*Photograph of EverPower's Howard Wind Project located in Steuben County, New York, which has been operational since 2011.*

# Preliminary Scoping Statement

## Baron Winds Project

Towns of Avoca, Cohocton, Dansville, Fremont, Howard, and Wayland - Steuben County

**Prepared for:**

New York State Board on Electric Generation
Siting and the Environment
3 Empire Plaza
Albany, NY 12223


**Prepared by:**

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**P.** 315.471.0688

**Prepared for:**

EverPower Wind Holdings, Inc.
1251 Waterfront Place, 3rd Floor
Pittsburgh, PA 15222
**Contact:** Kevin Sheen
**P.** 646.839.8919


August 2016

# PRELIMINARY SCOPING STATEMENT

Baron Winds Project
Steuben County, New York

Prepared For:

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August 2016

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# COMMONLY USED TERMS

Facility: Collectively refers to all components of the proposed project, including wind turbines, access roads, buried and above ground collection lines, substations, meteorological towers, staging areas, operations and maintenance building.

Facility Area: An area of land within which all Facility components will ultimately be located (depicted on various figures included in this Preliminary Scoping Statement).

Facility Site: Those parcels currently under, or being pursued, for lease (or other real property interests) with the Applicant for the location of all Facility components.

# COMMONLY USED ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| APLIC | Avian Power Line Interaction Committee |
| Applicant | Baron Winds LLC |
| BBA | Breeding Bird Atlas (New York State) |
| BBS | Breeding Bird Survey |
| EverPower | EverPower Wind Holdings, Inc. |
| CBC | Christmas Bird Count |
| CEF | Clean Energy Fund |
| CES | Clean Energy Standard |
| FGEIS | Final Generic Environmental Impact Statement |
| GHG | greenhouse gas |
| GIS | geographic information system |
| LWRP | Local Waterfront Revitalization Program |
| Met | meteorological |
| MW | megawatt |
| NYNHP | New York Natural Heritage Program |
| NRHP | National Register of Historic Places |
| NWI | National Wetland Inventory |
| NYSA&M | New York State Department of Agriculture and Markets |
| NYSERDA | New York State Energy Research and Development Authority |
| NYSOPRHP | New York State Office of Parks, Recreation, and Historic Preservation |
| NYSORPS | New York Office of Real Property Services |
| O&M | Operations and Maintenance |
| OSHA | Occupational Safety and Health Administration |
| PILOT | payment in lieu of taxes |
| PIP | Public Involvement Program |
| POI | point of interconnection |
| PSL | Public Service Law |
| PSS | Preliminary Scoping Statement |
| REV | Reforming the Energy Vision |
| Siting Board | New York State Board on Electric Generation Siting and the Environment |
| SPCC | Spill Prevention, Control, and Countermeasure |
| SPDES | State Pollutant Discharge Elimination System |
| SWPPP | Stormwater Pollution Prevention Plan |
| USACE | U.S. Army Corps of Engineers |
| USGS | U.S. Geological Survey |
| VIA | Visual Impact Assessment |

# 1.0 INTRODUCTION

Baron Winds LLC ("the Applicant"), a subsidiary of EverPower Wind Holdings, Inc. is proposing to submit an Application to construct a major electric generating facility (the "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). Under 16 NYCRR § 1000.5(c), an Applicant can file a PSS with the Siting Board no earlier than 150 days following the submission of a Public Involvement Program (PIP) Plan. The Baron Winds PIP was filed on May 1, 2015. This PSS for the Baron Winds Facility is intended to satisfy the filing requirements set forth at 16 NYCRR § 1000.5(c). 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. Further details for filing comments on this PSS are provided in the Notice, which is included in Appendix A of this PSS.

## 1.1 FACILITY DESCRIPTION

The Facility is a proposed 300 megawatt (MW) wind powered electric generating project located within the Towns of Avoca, Cohocton, Dansville, Fremont, Howard, and Wayland, Steuben County, New York. The regional Facility location and general Facility Area is depicted on Figures 1 and 2, respectively. The Facility will be located on leased private land that is rural in nature. The actual footprint of the proposed Facility components will be located within the leased land, and will enable farmers and landowners to continue with farming operations or other current land uses such as forestry practices. The precise locations of Facility components and the parcels that host them (the "Facility Site") will be identified in detail in the Article 10 Application. The potential environmental impacts of the Facility will be identified and assessed throughout the application in compliance with the specific requirements of 16 NYCRR 1001. In addition, alternatives will be addressed pursuant to the requirements of 16 NYCRR 1001.9.

The proposed Facility consists of the construction and operation of a commercial-scale wind power project, including the installation and operation of up to 120 wind turbines, together with approximately 57 miles of associated 34.5 kV collection lines (below grade and overhead), approximately 36 miles of access roads, up to 3 permanent meteorological towers, one operation and maintenance (O&M) building, and up to 4 temporary construction staging/laydown areas. To deliver electricity to the New York State power grid, the Applicant proposes to construct a collection substation which will "step-up" power to 230 kV. The collection substation will be located adjacent to the existing Canandaigua substation, which will be the point of interconnection (POI) substation, which will interconnect with NYSEG's Hillside-Meyer 230 kV transmission line. All of these Facility components collectively constitute the "Major Electric Generating

Facility" as defined in 1000.2(v) and the term "Facility" is used in this document to collectively refer to these components.

The Facility will have nameplate capacity of up to 300 MW, and will generate enough electricity to meet the average annual consumption of thousands of households in New York State. The benefits of the proposed Facility are described below in Section 1.2.

