully installed and the NYISO is ready to accept transport of power to the New York grid. The commissioning activities will consist of testing and inspection of electrical, mechanical, and communications systems. The Certificate Application will fully describe these procedures, which are summarized below:

Operation and maintenance of the Project will follow industry standard BMPs, to be incorporated into the Project-specific plans and procedures. To maintain and operate the facility, the Project will be staffed by full time technical and administrative employees. The primary workers will be wind technicians, along with a site supervisor and administrator. O&M staff offices will be located in the

O&M building. Staff will be on duty during normal business hours, with weekend shifts and extended hours as required. The Project will always have an on-call local technician who can respond quickly in the event of any emergency. In the event of turbine or facility outages, the supervisory control and data acquisition (SCADA) system will send alarm messages to on-call technicians to notify them of the outage.

The wind turbines will typically be operating whenever wind speeds are within the operating range and there are no component malfunctions or NYISO grid constraints. Each turbine has a comprehensive control system that monitors the subsystems within the turbine and the local wind conditions to determine whether the conditions are suitable for operation. If an event occurs that is outside the normal operating range of the turbine (such as low hydraulic pressures, unusual vibrations, or high generator temperatures), the wind turbine will immediately and automatically shut down and report the condition to the operations center. A communication line connects each turbine to the operations center, which closely monitors and, as required, controls the operation of each turbine. The wind turbine system will be integrated with the electric interconnection SCADA system to ensure that the Project critical controls, alarms, and functions are properly coordinated for safe and reliable operation.

The Applicant will be responsible for the operation, inspection, and maintenance requirements of all Project components. These activities include scheduled inspection/maintenance, unscheduled maintenance/repairs, or electrical system inspection/maintenance. Additionally, site vegetation will be managed in accordance with BMPs, to be incorporated into the Project-specific operation and maintenance plans and procedures.

NYSEG is the connecting transmission owner for this Project. The POI will be at the Kintigh 345 kV Substation. The Certificate Application will describe the substation/POI facilities. The Certificate Application will describe how the substation-interconnection design meets the transmission owner's requirements. In summary, the POI will be designed in cooperation with NYSEG (i.e., the transmission owner), and therefore will be in accordance with their design requirements.

2.3 PUBLIC HEALTH AND SAFETY

2.3.1 Existing Setting

Public health and safety concerns associated with wind power generating facilities may include both construction and operational related hazards. Examples of construction related public health and safety risks from the facility are typical to any construction project and may include onsite storage, use and disposal of fuel and wastes, construction traffic and movement of equipment, and open areas of excavation. Although uncommon in occurrence, potential operational risks or concerns that have been raised by the public and others relate to ice shedding, blade throw, tower collapse, stray voltage, fire, and lightning strikes. Additionally, public comments often express concerns that audible frequency noise, low-frequency noise or shadow flicker may cause public health issues. These concerns are discussed in greater detail below.

In addition to the potential risks mentioned above, it is important to note that the Project would result in significant positive impacts to public health. Operation of the Project will provide a significant source of emission-free energy generation, particularly in the immediate area. Additionally, Project operation will not require any water withdrawals, thereby minimizing use of local water resources for electricity

generating uses. As an alternative to conventional energy sources, wind energy generation avoids many of the negative impacts associated with those sources, including:

- Airborne mercury, released primarily by coal-fired power plants, has contaminated numerous rivers, lakes, and streams across the state. For many of these waterbodies, the NYSDEC has issued advisories pertaining to fish consumption. One hundred-four (104) of the 170 waterbodies with health advisories in New York State are have advisories in part or wholly because of mercury contamination. Pregnant women, women who may become pregnant, or children under the age of 15 are advised not to consume any fish, at any time, from any of the water bodies with issued health advisories by the NYSDEC (NYSDOH, 2015).
- Sulfur dioxide and nitrogen oxide emissions react with volatile organic compounds in the atmosphere (i.e., gasoline vapors or solvents) and produce compounds that can result in severe lung damage, asthma, and emphysema (Wooley, 2000).
- Researchers at MIT estimated that emissions from conventional energy sources across the U.S. result in the premature death of approximately 52,000 Americans every year (Caiazzo et al., 2013).
- Research undertaken by the American Cancer Society, Harvard School of Public Health, and the EPA shows that residents in every single state across the nation were at risk of premature death from air pollution (Cooper & Sovacool, 2007).

Review of NYSDEC remediation site mapping indicates no Brownfield Cleanup, Environmental Restoration, Voluntary Cleanup, or State Superfund sites exist within the Project site. The nearest sites are located approximately 0.25 miles south in the Village of Lyndonville (Site #837013 – Monroe Electronics and Site #837002 Lyndonville-West Avenue) (NYSDEC, 2015a).

EPA mapping indicates the nearest Brownfields site is located approximately 0.5 miles south of the Project site (Site #98821 – Barker Industrial site).

Existing emergency services in the vicinity of the Project are expected to be sufficient to address any public health and safety issues that may arise during construction or operation of the Project. A list of the main emergency services in the Project area is provided in Table 2:

Table 2. Emergency Services in the Project Area

Service Type	Name	Address
Emergency Medical Services	Mercy Flight of Western New York	100 Amherst Villa Road Buffalo, New York 14225
	Barker Fire Department (Ambulance Service)	1660 Quaker Road Barker, New York 14012
	Village of Medina Fire Department (Ambulance Service)	600 Main Street Medina, New York 14103
Law Enforcement	Village of Lyndonville Police Department (part-time)	2 South Main Street Lyndonville, New York 14098
	Village of Barker Police Department (part-time)	1697 East Avenue Barker, New York 14012
	Town of Somerset	8700 Haight Road

Service Type	Name	Address
	Police Constables	Barker, New York 14012
	Niagara County Sheriff's Office	5526 Niagara Street Ext., P.O. Box 496 Lockport, New York 14095
	Orleans County Sheriff's Office	400 Public Safety Building 13925 State Route 31 Albion, New York 14411
	State Police Department	14122 Route 31 Albion, New York 14411
	State Police Department	6566 Dysinger Road Lockport, New York 14094
Fire Response	Lyndonville Fire Department	148 North Main Street Lyndonville, New York 14098
	Barker Fire Department	1660 Quaker Road Barker, New York 14012
	Village of Medina Fire Department	600 Main Street Medina, New York 14103

2.3.2 Potentially Significant Adverse Impacts

The following sections provide a discussion of the *potential* or *possible range* of construction and operations-related impacts to public health and safety, based upon what is presently known about the Project. Again, as mentioned above, these potential or possible impacts can be avoided through siting considerations, avoidance, minimization and mitigation. Specific adverse impacts based on specifics regarding the Project will be addressed in the Certificate Application, Exhibit 15.

2.3.2.1 Construction

Construction-related impacts are identified as fairly typical of any large construction project. Potential hazards to the construction workers that may be encountered during construction include the movement of vehicles and heavy equipment; falling objects; open excavations; and electrocution. Project construction will not result in the production of any gaseous or solid waste. Small amounts of waste oils (lubricants and hydraulic fluid for mobile equipment) may be produced. These hazards are common and well-understood within the construction industry and will be addressed in various health and safety and emergency response plans as well as training protocols that are typically used and/or will be developed for Project construction. These plans will be consistent with all local, State, and Federal codes and worker safety (e.g., OSHA) requirements.

The risk of construction-related injury will be of primary concern to construction personnel, and not the general public, because construction workers are required to work in close proximity to potential hazards on a daily basis. Potential public health risks to the general public associated with construction-related hazards are most likely limited to the passage of large construction equipment on area roads or unauthorized access to the work site (e.g., on foot, by motor vehicle, all-terrain vehicle (ATV), or snowmobile). The latter could result in collision with stockpiled materials (soil, rebar, turbine/tower components), as well as falls into open excavations. The Certificate Application will provide additional details and measures and precautions to be undertaken during construction to avoid these incidents. In

addition, construction related traffic impacts are discussed in Section 2.10 and will be discussed in more detail in the Certificate Application.

2.3.2.2 Operation

2.3.2.2.1. Ice Shedding

Wind turbines may accumulate ice to varying degrees dependent on weather conditions and the turbine's operational state. As ice accumulates, forces associated with gravity and/or the rotating blades may cause ice to shed from the turbine. Although a very uncommon occurrence, if the turbine blade is rotating, ice fragments may be propelled a distance of up to several hundred meters (Morgan et al. 1996; Morgan et al. 1998; Seifert et al. 2003). However, the area directly below the turbine is generally the area where ice is most likely to fall. (Seifert et al. 2003). Situations where ice is thrown from the blade are relatively rare because turbines utilize sensors and calculations that detect the formation of ice deposits in order to shut down the turbine. This shut down eliminates the potential for ice throw and improves the service life of the turbine by reducing the wear that results from operation with the additional weight of ice (Baring-Gould et al., 2012). There is considerable experience in the industry with respect to issues regarding ice loading and a number of turbine manufacturers have safety mechanisms in place to avoid potential risks associated with ice throw. As a result, no injuries have been reported as a result of ice shedding during turbine operation (NYSERDA, 2009; International Energy Agency (IEA) Wind, 2011).

Although there are risks associated with ice being thrown or shed from a turbine, generally, the studies show that given the fact that turbines are located on leased private land and setback considerable distances from the public, that public health risks to the general public due to falling ice is generally low. These studies will be discussed in more detail in Exhibit 15 of the Certificate Application.

2.3.2.2.2. Blade Throw/Tower Collapse

Tower collapse and blades dropping, or being thrown, from the nacelle are also potential safety concerns. While rare, these events do occur and are potentially dangerous. The primary causes of turbine collapse or blade throw are failure of the control system leading to an over speed situation, a lightning strike, or manufacturing defects (Garrad Hassan Canada, Inc., 2007). For example, in January 2015 a 100-meter tall turbine collapsed in Northern Ireland as a result of a unique fault with its blade control system (Engineering and Technology Magazine, 2015). Debris was scattered up to 264 meters from the 4 year old turbine and no injuries were reported. In March 2010, a 150-foot blade snapped from a turbine near Glasgow, Scotland. No injuries were reported and an investigation revealed a material defect in the laminate (Wind Power Monthly, 2010). While such events do occur, they have been relatively rare (Health and Safety Executive, 2013). Coupled with the fact that setback requirements are developed in part to protect against such failures, public health risks from blade throw or tower collapse are generally low. These potential impacts and an assessment of the risks will be discussed in more detail in the Certificate Application.

2.3.2.2.3. Stray Voltage

The term "stray voltage" is commonly used to describe unwanted electrical leakage, or elevated electrical potential between two sources. Wind farms are designed, built, and operated to appropriate

electrical safety standards, and therefore wind farms and other electrical facilities are unlikely to create any stray voltage issues. Specifically, proper grounding and installation of electrical systems based on the standards of the *National Electric Code* and *National Electric Safety Code* effectively eliminates the risk of stray voltage effects. The occurrence of stray voltage typically results from a damaged or poorly connected wiring system, corrosion on either end of the wires, or weak/damaged insulation materials on the "hot" wire. Stray voltage only occurs if the system is poorly grounded and located in proximity to ungrounded or poorly grounded metal objects (e.g., fences, buildings, etc.). This situation is more common with single, large wind turbines or small wind turbines connected directly to a distribution system. Such a set up can affect the amount of current on the distribution system neutral conductor and therefore stray voltage levels (Midwest Rural Energy Council, 2014). However, wind farms connect to a substation via a transmission line and have no direct connection to the local distribution system. Therefore, the Project is not anticipated to result in any public safety risks from stray voltage.

2.3.2.2.4. Fire

There is a minor risk of a fire as part of ongoing operations and maintenance. Although a very unlikely and uncommon occurrence, a fire could be caused by mechanical malfunction inside the wind turbine generator or at other Project facilities such as the substation. Because of the relative inaccessibility of the nacelle and wind turbine tower, given its height, response to an emergency located in these areas is designed to be protective of public health and safety in a manner similar to a controlled burn, in that the nacelle will burn out and need replacing. Fire and emergency response will be coordinated with the local fire and emergency personnel. Further information will be provided in the Certificate Application in Exhibit 15. Other Project areas (e.g, the substation, electrical transmission structures, staging areas, and the operations and maintenance facility) will be more accessible to fire and emergency personnel. These areas may present additional safety risks because of the presence of small amounts of flammable materials (e.g., hydraulic fluids and lubricating oils) and high voltage electrical equipment, which will be managed through appropriate safety plans and protocols common to utility facilities

2.3.2.2.5. Lightning Strikes

Wind turbines are tall structures and are often placed in such a way that they are susceptible to lightning strikes. Wind turbines need to be protected against lightning as protection against hazards to living beings (primarily service personnel), as a precaution against economical losses due to damage and loss of revenue, and as a means to reduce maintenance costs. Lightning damage to an unprotected wind turbine can take the form of damage to the blades, to the mechanical parts, and to the electrical and control systems. Furthermore, Project personnel in and around wind turbines are exposed to hazards from step/touch voltages or explosions and fires caused by a lightning flash (European Committee for Electrotechnical Standardization, 2010). The design of lightning protection systems takes into account the risk of lightning flashes striking and/or damaging the structure in question. Effective grounding systems on modern wind turbines minimize damage and discharge current to the ground where it dissipates quickly, posing little threat to the area. Because the potential for lightning strikes and the appropriate systems for mitigating the effects of such events are fairly well known to the industry and will be implemented for this Project, public health risks from lightning strikes are considered low.

2.3.2.2.6. Gaseous, Liquid and Solid Wastes

Project operation will not result in the production of any gaseous or solid waste. Small amounts of waste oils (lubricants and hydraulic fluid) may be produced. One of the benefits of the Project will be the dramatic reduction of such wastes relative to other energy generation methods. Anticipated volumes will be provided in the Certificate Application. No public health risks from gaseous, liquid, or solid wastes are anticipated.

2.3.2.2.7. Audible and Low-Frequency Noise

The potential impacts of audible and low-frequency noise are discussed in Section 2.4.

2.3.2.2.8. Shadow Flicker

The potential impacts of shadow flicker are discussed in Section 2.9.

2.3.3 Extent and Quality of Information Required

To adequately address and evaluate potential adverse impacts to public health and safety, the Applicant will, at a minimum, address all of the requirements of the Certificate Application contained within 16 NYCRR § 1001.15 (a)-(l) (Exhibit 15).

2.3.3.1 Ice Shedding

Local ordinances in the Towns of Somerset and Yates require analysis of potential ice throw. An analysis of potential ice throwing range and size of ice fragments will be developed based on information available from operating wind farms. Climatological data will be analyzed to determine the potential frequency of icing events in comparison with other wind farms in the region.

2.3.3.2 Blade Throw/Tower Collapse

An analysis of potential blade throw impacts will be prepared based on information related to turbine dimensions, operating characteristics, and Project site topography.

The Applicant will provide certification by a registered New York State professional engineer that the tower's design is sufficient to withstand wind loading and seismic activity requirements for structures as established by the New York State Uniform Construction Code. Specifications regarding the wind speeds and conditions the selected turbine is designed to withstand will be provided in the Certificate Application.

2.3.3.3 Stray Voltage

Proper grounding and installation of electrical systems based on the standards of the *National Electric Code* and *National Electric Safety Code* effectively eliminates the risk of stray voltage effects. As such, no further study of stray voltage issues is anticipated.

2.3.3.4 Lightning Strikes

The Certificate Application will include up-to-date information on lightning density for the region. Because this risk and associated protection systems are fairly understood within the industry, and potential lightning strikes are mitigated through appropriate grounding systems, no further study of lightning strikes is anticipated.

2.3.3.5 Gaseous, Liquid, and Solid Wastes

Generally, one of the advantages of electricity generation from renewable energy sources, such as wind, is the relatively low generation of gaseous, liquid and other solid wastes compared with other sources of large scale energy generation. The procedures for storage, spill prevention and cleanup of any waste materials will be provided in the SWPPP and the Spill Prevention, Control, and Countermeasure (SPCC) plan. Spill management plans will include the identification of chemicals to be stored onsite and spill response plans. Pursuant to the regulations governing the SWPPP and SPCC, the NYSDEC will review and approve these plans prior to implementation.

2.3.3.6 Local Risk Factor Mapping

The Certificate Application will include mapping that depicts the relation of Project components to public water supply sources; community emergency response resources and facilities including police, fire, and emergency medical response facilities and plans; emergency communications facilities; hospitals and emergency medical facilities; designated evacuation routes; existing and known hazard risks including flood hazard zones, areas of coastal erosion hazard, landslide hazard areas, areas of geologic, geomorphic, or hydrologic hazard; dams, bridges, and related infrastructure; explosive or flammable materials transportation or storage facilities; contaminated sites; and other local risk factors. Data sources for these maps may include the NYS GIS Clearinghouse, NYSDEC, U.S. Geological Survey (USGS), EPA, local governments, NYS Department of Transportation (NYSDOT), and the U.S. Department of State (USDOS).

2.3.4 Avoidance and Minimization of Adverse Impacts

2.3.4.1 Construction

Contractors involved in Project construction will be required to comply with OSHA regulations and all applicable NYS regulations. All construction workers will be required to adhere to a safety protocol to be developed prior to Project construction. The safety protocol will include specifications for the following:

- personal protective equipment (e.g., hardhats, safety glasses, high-visibility clothing, steel-toed boots);
- job safety meetings and attendance requirements;
- maintenance and protection of traffic;
- equipment use;
- open hole and excavation area safety;
- parking;
- general first aid;

- petroleum and hazardous material storage, use, containment, and spill prevention;
- posting on health and safety requirements;
- job site visitation;
- local emergency resources and contact information; and
- incident reporting requirements.

As described in Section 2.10, a transportation routing plan will be developed to assure that construction vehicles minimize interaction with areas where public safety could be a concern (schools, residential developments, etc.), to the maximum extent practicable. To minimize safety risks to the general public, over-sized vehicles will be accompanied by an escort vehicle and/or flagman to assure safe passage of vehicles on public roads. Because construction activity will occur on private land, the general public would not be on the construction site). After hours, vehicular access to construction sites may be blocked by parked equipment or temporary construction fencing. Other visible barriers will be placed around excavations that remain open during off hours. In addition, material safety data sheets (MSDS) for potentially hazardous construction materials will be provided to local fire and emergency service personnel. The contractor will also coordinate with these entities to assure that they are aware of where various construction activities are occurring, and avoid potential conflicts between construction activity and the provision of emergency services (e.g., road blockages).

Safety, environmental protection, and quality assurance/quality control (QA/QC) inspections of the major facilities and equipment will also assure that the Project is constructed in a manner that minimizes risks to the public and Project personnel. These inspections will typically include, but not be limited to, safety and equipment inspections.

Safety inspections will include:

- Review of safety procedures;
- Observation of, and attendance at, safety training for supervisors and field staff (tail-gate meetings);
- Review of construction safety techniques and implementation; and
- Verification of safety incident reports and statistical data.

2.3.4.2 Operation

2.3.4.2.1. Ice Shedding

While turbine icing may occur at times, the turbines will be equipped with systems to detect the blade imbalance that may be caused by icing. Upon detection, this system automatically shuts down the turbine. Icing of the control anemometer will also result in a shut-down. Once the ice has thawed, and the risk of ice shedding has subsided, the turbine can be restarted. These systems help to minimize hazards related to ice shedding.

Siting on private land and compliance with required set-backs would minimize public safety risk associated with ice shedding. The Town of Somerset requires minimum turbine setbacks of 1,000 feet from any residential zoning district boundary; 1.5 times the total turbine height from any building, public road, or highway; and 1,500 feet from any dwelling (see the local ordinance in Appendix C). Minimum

turbine setbacks in the Town of Yates are 500 feet from the nearest Project site boundary; 500 feet from the nearest public road; and 1,000 feet from the nearest off-site residence (see the Yates local ordinance in Appendix D). The Applicant will review the sufficiency of these setbacks for protecting public health and safety and may adjust the Project layout if necessary to avoid or minimize risks from ice shedding.

2.3.4.2.2. Blade Throw/Tower Collapse

The turbines used for the Project will be certified according to international engineering standards and will meet all federal, state, and local requirements. The Project will also use braking systems, pitch controls, sensors, and speed controls to minimize the risk of tower collapse and blade throw. These systems will allow the turbines to be shut down if hazardous situations develop. The turbines will automatically shut down if excessive wind speeds are experienced.

The Project setbacks mentioned above ensure the unlikely events of a tower failure or blade throw would not endanger adjacent properties, residences, roadways, or utilities. Furthermore, members of the public do not generally have access to the private property where the turbines will be located. As a result, blade throw and tower collapse are not anticipated to pose significant risk of public health and safety impacts.

2.3.4.2.3. Stray Voltage

Stray voltage will be prevented through proper design and grounding of the Project's electrical system. In the unlikely event stray voltage is reported, the problem will be addressed through the Complaint Resolution Procedure to be developed for the Project.

2.3.4.2.4. Fire

Prior to construction, a Fire Protection and Emergency Response Plan will be developed in consultation with the fire department(s) that have jurisdiction over the Project site. This plan will include the following requirements:

- Training of all operating personnel and procedures review in conjunction with local fire and safety officials;
- Regular inspection of transformer oil condition at each wind turbine step-up transformer;
- Regular inspection of all substation components;
- Regular inspection of fire extinguishers at all facility locations where they are installed;
- All Project vehicles will be equipped with firefighting equipment (fire extinguishers and shovels) as well as communications equipment for contacting the appropriate emergency response teams;
- The MSDS for all hazardous materials on the Project site will be on file in the construction trailers (during construction) and the O&M building (during operation), and provided to local fire departments and emergency service providers; and
- The Project's Safety Coordinator shall notify the local fire department of any situation or incident where there is any question about fire safety, and will invite an officer of the fire department to visit the workplace and answer any questions to help implement a safe operating plan.

Development and implementation of this plan will assure that Project construction and operation will not have a significant adverse impact on public safety, or the personnel of local emergency service providers.

2.3.4.2.5. Lightning Strikes

The wind turbine lightning protection system, and the fire/emergency response plan described previously will provide adequate protection for lightning strikes and therefore no additional measures to avoid or minimize the effects of lightning strikes are proposed.

2.3.4.2.6. Gaseous, Liquid, and Solid Wastes

As mentioned previously, a SWPPP and SPCC will be prepared by the Applicant and reviewed by the NYSDEC. These plans will include all measures necessary for avoiding significant public health and safety impacts from waste materials generated by the Project.

2.3.5 Proposed Measures to Mitigate Unavoidable Impacts

2.3.5.1 Construction

The avoidance and minimization measures discussed previously are expected to be sufficient and no further mitigation measures are anticipated during construction.

2.3.5.2 Operation

2.3.5.2.1. Ice Shedding

As discussed above, Project setbacks, turbine ice detection systems, and prevention of unauthorized public access are expected to provide protection from any public health and safety risks associated with ice shedding. Therefore, no additional mitigation measures are anticipated.

2.3.5.2.2. Blade Throw/Tower Collapse

As discussed above, adherence to federal, state and local engineering standards, integrated turbine safety systems, and Project setback requirements are expected to provide protection from any public health and safety risks associated with blade throw or tower collapse. Therefore, no additional mitigation measures are anticipated.

2.3.5.2.3. Stray Voltage

Stray voltage will be prevented through proper design and grounding of the Project's electrical system. Therefore, no additional mitigation measures are anticipated.

2.3.5.2.4. Fire

The fire/emergency response plan described previously will include fire and emergency services mitigation measures that will be developed in consultation with local responders. This plan will describe

on-site equipment and procedures for fire suppression, medical evacuation, and any other critical situations identified. Turbines will be designed with internal fire suppression systems that will automatically activate if a fire occurs in the nacelle. In the event that a fire escapes the nacelle, trained personnel onsite will respond by using a water truck to saturate the ground below to prevent the fire from spreading. The tower will then be allowed to "burn out".

The base of each turbine will be constructed of a permanent gravel pad that will reduce vegetation growth. The lack of vegetation immediately below the tower will reduce the possibility of grass acting as fuel for the fire and a means for a fire to migrate. The grounds of the switchyard and substation will be surfaced with gravel which will also minimize fire hazards. Vehicles and the O&M building will be equipped with fire extinguishers at all times. Ancillary buildings will be equipped with fire suppression systems.

2.3.5.2.5. Lightning Strikes

The wind turbine lightning protection system, and the fire/emergency response plan described previously provide adequate protection for lightning strikes and therefore no additional measures to mitigate the effects of lightning strikes are anticipated.

2.4 NOISE AND VIBRATION

2.4.1 Existing Conditions

The Project site encompasses an area with a variety of land uses, ranging from agricultural or rural residential, to lakefront/lakeshore, seasonal recreational and residential in character. Interspersed through the Project area are industrial uses such as an active CSX-owned railroad and Somerset Operating power plant, as well as a roadway system network. As such, it is expected that ambient noise levels are variable depending upon the surrounding land use and proximity to transportation ways. Existing noise levels within the site are impacted by natural sound sources (e.g., rustling of leaves, wind blowing through pastures and agricultural fields, weather events, animals, and waves crashing on the shoreline) and man-made sources (e.g., boat/personal watercraft usage, vehicular traffic, farming activities, and lawnmowers). Topography throughout the Project site is relatively flat and, as a result, terrain-related attenuation of sound will be low.

Large agricultural fields are relatively more abundant in the northern half of the Project site. It is expected these areas would experience increased sound levels from tractors and farming activity during the planting and harvesting season. During the growing season, sound levels would be impacted by wind rustling through crop leaves and fencerows as well as increased activity from birds, insects, and other wildlife. Conversely, in the wintertime, when the ground is bare and animal activity is low, ambient sound levels would be lower than the other three seasons.