## 1.2 FACILITY BENEFITS

The immediate benefits of large scale renewable projects, such as the Baron Winds Facility, include economic development and jobs for the community, greater stability in customer bills, cleaner air, new energy infrastructure, and compliance with State and Federal mandates. Renewable energy sources, such as the Baron Winds Facility, represent important contributions to New York's current energy portfolio. As the recent Final Generic Environmental Impact Statement (FGEIS) for the Reforming the Energy Vision (REV) and the Clean Energy Fund (CEF) states, the clean energy economy provides clean, reliable, and affordable power while creating jobs and producing other economic and environmental benefits. In the long run, as recognized by the State Energy Plan, benefits may be similar to those New York enjoys from the State's hydroelectricity facilities today, below-market electricity prices and a healthier environment. The Facility is consistent with State policies designed to encourage the development of renewable energy projects, fight climate change, and contribute to the transition of New York's energy markets from a reliance on fossil fuels for electricity generation.

The Facility will help the State achieve the goals of the 2015 State Energy Plan. (See NY State Energy Law 6-104). The latest iteration of the New York State Energy Plan was announced on June 25, 2015. The State Energy Plan contains a series of policy objectives and coordinates with the REV initiative and the objectives to increase the use of energy systems that enable the State to significantly reduce greenhouse gas (GHG) emissions while stabilizing energy costs. The State Energy Plan is a "comprehensive strategy to create economic opportunities for communities and individual customers throughout New York." Through the State Energy Plan, New York has committed to achieving a 40% reduction in GHG emissions from 1990 levels by 2030 and reducing total carbon emissions 80% by 2050. In addition, the State Energy Plan calls for 50% of generation of electricity from renewable energy sources by 2030. According to the State Energy Plan, "Renewable Energy sources, such as wind, will play a vital role in reducing electricity price volatility and curbing carbon emissions." In furtherance of these objectives, on August 1, 2016, the Commission issued approval of the State's Clean Energy Standard (CES), which represents the most comprehensive and ambitious clean energy mandate in the state's history, to fight climate change, reduce harmful air pollution and ensure a diverse and reliable energy supply. The CES will require 50% of New York's electricity to come from

renewable energy sources like wind and solar by 2030, with an aggressive phase in scheduled over the next several years.

The proposed Facility fully advances the objectives of the State Energy Plan and the CES, and assists the State in achieving the 50% renewable energy generation objective. The Application will discuss the CES and the Project's role in achieving New York's clean energy goals.

In fulfillment of President Obama's commitment under the 2013 Climate Action Plan, EPA proposed "Clean Power Plan" regulations in 2014 establishing a framework for states to regulate carbon dioxide emissions from existing fossil fuel-fired electric generating units (See 79 Federal Register 34830; June 18, 2014). Once the guidelines are issued, states must develop plans that explain how they will achieve those guidelines. Nationwide, the proposal calls for reducing CO2 from the power sector by approximately 30% from 2005 emission levels by 2030. The proposal establishes emission rate-based CO2 goals for each state as well as guidelines for the development, submission and implementation of state plans to achieve those goals. The proposal relies on four basic building blocks: (1) reducing the carbon intensity of generation at individual units through heat rate improvements; (2) substituting less carbon-intensive generating units (e.g., replacing coal with natural gas); (3) increasing reliance on low or zero-carbon generation sources such as solar and wind; and (4) increasing reliance on demand-side energy efficiency programs. Unlike other states with a Renewable Portfolio Standard ("RPS"), in New York, the New York State Energy Research and Development Authority ("NYSERDA") is responsible for obtaining the targets established in the RPS through competitive bidding and contract procurements. To date, NYSERDA has conducted 10 Main Tier (larger, utility scale resources) solicitations in pursuit of the RPS target. From the ten completed solicitations, NYSERDA currently has contracts with electricity generators for 68 large-scale projects. These projects will add more than 2,137 MWs of new renewable capacity to the State's energy mix. However, as of December 2015, the State, through NYSERDA, has only procured enough renewable energy to meet 60% of the RPS targets. (NYSERDA, 2015).

The proposed Facility will have positive impacts on socioeconomics in the area through employment opportunities, specifically by generating construction jobs. Local construction employment will primarily benefit those in the construction trades, including equipment operators, truck drivers, laborers, and electricians. The influx of construction workers to the area will also benefit local hotels and restaurants, and increase purchases of local goods and supplies. In addition, Facility operation will generate full-time jobs, including a Site Manager, Wind Technicians, and an Assistant Site Manager. The Facility will also result in increased revenues to County, school districts, special use districts and local municipal tax base, and payments to participating landowners.

## 1.3 SUMMARY OF PRE-APPLICATION ACTIVITIES

Prior to this PSS, the Applicant prepared a PIP plan in accordance with 16 NYCRR § 1000.4, which was filed with the Siting Board, and the Facility was assigned a case number (Case No. 15-F-0122). The initial draft of the PIP was submitted to the Siting Board on February 26, 2015, comments on the PIP were received from the New York State Department of Public Service (DPS) on March 30, 2015, and the PIP was updated, finalized and filed by the Applicant on May 1, 2015. The PIP can be accessed, viewed and downloaded on the online case record maintained by the Siting Board on its Document Matter Management Website: (http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?Mattercaseno=15-F-0122) and on the Facility-specific website maintained by the Applicant (http://everpower.com/baron-winds-wind-project-steuben-county-ny/).

According to 16 NYCRR § 1000.4(c), a Public Involvement Program must include: (1) consultation with the affected agencies and other stakeholders; (2) pre-application activities to encourage stakeholders to participate at the earliest opportunity; (3) activities designed to educate the public as to the specific proposal and the Article 10 review process, including the availability of funding for municipal and local parties; (4) the establishment of a website to disseminate information to the public; (5) notifications; and (6) activities designed to encourage participation by stakeholders in the certification and compliance process. It is anticipated that this will be an ongoing, evolving process throughout all phases of the Article 10 review process (pre-application phase, application phase, hearing and decision phase, and post-certification phase) intended to disseminate information regarding the Facility to stakeholders, solicit information from those stakeholders during public outreach events and generally foster participation in the Article 10 review.

The Applicant has established the following public/stakeholder interaction elements that will carry on through the duration of the Facility:

- Facility Representative (for the public and stakeholders to contact with questions, concerns, etc.): Kevin Sheen, EverPower Vice President, 1251 Waterfront Place 3rd Floor, Pittsburgh, PA 15222; ksheen@everpower.com; 646-839-8919 (office), 917-679-6877 (mobile)
- Toll Free Number: 1-844-680-WIND (9463)
- Local Document Repositories:
    - Cohocton Public Library; 8 Maple Ave., Cohocton, NY 14826 (585-384-5170)
    - Hornell Public Library; 64 Genesee St., Hornell, NY 14843 (607-324-1210)

In support of this PSS, the Applicant has consulted with the public, affected agencies and other stakeholders, as required by 16 NYCRR § 1000.5(b). All such consultations have been documented in a Meeting Log maintained by

the Applicant, which is updated and submitted to the Siting Board approximately once per month (also available on the case record website referenced above). The most recent Meeting Log was filed with the Siting Board in July 2016, and is also included with this PSS as Appendix D. The Applicant will continue to prepare and file a Facility-specific Meeting Log on an approximate monthly basis throughout the duration of the Article 10 review process. Additional details regarding PIP implementation and outreach to stakeholders is provided in Section 2.2 of this PSS.

## 1.4 POTENTIAL IMPACTS

The following general information regarding typical impacts associated with wind powered electric generating facilities is provided in accordance with 16 NYCRR § 1000.5(l)(2)(ii):

Potentially positive impacts to the local community include significant long-term economic benefits to participating landowners, as well as to the Towns of Avoca, Cohocton, Dansville, Fremont, Howard, and Wayland, the local school districts, and Steuben County. When fully operational, the Facility will provide up to 300 MW of electric power generation with no emissions of pollutants or greenhouse gases to the atmosphere and without the need for the use of significant quantities of water. These potentially positive impacts will be assessed by, among other things, a socioeconomic study assessing the potential positive economic benefits of the Facility's operation and construction. In addition, the positive environmental and health impacts associated with generating electricity from wind rather than other fuel sources will be addressed based on a review of recent State policy determinations and assessments and a review of State energy planning objectives.

Despite the positive effects anticipated as a result of the Facility, its construction and operation will necessarily result in certain unavoidable impacts to the environment. Over the last 15 years, approximately 1700 MWs of large-scale wind resources Projects have been developed in New York State resulting in information regarding the potential environmental impacts to be assessed and studied related to the operation and construction of a wind project. The majority of these environmental impacts will be temporary, and will result from construction activities. The primary construction-related impacts will be temporary disturbance of soils during the development of the construction staging area, the O&M building, and the installation of access roads, turbine foundations, the permanent meteorological towers, underground and overhead collection lines, overhead interconnection poles, collection substation and modifications of an existing POI substation. Earth moving and general soil disturbance will increase the potential for wind/water erosion and sedimentation into surface waters, particularly in areas with moderate erosion hazards.

During construction, potential direct or indirect impacts to wetlands and surface waters may also occur. These impacts will be assessed through delineation and field studies that are detailed in sections 2.22 and 2.23 of this PSS. Direct

impacts, including clearing of vegetation, earthwork (excavating and grading activities), and the direct placement of fill in wetlands and surface waters, are typically associated with the development of access roads and workspaces around turbines. The construction of access roads, and possibly the upgrade of local public roads, is anticipated to result in both permanent (loss of wetland/surface water acreage) and temporary impacts to wetlands. The development and use of temporary workspaces will result in only temporary impacts to wetlands/streams. The installation of above-ground or buried electrical lines (transmission and interconnects) will temporarily disturb streams and wetlands during construction as a result of clearing (brushhogging, or similar clearing method requiring no removal of rooted woody plants). In addition, potential conversion of wetland communities as a result of construction activities (e.g. forested to scrub-shrub), and soil disturbance from burial of the electrical 34.5 kV collector lines or from pole installation along the overhead collection lines may occur. Indirect impacts to wetlands and surface waters may result from sedimentation and erosion caused by adjacent construction activities (e.g., removal of vegetation and soil disturbance).

Facility construction will also result in temporary and permanent impacts to vegetation and wildlife habitat. However, the process for siting Facility components is designed to minimize impacts to undisturbed habitat. Construction-related impacts to vegetation include cutting/clearing, removal of stumps and root systems, and increased exposure/disturbance of soil. Along with direct loss of (and damage to) vegetation, these impacts can result in a loss of wildlife food and cover, increased soil erosion and sedimentation, a disruption of normal nutrient cycling, and the introduction or spread of invasive plant species. Habitat fragmentation is also a potential Facility-related impact, which divides once continuous, large populations into many smaller ones, and can be a significant threat to threatened and endangered species. Again, these potential impacts will be addressed through detailed multi-year studies that will assess potential impacts to wildlife and terrestrial habitats associated with the construction of the Facility.