During the growing season, the larger forested areas concentrated in the southern half of the Project site would have many of the same natural sound characteristics as the agricultural areas (i.e., animal activity, wind/vegetation interactions). However, the denser, taller vegetation would limit sound propagation to shorter distances. These areas may occasionally be subject to forestry activities and the noise associated with the equipment and machinery used for these activities. Ambient sound levels in

forested areas would also be lowest in the winter when trees have shed their leaves and human and animal activity is lowest.

Throughout the Project site, the major travel corridors are a source vehicular noise. These include NYS Route 18 east of the Hamlet of Olcott, NYS Route 104 east of Hamlet of Ridgewood, NYS Route 78 between the Hamlet of Olcott and Newfane, NYS Route 63 north of the Town of Ridgeway, and County Road 15 south of the Village of Barker. Increased traffic noise is expected in areas of concentrated human activity such as the Hamlets of Olcott and Newfane and the Villages of Barker and Lyndonville. Additionally, the increased presence of man-made structures in these areas provides some screening from sounds produced outside of these areas and reflection of sounds produced within them.

Sound levels in developed areas along the Lake Ontario shoreline are expected to be typical of moderately developed, suburban areas (e.g., lawnmowers, children playing, dogs barking) with the additions of an occasional passing boat or personal watercraft, waves along the shoreline, and increased impacts from wind coming off the lake. Sound levels in developed shoreline areas are expected to be elevated seasonally as vacationers and seasonal residents occupy some properties that are vacant in the winter. The Somerset Operating power plant, a 675-megawatt coal-fired power plant, is also a source of increased sound levels along the shoreline north of the Village of Barker.

In order to quantify the existing sound conditions at the Project site, ambient sound levels will be measured at representative sites within the Project site. The ambient baseline sound measurement program that will be a part of Noise Impact Assessment will include both summertime and winter conditions.

2.4.2 Potentially Significant Adverse Impacts

The following sections provide a discussion of the *potential* or *possible range* of construction and operations-related impacts relating to noise/sound, based upon what is presently known about the Project. Specific adverse impacts would be addressed in the Certificate Application, Exhibit 19.

2.4.2.1 Construction

Project construction will require the operation of heavy equipment for activities such as right-of-way clearing, access road construction, material and component delivery, installation of electrical interconnect, turbine foundation construction, turbine erection, and site restoration. The noise generated by these activities will be associated with gasoline and diesel-powered engines as well as impact noise from jackhammers, pile drivers, and/or rock drills, or even localized blasting, if required due to geotechnical conditions. It is expected that Project-related construction noise will be similar to that of typical road or utility construction projects. While likely to go unnoticed in many areas because of the remote location of many construction activities (e.g., turbine sites), construction-related noise impacts will likely constitute an unavoidable impact at some residences within the Project area. However, these impacts will be temporary and will only occur during normal, daytime working hours. As such, these impacts are not anticipated to be significant. Typical sound levels from specific pieces of equipment expected at various stages of construction are shown in Table 3.

Table 3. Representative Sound Levels of Construction Machinery

Equipment Type	Typical Maximum Sound Level at 50 feet (dBA)
Road Construction and Installation of Electrical Interconnect	
Dozer	85
Front End Loader	80
Scraper	85
Grader	85
Backhoe	80
Dump Truck	84
Material and Component Delivery	
Flat Bed Truck	84
Turbine Foundation Work	
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	80
Jackhammer	85
Impact Pile Driver	95
Turbine Erection	
Crane	85

Source: U.S. Department of Transportation (USDOT) (2006)

2.4.2.2 Operation

Wind turbine operation generates sound that may be classified as either mechanical or aerodynamic in origin. These sounds may be further described as tonal (i.e., sound at discrete frequencies), broadband (i.e., a continuous distribution of sound pressure with frequencies greater than 200 Hz), low frequency (i.e., frequencies between 20 and 200 Hz), and impulsive (i.e., thumping sounds that vary in amplitude with time).

Mechanical sounds produced by a wind turbine originate from the gearbox, generator, yaw drives, cooling fans, and the hydraulic system. These are primarily tonal sounds with a smaller broadband component. Aerodynamic sounds are the largest component of wind turbine sound emissions and are created by the leading edge, trailing edge, and tip of the blade while it is rotating. This "whooshing" sound is broadband in nature.

The broadband, aerodynamic sound emissions generated by a wind turbine include low frequency sound and infrasound (below 20Hz). Early wind turbine designs utilized downwind rotors and produced relatively high levels of infrasound as the rotating blades passed through the wake caused by the tower. Modern turbines utilize an upwind rotor design, which eliminates this interaction and results in lower levels of infrasound (Rogers et al., 2006). Infrasound is naturally prevalent in urban and coastal environments at similar levels to the level of infrasound measured in close proximity to modern wind turbines (Turnbull et al. 2012). The levels of infrasound generated by modern wind turbines are generally not considered to produce adverse impacts (Leventhall, 2013; Evans et al., 2013).

The sound experienced at a given location is a function of the turbine design, distance, operating characteristics, and environmental factors. If the sound experienced is unwanted, it is considered noise. Concerns about noise are generally influenced by the following factors:

- The level of intensity, frequency, frequency distribution, and patterns of the noise.
- Background sound levels.
- The terrain between the noise source and receptor.
- The nature of the receptor.
- The attitude of the receptor towards the noise source.

The interaction of these factors may give rise to noise impacts, which can generally be grouped into three categories:

- Subjective effects including annoyance, nuisance, and dissatisfaction.
- Interference with activities such as speech, sleep, and learning.
- Physiological effects such as anxiety, tinnitus, or hearing loss.

In almost all cases, the sound levels associated with wind turbines produce effects only in the first two categories, with modern turbines typically producing only subjective effects. The reason why some people may be disturbed by the low levels of noise from wind turbines is a complex issue. While there have been instances of genuine noise impacts from wind turbines, it is anticipated that proper siting, based on the studies proposed below, the Project can largely avoid these impacts.

2.4.3 Extent and Quality of Information Required

In order to adequately evaluate the Project's potential adverse noise impacts, the Applicant will, at a minimum, address all of the requirements of the Certificate Application contained within 16 NYCRR § 1001.19 (Exhibit 19). As a part of this evaluation, a Noise Impact Analysis (NIA) will be prepared consistent with Exhibit 19, Section 205-43.2 of the Town of Somerset Municipal Code, Section 591.13 of the Town of Yates Zoning Regulations, and the NYSDEC's *Assessing and Mitigating Noise Impacts* (DEP-001-1) (NYSDEC, 2001). The NIA will use computer noise modeling values that match the characteristics of the "worst case" turbine model proposed for the Project and will include the following components:

- a complete inventory of sensitive sound receptors within the Study Area;
- a map of the sound level measurement locations;
- an evaluation of baseline noise conditions, during both summer and winter conditions;
- an estimate and evaluation of future noise levels (construction and operation);
- sound level measurements and modeled sound levels at representative property lines and noise receptors under a number of different scenarios listed in the requirements for Exhibit 19 of the Certificate Application;
- a discussion of applicable noise standards and the Project's level of compliance with said standards;
- a discussion of avoidance and minimization measures that may be implemented during construction and operation of the Project;

- an evaluation of potential noise impacts, including low frequency noise;
- a plan for post-construction studies to determine compliance with applicable standards; and
- a discussion of any potential post-construction mitigation measures.

The Applicant has conducted preliminary outreach activities with DPS, NYSDEC, and the New York State Office of Parks, Recreation & Historic Preservation (NYSOPRHP), as well as representatives from the Towns of Somerset and Yates. The Applicant will continue to meet and consult with local and state government representatives, and local stakeholders to ensure the NIA evaluates the potential adverse construction and operational noise effects to receptors of concerns. Comments received through the Project's PIP indicate a general concern within the community regarding the potential for operational noise and infrasound to cause annoyance or health problems for affected residents. Additionally, during agency consultation, State Parks indicated a need to model the sound levels in recreational areas, such as the camping grounds in Golden Hill State Park.

In accordance with 16 NYCRR §1001.19, the NIA will provide a thorough evaluation of the peer-reviewed literature regarding the potential for Project noise impacts to cause hearing damage, interfere with speech, generate complaints, or cause any other detrimental impacts to health and well-being of local residents. This information will be used to contextualize the results of the operational noise modeling described below.

The NIA's inventory of sensitive sound receptors will include residences, outdoor public spaces, hospitals, schools, and any other noise-sensitive receptors that are identified through consultations with the agencies or the public. Residence locations within the Study Area will be determined using aerial imagery and verified during field visits. Data sources that will be consulted for the presence of other noise-sensitive receptors will include the NYS GIS Clearinghouse, NYSOPRHP, NYSDEC, and the United States Census Bureau TIGER/Line shapefiles.

Ambient pre-construction noise level data will be collected at six locations, determined based upon proximity of residences to wind turbines, existing noise sources, and site access. Noise level data will be collected using an industry standard, appropriately calibrated sound level meter and octave band frequency spectrum analyzer. Data will be recorded continuously (24 hours/day) for a one week interval during both the summer and winter at representative locations throughout the Project site. The recorded data will be filtered to remove seasonal and intermittent noise. Ground level wind speed and direction will also be measured during the same interval, to determine the impact wind speed has on the ambient sound levels.

A computer model of the noise-related construction impacts will require data from the USDOT, Federal Highway Administration (FHWA), or the EPA regarding the typical sound level of the construction equipment to be used. In order to ensure the accuracy of the model, the following variables will be taken into account:

- the ability to model multiple pieces of construction equipment working either independently or simultaneously;
- the character of noise emission, be it impulsive noise or more steady noise;
- the ability to account for distances from each piece of equipment to each receptor location;
- the influence of time-of-day, be it daytime, evening, or nighttime;

- the expected duration of work;
- the propagation (ground) characteristics of the pathway between the equipment and the receptors;
- the attenuation effects of any man-made or natural barriers;
- the potential shielding or reflective effects of nearby buildings; and
- to a lesser degree, the meteorological effects on noise propagation.

Operational noise modeling for the Project will require any of the non-construction specific variables listed above as well as information from the turbine manufacturer regarding the unique operational noise characteristics of the selected turbine model. Turbine locations will be provided by the Applicant and tax parcel boundaries will be obtained from the county governments. Receptor locations and other noise-sensitive locations will be determined as described above. This analysis will also determine whether significant levels of low frequency noise or infrasound will be produced by the Project. The results of this modeling will include:

- Worst case daytime noise level
- Worst case summer nighttime noise level
- Worst case winter nighttime noise level
- Typical Project noise levels
- Typical daytime noise level

In addition to noise measurements and modeling results of the NIA, Exhibit 19 will provide a complete description of the noise standards that are applicable to the Project and a discussion of the Project's level of compliance with those standards. The predicted worst-case sound levels from the Project will be compared to the ordinances for the Towns of Somerset and Yates, as well as the NYSDEC Noise Guideline document to assess noise impacts. The Town of Somerset zoning ordinance states the noise levels at the boundary of the proposed Project site shall not exceed 45 dBA for more than five minutes out of any one-hour time period or exceed 50 dBA for any time period. This ordinance also limits impulsive sound below 20 Hz if that sound affects the habitability or use of any dwelling unit, hospital, school, library, nursing home, or other sensitive noise receptor (Somerset, New York, Municipal Code, § 205-43.2.C(9)). The Zoning Regulations for the Town of Yates limit sound levels to 50 dBA measured at the closest exterior wall of any residence existing at the time of completing State Environmental Quality Review Act (SEQRA) (Yates, New York, Zoning Regulations, § 591.13). The NYSDEC Guidelines state, "in non-industrial settings the sound pressure level (SPL) should probably not exceed ambient noise by more than 6 dBA at the receptor," and the addition of any noise source, in a non-industrial setting, should not raise the ambient noise level above a maximum of 65 dBA." Increases ranging from 0-3 dB should have no appreciable effect on receptors. Increases from 3-6 dB may have potential for adverse noise impact only in cases where the most sensitive receptors are present. Sound pressure increases of more than 6 dB may require closer analysis of impact potential depending on existing SPLs and the character of surrounding land use and receptors (NYSDEC, 2001).

Finally, the NIA will include a plan for post-construction noise evaluation and a procedure for implementing operational controls to address reasonable complaints or any noise-related issues that are identified during post-construction evaluation.

2.4.4 Avoidance and Minimization of Adverse Impacts

Impacts related to construction noise will be temporary, and minimization efforts may include:

- Implementing BMPs for sound abatement during construction, including keeping equipment in good working condition, use of appropriate mufflers and limiting hours of construction.
- Limiting construction hours to between 7:00 a.m. and 8:00 p.m. (in conformance with Section 591.10 of the Town of Yates Zoning Regulations and Section 131-1 of the Town of Somerset Municipal code).
- Notifying potentially impacted landowners in advance of loud events, such as jackhammering.
- Erecting temporary sound barriers around the noise generating equipment or near receptors.
- Implementing a Complaint Resolution Procedure to assure that any complaints regarding construction-related sound are adequately investigated and resolved.

Adverse noise impacts will be avoided or minimized through careful siting of Project components based on the results of the sound model that will be developed for the Project. The Applicant will make every effort to comply with NYSDEC guidelines, and evaluate compliance with local noise ordinances. Setback requirements are expected to ensure that impacts are avoided or minimized to the maximum extent possible.

2.4.5 Proposed Measures to Mitigate Unavoidable Impacts

As discussed above, it is anticipated that Project turbines can be sited in such a manner that significant adverse operational noise impacts can be avoided. However, if the results of the NIA indicate impacts will exceed the limits detailed in the NYSDEC guidelines (NYSDEC, 2001) or local ordinances, the Applicant may pursue noise easements with property owners whose residences fall within the impacted area. Furthermore, a Complaint Resolution Procedure will be implemented as the Project becomes operational. This procedure will provide residents a forum to voice noise complaints and will outline the steps for investigation and resolution of such complaints.

2.5 CULTURAL RESOURCES

2.5.1 Existing Setting

Cultural resources present within the vicinity of the Project may include prehistoric and historic archeological sites as well as historic districts, sites, structures and other above ground features that may be listed, or eligible for listing, in the National Register of Historic Places (NRHP). The New York State Cultural Resource Information System (CRIS) provides information on the known cultural resources that have been documented in and around the Project site.

The existing setting for archeological sensitive sites includes an area of potential effect (APE) associated with the construction of the Project, or the Project footprint (archeological APE). Because the exact location of Project infrastructure is not yet determined, existing resources are described within the existing Project site (as depicted in Figure 2). According to CRIS, archeologically sensitive sites are located in the vicinity of the Project. CRIS data indicates the presence of archeologically sensitive sites that are generally concentrated around major hydrological features (e.g., Eighteen mile Creek, Keg

Creek, Johnson Creek, and Oak Orchard River). CRIS provides little detail regarding these sites, though more information will be obtained from review of the SHPO and the New York State Museum historic archeological site files as part of a Phase IA cultural resource study (see Section 2.5) and will allow for a more accurate evaluation of the archeological sensitivity in the archeological APE.

The existing setting for historic resources in the vicinity of the Project includes a five mile radius around the Project site (historic APE). CRIS data also presents seven NRHP-listed historic sites within approximately five miles of the Project site. These include:

- The Amzi Bradley House in the Town of Hartland
- The First Baptist Church of Newfane in the Town of Newfane
- The Cobblestone Inn in the Town of Ridgeway
- The Constant Riley W. Bixby House in the Town of Hartland
- The District No. 10 Schoolhouse in the Town of Hartland
- The Van Horn Mansion in the Town of Newfane
- The Blood, Jackson Cobblestone House in the Village of Lyndonville

CRIS data regarding historic resources also presents eight additional sites as NRHP-eligible and 33 structures with an undetermined NRHP status. The location of several previous Phase I studies are also shown in CRIS, including a large study completed in the Town of Yates, east of the Village of Lyndonville, associated with water system improvements. Review of the results from these studies will be undertaken during the Phase I study for this Project and may provide useful information regarding the archeological and historic resources present in the APE (see Section 2.5).

2.5.2 Potentially Significant Adverse Impacts

The following sections provide a discussion of the *potential* or *possible range* of construction and operations-related impacts to cultural resources, based upon what is presently known about the Project. Specific adverse impacts would be addressed in the Certificate Application, Exhibit 20.

2.5.2.1 Construction

2.5.2.1.1. Archaeological Resources

Construction of the Project has the potential to impact prehistoric and historic archeological resources, though it is anticipated that any known archeological resources can be avoided during the design stage of the Project through routing and siting changes. Impacts to archeological resources within the Project's archeological APE (i.e., all areas subject to ground disturbance) have the potential to include physical disturbance or destruction. Soil disturbance activities that will occur during Project construction include excavation, earthwork and grading activities associated with the installation of buried electrical collection lines, turbines, access roads, staging areas/laydown yards, and construction of the O&M facility and point of interconnection/substation.

2.5.2.1.2. Historic Sites

No NRHP listed or eligible historic sites are anticipated to be demolished or altered during construction of the Project. Accordingly, potential construction impacts to NRHP listed or eligible historic sites would be limited to temporary construction related activities occurring adjacent to sites and would be similar to potential impacts experienced at other nearby properties. As described in Section 2.5, Project construction activities may be visible from historic structures or properties, and machinery and equipment used in Project construction may be audible from these sites. Additionally, historic sites may experience temporary impacts associated with construction and delivery equipment movement through the Project area. These impacts will be temporary and limited to the area when actively under construction.

2.5.2.2 Operation

2.5.2.2.1. Archeological Resources

Project operation is not anticipated to require any ground disturbing activities in areas that have not already been disturbed for Project construction. As a result, there will be no impacts to archeological resources from Project operations.

2.5.2.2.2. Historic Sites

NRHP-listed and eligible sites are present within the Project's APE (defined by the *New York State Historic Preservation Office Guidelines for Wind Farm Development Cultural Resources Work* (NYSOPRHP, 2006) as areas within the topography-based viewshed in a five mile area around the Project site). This indicates the potential for the Project operation to produce noise and/or visual impacts at these sites. These impacts will be evaluated in the visual (Section 2.9) and noise (Section 2.4) studies conducted for the Project. The extent of these impacts will be influenced by a number of variables including distance to the resource, vegetative screening, topographic screening, and the size, location, and density of modern features present, such as buildings, silos, transmission lines, the existing coal fired power plant, and cell towers.

2.5.3 Extent and Quality of Information Required

A Phase 1 Cultural Resource Investigation of the Project's archeological and historic APE will be prepared. This study will provide an inventory of all known cultural resources and an evaluation of the potential existence of undiscovered cultural resources within the APE, including structures which appear to be at least 50 years old and eligible for listing in the State or National Register of Historic Places based on a qualified assessment. These resources may include prehistoric and historic archeological sites as well as aboveground features. The investigation will comply with the SHPO *Guidelines for Wind Farm Development Cultural Resources Survey Work* (2006).The Phase 1 Cultural Resource Investigation is comprised of three components: 1) a Phase 1A survey which evaluates the sensitivity for archeological and historic structures within the APE, 2) a Phase 1B survey which involves implementing a field testing strategy for archeological investigations, and 3) an historic structure survey.

The Phase 1A survey will evaluate the sensitivity for archeological resources and historic structures within the APE and recommend the level of effort needed for any additional or future inventories based

upon the sensitivity of the Project area. This will include historic background and archival research, site file check to identify known Native American and historic archeological sites, historic structures, NRHP sites and districts, and the preparation of viewshed analysis. The Phase 1A survey will also include preparation of a Field Testing Plan outlining the Phase 1B field-testing strategy. The Field Testing Plan will identify environmental zones with in the APE based on Robert E. Funk's 1993 work, *Archeological Investigations in the Upper Susquehanna Valley, New York State*. Based upon the definition of zones, the number of shovel tests will be determined. Ultimately, the Field Testing Plan will be reviewed and approved by SHPO before implementation.

The Phase 1B survey involves archeological investigations conducted in accordance with an approved field testing protocol as well as the SHPO 2006 *Guidelines for Wind Farm Development for Cultural Resources Survey Work.* The survey will be conducted within the archeological APE, which is associated with the construction footprint of the Project. This consists of areas that will experience ground disturbance during the construction phase of the Project. Any previously identified archeological site or documented structure will be included in the Phase 1B survey. Archeological sites identified as a part of the Phase 1B survey will be documented using standard practices and located and identified by a latitude/longitude point. The Phase 1B investigation will provide a determination of whether archeological or other cultural resources are present within the APE. It is anticipated that the results of the Phase 1B investigation will be sufficient to allow avoidance of any cultural resources with slight relocation or rerouting of Project components. However, if it is deemed necessary by the SHPO and DPS, a Phase II investigation will be undertaken to provide detailed information on the integrity, limits, structure, function, and cultural historic context related to the site(s) of interest.

Finally, the Phase 1 Cultural Resource Investigation will include an historic structure survey within five a five mile radius of the Project site. This will consist of the following study efforts:

- Conduct historic structures field survey within the positive visual APE, as defined by the SHPO Guidelines for Wind Farm Development Cultural Resource Survey Work (2006), which is five miles radius from the Project site,
- Evaluate buildings over 50 years old or older within the Study Area and locate and document all National Register Listed (NRL) or National Register Eligible (NRE) resources listed in the CRIS database within the Study Area,
- Identify additional NRE properties not identified by SHPO,
- Identify potential historic districts,
- Consult with local sources, references, and historic maps to supplement NRE evaluations.
- Contact local historians to identify specific mitigation options, as necessary.
- Identify and document clusters of buildings (villages/hamlets) and farm complexes (outbuildings).

2.5.4 Avoidance and Minimization of Adverse Impacts

One design goal of the Project is to avoid the inclusion of known cultural resources within the Project's archeological APE. In order to achieve this goal, the Applicant will conduct a Phase 1B archeological survey in sensitive areas, as mentioned above.

If archeological resources are discovered during the Phase 1B survey, Project components will be relocated to avoid direct impact to the resource area. In the event that construction activities will occur

near cultural resources, these areas will be clearly shown on construction plans and the limits of disturbance will be demarcated in the field with high-visibility, temporary fencing.

If unexpected cultural resources are encountered during construction-related ground disturbance, the procedures outlined in the Project's *Unanticipated Discovery Plan* will be implemented immediately. The Unanticipated Discovery Plan will be included in the Certificate Application. This plan will authorize stop-work provisions for such an event and will detail the method of assessment or avoidance of the discovered resource in accordance with the most recent *Standards for Cultural Resource Investigations and Curation of Archaeological Collections in New York State*.

Avoidance and minimization measures for noise and visual impacts are outlined in Sections 2.4 and 2.9. In general, it is expected that proper siting of Project component's in accordance local and state requirements will avoid significant noise or visual impacts or minimize them to the greatest extent possible.

2.5.5 Proposed Measures to Mitigate Unavoidable Impacts

As described above, the Project will be designed to avoid all direct impacts to archeological resources by completing a Phase 1B archeological survey in consultation with the SHPO. Beyond that, additional mitigation measures for impacts to archeological resources are not anticipated or proposed.

As part of the Phase 1 investigation, detailed architectural reconnaissance will be conducted within five miles of any Project turbine. The results of this survey will be provided to the SHPO for a determination of whether additional sites are eligible for listing in the NRHP. An analysis of visibility for the listed and eligible sites will be provided to the SHPO and will serve as a basis for determining potential mitigation measures. The report will also identify efforts which could be considered to mitigate potential impacts to historic resources. Local stakeholders, such as the Niagara County Historical Society and the Cobblestone Society in Orleans County, will also be consulted for input on potential mitigation measures.

2.6 GEOLOGY, SEISMOLOGY, AND SOILS

2.6.1 Existing Setting

2.6.1.1 Geology

The Project site lies in the Eastern Lake Section of the Central Lowlands physiographic province. This section is characterized by its flatness and by shallow entrenchment of its drainages. Bedrock within the Project site consists of Queenstown shale of the Late Ordovician age. The United States Department of Agriculture's (USDA) Natural Resource Conservation Service (NRCS) Web Soil Survey (2015) indicates the depth to bedrock within the Project site is generally greater than 200 centimeters. Surficial materials within the Project site are primarily lake-laid sands, silts, and clays derived from glacial Lake Iroquois. The southern and western portions of the Project site encompass substantial areas of glacial till containing poorly sorted fragments of sandstone and limestone (USDA, 1972; USDA; 1977).

2.6.1.2 Seismology

There is potential for earthquakes to occur throughout NYS. In particular, earthquakes have occurred approximately once every 22 years in Niagara County (Ecology and Environment Inc., 2008). The Clarendon-Linden Fault System passes through eastern Orleans County, running in a north-south direction from Lake Ontario. However, past earthquakes associated with this system have been concentrated in Genesee and Wyoming Counties to the south (Genesee/Finger Lakes Regional Planning Council, 2008). The probability of earthquake occurrence in the vicinity of the Project site is considered moderate (Ecology and Environment Inc., 2008).

Western New York has experienced four earthquakes that caused property damage, three of which were centered in the Town of Attica, Wyoming County and one that was centered in the City of Buffalo, Erie County. It is unknown whether any of these earthquakes caused damage to locations within the Project site. The most severe of these earthquakes occurred on August 12, 1929 near the Town of Attica. This magnitude 5.2 earthquake caused damage to hundreds of chimneys, cracked plaster, damaged building walls, and disturbed cemetery monuments (Niagara County Emergency Services, 2014).

The USGS earthquake probability database indicates a 1.90% chance of a major earthquake (greater than 5.0 magnitude) within the next 50 years within 50 kilometers of Niagara County and a 1.48% chance within 50 kilometers of Orleans County (Homefacts, 2015a,b). The largest earthquake recorded within 30 miles of Niagara County was a magnitude 3.8 earthquake in 1999 and the largest earthquake recorded within 30 miles of Orleans County was a magnitude 3.6 magnitude earthquake in 1998 (Homefacts, 2015a,b). While there is a moderate probability of earthquakes occurring in the area, they are likely to be low-magnitude events causing little or no damage to structures. Therefore, the probability of impact from this hazard is considered low (Niagara County Emergency Services, 2014).

2.6.1.3 Soils

According to NRCS Soil Survey Geographic (SSURGO) database, the dominant soil series within the Project site are Rhinebeck (approximately 14 percent of the Project site), Collamer (approximately 12 percent), Ovid (approximately 11 percent), Hilton (approximately 8 percent), Niagara (approximately 8 percent), and Claverack (approximately 7 percent). Soils within the Project site are nearly level (i.e., slopes generally between 0 and 4 percent) and typically range from moderately well drained to somewhat poorly drained. The majority of soils within the Project site are not classified as hydric, though areas of hydric soils are indicated in depressions and flood plains suggesting the presence of wetlands in those areas. Soils within the Project site generally considered valuable for raising crops. Approximately 42 percent of soils within the Project site are classified as Prime Farmland, 45 percent are classified as Prime Farmland if Drained, and 9 percent are classified as Farmland of Statewide Importance.

2.6.2 Potentially Significant Adverse Impacts

The following sections provide a discussion of the *potential* or *possible range* of construction and operations-related impacts relating to geologic and soil resources, based upon what is presently known about the Project. Specific adverse impacts would be addressed in the Certificate Application, Exhibit 21.

2.6.2.1 Construction

2.6.2.1.1. Geology

Construction of the Project is not anticipated to result in significant impacts to the existing geologic setting. Impacts will be localized, and limited to the very minor percentage of the Project site occupied by buried electrical collection lines and turbine foundations. As discussed previously, the depth to bedrock within the Project site is generally greater than 200 centimeters. That depth would be sufficient for placement of buried electrical collection lines. However, it is possible that areas of shallow bedrock could be encountered requiring the use of a backhoe, rock saw, or pneumatic jacking. Installation of the turbine foundations is more likely to encounter bedrock because these structures are typically buried at a depth of 20-30 feet. The Queenston shale that is dominant in the area is expected to be ripable (USDA, 1972). However, if other methods are required, construction may utilize pneumatic jacking, hydraulic drilling, or blasting. If blasting is required, the Certificate Application will provide an assessment of potential impacts to nearby structures, buried infrastructure, and other improvements that may be present in the affected area.

2.6.2.1.2. Seismology

Seismic events are not anticipated to present a significant hazard during Project construction. As discussed previously, such events have been relatively low-magnitude and have generally caused little to no property damage in the region. The primary concern, if such an unlikely event were to occur, would be tower collapse. The potential risks associated with tower collapse are discussed in Section 2.3.

2.6.2.1.3. Soils

Localized, temporary impacts to soils will occur during Project construction. These impacts will result from clearing, excavation and filling activities associate with temporary access road construction, installation of buried interconnect, establishment of crane pads, and construction of turbine foundations. Soil impacts may include erosion, sedimentation, and compaction, which are typical of construction activities that cause soil disturbance. Excavated materials from all construction activities will be stockpiled during construction and reused for grading and revegetation. Topsoil will be separated, replaced on the soil surface, and decompacted, as necessary once construction is complete. Topsoil restoration in agricultural fields will be restored in accordance with NYSA&M guidelines.

2.6.2.2 Operation

2.6.2.2.1. Geology

Operation of the Project will not result in impacts to geology in addition to those described for the construction phase of the Project.

2.6.2.2.2. Seismology

Seismic impacts during Project operation will be similar to those encountered during Project construction. The primary concern in such an event would be tower collapse. Little data exists to show the potential for such impacts because few strong earthquakes have occurred in the vicinity of utility

scale wind farms. Two events of interest for seismic loading of wind turbines are the 1986 North Palm Springs Earthquake and 1992 Northridge Earthquake (Prowell and Veers, 2009). Ground motion recordings from the vicinity of wind farms are available for both earthquakes. The North Palm Springs Earthquake occurred very near wind turbine installations situated to the northwest of Palm Springs, California. The 1992 Northridge Earthquake occurred about 80 kilometers from wind farms located in Tehachapi, California. The Northridge Earthquake had a moment magnitude of 6.7 whereas the North Palm Springs Earthquake was weaker with a moment magnitude of 6.2. The recording near the Tehachapi wind farms (Northridge) shows a peak ground acceleration (PGA) of 0.06 g, which is similar to that investigated by Zhao and Maisser (2006) that showed minimal impact on resulting loads. Verbal reports indicate no damage to turbines in the area in agreement with published findings (Prowell and Veers, 2009).

In contrast the PGA recorded near the Palm Springs wind farms was 0.33 g, which represents a much more significant event that was in the range shown by numerical investigation to produce loads approaching design loads (Ritschel et al., 2003). This level of ground acceleration represents a much higher chance of damage to civil structures, including the wind turbines that were in the area. News reports from the 1986 North Palm Springs Earthquake do not detail any wind turbine damage, but document significant damage to buildings in the vicinity (Prowell and Veers, 2009). Considering the relatively low seismic risk of the Project site and the performance of wind turbines in these high-magnitude events, no significant impacts from seismic events are anticipated.

2.6.2.2.3. Soils

Project operation will result in the permanent conversion of some soils to built facilities (e.g., turbine foundations, permanent access roads, substation). Once construction is complete, temporarily disturbed soils will be restored and revegetated to previous condition. Other than occasional disturbance associated with Project maintenance, soil impacts caused by operation of the Project will be minimal.

2.6.3 Extent and Quality of Information Required

To adequately address and evaluate potential adverse impacts to geology, seismology and soils, the Applicant will, at a minimum, address all of the requirements of the Certificate Application contained within 16 NYCRR §1001.21 (a)-(r) (Exhibit 21).

In order to assess the suitability of the Project sites soils and geology, a study of the impacts of the planned Project will be prepared. Generally, this assessment will include:

- A detailed presentation of existing conditions (including mapping);
- An analysis of impacts;
- Existing and proposed elevation contours;
- Preliminary cut and fill descriptions and calculations;
- Description of excavation techniques;
- Designation of temporary cut or fill storage areas;
- Description of the suitability of excavated materials;
- A preliminary blasting plan (including a description of blasting impacts and mitigation measures);

- An evaluation of suitable foundations; and
- An evaluation of seismic vulnerability.

Regional and landscape-scale information will be obtained from public sources such as the NYS GIS Clearinghouse, NYSDEC, USDA, and USGS. Site-specific information will be obtained from a preliminary geotechnical investigation to be conducted within the Project site as a part of engineering design. Geotechnical investigation will include site characterization of subsurface conditions, including soil borings. A geotechnical investigation protocol will be prepared by a qualified engineer and presented in the Certificate Application.

2.6.4 Avoidance and Minimization of Adverse Impacts

Project components will be sited to avoid or minimize impacts to sensitive soils, bedrock, or steep slopes (as mentioned previously, the Project site is largely flat, but locally steep slopes may be present near drainages). These impacts may be further minimized with the following measures:

- Turbines will be sited on relatively level topography in order to minimize required cut and fill.
- Existing farm lanes will be used to the maximum extent possible for access roads and buried electrical interconnect.
- Stream, wetland, and drainage bottom crossings will be minimized to the maximum extent possible.
- New roads will be surfaced with aggregate materials, as appropriate.
- Heavy vehicles and equipment will be restricted to improved roads to the extent practicable.
- Erosion and sediment control measures will be used to dissipate the energy of flowing water and to stabilize soils.
- Erosion and sediment control measures will be implemented prior to construction to reduce the risk of soil erosion and siltation in downslope surface waters and wetlands.
- Erosion control measures will be placed around disturbed areas and stockpiled soil.
- After construction, temporarily disturbed areas will be stabilized and restored.

The Project will comply with State Pollution Discharge Elimination System (SPDES) General Permit conditions and the Project's SWPPP will include a sediment and erosion control plan that details specific measures to be used on the Project site. The SWPPP will be prepared during final engineering prior to Project construction. The Project will also comply with the *2010 Building Code of New York State*.

The risk of a tower collapse from seismic activity is minimal. A turbine and its base are designed to withstand major structural stresses, including seismic activity. Turbines will not be located on steep slopes, so the foundations will not be affected by slope failure. Therefore, no additional avoidance and minimization measures are anticipated with regards to seismic activity.

2.6.5 Proposed Measures to Mitigate Unavoidable Impacts

Geotechnical investigations will determine the potential for blasting during Project construction. If blasting is required, a blasting plan will be developed in order to limit offsite impacts. The blasting plan will address the following issues in order to mitigate potential impacts:

- Minimum distances for a pre-blast survey of structures and water wells;

- Air-blast limits, ground vibrations, and maximum peak particle velocity (PPV) for ground movement;
- Plans for monitoring and assessment of compliance with blasting requirements; and
- Compliance with the *Blasting Guidance Manual* of the United States Department of the Interior, Office of Surface Mining Reclamation and Enforcement.

If pile driving is deemed necessary and associated noise impacts are anticipated, equipment modifications, such as dampening of metal surfaces, may be implemented to mitigate any unavoidable impacts.

Mitigation of agricultural soil disturbance within the Project site will be consistent with the NYSA&M *Guidelines for Agricultural Mitigation for Wind Power Projects (revised 2013)*. Mitigation measures for soil resources may include:

- Minimizing ground-disturbing activities when soils are saturated;
- Following natural land contours and avoiding steep slopes;
- Salvaging topsoil from all excavation and construction activities to reapply to disturbed areas once construction is completed;
- Disposing of excess excavation materials in approved areas to control erosion;
- Reestablishing original grades and drainage patterns to the extent practicable; and
- Restoration of temporarily disturbed areas once construction is complete.

2.7 TERRESTRIAL ECOLOGY AND WETLANDS

2.7.1 Existing Conditions

This section addresses the currently available existing conditions description of terrestrial and wetland ecology of the Project site in terms of plant communities, significant natural communities, wildlife and wildlife habitat, and wetlands. The Certificate Application will address existing conditions in accordance with the requirements of 16 NYCRR § 1001.22, which will be based upon site specific data collection, field surveys, and evaluation of the Project layout.

2.7.1.1 Plant Communities

The most recent (2011) USGS National Land Cover Database (NLCD) was used to identify cover types present within the overall Project site. This dataset indicates the major cover types present onsite are agricultural, forested, grassland, and shrub/scrub cover types. Approximately 5 percent of the Project site is disturbed/developed land with minimal, or highly managed, plant communities (e.g., roads, road shoulders, industrial sites, lawns). Brief descriptions of these areas are provided below.

Agricultural land comprises approximately 68 percent (16,440 acres) of the Project site. These areas are used primarily for cultivated crops, fruit orchards, and pasture land. Agricultural areas are fairly evenly distributed throughout the site and the average block size depicted in the NLCD is approximately 26 acres. Plant species within these areas are expected to include species such as corn, soybean, wheat, grasses, clovers, goldenrod, asters, and milkweed.

Forestland makes up approximately 17 percent of the Project site, or approximately 4,120 acres. These areas are primarily deciduous forests with small areas of evergreen and mixed forests. Forests within the Project site are variable in size with an average of 8 acres per NLCD block and are generally interspersed among agricultural lands and concentrated along drainages. Common species within these forests likely include maples (*Acer* sp.), oaks (*Quercus* sp.), American beech (*Fagus grandifolia*), and black cherry (*Prunus serotina*).

Based upon NLCD data, wetlands account for approximately 8 percent of the area within the Project site, or approximately 1,890 acres; however, the Project would be designed to minimize and avoid impacts to the maximum extent practicable. Wetlands are predominantly forested areas associated with streams such as Marsh Creek, Fish Creek, and other tributaries to Lake Ontario. Wetlands are described in more detail in Section 2.7.

Grasslands and shrub/scrub lands are a very minor component of the NLCD data for the Project site, totaling approximately 1 percent or 200 acres. Species within these areas likely include grasses, clovers, goldenrods (*Solidago* spp.), asters, blackberry (*Rubus* sp.), and shrub species such as dogwoods (*Cornus* sp.).

The extent of invasive species within the Project site is currently unknown. The NYSDEC maintains a list of regulated invasive species (NYSDEC, 2015b), which will be referenced as ecological field studies are conducted.

2.7.1.1.1. Protected Flora

On September 11, 2015, a request for information regarding significant habitats, endangered, threatened, or rare species, or species of special concern on or in the vicinity of the Project was submitted to the New York Natural Heritage Program (NYNHP). According to NYNHP, one plant species has the potential to occur in the vicinity of the Project; pawpaw (*Asimina triloba*), which is a state-listed, threatened tree species. The pawpaw may be located in association with the floodplain of Fish Creek, a tributary to Lake Ontario located in the western portion of the Project site. During field surveys, biologists will determine if the pawpaw is located within the footprint of the Project layout, or its immediate vicinity to ensure avoidance. Presence of the species will be addressed in Exhibit 22 of the Certificate Application.

2.7.1.1.2. Significant Natural Communities

The NYSDEC's Environmental Resource Mapper indicates one Significant Natural Community is located in the vicinity of the Project. Silver maple-ash swamps are documented within the Hartland Swamp WMA, which is located in the Town of Hartland approximately 0.25 miles south of the southwestern portion of the Project boundary. The swamps within the WMA are characterized by uniformly wet conditions, with minimal seasonal fluctuation in water levels. The tree canopy is dominated by silver maple and green ash but typically includes a variety of other species such as American elm, red maple, swamp white oak, and ironwood. This community typically has a well-developed understory of tall shrub, short shrub, and herbaceous species.

2.7.1.1.3. Significant Coastal Fish and Wildlife Habitat Areas

Mapping from the NYSDOS, Division of Coastal Resources indicates no Significant Coastal Fish and Wildlife Habitats (SCFWH) are located within the Project site. The nearest SCFWH area occurs in the Village of Lyndonville approximately 0.5 miles southeast of the Project site along Johnson Creek. Johnson Creek is a relatively large, warmwater stream that drains over 100 square miles of primarily rural and agricultural lands. Johnson Creek is considered significant because it is one of about 10 major New York tributaries to Lake Ontario, it is one of the most popular recreational fishing sites in Orleans County, and it is one of only two significant salmonid spawning streams in Orleans County.

Another SCFWH located in the vicinity of the Project site is Keg Creek, which is located approximately 0.8 miles west of the Project site. This SCFWH-designated portion of the creek is an undisturbed, weedy channel approximately 10-20 feet wide and bordered by a broad band of wetland vegetation. This area is considered significant because of its undisturbed character (unusual in Niagara County), popularity as a fishing stream, and its significant concentrations of salmonids during spring and fall spawning runs.

2.7.1.2 Wildlife and Wildlife Habitats

2.7.1.2.1. Mammals

The plant communities within the Project site are expected to provide habitat for mammal species that are commonly found throughout western New York. Publicly available sources of mammal species ranges are not readily available; however, white-tailed deer (*Odocoileus virginianus*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*), Virginia opossum (*Procyon lotor*), eastern cottontail (*Sylvilagus floridanus*), and rodents such as woodchuck (*Marmota monax*), eastern chipmunk (*Tamias striatus*), eastern gray squirrel (*Sciurus carolinensis*), mice, rats, voles, shrews and moles, are well-adapted to mixed habitats and are likely present within the Project site. Additionally, big brown bats (*Eptesicus fuscus*) and little brown bats (*Myotis lucifugus*) are common throughout New York State and are also likely to be found roosting and foraging within the Project site during the summer bat activity period. No known bat hibernacula occur within the Project area or its vicinity.

2.7.1.2.2. Birds

The North American Breeding Bird Survey (BBS) is a long-term, large-scale, international avian monitoring program initiated in 1966 to track the status and trends of North American bird populations. The East Youngstown route of the BBS runs adjacent to the southern boundary of the Project site for approximately three miles and continues west toward the Town of Porter. Outside of the Project site, the route traverses a similar mix of habitats (agricultural, forested and residential) to those found within the Project site. Overall, the route is 24.5 miles long with a total of 50 stops located at 0.5 mile intervals. During the peak of the nesting season each year, three-minute point counts are conducted at each stop, during which the observer records all birds heard or seen within 0.25 miles of the stop. The most commonly observed species on the East Youngstown route include ring-billed gull (*Larus delawarenis*), European starling (*Sturnus vulgaris*), red-winged blackbird (*Agelaius phoeniceus*), common grackle (*Quiscalus quiscula*), American robin (*Turdus migratorus*), mourning dove (*Zenaida macroura*), house sparrow (*Passer domesticus*), song sparrow (*Melospiza melodia*), American crow (*Corvus brachyrhynchos*), barn swallow (*Hirundo rustica*), ring-necked pheasant (*Phasianus colchicus*), and eastern meadowlark (*Sturnella magna*). Historical records for the East Youngstown route include four

state-listed threatened species (pied-billed grebe (*Podilymbus podiceps*), northern harrier (*Circus cyaneus*), upland sandpiper (*Bartramia longicauda*), and sedge wren (*Cistothorus platensis*)) and 10 state-listed species of special concern (osprey (*Pandion haliaetus)*, Cooper's hawk (*Accipiter cooperii*), red-shouldered hawk (*Buteo lineatus*), common nighthawk (*Chordeiles minor*), red-headed woodpecker (*Melanerpes erythrocephalus*), horned lark (*Eremophila alpestris*), golden-winged warbler (*Vermivora chrysoptera*), yellow-breasted chat (*Icteria virens*), vesper sparrow (*Pooecetes gramineus*), and grasshopper sparrow (*Ammodramus savannarum*).

The NYS Breeding Bird Atlas (BBA) compiles the results of a 2000-2005 survey that was a cooperative project between the NYSDEC, the New York State Ornithological Association, Audubon New York, and Cornell University's New York Cooperative Fish and Wildlife Research Unit, Department of Natural Resources, and Lab of Ornithology. The Project site lies within BBA blocks 2080A, 2080B, 2180A, 2180B, 2280A, 2080C, 2080D, 2180C, 2180D, and 2280C. A total of 109 species were recorded in these blocks including one state-listed endangered species (short-eared owl (*Asio flammeus*)), two state-listed threatened species (upland sandpiper and northern harrier), and six state-listed species of special concern (sharp-shinned hawk (*Accipiter striatus*), horned lark, vesper sparrow, cerulean warbler (*Setophaga cerulean*), Cooper's hawk, and grasshopper sparrow).

2.7.1.2.3. Reptiles and Amphibians

The NYS Amphibian and Reptile Atlas Project (Herp Atlas) was a ten year survey (1990-1999) designed to document the geographic distribution of New York State's reptiles and amphibians. Distribution maps resulting from this survey indicate 18 species were documented within the topographic quadrangles that cover the Project site. According to these data, habitats within the Project site likely support common species such as common snapping turtle (*Chelydra serpentina*), painted turtle (*Chrysemys picta*), red-spotted newt (*Notophthalmus viridescens*), American toad (*Anaxyrus americanus*), gray treefrog (*Hyla versicolor*), spring peeper (*Pseudacris crucifer*), green frog (*Rana clamitans*), wood frog (*Lithobates sylvaticus*), and common garter snake (*Thamnophis sirtalis*).

2.7.1.2.4. Terrestrial Invertebrates

No publicly available data resource is available for determining the terrestrial invertebrate species that may be present within the Project site. However, none of the terrestrial invertebrate species on the NYSDEC's *List of Endangered, Threatened and Special Concern Fish & Wildlife Species of New York State* (e.g., Karner blue butterfly (*Lycaeides melissa samuelis*), frosted elfin (*Callophrys irus*), tawny crescent (*Phyciodes batesii*)) are documented within the Project site. Therefore, it is expected that species present within the Project site are common and typical for the region.

2.7.1.2.5. Protected Wildlife or Species of Concern

On September 11, 2015, a request for information regarding significant habitats, endangered, threatened, or rare species or species of special concern on or in the vicinity of the Project was submitted to the NYNHP. NYNHP response indicated one state-listed endangered species (short-eared owl) has been documented at the Project site. The response also indicated one federally-listed threatened species (northern long-eared bat (*Myotis septentrionalis*)) has been documented within 40 miles of the Project site and three additional listed bird species, upland sandpiper (state-listed as

threatened), northern harrier (state-listed as threatened), and red-headed woodpecker (state species of special concern) have been documented within 10 miles of the Project site.

A list of threatened and endangered species that may occur in the Project site was also obtained from the U.S. Fish and Wildlife Service (USFWS) Information Planning and Conservation (IPAC) system on September 10, 2015. This list contained one federally-listed threatened species (northern long-eared bat) and indicated no critical habitat exists within the Project site. The IPAC website also identifies 14 Birds of Conservation Concern that may occur in the vicinity of the Project site. Birds of Conservation Concern reported to breed in or near the Project site include American bittern (*Botaurus lentiginosus*), black tern (*Chlidonias niger*), black-crowned night heron (*Nycticorax nycticorax*), blue-winged warbler (*Vermivora cyanoptera*), Canada warbler (*Cardellina canadensis*), cerulean warbler (*Setophaga cerulean*), common tern (*Sterna hirundo*), golden-winged warbler (*Vermivora chrysoptera*), least bittern (*Ixobrychus exilis*), pied-billed grebe, red-headed woodpecker, upland sandpiper, and wood thrush (*Hylocichla mustelina*). If present on site, most of these species would be found in shoreline, emergent wetland, or forested habitat, which make up a relatively small percentage of the largely agricultural Project site. Additionally, one Bird of Conservation Concern, bald eagle (*Haliaeetus leucocephalus*), is reported as occurring year round in the vicinity of the Project site.

Range maps from the Herp Atlas indicate the spotted turtle (*Clemmys guttata*, state species of special concern) may exist within the Project site. Spotted turtles are primarily found in marshy meadows, bogs, swamps, ponds, ditches, or other small bodies of still water.

During field surveys, biologists will determine if state or federally listed threatened or endangered species are present in the Project area, or could be affected by the construction or operation of the Project. Presence of these listed species will be addressed in Exhibit 22 of the Certificate Application.

Table 4 provides a list of endangered or threatened species or species of special concern that may occur in the Project area or its vicinity, based upon consultation with NYNHP, USFWS IPAC system, or Herp Atlas.

Table 4. Endangered or Threatened Species or Species of Special Concern

Species	Scientific Name	Status[1]	Source[2]
Northern Long-eared Bat	*Myotis septentrionalis*	FED-T	NYNHP, IPAC
Short-eared Owl	*Asio flammeus*	NYS-E	NYNHP, BBA
Upland Sandpiper	*Bartramia longicauda*	NYS-T, BCC	NYNHP, BBA, IPAC, BBS
Northern Harrier	*Circus cyaneus*	NYS-T	NYNHP, BBA, BBS
Bald Eagle	*Haliaeetus leucocephalus*	NYS-T, BCC	IPAC
Pied-billed Grebe	*Podilymbus podiceps*	NYS-T, BCC	IPAC, BBS
Sedge Wren	*Cistothorus platensis*	NYS-T	BBS
Sharp-shinned Hawk	*Accipiter striatus*	NYS-SC	BBA
Horned Lark	*Eremophila alpestris*	NYS-SC	BBA, BBS
Vesper Sparrow	*Pooecetes gramineus*	NYS-SC	BBA, BBS
Cerulean Warbler	*Dendroica cerulean*	NYS-SC, BCC	BBA, IPAC
Cooper's Hawk	*Accipiter cooperii*	NYS-SC	BBA, BBS
Grasshopper Sparrow	*Ammodramus*	NYS-SC	BBA, BBS

Species	Scientific Name	Status[1]	Source[2]
	savannarum		
Osprey	*Pandion haliaetus*	NYS-SC	BBS
Red-shouldered Hawk	*Buteo lineatus*	NYS-SC	BBS
Common Nighthawk	*Chordeiles minor*	NYS-SC	BBS
Yellow-breasted Chat	*Icteria virens*	NYS-SC	BBS
Red-headed Woodpecker	*Melanerpes erythrocephalus*	NYS-SC, BCC	NYNHP, IPAC, BBS
American Bittern	*Botaurus lentiginosus*	NYS-SC, BCC	IPAC
Black Tern	*Chlidonias niger*	BCC	IPAC
Black-crowned Night Heron	*Nycticorax nycticorax*	BCC	IPAC
Blue-winged Warbler	*Vermivora pinus*	BCC	IPAC
Canada Warbler	*Wilsonia Canadensis*	BCC	IPAC
Common Tern	*Sterna hirundo*	BCC	IPAC
Golden-winged Warbler	*Vermivora chrysoptera*	BCC	IPAC, BBS
Least Bittern	*Ixobrychus exilis*	BCC	IPAC
Wood Thrush	*Hylocichla mustelina*	BCC	IPAC
Spotted Turtle	*Clemmys guttata*	NYS-SC	HA

[1] FED-T = Federally listed as threatened, NYS-E = NYS listed as endangered, NYS-T = NYS listed as threatened, BCC = Federal bird of conservation concern, NYS-SC = NYS listed as species of special concern.
[2] NYNHP = New York Natural Heritage Program (2015), IPAC = USFWS Information for Planning and Conservation (2015), BBA = Breeding Bird Atlas (2008), BBS = Breeding Bird Survey (2012), HA = NYS Herp Atlas (2009)

2.7.1.3 Wetlands

2.7.1.3.1. NWI-Mapped Wetlands

According to National Wetland Inventory (NWI) mapping, there are 349 federally-mapped wetlands within the Project site (NWI, 2015). Freshwater ponds are the most commonly mapped classification (169 ponds mapped, totaling approximately 93 acres), followed by forested wetlands (148 wetlands mapped, totaling approximately 1470 acres), emergent wetlands (29 wetlands mapped, totaling approximately 53 acres), "other" wetlands (three wetlands mapped, totaling approximately 2 acres), and lake (totaling approximately four acres).