In addition to construction impacts, impacts associated with operation and maintenance of the Facility may be associated with turbine visibility from some locations within the host and adjacent communities. Facility operation may also produce shadow flicker and sound at some receptor locations (residences), and result in a permanent loss of forest land, wildlife habitat changes, and some level of avian and/or bat mortality associated with bird/bat collisions with the turbines. Additional information regarding potential Facility impacts is included in Section 2.0 below. Potential impacts regarding visual impacts, potential impacts to historic, cultural or archeological resources, sound and shadow flicker will be evaluated through studies that are identified in this PSS and the results of the studies will be provided in the Application.

With careful planning and design, many of the potential impacts associated with wind facilities can completely avoided or minimized to be compatible with the surrounding areas. At this time, because the studies characterizing these impacts have not yet been conducted, it is difficult to identify specific avoidance, minimization and mitigation measures.

However, the studies conducted in furtherance of the Application and the scope and methodologies of which are detailed in this PSS, will identify measures taken by the Applicant to avoid potential impacts as well as minimization and mitigation measures that will reduce impacts to the extent practicable.

## 1.5 IMPACT AVOIDANCE MEASURES

Despite the fact that detailed studies have not yet been conducted, based on the historical information regarding typical impact avoidance, minimization and mitigation measures, for wind-powered electric generation projects, the following information is provided in accordance with 16 NYCRR § 1000.5(l)(2)(v) and (vi):

Compliance with the Conditions of the Article 10 Certificate, and various federal regulations, as well as certain applicable local regulations governing the development, design, construction and operation of the proposed Facility, will serve to avoid and minimize adverse impacts. Construction activities and Facility engineering will be in compliance with applicable state and local building codes and federal Occupational Safety and Health Administration (OSHA) guidelines to protect the safety of workers and the public. Federal and state permitting typically required by the United States Army Corps of Engineers (USACE) and/or the New York State Department of Environmental Conservation (NYSDEC) will serve to protect water resources, along with implementation of a state-approved State Pollutant Discharge Elimination System (SPDES) permit. Coordination between state and federal agencies will ensure that natural resource impacts are avoided to the extent practicable and that minimization and mitigation programs are in place to monitor potential impacts and ensure effective mitigation is in place. Highway permitting typically authorized at the local, county, and state level will assure that safety, congestion, and damage to highways in the area is avoided or minimized. In addition, the final Facility layout will be in accordance with various siting criteria, guidelines, and design standards that serve to avoid or minimize adverse environmental impacts. These include:

- Siting turbines to minimize noise, shadow flicker, and public safety concerns.
- Using existing farm roads or logging roads for turbine access whenever possible, to minimize impacts to soil, ecological and agricultural resources.
- Minimizing the number of stream and wetland crossings.
- Designing all electrical lines in a manner that minimizes any possibility of stray voltage.
- Siting turbines in open field areas to minimize forest clearing and impacts to habitat.
- Minimizing overhead electrical lines and designing any such lines in accordance with Avian Power Line Interaction Committee (APLIC) guidelines to minimize impacts on birds.
- Limiting turbine lighting to the minimum allowed by the FAA to reduce nighttime visual impacts.
- Construction procedures will follow Best Management Practices for sediment and erosion control.

- Designing, engineering, and constructing the Facility in compliance with various codes and industry standards to assure safety and reliability.
- Installing turbines with appropriate grounding and redundant shutdown/braking capabilities to minimize public safety concerns.
- To the extent practical, complying with the New York State Department of Agriculture and Markets (NYSA&M) guidelines in order to minimize impacts on agricultural ground and farming practices.

Facility development, construction and operation will also include specific measures to mitigate potential impacts to specific resources, which are anticipated to generally include the following:

- Developing and implementing various plans to minimize adverse impacts to air, soil, and water resources, including a dust control plan, sediment and erosion control plan, and Spill Prevention, Control, and Countermeasure (SPCC) plan.
- Documenting existing road conditions, undertaking public road improvement/repair as required to mitigate impacts to local roadways, and offering a Road Agreement with local municipalities to repair local roads potentially impacted by construction and maintenance of the Facility.
- Employing an environmental monitor/inspector to evaluate best practices to be employed at sensitive areas such as stream and wetland crossings.
- Implementing an Invasive Species Control Plan.
- Developing and implementing a complaint resolution procedure to address local landowner concerns throughout Facility construction and operation.
- Preparing a historic resource mitigation program to be developed in consultation with the SHPO.
- Preparing a compensatory wetland mitigation plan, if required, to mitigate impacts to streams and wetlands.
- Entering into a payment in lieu of taxes (PILOT) agreement with the local taxing jurisdictions to provide a significant predictable level of funding for the towns, county, and school districts.
- Developing a preliminary Operations and Maintenance Plan
- Developing a preliminary Health and Safety Plan
- Developing a preliminary Site Security Plan
- Developing an emergency and fire response plan with local first responders.
- Implementing a Decommissioning Plan.

It should be noted that there are operating wind power electric generating facilities in Steuben County including the Howard Wind Project, which is a subsidiary of EverPower Wind Holdings, Inc. The experience of EverPower Wind

Holdings, Inc. developing and operating the Howard Wind Farm has allowed the Applicant to gain a strong understanding of how to effectively minimize and mitigate impacts that can result from the development of a wind facility in this region of New York State.