2.7.1.3.2. NYSDEC Wetlands

NYSDEC mapping indicates six state-regulated wetlands occur within the Study Area (NYSDEC, 1998 and 2011). The wetlands are generally located along the southern boundary of the Project site, as illustrated in Figure 4 (Mapped Wetlands and Streams). NYSDEC mapped wetlands are summarized in in Table 5.

Table 5. NYSDEC-Mapped Wetlands

NYSDEC ID	Class	Total Acres	Acres within Project Site	NWI Vegetative Classification
LY-5	2	105.3	31.7	Forested/Scrub Shrub
BA-22	3	61.8	57.5	Forested/Scrub Shrub
NW-1	3	41.9	14	Forested
BA-23	3	25.7	23.1	Forested
LY-7	3	21.8	19.2	Forested
LY-6	3	25.5	21.5	Forested

The NYSDEC wetland classification system ranks the degree to which wetlands supply benefits based on factors such as vegetative cover, ecological associations, special features, hydrological and pollution control features, and their distribution and location. Higher class wetlands (e.g., Class 1) provide the greatest level of benefits and are afforded a higher level of protection. Lower class wetlands (e.g., Class 4) still provide important functions and benefits, but typically require less protection to continue to provide these functions. All of the wetlands within the Project site are Class 3 wetlands, except LY-5 (a Class 2 wetland).

2.7.2 Potentially Significant Adverse Impacts

The following sections provide a discussion of the *potential* or *possible range* of construction and operations related impacts to plant communities, wildlife, and wetlands, based upon what is presently known about the Project. Specific adverse impacts would be addressed in the Certificate Application, Exhibit 22, based upon the development of Project layout details and the results of studies and further data collection.

2.7.2.1 Construction

2.7.2.1.1. Plant Communities

Temporary impacts to plant communities may result from site preparation work for construction activities including clearing and grading for equipment staging areas, the O&M facility, turbine workspaces, access roads, and public road improvements, as well as earthwork for the installation of buried electrical collection lines. These activities will require temporary clearing of some vegetated areas. It is anticipated that most of these activities will occur on agricultural land; however, some clearing may also be required in forested and successional areas. In addition to direct loss of vegetated areas from clearing, plant communities could be indirectly affected by fugitive dust, exposure to contaminants (e.g., diesel fuel or hydraulic fluids), or the introduction of non-native invasive plant species. However, the temporary impacts can be avoided or minimized through the implementation of BMPs during construction.

It is anticipated that plant communities will be temporarily cleared around each tower along access roads, and along buried electric collection lines. Clearing will also be required for a construction laydown and staging area, the majority of which will be restored following construction. Permanent impacts to

plant communities will consist of a permanently cleared area around each turbine, roadways, the O&M facility and around the substation/POI. The area or footprint of disturbance will be presented in the Certificate Application in Exhibit 22.

A discussion of potential temporary and permanent impacts to agricultural resources is provided in Section 2.1.

2.7.2.1.2. Wildlife and Wildlife Habitat

During Project construction, wildlife may be adversely affected as a result of various construction activities. The impacts associated with construction activities can be broadly categorized as those that result from (1) habitat disturbance (e.g., habitat reduction, alteration and fragmentation), (2) wildlife disturbance, and (3) wildlife injury or mortality. Overall, the effects of habitat disturbance would be related to the type and abundance of habitats affected and to the wildlife that occurs in those habitats. Once construction is complete, most areas not located within the footprint of permanent structures will be restored as close as possible to preexisting conditions.

During construction, wildlife disturbances may occur, including attraction, habituation, or avoidance (Knight and Cole 1991). Some wildlife displacement may occur in the immediate vicinity of construction activities because of increased noise and human activity. The significance of this impact will vary by species and the seasonal timing of construction activities. The American Wind Wildlife Institute released a report in May 2015 entitled "Wind Turbine Interactions with Wildlife and their Habitats: A Summary of Research Results and Priority Questions" (AWWI, 2015). The report indicates that displacement response of individual species is observed inconsistently. A 2012 study found that the abundance of some species declined during construction, but the effect disappeared after the facility became operational (Pearce-Higgins et al., 2012).

Wildlife injury or death may result from clearing, grading, and trenching activities for species that are not mobile enough to avoid construction operations, or whose behavior makes them vulnerable to direct effect (e.g., those that use burrows or defend nest sites). If clearing or other construction activities occur during the nesting period for ground nesting birds, nests and eggs or nestlings could be destroyed if present. Although more mobile wildlife species, such as deer, foxes, rodents, etc., and adult or fledgling birds, might avoid the initial clearing activity by moving into habitats in adjacent areas. Direct mortality from vehicle collisions may also occur along access roads, especially in wildlife concentration areas or travel corridors. However, the temporary impacts to wildlife can be avoided or minimized through the implementation of BMPs during construction.

2.7.2.1.3. Wetlands

During construction, direct impacts to wetlands may result from minor vegetation clearing, soil disturbance, and direct filling associated with construction of roads and installation of buried electrical collection lines. To the extent practical, turbines and turbine workspaces will avoid wetlands. Removal of vegetation and soil disturbance in upland areas also has the potential to cause indirect impacts to wetlands from erosion and sedimentation. These indirect impacts may occur anywhere that construction activities take place in close proximity to wetland areas if proper precautions are not implemented. However, impacts would be minimized through the implementations of BMPs and erosion and sediment control measures.

2.7.2.2 Operation

2.7.2.2.1. Plant Communities

Beyond routine maintenance and repair activities, operation of the Project does not typically produce significant additional impacts to plant communities beyond the construction phase. The majority of impacts to plant communities that occur during construction are restored leaving a significantly smaller area of permanent conversion of vegetative community to built facilities. Typical permanent footprint for facilities includes 0.2 acres per turbine structure (pedestal and crane pad) and 20-foot wide access roads. Once the Project is built, plant communities will remain largely intact with habitat functionality retained for most species. Permanent impacts to plant communities may also include conversion of one vegetative community to another (e.g., forest conversion to shrub scrub or other maintained successional community). This type of conversion would occur if Project facilities were placed in forested area requiring vegetation management. Other minor, and infrequent, impacts to plant communities may occur as a result of maintenance or repair activities during Project operation but are not anticipated to be significant.

2.7.2.2.2. Wildlife and Wildlife Habitats

Potential impacts to wildlife associated with the operation and maintenance of the Project can be broadly categorized as those related to (1) habitat disturbance (i.e., minor alteration of habitat from maintenance activities); (2) wildlife disturbance (e.g., response to the presence of Project personnel or equipment); and (3) wildlife injury or mortality. At this time, the potential adverse impacts to wildlife can be discussed relative to what is seen at wind farms studied and operating in the US.; however, based upon site specific surveys that are currently underway, the Certificate Application will reflect survey results and projections of potential mortality or other impacts to wildlife as a result of the Project construction and operation.

Collisions of birds and bats with turbines would be the most likely cause of mortality and injury to birds and bats during the Project operation. Bird and bat collisions with wind turbines have been a major focus in the study of wind farms, and a great deal is known about the risk profiles of different bird and bat species. Waterfowl, waterbird, and shorebird mortality from wind turbines is uncommon (Kerlinger, 2006) and unlikely to occur at the Project site. Raptor fatalities at wind facilities are of particular concern because raptors have a high public profile, some raptor species have relatively small populations and/or low reproduction rates, and some raptor species fly at heights within the blade sweep area (Kingsley and Whittam, 2003) and/or are at higher risk of collision than other raptor species. Passerines (both resident and migratory species) are the most common group of birds killed at many wind energy projects (e.g., Erickson et al., 2004; Johnson et al., 2000, 2002; Kerns and Kerlinger, 2004), often making up more than 80 percent of reported fatalities (Erickson et al., 2001); however, average facility wide fatality rates across North America are very low overall, suggesting minimal risk of significant impact to local or regional populations (National Wind Coordinating Committee, 2010). Some grassland birds that exhibit courtship displays within the rotor swept heights and thus may be at particular risk where turbines are sited in habitats where these species occur (Illinois Department of Natural Resources, 2007; Kingsley and Whittam, 2005).

Bats most affected by wind facilities appear to be tree-roosting species during their fall migration (Arnett et al., 2008), with hoary bats (*Lasiurus cinereus*) and Eastern red bats (*L. borealis*) comprising most of the bat fatalities in the Midwest and eastern United States. Biotic factors that may contribute to bat mortality at wind energy facilities include flight behavior, migration patterns, and presence of insect prey (Fiedler et al., 2007); whereas abiotic factors such as temperature, precipitation and windspeed also affect risk. The prevalence of migratory tree bats observed as fatalities may be related to their tendency to aggregate at tall and highly visible landscape structures, which until recently only consisted of the crowns of trees (Cryan and Brown, 2007).

2.7.2.2.3. Wetlands

Placement of structures in wetlands, and the associated impacts, will be minimized to the maximum extent possible through Project design. Because disturbance of wetland areas complicates construction activities, increases development costs, and requires additional evaluation, permitting, and mitigation to limit wetland impacts, the Project will avoid disturbing these areas unless necessary (e.g., when features present a barrier between portions of the Project site that must be crossed).

As a result, permanent impacts to wetlands resulting from Project would be limited to minor areas of permanent fill. Such impacts would result from unavoidable access road crossings, necessary upgrades to existing roads, or installation of underground electrical collection line, resulting in minimal to no effect on wetland functionality. No turbines will be placed within wetlands.

2.7.3 Extent and Quality of Information Required

To adequately address and evaluate potential adverse impacts to terrestrial and wetland ecological communities, the Applicant will, at a minimum, address all of the requirements of the Certificate Application contained within 16 NYCRR § 1001.22 (a)-(q) (Exhibit 22).

2.7.3.1 Plant Communities

Plant communities within the Project site will be identified by both aerial photo interpretation and field observations conducted in the growing season and classified according to *Ecological Communities of New York State* (Edinger et al., 2014). Where possible, plant communities will also be identified on adjacent properties. If field observations of adjacent properties are not feasible, aerial photo interpretation will be used to identify plant communities. This information will be used to support an impact analysis that calculates the sum total of temporary and permanent impacts to each community (including agricultural and disturbed/developed areas). During field investigations special efforts will be made to locate any rare plant species identified by the NYNHP as possibly occurring in or near the areas planned for disturbance. In addition, invasive species will be located and mapped within areas planned for disturbance to support the development of an invasive species prevention and management plan in accordance with 16 NYCRR § 1001.22(p).

2.7.3.2 Wildlife and Wildlife Habitat

In order to characterize bird and bat activity within the Project site in accordance with 16 NYCRR § 1001.22, an avian and bat study plan has been developed in coordination with NYSDEC and USFWS that is consistent with NYSDEC *Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy*

Projects, USFWS *Land-based Wind Energy Guidelines (WEG),* and USFWS *Eagle Conservation Plan Guidance* (NYSDEC, 2009; USFWS, 2012; USFWS, 2013). The proposed surveys will evaluate the potentially affected bird and bat community and estimate the seasonal, spatial, and temporal use of the Project site by birds and bats. The surveys have been developed to respond to Tier 3 guidance and will consist of the following tasks:

- Task 1: Migratory Raptor Surveys
- Task 2: Breeding Bird Surveys
- Task 3: Bat Acoustic Monitoring
- Task 4: Threatened and Endangered Species Habitat Surveys
- Task 5: Wintering Grassland Raptor Surveys
- Task 6: General Avian/Eagle Use Surveys
- Task 7: Indiana and Northern Long-eared Bat Summer Presence/Absence Surveys

For details regarding each of these tasks see the Avian and Bat Study Plan in Appendix B (Ecology and Environment, 2015). In consultation with NYSDEC and USFWS staff, these field studies were initiated in December 2014 and are currently being completed. The results of these surveys will be sufficient to identify and evaluate expected impacts to birds and bats, analyze known or predicted species and species migration corridors present, determine effective impact avoidance, minimization or mitigation measures for any unavoidable adverse impacts in accordance with 16 NYCRR § 1001.22(h), and develop a post-construction operations monitoring and adaptive management plan

2.7.3.3 Wetlands

Wetland delineations will be conducted within 100 feet of planned access road centerlines/buried interconnect and within a 200-foot radius of planned turbine locations. Wetland boundaries will be flagged in the field based on the methods outlined in the U.S. Army Corps of Engineers (USACE) *Wetland Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)*. Delineated boundaries will then be surveyed using GPS technology. Wetlands will be described and classified according to the Cowardin classification system. Data regarding vegetation, soils, and hydrology will be collected for each wetland site identified. Wetland boundaries will be digitally extended to 500 feet from any proposed disturbance, and on to any adjacent off-site parcels, based on field observations, aerial photography, elevation data, NWI and NYSDEC wetland mapping, and USDA-NRCS Web Soil Survey hydric soil ratings. However, these extended areas will not be flagged and surveyed with a GPS unit.

The wetland delineation report will provide a qualitative and descriptive wetland functional assessment of each delineated wetland, that is consistent with 16 NYCRR § 1001.22(k) and the factors used by the NYSDEC to classify state-regulated wetlands. The data in this report will be sufficient to calculate all temporary and permanent impacts of the Project on wetlands and their regulated adjacent areas in accordance with 16 NYCRR § 1001.22(m).

2.7.4 Avoidance and Minimization of Adverse Impacts

2.7.4.1 Plant Communities

Avoidance is typically the most effective, and therefore preferred, choice for minimizing impacts to sensitive plant communities. The design and siting of the Project components will follow appropriate guidance and requirements from the USFWS, NYSDEC, and other resource agencies, as available and applicable. Additionally, the following avoidance and minimization measures will also be considered where feasible:

- Use existing roads to the maximum extent possible.
- Co-locate buried electrical interconnect and access roads wherever feasible.
- Minimize the size of areas in which vegetation will be removed.
- Minimize the number of miles of new road construction needed for the Project through efficient design.
- Initiate restoration of disturbed vegetation as soon as possible after construction activities are completed. Restore disturbed areas in accordance with the appropriate guidelines based upon the affected plant community, including but not limited to the SWPPP, and conditions of issued federal wetland permits.
- Develop a plan for control of non-native invasive plants that could occur as a result of surface disturbance activities. The plan should address monitoring, species identification, the manner in which invasive species spread, and methods for treating infestations.

As the Project layout is developed for the Project, additional information will be provided in the Certificate Application regarding potential and appropriate mitigation measures specific to the impacts identified in the Certificate Application.

The Certificate Application will include an Invasive Species Control Plan as an appendix, and will be described in Exhibit 22.

2.7.4.2 Wildlife and Wildlife Habitat

Project components will be sited to minimize impacts on wildlife to the maximum extent practicable. To further reduce the potential for adverse impacts to wildlife, the following measures would be considered by the Applicant, if warranted by unavoidable impacts:

- Reduce habitat disturbance by keeping vehicles on access roads and minimizing foot and vehicle traffic through undisturbed areas.
- Minimize scheduling construction activities in sensitive habitats during important periods for wildlife.
- Instruct employees, contractors, and site visitors to avoid harassment and disturbance of wildlife, especially during reproductive (e.g., courtship and nesting) seasons.
- Minimize the amount of lighting installed on Project components; all outdoor lighting on Project buildings should be downshielded.
- Promptly dispose of all garbage or human waste generated on site in order to avoid attracting nuisance wildlife

- Follow the recommendations provided in the USFWS and NYSDEC guidelines.
- Implement a post construction avian and bat fatality monitoring program.

2.7.4.3 Wetlands

As mentioned above, it is expected that direct placement of structures in wetlands, and the associated impacts, will be avoided to the maximum extent possible through Project siting, planning and design. Further minimization of impacts to wetlands may include:

- Portions of delineated wetlands that are not to be utilized for crossings may be designated "No Equipment Access" areas, thus prohibiting the use of motorized equipment in these areas.
- A buffer zone referred to as a "Restricted Activities Area", may be established where Project construction traverses wetlands. Restrictions may include:
    - No deposition of slash within or adjacent to a waterbody;
    - No accumulation of construction debris within the area;
    - Herbicide restrictions;
    - No equipment washing or refueling within the area; and
    - No storage of any petroleum or chemical material.
- When crossing wetlands, routing around edges, utilizing disturbed areas, and crossing the narrowest portion of the wetland will be the preferred crossing options. Wherever feasible, low impact crossing methods will be used such as timber mats or similar materials.

Following construction activities, temporarily disturbed areas will be seeded (and stabilized with mulch and/or straw if necessary) to reestablish vegetative cover in these areas.

2.7.5 Proposed Measures to Mitigate Unavoidable Impacts

2.7.5.1 Plant Communities

The minimization measures described above are expected to be sufficient to avoid adverse impacts to plant communities and no further mitigation measures are anticipated. Access roads, buried electrical collection corridors, and tower site areas should be monitored regularly for the establishment of invasive species, and weed control measures should be initiated immediately upon evidence of the introduction of invasive species.

2.7.5.2 Wildlife and Wildlife Habitat

A post-construction avian and bat fatality monitoring program will be developed in accordance with 16 NYCRR § 1001.22(h)(2) and in consultation with the USFWS and NYSDEC. In the event that mortality issues arise that are deemed significant and warranting management response, the Applicant will work with the USFWS and NYSDEC to address the issue or develop additional mitigation measures as appropriate. As the Project layout is developed for the Project, additional information will be provided in the Certificate Application regarding potential and appropriate mitigation measures specific to the impacts identified in the Certificate Application.

2.7.5.3 Wetlands

The temporary and permanent footprint of disturbance to wetland communities is currently unknown but would be fully addressed in the Certificate Application. While every effort will be made during siting and construction to avoid adverse impacts to wetlands, some level of temporary or permanent impacts may be unavoidable. However, if mitigation is warranted, wetland mitigation and monitoring plan will be developed with the NYSDEC and USACE during the permitting process, as appropriate. As the Project layout is developed for the Project, additional information will be provided in the Certificate Application regarding potential and appropriate mitigation measures specific to the impacts identified in the Certificate Application.

2.8 WATER RESOURCES AND AQUATIC ECOLOGY

2.8.1 Existing Conditions

This section addresses the currently available existing conditions description of water resources of the Project site in terms of groundwater, surface water, and aquatic species. The Certificate Application will address existing conditions in accordance with the requirements of 16 NYCRR § 1001.22, which will be based upon site specific data collection, field surveys, and evaluation of the Project layout.

2.8.1.1 Groundwater

The USDA-NRCS Web Soil Survey (2015) indicates the average depth to groundwater in the Project site is approximately 1.1 feet (34 centimeters) and the average depth to bedrock is greater than 6.5 feet (200 centimeters). NYSDEC mapping indicates that no Primary or Principle Aquifers occur below the Project site (NYSDEC, 2015c). The nearest Primary Aquifer is the Tonawanda aquifer located approximately 25 miles southeast of the Project site. The nearest Principle Aquifer is located approximately 1 mile west of the Project site and another is located approximately 4 miles south. The nearest EPA-designated Sole Source Aquifer is located approximately 50 miles south of the Project site. Additional, site-specific information regarding depth to groundwater resources will be obtained from the geotechnical investigation described in Section 2.6.

Information on water wells in New York State has been collected by the NYSDEC since April 2000. The nearest well contained in this database is located approximately 1 mile southwest of the Project site. Additional wells are depicted approximately 2 – 2.5 miles south and east of the Project site. It should be noted that wells constructed prior to April 2000 are not contained in this database and the presence of water wells within the Project site will require further investigation. Publicly available data indicates that private residences within the Project site are well-served by public water supplies (Towns of Shelby, Ridgeway, and Yates, 2003; Town of Somerset, NY, 2012).

NYSDEC water withdrawal mapping indicates no wells supplying a public drinking water system are present. The nearest public drinking water well is located approximately 20 miles southeast in the Town of Elba, New York. As a result, no Wellhead Protection Areas have been identified within the Project site.

2.8.1.2 Surface Water

2.8.1.2.1. Watershed

The Project site is located within the Oak Orchard-Twelvemile Watershed (USGS Cataloging Unit 04130001). This includes Lake Ontario, which is a Class A waterbody, suitable for water supply, public bathing and general recreation use, and support of aquatic life. Public water supply use of Lake Ontario is fully supported. The waterbody is used as a public supply for numerous municipalities in Niagara, Orleans and Monroe Counties, including the City of Rochester. The most recent annual water quality reports indicate no contaminants in finished (treated) water exceed regulatory limits (NYSDEC, 2015d). A Source Water Assessment by the NYSDOH conducted in the early 2000s found that, in general, public water supplies that use Great Lakes sources are not very susceptible to contaminants because of the size and quality of the Great Lakes (NYSDOH, Source Water Assessment Program, 2005). Public bathing and general recreational uses of this waterbody are considered to be impaired based on monitoring at area beaches that show elevated levels of pathogen indicators that result in occasional beach advisories or closures and due to the well-documented occurrence of algal blooms, particularly *Cladophora*, in the shallower nearshore waters.

Within the Oak Orchard-Twelvemile Watershed, Golden Hill Creek and its tributaries are the only other assessed segments. Aquatic life support and recreational uses (fishing) in Golden Hill Creek are impaired by unknown pollutants. Organic wastes are the suspected cause though other factors may also contribute (NYSDEC, 2015d).

Under Article 15 of the Environmental Conservation Law (Protection of Waters), the NYSDEC has regulatory jurisdiction over any activity that disturbs the bed or banks of protected streams. In addition, small lakes and ponds with a surface area of 10 acres or less, located within the course of a stream, are considered to be part of a stream and are subject to regulation under the stream protection category of Article 15. Protected stream means any stream, or particular portion of a stream, that has been assigned any of the following classifications or standards: AA, AA(t), A, A(t), B, B(t) or C(t) (6 NYCRR Part 701). A classification of AA or A indicates that the best use of the stream is as a source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. The best usages of Class B waters are primary and secondary contact recreation and fishing. The best usage of Class C waters is fishing. Streams designated (t) indicate that they support trout, and also include those more specifically designated (ts) which support trout spawning. The NYSDEC GIS database was consulted to determine which streams in the area are protected by the state (under Article 15 of the Environmental Conservation Law). According to NYSDEC, there are no state protected streams within the Project site. There are three named streams (Fish Creek, Golden Hill Creek, and Marsh Creek) and numerous unnamed tributaries within the Project site. However, these streams are all classified by the NYSDEC as class C streams and therefore are not subject to regulation under the stream protection category of the Environmental Conservation Law, Article 15. However, on-site streams would fall under the jurisdiction of the USACE pursuant to Section 404 of the Clean Water Act (CWA). Mapped streams are depicted in Figure 4 (Mapped Wetlands and Streams).

2.8.1.2.2. Public Water Supply

The Town of Somerset Comprehensive Plan Update (2012) indicates the Village of Barker and the Town of Somerset are served by public water from the Niagara County Water District (sourced from the

Chippawa Channel of the Niagara River west of Grand Island). Service is provided to Barker through a 10-inch line located on Quaker Road, which connects to a 24-inch line coming easterly on NYS Route 31 from the City of Lockport. There are also two 10-inch water mains located along Route 18 and West Somerset Road that tie into the Town of Newfane, which are part of the Niagara County Water District. In general, the Town is well interconnected to the Towns of Newfane and Hartland, and the water system is up-to-date and in good condition. Water is also supplied to the Town of Yates through interconnection off of County Line Road.

The Village of Lyndonville treats water from Lake Ontario at a facility located at the north end of North Lyndonville Road (NYS Route 63) in the Town of Yates. The intake pipe at the plant extends 1250 feet into Lake Ontario. The plant has a capacity of 500,000 gallons per day (gpd). An 8-inch transmission main carries water along Route 63 from the intake at Lake Ontario to a 3 million gallon storage tank just north of the Village of Lyndonville. Public water is available to residents in most areas of the Town of Yates via the Village of Lyndonville facility and a transmission main that is jointly owned by the Town of Yates and the Town of Somerset. In the remaining areas, residents are likely served by private wells.

2.8.1.3 Aquatic Species

The NYSDEC Fish Atlas Maps provide information on the current distribution of each species of inland fish found in the state. These maps indicate that common species within the Project site include common carp, common shiner, brown bullhead, yellow perch, white sucker, largemouth bass, smallmouth bass, and other sunfish.

A biological (macroinvertebrate) assessment of Golden Hill Creek was conducted in 2000. Sampling results indicated severely impacted water quality conditions. Organic wastes were identified as the likely cause of the impact. Slow current speed may also be a factor, but water quality impacts were clearly indicated. The sampled fauna was heavily dominated by snails and sowbugs, with no mayflies, stoneflies, or caddisflies. A fish kill earlier that year (March 2000) from a chlorine discharge may have had residual effects on the macroinvertebrate fauna. (DEC/DOW, BWAM/SBU, April 2003).

Correspondence received from the NYNHP indicates no rare aquatic species have been documented within the Project site (2015).

Non-native invasive species have the potential to degrade aquatic environments. To minimize the impact on the environment, NYSDEC regulates the possession, transport, importation, sale, purchase and introduction of select invasive species (6 NYCRR 575). These include select aquatic species (i.e. fish, aquatic invertebrates and aquatic vertebrates) as listed in *Prohibited and Regulated Invasive Species* dated September 10, 2014. The extents of invasive non-native aquatic species in the surface water features of the Project site are not known.

2.8.2 Potentially Significant Adverse Impacts

The following sections provide a discussion of the *potential* or *possible range* of construction and operations related impacts to surface water resources and aquatic ecology, based upon what is presently known about the Project. Specific adverse impacts would be addressed in the Certificate Application, Exhibit 23, based upon the development of Project layout details and the results of studies and further data collection.

2.8.2.1 Construction

2.8.2.1.1. Groundwater

The potential for construction activities to impact groundwater resources are very dependent upon the activity and the condition of the site location where ground disturbance may occur. Those activities that have the potential to impact groundwater resources include the following:

- *Vegetation Clearing*. Once vegetation is removed from a site, the potential for surface runoff increases. As surface runoff increases, infiltration rates (and groundwater recharge rates) are reduced. Removing vegetation also reduces the natural rates of evapotranspiration, which transfers groundwater to the atmosphere. In general, such impacts would be relatively minor and temporary in nature.
- *Excavating, Trenching, and Grading*. These activities could result in changes to natural topography that alter overland, channel surface, and subsurface flow. These activities also have the potential to increase rates of infiltration. However, due to the shallow nature of excavation activities for turbine foundations, impacts to groundwater quality, quantity or flow direction are unlikely.
- *Dewatering Excavation Sites*. Dewatering areas around turbine foundation sites may be necessary if shallow water tables are present. Water table levels would be lowered during the dewatering process (creating a cone of depression at the withdrawal site) but would likely recover once excavation is completed. Dewatering activities would be conducted in accordance with the Project SWPPP.
- *Building Roads, Crane Paths, Staging Areas, and Laydown Areas*. The building of roads, crane paths, staging areas, and laydown areas involves preparing the ground by grading and compacting soil. Vehicular traffic in these areas also increases the level of soil compaction. Soil compaction decreases the porosity of soils and results in reduced rates of infiltration (and increased surface runoff).

2.8.2.1.2. Surface Water

Construction of the Project has the potential to cause localized and short-term (direct and indirect) impacts to surface water. Sediment load, resulting from both natural and man-made soil erosion is an important water quality issue. When ground is disturbed, there is the potential for increased soil erosion, and, because soil has been loosened, surface runoff in disturbed areas tends to be high in sediment content. When sediment settles out of water, it can clog ditches and irrigation canals and block navigation channels, increasing the need for dredging. By raising streambeds and filling in streamside wetlands, sedimentation increases the probability and severity of floods. Sediment in water also increases the cost of water treatment for municipal and industrial users. Soil erosion can also degrade the quality of surface water by introducing other kinds of contaminants (e.g., crop nutrients like nitrogen and phosphorus, pesticides, and salt) and changing its pH.

Ground-disturbing activities that could contribute to adverse water quality impacts include vegetation clearing; excavating, trenching, and grading of soil; dewatering excavation sites; stockpiling excavated soil and other fine-grained materials; crane paths; and building roads. Building access roads, with

associated culverts or concrete arches, across streams could also affect water quality during construction because of the suspension of sediment and introduction of eroded soils. Increases in surface runoff as a result of soil compaction at the sites of new and modified access roads could affect sediment loads in nearby surface water bodies. Erosion rates and runoff potential is low at sites with relatively level terrain.

2.8.2.1.3. Aquatic Species

Construction activities in the vicinity of surface water resources have the potential to impact aquatic species and their habitats. The nature and magnitude of impacts would be function of sediment loading resulting from work in adjacent uplands and/or the extent and duration of impacts to the actual water features. Project construction could result in the following impacts if not carefully managed:

- Habitat destruction or degradation from site clearing and grading and associated alteration in topography and hydrology, the placement and construction of Project infrastructure within a surface water body such as a stream, pond or lake, and accidental releases of hazardous materials such as fuels.
- Interference with the movement of aquatic species in streams.
- Direct injury or mortality of aquatic species at stream crossings and in habitats where Project infrastructure construction is occurring.
- Disturbance of aquatic species during construction in areas adjacent to aquatic habitats.
- Introduction of invasive species.

2.8.2.2 Operation

2.8.2.2.1. Groundwater

It is anticipated that the O&M facility would use a public water supply. However, depending upon the location of the facility, it may be necessary to develop a well for drinking water and sanitation purposes associated with the Project operations and maintenance facility. If needed for this purpose, the water requirements would likely be relatively small and impacts on groundwater resources would also be minor.

Accidental spills or leaks from transformers and other liquid-filled devices could adversely impact the quality of nearby surface water bodies and groundwater during the operations and maintenance phase. Herbicides, if they are used to control noxious weeds and vegetation growth around towers and access roads, could also degrade water quality in nearby surface water bodies and groundwater. A negligible percentage of the overall Project site will be converted to impervious surfaces, which is not expected to result in significant impacts to groundwater recharge.

2.8.2.2.2. Surface Water

Operation of the Project is not anticipated to have significant adverse impacts to streams or other surface waters within the Project site. Vehicular access to Project components will be completely established during construction, and routine operation and maintenance procedures are not anticipated to result in significant adverse impacts to surface water. Minor and isolated incidences associated with

activities such as buried electrical collection line maintenance, access road washouts, culvert replacement/maintenance, or accidental fuel/chemical spills. In the unlikely event of a turbine mechanical failure, large trucks and cranes may again need to access all, or portions, of the Project site, and temporary impacts to surface waters could occur.

2.8.2.2.3. Aquatic Species

During Project operation, aquatic habitats and species could be affected by the following:

1. Site maintenance activities that involve mowing or cutting of wetland or riparian vegetation;
2. Accidental releases of regulated or hazardous materials (such as fuel, lubricating oils, paints, and pesticides);
3. Stream crossings by maintenance and worker transport vehicles;
4. Soil erosion and runoff from Project facilities and access roads; and

If any of these infrequent, short-term impacts occur, they are not anticipated to be significant.

2.8.3 Extent and Quality of Information Required

To adequately address and evaluate potential adverse impacts to water resources and aquatic ecology, the Applicant will, at a minimum, address all of the requirements of the Certificate Application contained within 16 NYCRR §1001.23(a)-(f) (Exhibit 23).

16 NYCRR § 1001.23(a)(2) mapping requirements will require GIS shapefiles available from the NYSDEC and USGS. As mentioned above, the NYSDEC water well database only dates back to 2000. Additional information related to water wells within the Project site will be obtained from the NYSDEC, NYSDOH, Niagara County, and Orleans County, as available. Public information indicates the Project site is well-served by municipal water supplies (sourced from surface waters).

In accordance with 16 NYCRR § 1001.23(b)(1) & (2), mapping and description of all surface waters will be included in the wetland and stream delineation report described in Section 2.7.1.3. Delineations will identify all surface waters (ponds and ephemeral, intermittent, and perennial streams) within 100 feet of proposed access roads and buried electrical interconnect and within 200 feet of all turbines. Stream mapping outside of these areas will be based on NYSDEC mapping and stream classifications. Additional surface water information, such as flow and biological aquatic resource characteristics (including species, habitat, and presence of aquatic invasive species), will be recorded during field delineations. However, specific surveys for aquatic species (either native or invasive) are not anticipated.

In accordance with 16 NYCRR § 1001.23, a preliminary SWPPP will be submitted with the Certificate Application. The preliminary SWPPP will detail erosion and sediment control measures and stormwater control practices to be used during construction and operation of the Project. The preliminary SWPPP will also provide a description of the spill prevention and control measures that will be in place during construction and operation of the Project. Construction of the Project will disturb more than 1 acre of land and, as a result, will require a SPDES General Permit for Stormwater Discharges from Construction Activity. The SPDES general permit will require a final SWPPP and a sediment and erosion control plan consistent with the *New York State Stormwater Management Design Manual* and the *New York State Standards and Specifications for Erosion and Sediment Control*.

The Project is not anticipated to require the on-site storage or disposal of materials that would be subject to regulation under local laws or the State of New York's chemical and bulk storage programs.

2.8.4 Avoidance and Minimization of Adverse Impacts

2.8.4.1 Groundwater

Impacts to groundwater resources will be minimized or avoided through careful siting of Project facilities. Planned turbines will be setback from residences, and therefore earthwork activities are generally not planned to occur in close proximity to residential drinking water wells.

During construction, BMPs will be applied to minimize erosion and sedimentation that could lead to groundwater resource impacts. As mentioned above, the preliminary SWPPP will describe BMPs to be applied for erosion and sediment control as well as spill prevention and control measures. BMPs for erosion and sediment control may include:

- Minimize the extent of land disturbance to the extent possible.
- Use existing roads and disturbed areas to the extent possible.
- Site new roads to avoid crossing streams and wetlands and minimize the number of drainage bottom crossings.
- Apply standard erosion control BMPs to all construction activities and disturbed areas (e.g., sediment traps, water barriers, erosion control matting) as applicable to minimize erosion and protect water quality.
- Apply erosion controls relative to possible soil erosion from vehicular traffic.
- Identify and avoid unstable slopes and local factors that can cause slope instability.
- Construct drainage ditches only where necessary; use appropriate structures at culvert outlets to prevent erosion.
- Avoid altering existing drainage systems, especially in sensitive areas such as erodible soils or steep slopes.
- Clean and maintain catch basins, drainage ditches, and culverts regularly.
- Dispose of excess excavation materials in approved areas to control erosion and minimize leaching of hazardous materials.
- Reestablish the original grade and drainage pattern to the extent practicable.

Spill prevention and control measures typically include requiring the contractor to maintain good housekeeping practices throughout the Project, perform vehicle maintenance and refueling on impervious surfaces, and keep a spill cleanup kit readily available near refueling and maintenance areas during construction activities. Further, after construction is complete a spill cleanup kit is typically maintained at a central location for use during maintenance activities. Finally, the Project specifications will require the contractor to comply with all applicable NYSDEC and EPA spill regulations.

In the event that blasting is required, a blasting plan will be developed in order to avoid any significant adverse impacts to groundwater quality or quantity. This plan will detail procedures for blasting in proximity to private drinking water wells, if applicable, for pre-construction well surveys (e.g. quality and quantity) and will establish appropriate setbacks from existing drinking water supply wells.

2.8.4.2 Surface Water

Siting to avoid and minimize surface water impacts will generally follow the wetland avoidance and minimization measures described in Section 2.7. In addition to siting components to avoid impacts to surface waters, such measures may include:

- A buffer zone referred to as a "Restricted Activities Area", may be established where Project construction traverses surface waters. Restrictions may include:
    - No deposition of slash within surface waters;
    - No accumulation of construction debris within the area;
    - Herbicide restrictions;
    - No equipment washing or refueling within the area; and
    - No storage of any petroleum or chemical material within the area.

The preferred options for avoidance or minimization of impacts to surface waters include routing around edges, utilizing previously disturbed areas, and crossing the narrowest portion of the water. Wherever feasible, timber mats or other low-impact methods may be used.

2.8.4.3 Aquatic Species

Measures to avoid impacts to wetlands and surface waters also limit potential impacts to aquatic species. In addition to those measures, an invasive species control plan will be developed for the Project, which will include procedures for avoiding the introduction or spread of invasive species within the Project site. The plan will address prevention, monitoring, weed identification, the manner in which weeds spread, and treatment if invasive species are introduced to water resources.

2.8.5 Proposed Measures to Mitigate Unavoidable Impacts

It is anticipated that all potentially significant impacts to groundwater, surface waters, and aquatic species can be avoided with the measures described above. If it is determined the Project would result in unavoidable adverse impacts to these resources, mitigation measures will be developed through continued coordination with the relevant agencies and stakeholders to reduce impacts to insignificant levels. Any such measures will be thoroughly detailed in the Certificate Application. These measures may include:

- Special crossing techniques;
- Additional equipment restrictions;
- Additional herbicide use restrictions;
- Low-impact crossing techniques;
- Seasonal construction restrictions; and
- Structural specifications (e.g., open-bottomed or elliptical culverts).

As the Project layout is developed for the Project, additional information will be provided in the Certificate Application regarding potential and appropriate mitigation measures specific to the impacts identified in the Certificate Application.

2.9 VISUAL IMPACT

2.9.1 Existing Conditions

The visual Study Area for the Project will include all areas up to 10 miles of a proposed turbine site (see 10 mile buffer of Project site in Figure 3). This Study Area encompasses approximately 375 square miles of Niagara and Orleans Counties and includes the Towns of Somerset, Yates, Carlton, Hartland, Newfane, and Ridgeway, and the Villages of Barker and Lyndonville. Preliminary aesthetic resources are depicted in Figure 5.

Land cover within the visual Study Area is roughly 60 percent agricultural; 35 percent forest; and 5 percent developed (Homer et al., 2015). Within agricultural lands, a majority of the acreage is maintained as cropland with the remainder as pasture/hay. The relatively large, open fields that characterize agricultural sites within the Study Area provide unobstructed, long distance views that are generally unavailable in forested or developed areas. Typical of these views is an expansive, flat foreground of row crops (e.g. corn or soybeans) or hay/pasture against a forested background with single-family residences, barns, silos, farm machinery, livestock, and telephone/electrical distribution lines commonly within sight.

Forested areas are generally concentrated in the southern half of the Study Area. Within the southern half of the Study Area, large forested tracts (>400 acres) are more common, whereas forested areas in the north are generally smaller woodlots within a predominantly agricultural setting. An example of the typical forest type found within the Study Area lies south of the Village of Barker along Quaker Road and Hartland Road. Forests in this area are generally a mix of upland hardwoods and forested wetlands. These areas are generally used for recreation, forestry, and low-density residential development. Views from forests within the Study Area are expected to be limited because of the screening effect provided by forest vegetation. Limited views may be created by breaks in the forest vegetation and the long, straight transportation corridors that are common in the Study Area. However, these views would most frequently be experienced while travelling and, as a result, would be of relatively short duration.

Development within the Study Area occurs primarily within the Villages of Barker and Lyndonville; the census designated place of Newfane; the Hamlets of Olcott, Appleton, Burt, Millers, Somerset, South Somerset, West Somerset, County Line, Shadigee, Yates Center, and North Hartland; and along the Lake Ontario shoreline. Single family residences are also dispersed along local roads and the major travel routes within the Study Area (NYS Routes 18 and 104 running east to west and NYS Routes 63, 269, 148, and 78 running north to south). Within these developed areas, single family residences and small 1-2 story buildings are the predominant visual features. These areas are primarily residential with some small businesses and agricultural uses also present. Views from these areas are generally limited to the roadway and structures present in the immediate vicinity of the viewer, though longer distance views across yards and open fields are available in areas of less dense development (e.g. along transportation corridors at the edge of the villages).

Along the Lake Ontario shoreline, development consists primarily of single-family residences on the waterfront or immediately adjacent. These homes belong to a mix of seasonal and permanent residents. Many of these properties are bordered to the south by extensive agricultural fields. As a result, views from these areas are very similar to those described above for agricultural areas. The

Somerset Operating power plant, a 675-megawatt coal-fired power plant, is also located along the Study Area shoreline approximately 3 miles northwest of the Village of Barker.

Numerous recreational and tourism opportunities also exist within the Study Area. Lake Ontario is a popular destination for fishing, boating, and watersports activities. The Great Lakes Seaway Trail is National Scenic Byway that runs along Lake Ontario and State Route 18. Destinations along the Seaway Trail within the Study Area include the Olcott Lighthouse Replica and Harbor Development, Murphy Orchards and Underground Railroad Site in Burt, the Babcock House Museum in Somerset, and Golden Hill State Park and Thirty Mile Point Lighthouse in Barker. Additional historic sites within the Study Area include the Constant Riley W. Bixby House in Hartland, the Amzi Bradley Farmstead in Hartland, the Van Horn Mansion in Newfane, and the Blood, Jackson, Cobblestone House in the Village of Lyndonville, all of which are included in the NRHP.

In anticipation of preparing an assessment of aesthetic resource inventory and impact assessment activities, the Applicant reached out to local municipalities in an effort to seek input on visually sensitive resources within each community. The outreach was included sending a written letter on October 19, 2015 to the 15 communities within the 10 mile area from the Project site (see sample letter in Appendix E). Responses were received from four communities, with substantive responses from the Towns of Ridgeway and Shelby. The responses identified community resources such as cemeteries, recreational areas, parks, wildlife management areas, and the Erie Canal. Responses to the outreach letter are included in Appendix E.

2.9.2 Potentially Significant Adverse Impacts

The following sections provide a discussion of the *potential* or *possible range* of construction and operations related impacts to aesthetic and visual resources, based upon what is presently known about the Project. Specific adverse impacts would be addressed in the Certificate Application, Exhibit 24, based upon the development of Project layout details and the results of studies and further data collection.

2.9.2.1 Construction

Construction-related visual impacts will be short-term and generally limited to the immediate vicinity of construction activities. These activities will include increased use of construction vehicles on local roads and within Project corridors, earth-moving and tree clearing, preparation of turbine workspaces and staging areas, access road construction, construction of the substation, and turbine erection, all of which may be visible from public spaces. By their nature, many of the associated visual impacts will be limited to areas currently under construction and will end once construction is complete and temporarily impacted areas have been restored.

2.9.2.2 Operation

Potential visual impacts resulting from Project operation may include visibility of Project components from sensitive places of statewide or local concern, shadow flicker at occupied structures, visibility of turbine lighting, and visibility of minor facility monitoring and maintenance activities.

Shadow flicker occurs when a turbine operates between the sun and a receptor (i.e., an occupied structure). As the turbine blades move in this situation, an alternating pattern of

shadow and sunlight may be cast on the receptor and this phenomenon is known as shadow flicker. Shadow flicker is generally limited to relatively short periods during times of day/year when the sun is low in the sky. While shadow flicker has not been linked to any health effects, it may cause an annoyance for occupants of an affected structure.

With respect to Project visibility, it should be noted that according to NYSDEC (2000) guidance:

> *Aesthetic impact occurs when there is a detrimental effect on the perceived beauty of a place or structure. Mere visibility, even startling visibility of a project proposal, should not be a threshold for decision making. Instead a project, by virtue of its visibility, must clearly interfere with or reduce the public's enjoyment and/or appreciation of the appearance of an inventoried resource.*

Additional visual impacts may occur during Project decommissioning. The activities involved would include removal of turbines, foundations, and other buried components. These impacts would be relatively short-term and would end after site restoration is complete.

2.9.3 Extent and Quality of Information Required

In order to adequately evaluate the Project's visual impacts, a Visual Impact Analysis (VIA) will be prepared. The VIA will be consistent with Exhibit 24 of the Certificate Application and the NYSDEC's *Assessing and Mitigating Visual Impacts (DEP-00-2)* (NYSDEC, 2000). The analysis will include a comprehensive description of the visual characteristics of the Project, a description of the existing character and visual quality of the Study Area, a viewshed analysis, visual simulations of the proposed Project, and potential mitigation alternatives.

The scope of the VIA, particularly the identification of visually sensitive sites and selection of viewpoint locations, will be guided by ongoing consultation with the DPS, NYSDEC, NYSOPRHP, municipal representatives, and local public sources as part of the Project's PIP. To date, the Applicant and/or its consultants have met with the local town supervisors and planning board representatives, local government representatives, state government representatives, the NYSDEC, USFWS, USACE, NYSA&M, and other stakeholders. Likewise, the Applicant has engaged local groups and individual residents through open houses, mail (postal and electronic), and phone conversations.

The existing conditions section of the VIA will include details regarding topography, hydrography, land cover, land use, landscape similarity zones, viewer groups, and visually-sensitive places of statewide or local concern within the Study Area. The data sources that will be used to inform this discussion will likely include site visits, the USGS, County Departments of Real Property Tax Services, NYS GIS Clearinghouse, NYSOPRHP, USFWS, National Park Service (NPS), National Wild and Scenic Rivers System, USDA, NYSDEC, United States Census Bureau TIGER/Line shapefiles, and the National Conservation Easement Database.

The viewshed analysis for the Project will include scenarios for topography-only and topography-plus-vegetation visibility. The VIA will provide a complete description of the methods used in the analysis and will be based on the specifications for the largest turbine model under consideration for the Project. The final mapping products will include the number of turbines visible from a given area (which may be grouped by number of turbines, as required for legibility), viewpoint locations, and visually-sensitive site

locations. Separate maps will be prepared based on visibility of the maximum blade tip height as well as the Federal Aviation Administration (FAA) lighting height. The analysis will be performed with GIS software such as ESRI's ArcGIS using USGS data (the highest resolution elevation model available and the most current land use/land cover data).

Photographic simulations will be prepared as part of the VIA in order to show the proposed appearance of the completed Project. Photographs of the Study Area will be obtained from representative viewpoint locations, which will be determined in consultation with the stakeholders described above and based on potential visibility as determined through the viewshed analysis.

By using aerial imagery, GPS location data obtained during site photography, and a three-dimensional model of the proposed turbine, a three-dimensional model of the portion of the Study Area depicted in a given photo will be created. This model will be overlaid on the site photograph and aligned to known reference points that are visible within the photograph. These reference points may be any object that is easily identified in aerial photos and included within the site photograph (e.g., water towers, communication towers, telephone poles, house corners, etc.). The result is that the three-dimensional model is superimposed over the photograph with the proper dimensioning and turbine locations. Finally, the appropriate exterior finish is applied to the turbine model and sun angle is simulated to accurately represent highlights and shadows that would be present. Other than the specific turbine specifications, the data needed to complete the photographic simulations will come from site visits.

Potential mitigation measures that may be included in the VIA are discussed further below. If mitigation measures are deemed necessary, photographic simulations will depict the effectiveness of the proposed mitigation from the perspective of the impacted viewpoint.

A separate Shadow Flicker Analysis (SFA) will also be prepared for the Project using an industry standard software package such as *WindPRO*. This software uses site elevation, weather data, turbine locations and dimensions, Earth's orbit around the sun, and the tilt of Earth's axis relative to the plane of orbit to model the shadows that will be cast by the turbines throughout the year. Because no state or federal standards or guidelines have been adopted regarding shadow flicker, the SFA will adhere to generally acceptable methods and thresholds of significance. In order to conduct the SFA, the following information will be required:

- A Project layout with information on the proposed turbine model and dimensions.
- Information on the location of all occupied structures within the SFA Study Area (typically a 10-rotor diameter area around each turbine). This will be accomplished using high resolution aerial imagery available through the NYS GIS Clearinghouse and collection of ground truth data as necessary.
- National Oceanic and Atmospheric Administration (NOAA) data on the historic sunshine probabilities of the nearest weather station.
- Site-specific information related to topography (USGS digital elevation models), vegetation (USGS land use/land cover data), and wind direction frequencies (obtained from Project meteorological towers).

The resulting shadow flicker report will contain a summary of impacts at each receptor that is expected to receive over 30 hours of shadow flicker per year (the most commonly used threshold for significant impacts) and mapping that depicts potentially affected receptors with isolines representing cumulative

shadow flicker hours per year. The shadow flicker report will also contain the full result output from the shadow flicker modeling software, including detailed tables and calendars showing the times of day and seasons when shadow flicker is most likely to be experienced.

2.9.4 Avoidance and Minimization of Adverse Impacts

Adverse visual impacts will be avoided or minimized to the extent possible primarily through careful siting and design of turbines and other Project components. The following BMPs will be used to minimize or avoid impacts during the siting and design phase of the Project (U.S. Department of the Interior, 2013):

- Major modifications to natural landforms, roads, water bodies, structures, or other characteristic parts of the landscape will be avoided.
- To the extent possible, turbines will be sited in well-organized clusters or groupings; to avoid cluttering, overly long lines of turbines, or large arrays, will be separated into distinct visual units or groups of turbines.
- Turbines will be sited in a way that creates visual order and unity among clusters of turbines (visual units) to avoid visual disruptions and perceived disorder, disarray, or clutter.
- Turbines will be sited so that shadow flicker impacts are minimized.
- Turbines may be relocated to avoid impacts to sensitive sites and maximize screening provided by topography and/or vegetation.
- Hazard navigation lighting will be limited to the minimum required to meet FAA safety requirements.
- The same turbine model and specifications will be used throughout the Project in order to create visual uniformity in the shape and size of blades, nacelles, and towers.
- In order to reduce reflection and glare, non-reflective paints and coatings will be used on turbines and other ancillary structures where feasible.
- Commercial messages and symbols will not be used on wind turbines.

During the operation phase of the Project, adverse visual impacts will be minimized by keeping the turbines clean and in good repair.

2.9.5 Proposed Measures to Mitigate Unavoidable Impacts

As discussed above, the most effective means of mitigating visual impacts is through optimal siting and design of Project components. In the event that mitigation is necessary because of unavoidable adverse visual impacts, the following mitigation measures will be considered (NYSDEC, 2000):

- The use of natural or artificial screening to conceal objects from view.
- The relocation of a Project component to another place where the mitigating effects of topography and vegetation would be more effective.
- The use of colors or patterns to conceal an object or its identity.
- Reducing the number or density of objects in order to reduce impacts.
- The use of substitute technologies to reduce impacts.
- The use of building materials that do not shine.

- Consultation with the FAA and local jurisdictions to reduce lighting to the minimum requirements for the Project.
- Removal of objects from the landscape after their useful life is over
- Correction of an existing aesthetic problem identified within the Project viewshed as an offset or compensation for Project impacts.