## 1.6 ORGANIZATION OF THE PSS

To facilitate an understanding of the intended content and organization of the pending Application, and to identify the proposed methodology or scope of the studies to be conducted in support of the Application, this PSS has been organized in accordance with 16 NYCRR § 1001 (Content of an Application). Specifically, all sub-sections of Section 2.0 (Content of the Application) of this PSS correspond directly to each Exhibit that will be included in the Application as set forth in 16 NYCRR § 1001 (e.g., Section 2.1 corresponds to 16 NYCRR § 1001.1, Section 2.2 corresponds to 16 NYCRR § 1001.2, etc.). As a result of this sequence, Exhibits that are not necessarily applicable to the Facility have been included as individual PSS sections in order to maintain consistency. However, Exhibits that are not applicable to this Facility (e.g., Natural Gas Power Facilities, Nuclear Facilities) have been identified in the corresponding PSS section as Not Applicable.

With respect to the remaining PSS requirements set forth at 1000.5(l), a content matrix is provided in Section 3.0 (Summary and Conclusions) of this PSS, which cross-references the requirements of 16 NYCRR § 1000.5(l) with the representative sections of this PSS.

# 2.0 CONTENT OF APPLICATION

## 2.1 GENERAL REQUIREMENTS

(1) Applicant Information

The Applicant is Baron Winds LLC (Baron Winds), a wholly-owned subsidiary of EverPower Wind Holdings, Inc. (EverPower). Baron Winds' business address is 1251 Waterfront Place, 3rd Floor Pittsburgh, PA 15222.

(2) Facility Website

The Facility website can be found at http://everpower.com/baron-winds-wind-project-steuben-county-ny/.

(3) Public Contact

The Facility's public contact is Kevin Sheen, Senior Director, Development. His contact information is:

Kevin Sheen
1251 Waterfront Place, 3rd Floor
Pittsburgh, PA 15222
646-839-8919 (o)
412-578-9757 (f)
ksheen@everpower.com

Public comments on the PSS should be provided in writing to the street or email address indicated above.

(4) Principal Officer

The Principal Officer of Baron Winds is Jim Spencer, Chief Executive Officer. His contact information is:

1251 Waterfront Place, 3rd Floor
Pittsburgh, PA 15222
412-253-8915 (o)
412-578-9757 (f)
jspencer@everpower.com

(5) Document Service

The Article 10 Application will indicate if the Applicant desires service of documents or other correspondence on an agent, and if so the required contact information will be provided.

(6) Type of Business

Baron Winds LLC is a Delaware limited liability company. Baron Winds was formed on June 29, 2012. EverPower Wind Holdings, Inc. is the sole member of Baron Winds LLC, which has a business address of 1251 Waterfront Place, 3rd Floor Pittsburgh, PA 15222.

(7) Documents of Formation

The Facility will be owned by Baron Winds, LLC. The certification of formation for Baron Winds LLC is included as Appendix B to this PSS.

## 2.2 OVERVIEW AND PUBLIC INVOLVEMENT SUMMARY

(a) Brief Description of the Proposed Facility

The proposed Facility is a utility-scale wind project located in Steuben County, New York. Project facilities will be located in six towns: Avoca, Cohocton, Dansville, Fremont, Howard, and Wayland. The regional Facility location and general Facility Area is depicted on Figures 1 and 2, respectively. The Facility will be located on leased private land that is rural in nature. The actual footprint of the proposed Facility components will be located within the leased land, and will enable farmers and landowners to continue with farming operations or other current land uses such as forestry practices.

The Facility will consist of up to 120 utility-scale wind turbines. The total size of the facility will be a maximum of 300 MW. Other proposed components will include: access roads, above and underground collection lines, above ground generator lead line, collection substation, three permanent meteorological (met) tower, four staging/laydown yards, and an O&M building.

The Applicant will provide a range of turbine models and sizes that are suitable for the Facility. Ultimately, the turbine model selected may be one presented in the Application or may be another turbine model that will not have greater impacts that those analyzed in the Application. In no case will the Facility consist of more than 120 turbines or be greater than 300 MW. For example, if a 3.0 MW turbine is analyzed and ultimately selected, no more than 100 turbines will be built, whereas if a 2.5 MW turbine is selected, then 120 turbines will be built. The Application will clearly describe the range of project sizes based on the size of turbine models proposed.

Currently, the proposed total length of access roads is approximately 36 miles. The proposed length of combined overhead and underground collection lines that will collect power from the turbines to deliver to the collection substation is 57 miles. There are expected to be up to four temporary laydown yards, one O&M building and three permanent met towers. There will be one collection substation, and the Facility will make use of an existing POI substation to interconnect with NYSEG's Hillside-Meyer 230 kV transmission line.

The Article 10 Application will clearly depict all 120 turbine locations, along with the footprint of all other Facility components. The linear distances of all components will be updated in the Application based on the actual footprint that will be presented and analyzed.

(b) Brief Summary of the Application Contents

The Application will contain a complete analysis of all exhibits required under Part 1001 Content of an Application except the following that do not apply to the proposed Facility:

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

(c) Brief Description of the Public Involvement Program before Submission of Application

The initial draft of the PIP was submitted to the Siting Board on February 26, 2015, comments on the PIP were received from the DPS on March 30, 2015, and the PIP was updated, finalized and filed by the Applicant on May 1, 2015.

The first goal of the PIP is to identify affected stakeholders. The PIP presented this information in Exhibit A – Master List of Stakeholders. Since the PIP's final submission, that master list has been updated based on the Applicant's consultations and meetings with stakeholders. An updated Master List of Stakeholders is presented in Appendix C of this PSS. The Applicant has initiated consultations, and the results and summary of these meetings/consultations are

in the Meeting Log, which is presented in Appendix D of this PSS. The Meeting Log will continue to be updated and filed on the DPS website through the entire PSS and Application process.