2.10 EFFECT ON TRANSPORTATION

2.10.1 Existing Conditions

Transportation infrastructure within the Project area and vicinity are comprised of automobile/vehicular road systems, train/railways, bicycle routes, and airport service. As a predominantly rural area, the Project site has a relatively simple road system consisting of a network of state, county, and local roadways. These roads range from two-lane highways with paved shoulders to seasonally maintained roads. Route 18 is the principle east-west route through the Project site and Routes 148 and 63 are the major north-south routes. Route 18 (Lake Road/Roosevelt Highway) spans the entire width of the Project site and Routes 63 (Main Street) and 148 (Quaker Road) run south to the Villages of Lyndonville and Barker, respectively. North Lyndonville Road/Route 63 generally defines the eastern boundary of the Project site. Routes 18 and 63 are state-jurisdictional roads classified as Rural Minor Arterials (NYSDOT, 2015a). This NYSDOT Functional Classification is for roads that, in conjunction with the Principal Arterial System, link cities and larger towns and provide relatively high overall travel speeds, with minimum interference to through movement (NYSDOT, 2015b). Route 148 is county-jurisdictional and classified as a Minor Collector, which links locally important traffic generators with rural areas (NYSDOT, 2015b). The majority of the remaining roads in the Project site are classified as "local" roads, which function to provide direct access to adjoining properties and to provide connections to the collector or arterial roads (NYSDOT, 2015a). During the construction of the Somerset Generation Plant, Hartland Road was rebuilt as a heavy haul road (Wendel, 2012).

Traffic counts indicate that Route 63 is the most heavily travelled road in the Project site with average daily traffic of 3,568 vehicles per day (NYSDOT, 2015a). Route 148 had an average daily traffic count of 1,725 vehicles per day and traffic on Route 18 varies along its length between 1,035 and 1,323 vehicles per day (NYSDOT, 2015a). Most of the remaining roads in the Project site have an average daily traffic of less than 500 vehicles per day. In addition to vehicular traffic, roads within the Project site receive pedestrian and horse-drawn carriage traffic generated by local Amish and Mennonite communities.

The Project site lies within the Barker Central School District and the Lyndonville Central School District. Barker Junior/Senior High School and Pratt Elementary School bus routes pass through the Project site on Countyline Road, Haight Road, West Somerset Road, Hosmer Road, Hartland Road, Lake Road, Quaker Road Burgess Road, Lakeview Drive, and Carmen Road. Bus routes in the Lyndonville Central School District traverse Murdock Road, Marshall Road, West Yates Center Road, Lakeshore Road, and the Roosevelt highway.

An active rail line runs through the western end of the Project site in the town of Somerset, providing access to the Somerset Operating plant on the shore of Lake Ontario. This railroad was built in 1983 and is currently operated by CSX Transportation. The primary use of this railroad is to provide coal to the Somerset Operating power plant. The railroad right-of-way continues eastward through the town, but this portion of the right-of-way is in private ownership and is not in operation (Wendel, 2012).

The Great Lakes Seaway Trail is a 518-mile scenic driving route that follows the shores of Lake Erie, the Niagara River, Lake Ontario, and the St. Lawrence River in New York and Pennsylvania. It is a designated as a National Scenic Byway, and through the Project area provides a scenic route for both passenger cars and bicycles. Approximately 12 miles of the Seaway Trail crosses the northern portion of the Project area, located along Route 18 (Lake Road).

The *Bicycle Route Guide* of the Greater Buffalo-Niagara Regional Transportation Council (GBNRTC) identifies Route 108 (Hartland Road) in the western edge of the Project site and Route 18 as roads with a "suitable" level of bicycle service (GBNRTC, 2010). This level of service designation is based on factors such as the roadway width, shoulder width, speed of adjacent traffic, traffic volumes, and the condition of the pavement. Quaker Road north of Route 18 and Lower Lake Road are designated as a "Local Bicycle Connector," which connects the Village of Barker to Golden Hill State Park (GBNRTC, 2010). No public transportation is available within the Project site.

The Greater Buffalo International Airport is located approximately 27 miles south-southwest of the Project site and the Niagara Falls International Airport is located approximately 23 miles west-southwest. Private airfields in the vicinity of the Project include the Tiger Paw Aerodrome (located in the northeast portion of Project site off of Lakeshore Road), Olcott-Newfane Airport (approximately 6 miles west), Bent-Wing Airport (approximately 8 miles southwest), Royalton Airport (approximately 10 miles south), Maple Ridge Airport (approximately 10 miles south-southeast), Gaines Valley Aviation Airport (approximately 10 miles east), and Dawn Patrol Aviation Airport (approximately 13 miles east).

The nearest military installation with operational airspace in the vicinity of the Project site is the Niagara Falls Air Reserve Station located adjacent to Niagara Falls International Airport. This station is an Air Mobility Command military installation.

2.10.2 Potentially Significant Adverse Impacts

The following sections provide a discussion of the *potential* or *possible range* of construction and operations related impacts to area transportation infrastructure, based upon what is presently known about the Project. Specific adverse impacts would be addressed in the Certificate Application, Exhibit 25, based upon the development of Project layout details and the results of studies and further data collection.

2.10.2.1 Construction

Generally, Project construction is expected to result in some temporary impacts to roadway infrastructure associated with stresses resulting from their repeated use as construction haul routes. The Project will generate both standard truck and oversized/overweight (OS/OW) vehicular traffic. Construction traffic is anticipated to consist of:

- Gravel trucks for access road construction;
- Concrete trucks for turbine foundation construction;
- Flatbed trucks for delivery of steel reinforcement of turbine foundations;
- Low bed trailers for delivery of crane (once assembled, crane may crawl between tower sites);
- Specialized low bed trailers for transportation of tower sections, blades, nacelles, and hubs;

- Conventional semi-trailers for delivery of various other components and materials;
- Escort vehicles for OS/OW traffic;
- And pickup trucks/cars/buses for construction support (e.g., delivery of equipment and tools or transportation of construction workers).

In addition to road use damage that could occur because of construction traffic, the Project could result in minor delays for motor vehicles, bicyclists, pedestrians, and horse-drawn carriages along delivery routes. Any delays experienced would occur only when roads are being used by OS/OW vehicles. The use of escort vehicles, flag persons, and/or temporary traffic signals typically allows traffic to continue to flow smoothly, and provides for increased safety during construction-related use of public roads.

Project construction may require modifications to constraining features such as road widths, turning radii, overhead wires, bridges, or other crossings. Any such features will be identified in a route evaluation study that will be conducted for the Project and will be fully described in Exhibit 25 of the Certificate Application.

During construction, erection of the turbine towers has the potential to introduce flight obstruction to aircraft. Potential impacts to aircraft are primarily related to public safety and disruptions to air traffic control or FAA Long Range Radar systems. Issues of public safety are discussed in Section 2.3. Issues related to air traffic control and FAA Long Range Radar are discussed in Section 2.11.

2.10.2.2 Operation and Maintenance

Routine Project operation and maintenance will not generate a significant volume of traffic or involve the use of OS/OW vehicles on a regular basis. Operation-related travel would generally consist of employees traveling to and from turbines (e.g., for regular maintenance). Thus, following the completion of construction and road restoration/repair, on-going traffic and transportation impacts are not anticipated. In the event that more substantial repair work requires the use of OS/OW vehicles, including cranes, impacts could include damage to local roadways, and minor delays in traffic flows. These impacts are anticipated to be localized and temporary, occurring only during the maintenance/repair effort.

2.10.3 Extent and Quality of Information Required

To adequately address and evaluate potential adverse impacts to transportation infrastructure and traffic, the Applicant will, at a minimum, address all of the requirements of the Certificate Application contained within 16 NYCRR § 1001.25 (a)-(f) (Exhibit 25).

To support the evaluation, a *Route Evaluation and Transportation Impact Study* will be prepared. In accordance with Exhibit 25, the *Route Evaluation and Transportation Impact Study* will:

- Propose a delivery route for Project components;
- Provide a conceptual site plan depicting Project site driveway and roadway intersections;
- Describe the pre-construction characteristics of the roadways in the vicinity of the facility;
- Estimate the trip generation characteristics during construction and operation; and,
- Analyze and evaluate the traffic and transportation impacts of the Project.

The *Route Evaluation and Transportation Impact Study* will begin with a desktop evaluation of the conceptual site plan with potential delivery routes and identification of intersections and other areas that require more detailed investigation. The study will include a site investigation component, where all potential routes will be reviewed. The site investigation will evaluate the anticipated delivery vehicle path(s) from the Interstate System to the construction site(s). This will include evaluating the condition(s) of the roadway pavements, lateral clearances, vertical clearances, intersecting roadway control, speed limits, posted truck size and weight restrictions, major roadway intersection configurations, primary route selection, and development of preliminary mitigation measures.

The study will also include evaluating traffic and traffic mitigation measures along multi- jurisdictional (state, county and local) roadways associated with the construction of the proposed wind farm. Traffic evaluation will include a review of available traffic volume data, posted roadway speed limits, and roadway conditions. Traffic mitigation measures will consist of determining potential roadway mitigation measures to improve the accessibility of the construction site by construction and delivery vehicles. Traffic evaluation will consist of determining routes that will minimize the number of turns in excess of 90 degrees along the delivery path that meet the minimum turning radius of the oversized vehicles delivering Project components. The definition also includes evaluating the minimum number of turns possible, and limit travel through downtown and residential areas. Other considerations will include vertical and lateral clearances, vertical curves, and roadway speeds. The evaluation will also consider available traffic data and anticipated construction deliveries and trips.

Delivery route evaluations will be carried out in consultation with the NYSDOT, Highway Departments in the Towns of Somerset and Yates, the Niagara County Department of Public Works, and the Orleans County Highway Department, as well as local school districts regarding bus routes. Coordination with these stakeholders will allow specific concerns to be identified and evaluated.

The Certificate Application will also include an analysis of impacts on airports, including private airstrips, in accordance with 16 NYCRR § 1001.25 (f)(2)(i-iii). This will include any detailed consultation that may be necessary with the operators of such facilities.

The Certificate Application will include a discussion and associated correspondence regarding any potential impacts on military operations and airspace designated by the FAA. As applicable, the Certificate Application will include a statement regarding consultation with the Department of Defense (DOD), in accordance with 16 NYCRR § 1001.25 (f)(1).

2.10.4 Avoidance and Minimization of Adverse Impacts

The transportation routing plan will be designed to avoid or minimize safety issues associated with the use of approved haul routes and will confine OS/OW travel to select roads. This will likely include the use of escort vehicles, flagmen, and/or temporary signals to assure safe passage of vehicles, bicycles, pedestrians and horse-drawn carriages on public roads. The final transportation routing plan will be provided to the towns of Somerset and Yates, the NYSDOT, the counties of Niagara and Orleans, and other affected communities as appropriate. This plan will specify the local, county, and state roads to be used as haul routes (both within and outside of the Project site) by construction/transportation vehicles.

The final transportation routing plan will detail any necessary upgrades that may be required to accommodate construction vehicles, which may include improvements to bridge abutments, adding steel plates or gravel to road surfaces, widening roadways, reconfiguring intersections, or replacement of bridges, pipes, or culverts. Design plans will be completed for any necessary public road improvements and will be provided to the affected jurisdiction for review prior to the initiation of construction activities.

To minimize safety risks to the general public, over-sized vehicles will be accompanied by an escort vehicle and/or flagman to assure safe passage of vehicles on public roads. Construction operations will be conducted so that the traveling public is subjected to a minimum delay and hazard.

Prior to construction, the applicant and/or contractor will obtain all necessary permits from local jurisdictions and the NYSDOT for Project activities, which may include new access points, improving existing roadways, crossing highways with buried electrical interconnects, and operating OS/OW vehicles on highways. Special hauling permits are required for loads that exceed legal dimensions or weights. Thus transport of the blades, nacelles, tower sections and cranes will require a variety of special hauling permits. Actual loads will depend on the specific turbine supplier, crane equipment chosen, and degree of disassembly of the crane.

2.10.5 Proposed Measures to Mitigate Unavoidable Impacts

It is anticipated that County and Town road use agreements will be developed in consultation with the Highway Departments in the Towns of Somerset and Yates as well as the Niagara County Department of Public Works and the Orleans County Highway Department. These agreements typically provide a procedure for assessing existing road conditions and a plan to repair any extraordinary over-run or damage caused by vehicles during Project construction. Roads affected by construction would be repaired by the Applicant to the standards outlined in the road use agreement. Establishment of a road use reparation fund or purchase of a reparation bond may be used as a means to provide financial assurance that roads damaged by construction activities can be repaired to the agreed upon standards. The road use agreements may also provide a method for post-construction inspections to assure that mitigation measures have satisfied repair and restoration requirements.

2.11 EFFECT ON COMMUNICATIONS

2.11.1 Existing Setting

The AntennaSearch.com database contains information on towers and antennas used for cellular, microwave, paging, and other commercial purposes. An initial review of this database indicates a minimum of seven towers (more than 200 feet in height) and 24 antennas (generally less than 200 feet in height) occur within 4 miles of the Project site. Three of these towers and ten antennas are located within the Project site.

To evaluate the potential for the Project to impact existing telecommunication signals, Comsearch conducted a Microwave Study in August 2014. Microwave telecommunication systems are wireless point-to-point links that communicate between two sites (antennas) and require clear line-of-sight conditions between each antenna. Comsearch identified no microwave paths that intersect the Project site.

On August 20, 2014, the National Telecommunications and Information Administration (NTIA) was provided written notification of the proposed Project. Upon receipt of a notification, the NTIA provides plans for the proposed Project to the federal agencies represented in the Interdepartment Radio Advisory Committee (IRAC), which include the DOD, Department of Education (DOE), Department of Justice (DOJ), and the FAA. The NTIA then identifies any Project-related concerns during a 45-day review period. In a letter received on October 14, 2014, the NTIA indicated that no federal agencies identified concerns regarding blockage of their radio frequency transmission.

2.11.2 Potentially Significant Adverse Impacts

The following sections provide a discussion of the *potential* or *possible range* of construction and operations related impacts on area communication infrastructure, based upon what is presently known about the Project. Specific adverse impacts would be addressed in the Certificate Application, Exhibit 26, based upon the development of Project layout details and the results of studies and further data collection.

2.11.2.1 Construction

Temporary communication interference may occur as a result of Project construction. Cranes used during construction activities (and the individual turbine components being raised by the cranes) can cause temporary obstruction of microwave links, as well as some degradation to television and radio signals. However, individual turbines are typically sited to avoid interference with microwave paths, and since there are no microwave paths in the Project area, no interference is expected to occur. Any impact on television or radio reception or other communication systems caused by construction equipment would be temporary, as turbine assembly and erection at each turbine site is typically completed within one to three days. Construction activities also have the potential to cause physical disturbance to any buried or overhead distribution lines (e.g., telephone lines) located in the Project site.

2.11.2.2 Operation

As implied above, improperly sited turbines may disrupt communications signals between microwave links. This may occur when a turbine is located in the direct line of site between antennas or within a mathematical distance around the center axis known as the Fresnel zone. Since there are no microwave paths in the Project area, not interference is expected to occur.

Wind turbine blade motion may cause variations in analog television signal levels, which may result in distortions in the contrast, brightness, and clarity of the video. In addition, changing reflections produced by the motion of wind turbine blades may cause ghosting. Digital television signals are also subject to level variations and reflections, but as long as the signal remains above the operational threshold of the receiver, the video produced is unaffected. Wind turbines can cause signal attenuation in both analog and digital signals. However, because they require a much lower signal level to produce excellent video, digital signals can withstand the attenuation effect to a greater extent. For analog television, as the signal is degraded by external effects, video quality is reduced in a sliding scale of performance. For digital television, as the signal is degraded, the video quality remains excellent until the signal level falls below the operational threshold of the receiver. Since the conversion to digital

broadcast, there has been an improvement in television reception in the vicinity of wind energy facilities (Polisky, 2011).

AM radio frequency broadcast coverage can be affected when turbines are located within 3.2 kilometers of stations with directive antennas or within 0.8 kilometer of stations with non-directive antennas. The coverage of FM stations can be affected when turbines are located within 4.0 kilometers of a station.

First responder, industrial/business land mobile sites, area-wide public safety, and commercial E911 communications are not anticipated to be impacted by Project operation for the following reasons:

- These networks are designed to operate reliably in a non-line-of-sight environment;
- Many land mobile systems are designed with multiple base transmitter stations covering large areas with overlap between adjacent transmitter sites resulting in users receiving signals from multiple transmitter locations; and
- The frequencies of operation for these services allow the signal to propagate through wind turbines.

Mobile phone users often receive signals from multiple transmitter locations due to coverage overlap and should not experience a disruption in service even if one of these signals is attenuated by a turbine in a particular location. However, the potential impact to mobile phone service will be evaluated once the Project layout is defined and will be included in Exhibit 26 of the Certificate Application.

Potential disturbances to other communication sources (e.g. air traffic control, armed forces infrastructure, and weather radar) resulting from Project operation are similar to those described above and include:

- Interference with broadcast patterns by re-radiation of signals;
- Blocking line-of-sight; and
- Adverse impacts to co-located lines due to unintended bonding.

2.11.3 Extent and Quality of Information Required

To adequately address and evaluate potential adverse impacts to communication resources, the Applicant will, at a minimum, address all of the requirements of the Certificate Application contained within 16 NYCRR § 1001.26 (a)-(f) (Exhibit 26).

It is anticipated that, in addition to an update of the microwave study mentioned above, the Applicant will prepare a complete communication study based upon the Project layout and present the results in Exhibit 26 of the Certificate Application. This study will include an identification of all existing broadcast communication sources. The scope of analysis will include the following:

- **Microwave 3-D GeoPlanner**; Identify and map licensed non-Federal Government microwave paths that intersect the coordinate block that covers the Project site. Determine the actual 3-D fresznel zone for each path. Identify which wind turbines may cause an obstruction, if applicable.

- **AM and FM radio**; Identify and map any Federal Communication Commission (FCC) licensed AM and FM stations within 30 kilometers of the Project site. Detailed technical data will be provided for each station with impact analysis and engineering recommendations for mitigation, if necessary.
- **Off-Air TV Analysis**; Identify and map any off-air TV stations in a 150 kilometer radius of the Project site. Define the communities serve. Detailed technical data would be provided for each station followed by an impact assessment and engineering recommendations for mitigation, if necessary.
- **Communication Tower Study**; Identify tower structures and wireless communication antennas in the Project area. Provide technical data and tower owner/license and contact information and potential additional studies based upon search results, if necessary.
- **Land Mobile and Emergency Services Report**; Identify and plot site based and area wide industrial, business, public safety and first responder licenses in the Project area. Detailed technical data will be provided for each license with an impact assessment and engineering recommendations for mitigation, if necessary.
- Commercial Doppler RADAR System Analysis; Determine the Doppler RADAR systems owned by TV stations and commercial interests that are within 150 miles of the Project site. Conduct an analysis of potential wind turbine obstruction to systems. If an obstruction condition is determined, quantify with respect to azimuth and elevation of each RADAR systems coverage. Prepare path profiles detail the coverage for each system.
- **Government RADAR Systems Analysis**; Determine if there would be any degradation to the operational coverage of RADAR systems for DoD military systems, the weather service systems and the FAA Long Range RADAR.

Additional Project information and the Project layout will also be provided to the NTIA in order to assess impacts to the following resources:

- Weather radar;
- Armed forces communications infrastructure;
- Global Positioning Systems (GPS); and
- LORAN (While the U.S. Coast Guard began shutting down this system in 2010, dismantling and disposal of associated infrastructure was halted in 2014. This system may be put into use as a backup for GPS navigation. Consultation with the National Telecommunications and Information Administration (NTIA) will seek to assess the potential of the Project to impact this system.)

Turbine locations and dimensions will be provided to the FAA and DOD for assessment of potential impacts to air traffic control. Information will also be provided to the FCC to determine the presence of licensed amateur radio operators in the area and to assess potential impacts to these users.

2.11.4 Avoidance and Minimization of Adverse Impacts

2.11.4.1 Construction

If disruptions to existing communication systems occur as a result of Project construction, they will be temporary, and will only occur during the erection of a limited number of turbines. Because turbine installation/crane activity will occur at different locations and at different times during the construction

period, any degradation/disruption to existing communications will not represent a constant interference to a given television/radio reception area or microwave signal. In addition, turbine erection will be performed as efficiently as possible. A Complaint Resolution Procedure will be developed to resolve issues and complaints that may arise within the local community. The procedure will outline the steps for investigation and resolution of such complaints.

2.11.4.2 Operation

Alterations of the Project layout will be the primary means of avoiding and minimizing communication resource impacts. For example, turbines will be sited to avoid any microwave paths or associated Fresnel zones. It is expected that Project impacts to communication resources, in general, will be minimal.

2.11.5 Proposed Measures to Mitigate Unavoidable Impacts

If issues arise during operation of the Project, the operator will resolve those issues on an individual basis. Mitigation of impacts may involve such measures as the installation of auxiliary antennas to maintain coverage in affected areas, adjusting existing receiving antennas, upgrading antennas, or providing cable television or satellite television systems to affected residences.

2.12 SOCIOECONOMIC EFFECTS

This section presents a preliminary identification of the demographic, economic and other attributes of the local communities. A discussion of potential environmental justice areas (PEJAs) is provided in Section 2.13, below. A comprehensive description of the existing demographic and economic condition of the Project area and socioeconomic effects of the construction and operation of the Project will be presented in Exhibit 27 of the Certificate Application in accordance with 16 NYCRR § 1001.27.

2.12.1 Existing Setting

The population of the Town of Somerset remained steady from 1990 to 2010, with approximately 2,600 residents (Town of Somerset, NY, 2012). Between 2000 and 2010 the population of the Town of Yates remained steady with approximately 2,500 residents (Town of Yates, NY, 2015). In both Orleans and Niagara County, population is expected to decrease slightly through 2020 (Cornell Program on Applied Demographics, 2015). Within Orleans County, the Village of Medina (spanning the Towns of Ridgeway and Shelby) serves as the industrial hub of the County (Towns of Shelby, Ridgeway, and Yates, 2003). Lyndonville also has some manufacturing and processing plants (Towns of Shelby, Ridgeway, and Yates, 2003). Housing within the Project site is characterized by widely scattered, generally modest homes. Other than farmers and retirees, most residents are assumed to commute to their places of employment in the larger population centers, such as the Village of Medina and City of Lockport or further to the metropolitan areas of Rochester or Buffalo.

2.12.1.1 Town of Somerset

Demographic information for the Town of Somerset was obtained from the U.S. Census Bureau's *American Fact Finder* website for the 2013, the most recent year with available statistics (U.S. Census Bureau, 2015). The Town of Somerset is comprised primarily of family households (76%), with an

average household size of 2.9 (11% larger than Niagara County as a whole), and a median household income of $53,222. The vacancy rate for homeowners was 3.6% and for rentals 16.8%. The percent of the civilian labor force that was unemployed in 2013 was 8.6%. The town is comprised of primarily white residents (approximately 96%).

In terms of the highest level of educational attainment for residents 25 years and over, approximately 47% graduated from high school, 11% received bachelor's degrees, and less than 4% have received graduate degrees. According to the most recent estimates available, 11.8% of the population of the Town of Somerset live below the federal poverty line, including 8.7% of people below age 18 and 8.4% of people 65 years or older.

According to the Town of Somerset Comprehensive Plan, agriculture is an important component of the town's economic profile, and the Somerset Power Plant is a major revenue generator for the town and county (Town of Somerset, 2012). Additionally the Plan indicates a very important component of the Town is its waterfront and issues related to it, including recreation and tourism. The most notable attraction is the Golden Hill State Park. This park is a 511-acre state-owned facility that contains a campground, nature trails, picnic areas and shelters, and playgrounds. The park is located on the Lake Ontario shoreline. The park's facilities include a state-operated boat launch, and the park offers public access to the lake for fishing, boating and other water-related recreational uses. A unique feature of this park is the Thirty-Mile Point Lighthouse, a historic lighthouse built in 1875. The lighthouse, which is listed on the National and State Registers of Historic Places, is a popular tourist attraction.

2.12.1.2 Town of Yates

Demographic information for the Town of Yates was obtained from the U.S. Census Bureau's American Fact Finder website for the 2013, the most recent year with available statistics (U.S. Census Bureau, 2015).The Town of Yates is comprised primarily of family households (76%), with an average household size of 2.62 and a median household income of $52,431. The vacancy rate for homeowners was 8.3% and for rentals 6.3%. The percent of the civilian labor force that was unemployed in 2013 was 6.7%. The town is comprised of primarily white residents (approximately 96%).

In terms of the highest level of educational attainment for residents 25 years and over, approximately 42% graduated from high school, 7.6% received bachelor's degrees, and less than 6% have received graduate degrees. According to the most recent estimates available, 7.2% of the population of the Town of Yates live below the federal poverty line, including 7.8% of people below age 18 and 2.1% of people 65 years or older.

2.12.1.3 Taxes and Revenue

Municipalities, counties, and school districts are responsible for providing specific services to those who live within their boundaries. These jurisdictions incur costs associated with providing these services, and to offset these costs, collect revenues by levying taxes. Tax revenues in the Project site accrue from both sales taxes and real property taxes. The taxing jurisdictions in the Project area include Niagara County, Orleans County, Town of Somerset, Town of Yates, Barker School District, and the Lyndonville School District. Table 6 summarizes the total 2013 taxes levied by these jurisdictions (New York State Office of Real Property Tax Services (NYSORPTS), 2015).

Table 6. Total 2013 Taxes Levied

Taxing Jurisdiction	Tax Levy Year 2013
Niagara County	$83,869,892
Orleans County	$15,695,882
Town of Somerset	$624,682
Town of Yates	$859,671
Town of Yates - Barker School District	$81,698
Town of Yates - Lyndonville School District	$2,784,233
Town of Somerset – Barker School District	$2,200,822

2.12.2 Potentially Significant Project Effects

2.12.2.1 Construction

During construction, it is anticipated that at least 300 full time equivalent construction jobs will generate significant local employment for construction and related works. However, these construction jobs are not likely to result in a significant increase to permanent resident populations of the towns or counties. A substantial number of workers will be employed during construction, but workers that may be hired from outside the local area likely would not permanently relocate to the area given the temporary nature of the work. This could result in an increase in the demand for temporary housing, which could likely be accommodated by the towns and surrounding communities.