To date, the Applicant hosted three open houses:

- Town of Cohocton on June 3, 2015
- Town of Freemont on July 22, 2015
- Town of Wayland on October 8, 2015

At each of these open houses the Applicant provided information associated with the proposed Facility (including poster boards of maps presented in the PIP), a company fact sheet, an overview of the Article 10 process, and copies of an Article 10 Consumer Presentation. All open houses were well attended, and members of the public asked questions in both a group setting and a one-on-one basis, all of which were answered by one (or more) of the Applicant's representatives. Some of the questions included the following:

- What is the size of the turbines?
- Where will the turbines be located?
- How is the power transmitted to the grid?
- How much of the necessary land is leased?
- Has a meteorological tower been erected?
- How can the community prepare for decommissioning?
- Does Article 10 supersede local laws?

In addition to the open house meetings, the Applicant has a Facility specific website as well as a toll free number to call with any questions or comments. There is also a Facility Facebook page through which stakeholders and the public can submit comments and questions. The Applicant has provided paper copies of all documents presented at the open houses at the following document repositories:

- Cohocton Public Library; 8 Maple Ave., Cohocton, NY 14826 (585-384-5170)
- Hornell Public Library; 64 Genesee St., Hornell, NY 14843 (607-324-1210)

During the time before the submission of the Article 10 Application, the Applicant intends to continue stakeholder outreach. The Applicant will do a mass mailing to all stakeholders just prior to the submission of the PSS to provide an update on the Facility and invite comments and remind the stakeholders of the comment period timeframe. The

Applicant will continue to attend municipality meetings and will hold one additional open house prior to submitting the Article 10 Application. Finally, the Applicant will also attempt to identify additional community events in which it would participate. All outreach efforts will be tracked in the meeting logs.

(d) Brief Description of the Public Involvement Program after Submission of Application

The Applicant will continue to engage stakeholders following submission of the Application. The Applicant will continue to attend Town board meetings which have Facility components. In addition, the Applicant will continue to meet with other local pubic stakeholders such as the Town and County road departments as needed.

The Applicant will also continue communication with non-public entities as identified in the PIP and through PIP activities. The Applicant will engage with any equestrian and snowmobile groups active within the Facility area regarding their trail network and use. The Applicant plans to continue conversations with these organizations following submission of the Application to ensure that there are no conflicts between use of the trails and the Facility.

All of the above continued PIP activities will continue to be tracked and filed in the monthly tracking report. The Applicant will respond to suggestions and comments through a detailed response to the commenter and will summarize the response in the monthly tracking report. To date, there have not been any written or oral comments provided to the Applicant.

(e) Brief Overall Analysis

This section will provide an overall analysis that assembled and presents the relevant and material facts from the Application, together with the information and analysis from the studies conducted in support of the Application, which will provide a basis for the Siting Board to make the required Findings on the proposed Facility and a decision to grant the Certificate in accordance with PSL Section 168. This section will summarize the facts in the Application which will provide the Board with the information required to make its explicit findings regarding the nature of the probable environmental impacts of the construction and operation of the Facility on (a) ecology, air, ground and surface water, wildlife and habitat (b) public health and safety (c) cultural, historic and recreational resources and (d) transportation, communications, utilities and other infrastructure, as required by Article 10.

In addition, this section will summarize the facts in the Application that will provide the Siting Board with the information needed to determine: (a) that the Facility is a beneficial addition or substitution for electric generation capacity of the State, (b) the construction and operation of the Facility will serve the public interest, (c) that the adverse environmental effects of the construction and operation of the Facility will be minimized or avoided to the maximum extent practicable,

d) if the Facility results in or contributes to a significant and adverse disproportionate environmental impact in the community in which the Facility would be located, that the Applicant will avoid, offset or minimize impacts caused by the Facility upon the local community for the duration of certificate to the maximum extent practicable using verifiable measures; (e) and that the Facility is designed to operate in compliance with applicable state and local laws and regulations, or in the alternative that such laws and regulations as applied to the Facility are unreasonably burdensome and therefore not applicable.

## 2.3 LOCATION OF FACILITIES

(a) Topographic Maps

Mapping/figures in the Article 10 Application will show the location of the components of the major electric generation and interconnection facilities associated with the proposed Baron Winds Project including the turbines, access roads, electrical collection system, POI substations, permanent meteorological towers, O&M building, and laydown areas. These components, collectively referred to as the "Facility", will be mapped on the U.S. Geological Survey "(USGS) Topo" topographic tile cache base map service. This map service combines the most current data (Boundaries, Elevation, Geographic Names, Hydrography, Land Cover, Structures, Transportation, and other themes) that make up The National Map (USGS, 2016). The National Map is a collaborative effort between the USGS and other Federal, State, and local partners to improve and deliver topographic information for the United States (USGS, 2015). The "USGS Topo" map service is designed to provide a seamless view of the data in a geographic information system (GIS) accessible format, and depicts information consistent with the USGS 7.5-minute (1:24,000) quadrangle topographic maps at large scales (USGS, 2016).

(1) Proposed Major Electric Generating Facility Locations

In the Article 10 Application, the Facility Site will be defined as those parcels currently under, or being pursued for lease (or other real property interests) with the Applicant for the location of all Facility components. Mapping/figures in the Article 10 Application will depict the location of all Facility components within the Facility Site, including the following:

- wind turbines
- permanent meteorological towers
- access roads
- buried electrical collection
- overhead electrical collection
- O&M building

- laydown areas
- point of interconnect substation
- collection substation
- Alternate turbine locations

As currently designed, it is not anticipated that any permanent storm water devices of a significant nature (e.g., large detention basin) will be utilized during construction and operation of the Facility. In addition, to the extent that they are utilized, a concrete batch plant will be located in the Facility's central laydown area. The Article 10 Application will discuss the need and location of a temporary concrete batch plan. Although unlikely, to the extent any information is known at the time of the submission of the Article 10 Application regarding potential locations of permanent mitigation/offset sites for wetlands or historic resources, such locations will be mapped.

(2) Interconnection Location

All Facility components, including the interconnection facilities, will be located within the defined Facility Site and therefore will be mapped as indicated in Section 3(a)(1), above.

(3) Location of Ancillary Features

It is anticipated that the only off-site ancillary features associated with the Facility are temporary public road improvements. These features will be depicted on mapping/figures in the Article 10 Application.

(4) Location of Article VII Transmission Lines Not Subject to Article 10

The Facility does not include any components that are subject to Article VII of the PSL.

(5) Study Area

The Facility has been and will be subject to a number of studies in support of the Article 10 Application. A single, universal study area will not be utilized for all studies/analyses, rather the various studies have applied resource-specific study areas, which will be described briefly in this section of the Article 10 Application (and are described where appropriate below).

(b) Municipal Boundary Maps

Mapping/figures in the Article 10 Application will depict the location of the proposed Facility with respect to village, town, county, and school district boundaries.

(c) Description of Proposed Facility Locations

The locational relationship of the Facility to village, town, county, and school districts will be described in the Article 10 Application including a listing of the proposed number of turbines in each municipality.

Please note that with respect to siting various Facility components, existing disturbances will be utilized wherever practicable. For instance, in many locations linear features of the Facility (e.g., access roads, collection lines) will be sited, in part, on agricultural farm roads or four-wheeler trails.

(d) Facility Shapefiles

The Article 10 Application will include Facility shapefiles and will show the proposed turbine locations, access roads, collection lines, collection substation, POI substation, construction lay down and temporary concrete batch plant areas, and the O&M building.

However, the Applicant will be seeking confidential information protection for shapefiles for all Facility components, and will submit the shapefiles under separate and confidential cover, seeking the requisite protection for this information pursuant to NY Public Officer's Law Section 87(2)(d) and 16 NYCRR 6-1.4.

(e) Turbine Coordinates and Surface Elevation

The Article 10 Application will provide the latitude and longitude coordinates for each proposed Facility wind turbine, along with the approximate ground surface elevation as derived from USGS 10-meter resolution digital elevation model data.

## 2.4 LAND USE

(a) Map of Existing Land Uses

Existing land uses within a 5–mile radius of the Facility will be mapped in the Article 10 Application using publicly available data, including the classification codes of the New York Office of Real Property Services (NYSORPS). The

following land uses occur within the Facility boundary: 100 – Agricultural; 200 – Residential; 300 – Vacant Land; 400 – Commercial; 500 – Recreation and Entertainment; 600 – Community Services; 700 – Industrial; 800 – Public Services; and 900 – Wild, Forested, Conservation Lands and Public Parks.

The Map of Existing Land Uses will include: (i) land subject to a forest management plan pursuant to Real Property Tax Law Section 480-a; (ii) agricultural district land at the Facility Site, which is established pursuant to the NYSA&M Law; and (iii) any land subject to a conservation program. To determine the location of any conservation program lands in the vicinity of the Facility Site, publicly available resources will be consulted such as the National Conservation Easement Database (NCED), an initiative of the U.S. Endowment for Forestry and Communities to compile records from land trusts and public agencies throughout the United States.

(b) Transmission Facilities Map

Existing overhead and underground major facilities for electric, gas, and telecommunications within a 5–mile radius of the Facility will be identified and mapped (to the extent known by the Applicant). This information was obtained from Platts, a division of S&P Global Inc. In addition, the location of existing cable and fiber optic lines was acquired from GeoTel Communications LCC, which maintains a database of this information. Data on natural gas and oil wells within the Facility vicinity has also been obtained from the NYSDEC and NYDPS.

(c) Tax Parcel Map

Existing boundaries of parcels where Facility components will be located, and the boundaries of those parcels within 2,000 feet of such properties, will be identified and mapped in the Article 10 Application. This map(s) will show land use, tax parcel number, and owner of record of each property, and any publicly known proposed land use plans for any of these parcels. Parcel and land use data will be obtained from the Steuben County GIS Department and through consultations with the Towns.

(d) Zoning District Map

Zoning jurisdiction in Steuben County is at the town/village level. Existing and proposed zoning districts within a 5–mile radius of the Facility, based on data obtained from local governments, will be depicted in the Article 10 Application. The Applicant will review zoning regulations for each of the towns and villages within 5-miles of the proposed Facility, and a summary of the zoning regulations will be presented in the Application, with a focus on the permitted and prohibited uses within each zoning district where Facility components will be located.

(e) Comprehensive Plan

The proposed Facility is located in the Towns of Avoca, Cohocton, Dansville, Fremont, Howard, and Wayland in Steuben County, New York. Steuben County has not adopted a Comprehensive Plan. With the exception of Howard, each of the Towns has adopted a Comprehensive Plan. The Article 10 Application will include a review of the Comprehensive Plan for each host Town. The Article 10 Application will also discuss whether the proposed Facility land use is consistent with these Plans.

(f) Map of Proposed Land Uses

The Applicant will gather information about proposed land uses from discussions with local planning officials, open houses, the PIP implementation/PSS development process, and other sources. For example, it is anticipated that such discussions will result in data associated with existing/proposed local snowmobile trails. Any information gathered will be mapped in the Article 10 Application.