Local employment resulting from construction would benefit those in the construction trades, including equipment operators, truck drivers, electricians, and laborers. Many of these positions can likely be filled from the local area or within the state. Construction will also require workers with specialized skills such as crane operators, turbine assemblers, specialized excavators, and high voltage electrical workers. If not available from local sources, such specialized skill workers may need to be sourced from outside the local area or the state.

Construction of the Project may have a positive impact on municipal budgets through sales taxes generated by construction workers' local personal spending while onsite. The construction process is not anticipated to result in any municipal revenues from increased property taxes. The number of on-site workers associated with Project construction is not expected to require additional municipal services (e.g. snowplowing, solid waste pick-up, emergency services).

Construction-related sales taxes are not likely to have a significant impact on municipal revenues, as many materials will be exempt from sales taxes pursuant to New York State tax law (New York State Department of Taxation and Finance (NYSDTF), 2009).

2.12.2.2 Operation

The Project's economic benefits to its host communities will be significant, including lease revenues to participating landowners, temporary and permanent employment, increased tax revenues, and

payments to other local businesses. Additionally, economic benefits are expected to be provided to the Towns of Yates and Somerset, the local school districts, and Niagara and Orleans Counties through an anticipated PILOT agreement. The direct payments to the local taxing jurisdictions are expected to total at least $1.5 million per year, potentially for up to 30 years, based on a 201 MW project. Lease payments to participating landowners who own land in the proposed Project area would total over $1 million per year for the life of the Project.

During operations, it is anticipated that up to 13 local, full time positions will be required throughout the operation of the Project. The Project will also result in increased revenues to county and local municipality tax bases, payments to the local hospitality industry, and purchase of local supplies and goods. Some of these employees may be local to the Project, which could translate into a benefit for the local population. Based on vacancy rates in the Towns, there would be an adequate number of housing units available for purchase or rent if employees were hired from outside the local area. Although this represents a positive economic impact, long-term employment associated with the Project is not large enough to have a significant impact on local population or housing characteristics.

Local residents often inquire about the potential for property values to depreciate as a result of a proposed wind power project. This concern was raised by local stakeholders during public outreach efforts and will be addressed in the Certificate Application through a presentation of existing information collected from other operating wind farms. While public perceptions seem to indicate that the presence of wind turbines diminish property values, numerous property value studies based on statistical analysis of real estate transactions have found that wind facilities have no significant impact on property values (Sterzinger et al., 2003; Hoen, 2006; Hoen et al.,2009; Hinman, 2010; Carter, 2011). These studies will be summarized and discussed in the Certificate Application in Exhibit 27.

2.12.3 Extent and Quality of Information Required

To adequately address and evaluate potential adverse socioeconomic impacts, the Applicant will, at a minimum, address the requirements of the Certificate Application contained within 16 NYCRR § 1001.27 (a)-(l) (Exhibit 27).

Specifically, the U.S. Department of Energy, National Renewable Energy Laboratory's *Jobs and Economic Development Impact* (JEDI) model will be used to estimate the economic impacts of constructing and operating the Project. This model will be based on a number of Project specific inputs including:

- Construction materials and labor costs;
- Turbine, tower, blade costs, and local content;
- Utility interconnection, engineering, land easements, and permitting costs;
- Annual operating and maintenance costs (personnel, materials, and services); and
- Tax, land lease, and financing parameters.

In the event Project specific data is not available, the default values may be used to represent average costs and spending patterns derived from a number of sources (project-specific data contained in reports, industry surveys, and studies).

JEDI results are not intended to be a precise forecast; they are an estimate of potential activity resulting from a specific set of projects and scenarios. These results will be used to estimate the following:

- Average construction work force;
- Annual construction payroll;
- Annual secondary employment and economic activity during construction;
- Number of jobs created and on-site payroll during operation; and
- Annual secondary employment and economic activity during operation.

Outside of potential impacts to public roadways, no incremental costs are expected to be incurred by school districts or local municipalities, or utilities as a result of Project construction or operation. Once operational, the Project will not require any significant use of non-highway municipal infrastructure, such as sewer, water, or solid waste services, and will not result in increased costs to the municipality related to the use of those systems. The Project is not expected to result in any significant increases in the use of local services, including local schools.

Furthermore, emergency response plans will be provided in the Certificate Application that establishes that, compared with other commercial or industrial uses, the Project is not expected to require significant use of local fire, police or emergency services. As discussed in Section 2.3, Public Health and Safety, it is not anticipated the Project will require specific training or equipment for local first responders. Therefore, no additional costs are expected in this regard. The Applicant will consult with local emergency response organizations to develop an emergency response plan that will be included in the Certificate Application. Any concerns regarding special equipment or training will be addressed during these consultations.

The Applicant will also consult with local jurisdictions to develop an estimate of taxes or payments in lieu of taxes that will be paid once the Project is operational. The Certificate Application will compare these payments to the costs, if any, discussed above.

As stated above, in order to evaluate the potential for adverse impacts to property values, literature review will be presented and discussed in the Certificate Application.

The New York State Smart Growth Public Infrastructure Policy Act is intended to minimize the unnecessary cost of sprawl development and requires State infrastructure agencies to ensure public infrastructure projects undergo a consistency evaluation and attestation. State agencies are subject to the Act whenever any of them consider whether to undertake, approve, support or finance the construction or reconstruction of new or expanded public infrastructure. The Project will likely require state agency approvals for improvements to public infrastructure (e.g., public roads). Therefore, the Certificate Application will detail Project consistency with the ten Smart Growth criteria laid out in the act.

2.12.4 Avoidance and Minimization of Adverse Impacts

2.12.4.1 Construction

The construction of the Project is expected to have a positive socioeconomic impact on the local economy and employment, in that Project-related spending may increase employment opportunities and local expenditures (i.e., local purchases of goods and services). Aside from the costs associated with roadway repair, which is discussed in Section 2.10, construction of the proposed Project will not create a

significant demand for additional municipal facilities or services. Because Project construction will not directly increase local municipal expenses, it will have no adverse impact on municipal budgets.

2.12.4.2 Operation

The operation and maintenance of the Project is expected to have a positive impact on the local economy and employment. Project-related spending would result in increased local expenditures (i.e. local purchases of goods and services). In addition, lease payments will provide participating landowners and residents with an additional source of revenue. With respect to any impacts related to operational liability, the Project Sponsor and respective contractors will be appropriately insured.

Neither operation nor maintenance of the proposed Project will create a significant demand for additional municipal facilities or services. Because it will not directly increase local municipal expenses, it will have no adverse impact on municipal budgets.

2.12.5 Proposed Measures to Mitigate Unavoidable Impacts

To mitigate any economic impacts resulting from the placement of Project components on private property (e.g., loss of productivity or farmed acreage), property owners hosting Project components will receive payments during Project operation. Road use agreements and tax/PILOT payments will be structured so that any potential impacts to local jurisdictions are offset. Mitigation measures to address economy, employment, population, and housing are not anticipated to be necessary.

2.13 ENVIRONMENTAL JUSTICE

The NYSDEC defines Potentential Environmental Justice Areas (PEJAs) as 2000 U.S. Census block groups of 250 to 500 households each that, in the 2000 Census, had populations that met or exceeded at least one of the following thresholds (NYSDEC, 2003):

1. At least 51.1 percent of the population in an urban area reported themselves to be members of minority groups; or
2. At least 33.8 percent of the population in a rural area reported themselves to be members of minority groups; or
3. At least 23.59 percent of the population in an urban or rural area had household incomes below the federal poverty level.

According to the NYSDEC, the nearest PEJAs are located approximately 10 miles southwest of the Project site in the City of Lockport, New York (Census Block Group IDs 360630237001, 360630237003, 360630238003, and 360630237002). U.S. Census data indicate that more than 23.59 percent of the population in these block groups are below the federal poverty level.

The PEJA impact Study Area is defined in 6 NYCRR 487.4 as, at a minimum, a one-half mile radius around the proposed location of the facility. The radius of the impact Study Area may be increased based on site-specific factors, including the nature, scope, and magnitude of the environmental impacts, the projected range of those impacts on various environmental resources, and the geography of the area surrounding the location of the proposed facility. During PIP implementation to date, no comments have

been received regarding consideration of the environmental justice area or potential environmental impacts to the environmental justice area.

The Project is not anticipated to result in any adverse environmental impacts that will span the distance of approximately 10 miles to the PEJAs identified. Accordingly, no extension of the impact Study Area beyond the one-half mile minimum is necessary to assess impacts to the identified PEJAs. Therefore, in accordance with 6 NYCRR 487.5(e), a full Environmental Justice analysis is not required and the Certificate Application will not include the study required by 16 NYCRR 1001.28 (Exhibit 28) because it is not applicable.

2.14 ELECTRIC AND MAGNETIC FIELDS

Electromagnetic fields (EMF) are generated by the operation of Project components such as the turbine generator, electrical collection lines, and transformers. EMF strength decreases with the square of the distance from the source (the electric charges or currents) for power lines and the cube of the distance from point sources such as substations. For an electric transmission line, EMF levels are highest next to the transmission lines and directly under an overhead line, and decrease rapidly as the distance from the transmission corridor increases. The height of the turbine generator above the ground, the location of electrical collection cables underground, and the location of substation transformers and other electrical equipment inside a fenced yard provide separation of these components from the general public, livestock, and wildlife. Therefore, generally, EMF exposure from Project components is expected to be non-existent or very limited.

Humans are exposed to a wide variety of natural and man-made EMF both in the outdoor environment and in homes, schools, and businesses. The EMF produced by electric transmission lines are well within the range of EMF exposures from such other sources. Numerous public health review groups, including the National Institute of Environmental Health Sciences, the National Institutes of Health, and the U.S. Department of Energy, have examined the public's exposure to EMFs produced by power lines. The consistent, overall conclusion of these groups is that available data do not support a cause and effect relationship between exposure to environmental levels of EMF and elevated risk of disease.

The PSC established electric field strength standards in Opinion 78-13 (issued June 19, 1978). Electric field strength is limited to 1.6 kilovolts per meter (kV/m) for electric transmission lines, at the edge of the right-of-way, one meter above ground level, with the line at the rated voltage. Project components will comply with this standard.

Magnetic field standards established by the PSC are described in the Interim Policy Statement on Magnetic Fields, issued September 11, 1990. The interim policy established a magnetic field strength interim standard of 200 milligauss (mG), measured at one meter above grade, at the edge of the right-of-way, at the point of lowest conductor sag. The measurement is based on the expected circuit currents being equal to the winter-normal conductor rating. Project components will comply with this standard.

While EMF will be generated by the operation of Project components, the strength of these EMF will not be significant at any of the measurement locations listed by the PSC. The height of the turbine generator above ground; the depth of electrical collection cables underground; the width of the transmission line ROW, if any; and the location of substation transformers, will adequately separate

these components from any human receptors. No significant adverse health impacts from EMF are anticipated and no further minimization or avoidance measures will likely be necessary.

To adequately address and evaluate potential adverse impacts from EMF, the Applicant will, at a minimum, address all of the requirements of the Certificate Application contained within 16 NYCRR § 1001.35 (a)-(d) (Exhibit 35). This will include:

- Identification of every right-of-way segment having unique EMF characteristics;
- Proposed and "base case" cross-sections for each identified right-of-way segment;
- Aerial photo mapping that depicts the identified right-of-way segment, cross-section, nearest occupied structure, and distance between the right-of-way edge and the nearest edge of the identified structure; and
- An EMF study with calculation tables and field strength graphs for each identified right-of-way segment cross-section.

2.15 EVALUATION OF ALTERNATIVES

This section addresses the requirements of 16 NYCRR § 1000.5 (l)(2)(viii) requiring a description and evaluation of alternative locations for the proposed facility. Given that this is a private facility applicant, alternative locations are limited to parcels owned by or under option to the Applicant. This section also addresses 16 NYCRR § 1000.5 (l)(2)(x), addressing the request for a statement why the primary proposed location is best suited among alternatives, including the no action alternative.

The Certificate Application will contain an alternatives analysis in accordance with 16 NYCRR § 1001.9 (a) through (i), as applicable to wind powered generating facilities. This analysis will be presented in Exhibit 9.

2.15.1 Selection of the Towns of Somerset and Yates Area

The Project's location in a strong wind resource area makes the Project in a unique position to assist the State in addressing policies directed at climate change goals and renewable energy (including the State Energy Plan, RPS targets and the REV goals) encouraging the development of renewable energy and wind projects while minimizing potential environmental impacts and impacts of local concern typically associated with wind-powered electric generating facility siting. The goal of the Project is to take maximum advantage of the unique wind resource within the Project area, and the ability to construct a facility with a nameplate capacity of up to 201 MWs of wind powered renewable energy.

The selection of a site for an economically viable wind energy project is dependent upon a number of factors. The Towns of Somerset and Yates were chosen for the Project based upon a preliminary, favorable assessment of the following variables:

- sufficient wind resources;
- adequate access to the site;
- close proximity to an electrical system interconnect point with sufficient capacity;
- laws allowing the development of wind energy facilities
- willing participant landowners with contiguous parcels large enough to support the Project;
- potential for avoidance and/or minimization of significant environmental impacts;

- relatively limited residential development; and
- the presence of complementary land uses.

Preliminary analysis of these factors by the Applicant indicates a high probability of technical and economic viability within the Study Area. Outside of proprietary wind resource data, the results of this preliminary analysis of potential for avoidance and minimization of environmental impacts are presented within Section 2 of the PSS. A full analysis and discussion of site specific environmental effects will be provided in the Certificate Application, Exhibit 9 (Alternatives). In accordance with 16 NYCRR §1001.9, Exhibit 9 will include a description of reasonable and available alternative location sites for the proposed Project. Unlike other entities, the Applicant does not have eminent domain authority or the ability to condemn private property. Therefore, the alternatives analysis is required to be limited to property under the Applicant's control.

2.15.2 Alternative Project Layouts

Alternative Project layouts are currently being evaluated by the Applicant and will continue to be refined throughout the Article 10 process with input from Project stakeholders, as well as based upon the results of key resource studies and environmental impacts. A proposed layout will be presented in the Certificate Application along with a discussion of the alternative layouts considered. Alternatives considered will also include an evaluation a no action/no build alternative, which will be described in accordance with 16 NYCRR §1001.9 (f) . As required by 16 NYCRR §1001.9 (c)(4), the Certificate Application will include a description and evaluation of reasonable alternatives at the primary proposed location including alternative layouts of the turbines within the site location.

2.15.3 Alternative Turbines Models

The proposed Project layout will be influenced by the size of the turbine model chosen. At this time, the Applicant is considering a range of potential turbines. The ultimate selection of a turbine may impact the scale, layout and footprint of a project. For example, if the Applicant selects a 3.30 MW turbine, no more than 61 turbines will be built. However, if a smaller generating capacity turbine is selected, such as if a 2.85 MW turbine, then up to 71 turbines will be built. The Certificate Application will evaluate how alternative turbine models affect the Project layout and associated environmental and economic impacts. In the event that market conditions prevent the selection of a specific turbine model at the time of application, an evaluation will be made that includes all potential turbine sites as well as the largest turbine model under consideration.

2.15.4 Alternative Technologies

The development of alternative energy supply sources within the Project site would not meet the purpose and need that has been defined for this Project (See Section 1.5 Project Purpose, Need and Benefit). Alternative power generation technologies, such as fossil-fuel and biomass combustion, or even solar technologies would not meet the goals of the Project, are not the area of expertise of the Applicant, and/or would pose more significant adverse environmental impacts, particularly on air quality but also on land use and water resources. Most fossil fuel-fired generating facilities would require significant amounts of water to operate, the use of which may pose impacts to surface water or groundwater resources as well as fish and other aquatic organisms. Solar energy would require a greater land area to develop the same electric generation and would displace some existing land uses

such as agricultural practices. Conventional power plants also would not advance State's energy or climate change policy directives. Finally, a conventional power plant is located in the Project area and the construction of an expanded facility or an additional facility would not be feasible.

2.16 CONSISTENCY WITH THE NYS COASTAL MANAGEMENT PROGRAM AND LOCAL WATERFRONT REVITALIZATION PROGRAM AREAS

This section addresses the preliminary analysis of consistency requested in 16 NYCRR § 1000.5 (l)(2)(ix). Because a project layout has not been finalized, it is unknown if any natural resources of the coastal area would be impacted by the construction or operation of the Project. It is reasonable to assume that the Project has the potential to occur in proximity to these resources. Therefore, the Applicant will present a thorough analysis of consistency with the NYS CMP and Local Waterfront Revitalization Programs (LWRPs) in the Certificate Application.

2.16.1 Coastal Zone Areas

A portion of the Project site is located within a coastal zone designated by the New York State CMP. See Figure 6 (Coastal Area). Development in the designed coastal zone of New York State must address consistency with the program. The program is based on 44 policies, which are grouped into the following ten categories:

1. Development;
2. Fish and Wildlife;
3. Flooding and Erosion Hazards;
4. General Policy;
5. Public Access;
6. Recreation;
7. Historic and Scenic Resources;
8. Agricultural Lands;
9. Energy and Ice Management; and
10. Water and Air Resources.

The proposed Project is anticipated to be consistent with all applicable policies of the New York State CMP.

2.16.1.1 Local Waterfront Revitalization Areas

Approximately 5,000 acres of the Project site are within the Towns of Somerset and Yates LWRP boundaries. New York State's *Waterfront Revitalization of Coastal Areas and Inland Waterways Act* offers local governments the opportunity to participate in the State's CMP by preparing and adopting a LWRP, providing a more detailed implementation of the State's CMP through use of zoning and site plan review. The Town of Yates (jointly with the Towns of Kendall and Carlton) adopted a LWRP in 1999 and the Town of Somerset adopted a LWRP in 2005. The LWRP is a comprehensive land and water use plan for managing natural, public, and developed waterfront resources. The LWRP plan enables stronger local control over development in the coast zone. The plan establishes local policies and programs to guide

development and protect natural resources along the Lake Ontario shoreline, and identifies preferred future land uses and projects for the waterfront area.

According to the Town of Somerset LWRP (Town of Somerset, 2007), whenever an action is proposed to be undertaken in the Town's LWRP area, a waterfront assessment form (WAF) shall be prepared by the applicant. An action shall be consistent with the following policies:

1. Foster a pattern of development in the Town of Somerset that enhances community character, preserves open space, makes efficient use of the infrastructure, makes beneficial use of a waterfront location, and minimizes potential adverse impacts of development.
2. Protect existing water-dependent uses in the Town of Somerset and promote the siting of new water-dependent uses in suitable locations.
3. Protect existing agricultural lands.
4. Promote the sustainable use of living marine resources in the Town of Somerset.
5. Protect and restore ecological resources, including significant fish and wildlife habitats, wetlands and rare ecological communities.
6. Protect and improve water resources.
7. Minimize loss of life, structures and natural resources from flooding and erosion.
8. Protect and improve air quality.
9. Promote appropriate use of energy resources.
10. Minimize environmental degradation from solid waste and hazardous substances and wastes.
11. Improve public access to the waterfront and the use of public lands.
12. Enhance visual quality and protect outstanding scenic resources.
13. Preserve and protect historic resources.

The Project is anticipated to be consistent with the policies set forth in the Town of Somerset LWRP and summarized above. Specifically:

1. The Project is expected to generally preserve community character and open space, while minimizing adverse impacts as discussed in the resource sections of this document.
2. The Project is not expected to adversely impact existing water-dependent uses or to preclude the siting of new water-dependent uses.
3. The Project will result in the conversion of a small amount of agricultural land to build facilities. However, over the long term, lease payments from wind energy facilities to landowners have provided a way to preserve existing farms by maintaining profits.
4. The Project is not expected to have any adverse impact on the sustainability of marine resources.
5. The Project will be designed to avoid, minimize, and mitigate adverse effects to ecological resources. Wind energy facilities in general provide a net benefit in this regard as opposed to traditional sources of energy (NYSERDA, 2009)
6. No significant adverse impacts to water quality are anticipated and no water withdrawals will be required for Project operation.
7. The Project will not result in increased losses of life, structures, or natural resources from flooding or erosion.
8. The Project will result in significant improvements in air quality over traditional generation methods, providing emission-free electricity to the grid while the Project is operational.

9. As mentioned in #8 above, the Project will provide a significant, emission-free energy resource for the region.
10. The Project is not expected to result in any environmental degradation from solid waste or hazardous substances and wastes.
11. The Project will not impede any waterfront access or public land use.
12. The Project is expected to be generally consistent with the visual character of the area. Further discussion of visual impacts is provided in Section 2.9 and a full discussion of visual impacts will be provided in the Certificate Application.
13. The Project is not anticipated to have any adverse impacts on historic resources in the area.

According to the Town of Yates Zoning Regulations, proposed developments within the Town's LWRP area require Planning Board review of zoning permit applications. The stated purpose of the LWRP is to insure unified development, enhance water-related uses, preserve public access to the waterfront, and promote the overall improvement of the waterfront and its attractiveness. The Project is anticipated to be consistent with these goals as summarized above for the Town of Somerset. The Applicant will consult with the Towns of Yates and Somerset, as well as the NYSDOS, to identify any specific LWRP policy concerns and will provide the information needed for a consistency determination in the Certificate Application.

2.17 BENEFITS OF THE PREFERRED ALTERNATIVE

As mentioned above in Section 2.15, the Certificate Application will provide a statement to explain why the preferred alternative is best suited to promote public health and welfare. This will be presented in Exhibit 9, in accordance with the requirement of 16 NYCRR §1001.9.

2.18 DEMOGRAPHIC, ECONOMIC, AND PHYSICAL ATTRIBUTES OF THE LOCAL COMMUNITY

The demographic and economic attributes of the local community are presented in Section 2.12.

2.19 OTHER MATERIAL ISSUES RAISED BY THE PUBLIC

No additional material issues have been raised by the public.

3. Required State and Federal Authorizations

The Article 10 Regulations, 16 NYCRR § 1000.5, require that a preliminary scoping statement include an identification of all other state and federal permits, certifications, or other authorizations needed to construct, operate or maintain the Project. Article 10 preempts state and local permitting related to the construction and operation of a major electric generating facility. However, the Project is still required to receive federal approvals, including those administered by the State. The Article 10 preemption only applies to procedural requirements. The substantive requirements of state and local laws still must be complied with, unless they are set aside by the Siting Board. The Certificate Application will provide a more site specific evaluation of the applicability of the various requirements set forth in this section.

3.1 STATE AUTHORIZATIONS

Pursuant to 16 NYCRR §1000.5(l)(3), Table 7 provides an identification of state authorizations needed to construct, operate and maintained the proposed facility.

Table 7. State Authorizations

Agency	Requirement	Notes
New York State Board on Electric Generation Siting and the Environment	Article 10 Certificate of Environmental Compatibility and Public Need	Article 10 legislation establishes a "one stop" state review and approval process for electric generating facilities greater than 25 MW. Article 10 preempts state and local permitting related to the construction and operation of a major electric generating facility.
New York State Department of Public Service Director of the Office of Energy Efficiency and the Environment	Section 401 of the Clean Water Act – Water Quality Certification	Section 401 of the CWA requires each state to approve its own Water Quality Certification (WQC) for each USACE Permit. As a result when a Section 404 permit is issued by the USACE it is conditioned upon the approval of the state WQC. Projects approved under NWP 51 – Land Based Renewable Energy Generation Facilities, must apply for and obtain an individual Section 401 WQC. The review/approval process associated with Section 401 of the CWA typically proceeds in parallel with Article 10.
New York SHPO	Historic, Cultural, or Archeological (consultation)	Consultation pursuant to NY Parks, Recreation and Historic Preservation Law (PRHPL) § 14.09 and § 106 of the National Historic Preservation Act. Federal and state laws provide protections for historic and archaeological properties affected by government-sponsored undertakings. Private and local undertakings are not affected by these laws unless there is state or federal involvement in the undertaking. However, since state and/or federal permits are anticipated for the construction of this Project, consultation with the SHPO will be required. The Article 10 process will also require

Agency	Requirement	Notes
		SHPO consultation to determine the specific studies to be included in the Certificate Application. Ultimately, it is anticipated that a Memorandum of Agreement between the developer and the SHPO will be required (likely as a condition of state or federal approvals) for adverse impacts to archeological or cultural resources.
NYSDEC	SPDES General Permit	The SPDES General Permit is necessary for construction activities that disturb greater than 1 acre. A Stormwater Pollution Prevention Plan and Notice of Intent will need to be submitted at least 60 days prior to the start of construction. Due to the nature of wind power projects, the SWPPP will likely not comply with standard practices, thus resulting in the longer 60-day review period.
NYSDOS	Coastal Management Program Consistency Review	An applicant seeking approval from a federal agency which is subject to the New York State CMP shall complete an assessment form for any proposed activity that will occur within and/or directly affect the State's Coastal Area. This form is intended to assist in determining if an activity is consistent with New York State's CMP as required by U.S. Department of Commerce regulations (15 CFR 930.57). The Department of State will use the completed form and accompanying information in its review of the applicant's certification of consistency.
NYSDOT	Special Use Permit for Oversize/Overweight Vehicles	Special hauling permits will be required for Project components that exceed legal dimensions or weights. The specific permits required are typically determined and obtained immediately prior to construction.
NYSDOT	Highway Work Permit	A highway work permit will be required for any physical improvements within the NYSDOT right-of-way.

3.2 FEDERAL AUTHORIZATIONS

Pursuant to 16 NYCRR §1000.5(l)(3), Table 8 provides an identification of federal authorizations needed to construct, operate and maintained the proposed facility.

Table 8. Federal Authorizations

Agency	Requirement	Notes
USACE	Section 404 of the Clean Water Act (Wetlands and Surface Waters)	The Project could disturb wetlands or waterways regulated under Section 404 of the CWA. Therefore, a permit will be required for temporary or permanent impacts to wetlands and streams during Project construction or operation.
USFWS	Threatened and Endangered Species and The Bald and Golden Eagle Protection Act	Data collected to date indicate bald eagle and northern long-eared bat are known to occur in the vicinity of the Project site. That being the case, specific studies are underway to determine the type and extent of use the site receives by these species. Should impacts to these species, or other federally protected species, be a concern to the USFWS an Incidental Take Permit under Section 10 of the Endangered Species Act or a Permit for Non-Purposeful Take of Eagles under the Bald and Golden Eagle Act could be required.
FAA	Obstruction Evaluation	A Notice of Proposed Construction or Alteration (FAA Form 7460-1) will be submitted to the FAA for each turbine to initiate a formal review. Depending on the wind turbine layout in relation to local air traffic patterns and airport proximities, a determination of the potential hazard of constructing and operating the Project would be made by FAA. This includes a recommended wind turbine lighting scheme necessary to acquire a determination of no hazard.

4. Applicable State Laws and Regulations

Pursuant to 16 NYCRR §1000.5(l)(4), the Applicant has compiled the following list of state laws and regulations, the substance of which would be applicable to the construction, operation, or maintenance of the Project, but which are associated with permits procedurally preempted by Article 10. The Applicant will continue to consult with stakeholders and agency representatives regarding laws that may be applicable to the Project and will include a full assessment of compliance in the Certificate Application. At this time it is anticipated that applicable laws will include:

- Coastal Zone Consistency under Section 307 of the federal Coastal Zone Management Act of 1972
    - The Coastal Zone Management Program (CZMP) provides a framework for government decision-making for actions that affect coastal areas. Any Project requiring federal authorization or permits affecting the coastal area must obtain a Federal Coastal Consistency Certification and a New York State CMP consistency finding under the CZMP and any LWRP developed by the Towns of Somerset and Yates. The applicant's plans for complying with these requirements are discussed further in Section 2.16.

- New York State Water Withdrawal Program, NY Environmental Conservation Law Article 15 (6 NYCRR, Part 601)
    - These regulations apply to water withdrawal systems having the capacity to withdraw 100,000 gallons per day or more of surface or groundwater. Temporary water withdrawals for the purposes of construction where the volume withdrawn is less than an average of 100,000 gallons per day in any consecutive thirty-day consecutive period (3 million gallons during a 30 day period) are exempt. The Applicant does not anticipate the need to withdraw 100,000 gallons per day or more of surface or groundwater, in order to make these provisions applicable to the Project.

- New York State Provisions on Protection of Waters, NY Environmental Conservation Law Article 15 (6 NYCRR Part 608)
    - These substantive requirements would apply to portions of the Project which involve the crossing of protected streams by proposed access roads and/or collection lines. Protected streams are designated by the NYSDEC with one of the following classifications: AA, AA(t), A, A(t), B, B(t) or C(t). The requirements apply where there is any change, modification, or disturbance of any protected streams, streambeds, or stream banks. Under Article 10 Regulations, the Certificate of Environmental Compatibility and Public Need issued by the Siting Board will supplant this permit from the NYSDEC. However, compliance with the substance of these requirements will be addressed in the Certificate Application.

- New York State Provisions on Freshwater Wetlands, NY Environmental Conservation Law Article 24 (6 NYCRR Part 662)
    - A delineation of state-regulated wetlands and jurisdictional confirmation by the NYSDEC will be required. Under Article 10 Regulations, the Certificate of Environmental Compatibility and Public Need issued by the Siting Board will supplant the wetlands permits from the NYSDEC. However, compliance with state wetlands rules and regulations more generally will be addressed in the Certificate Application.

- Endangered and Threatened Species of Fish and Wildlife; Species of Special Concern, NY Environmental Conservation Law Article 11 (6 NYCRR Part 182)
    - Under Article 10 Regulations, the Certificate of Environmental Compatibility and Public Need issued by the Siting Board will supplant the need for an approval from NYSDEC under this article. However, it is expected the Siting Board will require compliance with NYSDEC requirements and guidelines relating to threatened and endangered species.

- Notice of Intent pursuant to NYS Agriculture and Markets Law, Section 305(4)
    - Construction of non-agricultural structures within a designated agricultural district requires that a Notice of Intent be filed with NYSA&M. The Applicant will consult with NYSA&M regarding the Project and expects they will make recommendations to the Siting Board.

5. Local Laws and Regulations

Pursuant to 16 NYCRR §1000.5(l)(5), the following section contains a preliminary list and of all local laws and regulations applicable to the construction, operation, and maintenance of the Project and a preliminary assessment of anticipated compliance. The Applicant will continue to consult with municipalities and other local agencies to determine whether all of the pertinent requirements have been identified and whether any changes to the Project could eliminate the need to request a waiver for any of these requirements. The local wind laws for the Towns of Somerset and Yates are provided in Appendix C and D, respectively.

5.1 NIAGARA AND ORLEANS COUNTIES

General Municipal Law (GML) § 239-m requires referral to County Planning Departments where project components fall within certain triggers (distance from state highways, municipal boundaries, parks, etc.). Without Article 10, compliance with this County approval requirement would be required for special use permits, zoning changes, etc. Because this statute requires that referrals to the County be made by a "city, town or village body responsible for final action on proposed actions" which trigger GML § 239-m, action by a State agency or body under Article 10 would not trigger the GML to require referral.

Any work on, or improvements/alterations to County-owned roads or bridges, or within a County highway right-of-way, may require approval by those counties' respective Departments of Transportation, and/or a highway work permit. To the extent that use of County roadways is required for the Project, the Applicant anticipates the ability to comply with the substantive requirements of the county permit.

5.2 TOWN OF SOMERSET

5.2.1 Procedural Requirements

The Code of the Town of Somerset requires that placement, construction, and major modification of all commercial wind-energy conversion systems (WECS) within the boundaries of the Town of Somerset shall be permitted only by special use permit, upon site plan approval issued by the Planning Board (§ 205-43.2.A) (See Appendix D). The requirements for this and other potentially applicable permit applications are listed in Table 9. Because these provisions are procedural in nature, and would impose additional local approvals on the Applicant, these procedural requirements are supplanted by Article 10. See PSL 172.

The following procedural provisions exist in the Town of Somerset's local laws, but would be supplanted by Article 10 (PSL 172):

Section 96 Excavations
- Permit Requirements and Restrictions, § 96-5

Section 114 Highway Construction Standards
- Construction Permit and Fee for drainage facilities or pavement/road repairs, etc., § 114-3
- Observation of Construction, Certificate of Completion, § 114-8

Section 171 Subdivisions

- Subdivision Applications; Fee, § 171-4, § 171-6 through -7
- Sketch Plan Review, § 171-5
- Subdivision Documents to Be Submitted, §171-21 through -23

Section 205-43.2 Commercial Wind Energy Conversion Systems (WECS)

- B(1)(a)&(b) Applicant information
- B(1)(c) Visual environmental assessment form
- B(1)(d) Site plan
- B(1)(e) Turbine information
- B(1)(f) Turbine drawings
- B(1)(g) Noise report
- B(1)(h) Geotechnical report
- B(1)(i) Ice throw calculations
- B(1)(j) Blade throw calculations
- B(1)(k) Turbine operational specifications
- B(1)(l) FAA notification
- B(1)(m) Utility notification
- B(1)(n) Microwave communications link operators notification
- B(1)(o) Floodplain information
- B(1)(p) Other information
- C(8)(j) Ice throw calculations
- C(9)(b) Noise study
- C(9)(f) Noise complaint and investigation process
- C(10) Fire control and prevention program
- C(11)(b) Evaluation of migratory bird impacts
- C(12)(c) Removal and site restoration plan
- C(15) Erosion control plan and SPDES General Permit
- C(16) Certification of structures and systems
- D(1) Right of Town of Somerset officials to enter the Project site for monitoring
- D(2) Avian/bat impact study plan
- D(3) Periodic monitoring reports
- D(4) Power production report
- D(5) Inspection of structures
- D(6) General complaint process
- E(1) Application fee

5.2.2 Substantive Requirements

The town code also includes substantive requirements that may be applicable to the Project. These requirements are listed in Table 9 along with a preliminary assessment of the ability of the Project to comply.

Table 9. Substantive Requirements of the Town of Somerset

Section 96 Excavations	Preliminary Assessment of Compliance
§ 96-5(A) Restrictions	No excavations permitted in any district other than Industrial or General Industrial District, unless otherwise exempted. Applicant may seek a determination from the Siting Board that this
§ 96-9 (Substantive) Excavation Standards	

Section 96 Excavations	Preliminary Assessment of Compliance
	restriction is unreasonably burdensome, and thus that the restriction not be applied to the Applicant's Project.
Section 114 Highway Construction Standards	**Preliminary Assessment of Compliance**
§ 114-2 Specifications for Town Highways	These requirements are applicable to streets, alleys, roads, and roadways owned by the Town or anticipated to be dedicated to the Town. To the extent that Applicant needs to make any modifications/upgrades to existing Town Highways, or construct new roads which would be dedicated to the Town, compliance with these requirements would be anticipated.
§ 114-4 Rights-of-Way (specifications)	
§ 114-9 Clearing and Excavation (within Town Right of Way)	
§ 114-10 Road Grades	
§ 114-11 Drainage Ditches, Culvert Pipes	
§ 114-12 through -17 Preparation of Subgrade; Drainage; Gutters; Bottom Courses; Top Courses	
Section 131 Noise	**Preliminary Assessment of Compliance**
131-4(G) Construction noise will occur between 7:00 a.m. and 11:00 p.m.	The Certificate Application will address the reasonableness of these restrictions and whether or not there may be specific scenarios whereby this provision may be considered unduly burdensome.
Section 171 Subdivisions	**Preliminary Assessment of Compliance**
§ 171-1 through -12 Approval of Subdivision Required; Substantive Standards for Subdivision	Compliance is anticipated
Section 191 Vehicles and Traffic	**Preliminary Assessment of Compliance**
§ 191-29 Trucks Over 10 Tons Excluded, Except for Pickup and Delivery, From All Town Highways	The ability to comply with this provision of the Code will depend on haul routes and other aspects of the Project which have not yet been assessed. The Certificate Application will discuss this requirement and indicate either that it can be complied with or will provide a request that the Siting Board consider it unduly burdensome.
Section 205-10 Preservation of Natural Features	**Preliminary Assessment of Compliance**
A. No structures within 50 feet of a stream bed or on land subject to periodic overflow.	The ability to comply with this provision of the Code will depend on haul routes and other aspects of the Project which have not yet been assessed. The Application will discuss this requirement and indicate either that it can be complied with or will provide a request that the Siting Board consider it unduly burdensome.
C. Topsoil, earth, sand, gravel, rock, or other substances deposited in R-1, R-2, and RLS Districts shall not be stored more than 45 days	Compliance is anticipated
D. Existing natural features shall be retained	Compliance is anticipated
Section 205-11 Regulations Applicable to All Zones	**Preliminary Assessment of Compliance**
P. Fencing requirements	Compliance is anticipated
W. NYS Uniform Fire Prevention and Building	Compliance is anticipated

Section 96 Excavations	**Preliminary Assessment of Compliance**
Code	
Section 205-43.2 Commercial Wind-energy Conversion Systems	**Preliminary Assessment of Compliance**
C(1)(a) No commercial wind-energy systems shall be allowed in any residential district (R, R-1, RLS) or within one thousand feet from any residential district boundary line.	At this time, the location of Project Components has not been identified. However, the Certificate Application will address compliance with this zoning restriction.
C(1)(b) Setback of 1.5 times the total WECS height from any building and 1,500 feet from any dwelling.	Compliance is anticipated
C(1)(c) Setback a minimum of 1.5 times the total WECS height from any property line excluding adjoining lot lines of Project participants.	Compliance is anticipated
C(1)(d)[1]&[2] Setback a minimum of 1.5 times the total WECS height from any public road and highway. Where the lot line abuts a public right-of-way, the setbacks specified above shall be measured from the center line of the right-of-way.	At this time, the location of Project Components has not been identified. However, the Certificate Application will address compliance with this zoning restriction.
C(1)(e) Setback a minimum of 1.5 times the total WECS height from any aboveground transmission line greater than 12 kilovolts, excluding where transmission lines are located within PUD Zones.	Compliance is anticipated
C(2) Maximum overall height (450 feet)	A turbine model that serves the purpose of, and needs for, the Project is likely to exceed this maximum overall height. Applicant may seek a determination from the Siting Board that the height restriction is unreasonably burdensome in view of the existing technology and thus that the restriction not be applied to the Applicant's Project.
C(3) Signage limitation	Compliance is anticipated
C(4) Color and finish	Compliance is anticipated
C(5) Lighting	Compliance is anticipated
C(6) Compliance with regulatory agencies	Compliance is anticipated
C(7) Compliance with LWRP	At this time, the location of Project Components has not been identified. However, the Certificate Application will address compliance with this the provisions of the LWRP.
C(8)(a) Manual and automatic controls to limit rotor speed	Compliance is anticipated
C(8)(b) Grounding	Compliance is anticipated
C(8)(c)&(d) Underground wiring	Compliance is anticipated
C(8)(e) Minimum ground clearance (50 feet)	Compliance is anticipated
C(8)(f) Towers not climbable up to 15 feet above	Compliance is anticipated

Section 96 Excavations	Preliminary Assessment of Compliance
ground	
C(8)(g) Lockable access doors	Compliance is anticipated
C(8)(h) Monopole structures	Compliance is anticipated
C(8)(i) Warning signs	Compliance is anticipated
C(9)(d) Noise level at the Project site boundary shall not exceed 45 dBA for more than five minutes out of any one-hour time period or exceed 50 dBA for any time period.	Compliance is anticipated. In the event the noise levels resulting from the Project exceed the criteria established in this Section, or a setback requirement is not met, the Applicant anticipates obtaining a waiver from the adjoining owner's property such that it is considered part of the Project site.
C(9)(e) Impulsive sound below 20 Hz shall not adversely affect the habitability or use of any dwelling unit, hospital, school, library, nursing home, or other sensitive noise receptor.	Compliance is anticipated
C(11)(a) Shall not have a significant adverse impact on endangered or threatened fish, wildlife, or plant species or their critical habitats, or other significant habitats.	Compliance is anticipated
C(12)(a) Removal and site restoration	Compliance is anticipated
C(12)(c) Requirements for abatement by repair, rehabilitation, demolition, or removal	Compliance is anticipated
C(13) Interference with residential television, microwave, and radio reception.	Compliance is anticipated
C(14) Interference with aviation navigational systems	Compliance is anticipated
E(2) Development fees to provide public works or services (one-time or periodic)	The Applicant anticipates continuing its consultation with the Town to determine the applicability of this requirement.
E(3) Payment in lieu of taxes	The Applicant anticipates continuing its consultation with the Town to determine the applicability of this requirement.
E(4) Proof of insurance	Compliance is anticipated

The Applicant will continue to consult with the Town of Somerset to identify additional laws that may be applicable to the Project and a full assessment of the ability to comply will be provided in the Certificate Application.

5.3 TOWN OF YATES

5.3.1 Procedural Requirements

The Town of Yates enacted *Local Law No. 1 of 2008 – A Local Law Governing Wind Energy Facilities in the Town of Yates* in order to all consideration of the effective and efficient use of the Town's wind energy resource through WECS (See Appendix C). This law states that no WECS, except a small WECS, shall be constructed, reconstructed, modified, or operated in the Town of Yates, except in a Wind

Energy Overlay District, pursuant to an application for rezoning and for an approved Special Use Permit. Special Use Permits for Wind Energy Facilities are to be issued by the Town Board. The requirements of this process are listed below. Because these provisions are procedural in nature, and would impose additional local approvals on the Applicant, it is expected that these requirements will be supplanted by Article 10. The Applicant does not anticipate a request that exercise of these procedural requirements be expressly authorized.

Procedural Requirements of the Town of Yates

The following procedural provisions are contained in the Town of Yates' local laws, but would be supplanted by Article 10:

Permits and Rezoning for Wind Energy Conversion Systems

- Under Section 591.5(B), no Wind Energy Conversion System can be constructed or operated in the Town of Yates except in a Wind Energy Overlay District, pursuant to an application for rezoning and special use permit. Under Section 591.7, initial requests for Wind Energy Overlay Districts shall be submitted with application for WECS Special Use Permits. No Wind Energy Overlay District may be initially created without specific requests for special use permits for individual WECS.
- The procedural requirement mandating that the Applicant comply with certain applications and local processes (rezoning and special use permit), is supplanted by Article 10 (PSL 172).

Application Requirements for Wind Energy Conversion Systems (Section 591.8)

- A.1. Applicant information
- A.2. Property owner information
- A.3. Parcel information
- A.4. Project description
- A.5. Plot plan
- A.6. Vertical drawing of WECS
- A.7. Landscaping Plan
- A.8. Lighting Plan
- A.9. List of property owners within 500 feet
- A.10. Decommissioning Plan
- A.11. Complaint resolution process
- A.12(a) Construction schedule
- A.12(b) Construction haul routes
- A.13. Completed Part 1 of the Full EAF
- A.14. Application for Special Use Permits for Wind Measurement Towers
- A.15. WECS manufacturer specifications
- A.17(a) Shadow flicker study
- A.17(b) Visual impact study
- A.17(c) Fire Protection and Emergency Response Plan
- A.17(d) Noise analysis
- A.17(e) Property value analysis
- A.17(f) Assessment of interference with microwave, radio, television, personal communication systems, and other wireless communication
- A.18. Tower design Information
- A.19. Analysis of ice and blade throw impacts
- A.20. Statement of truth and accuracy

WECS Application Process (§ 591.9)

Fencing Permits (§ 610)

5.3.2 Substantive Requirements

The town law also includes substantive requirements that may be applicable to the Project. These requirements are listed in Table 10 along with a preliminary assessment of the ability of the Project to comply. The Town of Yates

Table 10. Substantive Requirements of the Town of Yates

Section 591.5 Permits and Rezoning Required	**Preliminary Assessment of Compliance**
B. No Wind Energy Conversion System can be constructed or operated in the Town of Yates except in a Wind Energy Overlay District, pursuant to an application for rezoning and special use permit.	At this time, it does not appear that the Town of Yates has established a Wind Energy Overlay District in any zone. Therefore, WECS are not currently permitted anywhere in the Town without an application for rezoning and a special use permit to create an Overlay District. As discussed above, this procedural requirement is supplanted by Article 10. However, Applicant does anticipate working closely with the community to achieve compliance, to the greatest extent practicable, with the underlying substance of the rules established for Overlay Districts, such as those standards listed below.
Section 591.7 Wind Energy Overlay District Rules	**Preliminary Assessment of Compliance**
A. Wind Energy Overlay District may be created in the Agricultural/Residential (AR) and Industrial (I) Districts only	The Applicant anticipates it will be able to comply with this zoning restriction by siting its Project within the AR and I Districts only, to conform to the community's stated preference for placement of WECS in those zones. However it does not appear that the Town of Yates has established a Wind Energy Overlay District in any existing zone in the Town.
Section 591.10 Standards for WECS	**Preliminary Assessment of Compliance**
A.1. Underground electrical lines	Compliance is anticipated
A.2. Television, radio, or other communication antennas	Compliance is anticipated
A.3. Advertising signs	Compliance is anticipated
A.4. Lighting of tower	Compliance is anticipated
A.5. Measures to reduce visual impacts	Compliance is anticipated
A.6. Guy wires	Compliance is anticipated
A.7. Electromagnetic interference	Compliance is anticipated
A.8. Solid waste, hazardous waste, and construction debris	Compliance is anticipated

A.9. Minimization of land clearing	Compliance is anticipated
A.10. Minimization of impacts to rare species	Compliance is anticipated
A.11. Wetland impacts	Compliance is anticipated
A.12. Stormwater and erosion control	Compliance is anticipated
A.13. Maximum WECS height (420 feet)	A turbine model that serves the purpose of, and needs for, the Project is likely to exceed this maximum overall height. Applicant may seek a determination from the Siting Board that the height restriction is unreasonably burdensome in view of the existing technology or the needs of or costs to ratepayers, and thus that the restriction not be applied to the Applicant's Project.
A.14. Construction hours (7 a.m. to 8 p.m.)	The Certificate Application will address the reasonableness of these restrictions and whether or not there may be specific scenarios whereby this provision may be considered unduly burdensome.
A.15. Visual screening of substation	The Certificate Application will address the reasonableness of these restrictions and whether or not there may be specific scenarios whereby this provision may be considered unduly burdensome.
A.16. Town of Yates as additional insured	Compliance is anticipated
A.17. Compliance with NYSA&M Guidelines	Compliance is anticipated
Section 591.11 Required Safety Measures	**Preliminary Assessment of Compliance**
A. Manual and automatic controls to limit rotor speed	Compliance is anticipated
B. Fencing (with locking portal) around WECS	The Certificate Application will address the reasonableness of these restrictions and whether or not there may be specific scenarios whereby this provision may be considered unduly burdensome.
C. Warning signs	Compliance is anticipated
D. No climbing pegs or ladders closer than 12 feet of ground level	Compliance is anticipated
E. Minimum distance between rotor and ground (20 feet)	Compliance is anticipated
F. Prevention of unauthorized access	Compliance is anticipated
G. Maps of underground facilities	Compliance is anticipated
Section 591.12 Traffic Routes	**Preliminary Assessment of Compliance**
A. Establishment of Project transportation routes	Compliance is anticipated
B. Remediation of road damage	Compliance is anticipated
C. Responsibility of maintenance on seasonal highways	Compliance is anticipated
Section 591.13 Setbacks for Wind Energy Conversion Systems	**Preliminary Assessment of Compliance**

A. - B. Noise limit at residences. Shall not exceed L10 – 50 dBA or if ambient sound pressure level exceeds 50 dBA, the standard shall be ambient dBA plus 5 dBA. Reduction of noise limit by five dBA if audible noise contains a steady pure tone.	Compliance is anticipated. In the event the noise levels resulting from the Project exceed the criteria established in this Section, or a setback requirement is not met, the Applicant anticipates obtaining a waiver from the adjoining owner's property such that it is considered part of the Project site.
E.1. 500 feet from the nearest Project site boundary property line	
E.2. 500 feet from the nearest public road	
E.3. 1,000 feet from the nearest off-site residence	
E.4. 100 feet from state-identified wetlands	Compliance is anticipated.
Section 591.16 Abatement	**Preliminary Assessment of Compliance**
B. Proof that the Project is functional	Compliance is anticipated.
C. Decommissioning bond	Compliance is anticipated.
Section 591.18 Testing Fund; Permit Revocation	**Preliminary Assessment of Compliance**
A. Testing fund	The Certificate Application will address the reasonableness of these restrictions and whether or not there may be specific scenarios whereby this provision may be considered unduly burdensome.
B. Operational condition	Compliance is anticipated.
Section 610 Fences	**Preliminary Assessment of Compliance**
B. Fencing materials	The Certificate Application will address the reasonableness of these restrictions and whether or not there may be specific scenarios whereby this provision may be considered unduly burdensome.
C. Ten foot maximum height for non-residential uses	Compliance is anticipated

The Applicant will continue to consult with the Town of Somerset to identify additional laws that may be applicable to the Project and a full assessment of the ability to comply will be provided in the Certificate Application.

6. Description of the Applicant

The Applicant, Lighthouse Wind LLC, is a privately held limited liability company and a wholly owned subsidiary of Apex Clean Energy Holdings, LLC. Apex is the managing entity of Lighthouse Wind LLC. Apex's headquarters are located in Charlottesville, Virginia and the Lighthouse Wind LLC maintains a local Project office in Barker, New York. Apex Clean Energy is an independent renewable energy company focused on building utility-scale generation facilities. Apex is constructing one of the nation's largest, most diversified portfolios of renewable energy resources, capable of producing more than 12,000 MW of clean energy. This year, Apex is bringing five new U.S. wind energy facilities online, comprising 1,161 MW of capacity. Apex will provide asset management services on four of these facilities. Today, the Apex team comprises over 150 talented and experienced professionals, positioning Apex to deliver clean, domestically produced energy to homes and businesses across North America. Apex's website is www.apexcleanenergy.com.

The contact information and address for document service for the Applicant is:

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7. Description of the Applicant's Property Rights and Interests

The Project will be located on leased private land in the Town of Somerset, Niagara County and the Town of Yates, Orleans County, New York. The Applicant has no land holdings, and therefore must secure easements or leases with private landowners to obtain the rights to place all Project components, whether temporary or permanent. Within the structure of these agreements, the Applicant would obtain the rights to construct, operate, maintain and decommission and restore the facility. Moreover, the Applicant does not have the right to obtain property through eminent domain. Exhibit 13 of the Certificate Application will contain a survey of the Project components illustrating all property boundaries and tax parcel identification, including all owner information for each parcel. This exhibit will display all planned rights-of-way for all facilities, including access roads, electrical collection, the POI/substation, and temporary construction staging areas. The Applicant will provide proof that a lease, easement agreement, or other instrument of right of way has been obtained from each landowner upon which facilities will be sited, including for site access.

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FIGURES

APPENDIX A

Public Outreach Event Tracking Logs

APPENDIX B

Avian and Bat Study Plan

APPENDIX C

Town of Yates Local Law No. 1 of 2008
Wind Energy Facilities

APPENDIX D

Town of Somerset Local Law No. 1 of 2006
Commercial Wind Energy Conversion System

APPENDIX E

Visual Resource Outreach Letter