(g) Map of Specially Designated Areas

Designated coastal areas, inland waterways, agricultural districts, special flood hazard areas, Local Waterfront Revitalization Program (LWRP) communities, and other specially designated areas potentially occurring within a 5–mile radius of the Facility will be mapped in the Article 10 Application. There are no designated Critical Environmental Areas (CEAs) in Steuben County. Table 1 summarizes the sources of data to be used to prepare these maps.

Table 1. Sources of Data Used to Prepare Mapping of Specially Designated Areas

| Mapping Requirement | Source |
|---|---|
| Designated coastal areas | NYS GIS Clearinghouse, NYS Department of State |
| Inland waterways and local waterfront revitalization program areas | NYS GIS Clearinghouse, NYS Department of State |
| Groundwater management zones | NYS GIS Clearinghouse |
| Agricultural districts | NYS GIS Clearinghouse |
| Flood hazard areas | NYS GIS Clearinghouse, FEMA |
| Critical Environmental Areas | NYSDEC |

(h) Map of Recreational Areas and Other Sensitive Land Uses

Recreation areas and other sensitive land uses known to the Applicant within a 5–mile radius of the Facility will be mapped in the Application. Table 2 summarizes the sources of data to be used to prepare these maps.

Table 2. Sources of Data Used to Prepare Mapping of Recreational and Sensitive Areas

| Requirement | Source |
|---|---|
| Wild, scenic and recreational river corridors | National Wild and Scenic Rivers System |
| Open space | NYS GIS Clearinghouse and local governments |
| Wildlife management lands | NYS GIS Clearinghouse, NYSDEC, USFWS |
| Forest management lands | NYS GIS Clearinghouse, NYSDEC |
| Conservation easement lands | National Conservation Easement Database; NYS GIS Clearinghouse |
| State and federal scenic byways | NYSDOT; NYS GIS Clearinghouse |
| Nature preserves | NYS GIS Clearinghouse |
| Designated trails | NYS GIS Clearinghouse and local Governments |
| Public-access fishing areas | NYS GIS Clearinghouse, NYSDEC |
| Oil and gas production | NYSDEC |
| Gas pipelines | Platts, NYSDEC, NYSDPS |
| Major communication and utility uses and infrastructure | TBD |
| Institutional, community and municipal uses and facilities | ESRI; TIGER/line files; NYS GIS Clearinghouse |

The Facility's Visual Impact Assessment (see Section 2.24 for additional information) will also identify visually sensitive resources, including recreational and other sensitive land uses that may be affected by potential visibility of the Facility. Specifically, this inventory will include visually sensitive resources of potential statewide significance within 10 miles of the proposed Facility and a more detailed inventory (including potential locally significant resources) within a 5-mile visual study area.

The Article 10 Application will address the potential for the Facility to have a direct impact on the recreational resources and other sensitive areas identified. In addition, the Facility's potential indirect effect on these resources (e.g., a change in the property's visual setting), will be addressed.

(i) Compatibility of the Facility with Existing and Proposed Land Uses

The Article 10 Application will quantify the existing land use in the area based on parcel data and NYSORPS classification codes, specifying the area in acres and percentage of the total Facility Site occupied by each land use type. Proposed land uses will be identified through review of Town Plans, Town meetings, and/or other outreach efforts. The Article 10 Application will present, in acres, the permanent and temporary impacts to each of the land use classes to be physically affected by the Facility.

The Application will identify nearby land uses of particular concern to the communities, and will address the land use impacts of the Facility on residential areas, schools, civic facilities, recreational facilities and commercial areas.

The Facility's consistency with the host Towns' Comprehensive Plans, and other regional plans will be addressed in the Article 10 Application. The following Comprehensive Plans, in effect as of the date of this PSS, will be evaluated:

- Town of Avoca Comprehensive Plan
- Town of Cohocton Comprehensive Plan
- Town of Dansville Comprehensive Plan
- Town of Fremont Comprehensive Plan
- Town of Wayland Comprehensive Plan
- Steuben County Agricultural & Farmland Protection Plan

Only very minor changes in land use are anticipated within the Facility Site as a result of Facility operation, and no changes are predicted outside the Facility Site. The presence of the turbines bases, access roads, substations, and the O&M building will result in the conversion of some land from its current use to built facilities. During Facility operation, additional impacts on land use (if any) over the years should be infrequent and minimal. Aside from occasional maintenance and repair activities, Facility operation will not interfere with on-going land use (i.e., farming and forestry activities).

The NYSDAM has promulgated a guidance document that applies to Facility components sited within agricultural lands. The *Guidelines for Agricultural Mitigation for Wind Power Projects* include siting goals, construction requirements, restoration requirements, and post-construction monitoring and remediation requirements. To minimize and/or mitigate impacts to active agricultural land and farming operations, Facility siting and construction will comply with NYSDAM agricultural protection guidelines to the maximum extent practicable. Please note that based on recent consultation with NYSDAM personnel, complete adherence to the *Guidelines for Agricultural Mitigation for Windpower Projects* is

not necessarily required. The Applicant will consult with NYSDAM personnel, and will provide additional information regarding this consultation in the Article 10 Application.

(j) Compatibility of Above-Ground Interconnection with Existing and Proposed Land Uses

The proposed Facility will use above-ground interconnect lines where the usage of underground lines would cause greater environmental impacts, and/or are cost prohibitive, including (but not limited to) along the edges of select agricultural fields, and crossing steep terrain, streams, wetlands, and public roads. The compatibility of proposed above-ground interconnect lines will be assessed in the Article 10 Application.

(k) Compatibility of Underground Interconnections with Existing and Proposed Land Uses

The Facility's proposed underground collection lines will not prohibit the continued use of the land as the impact will only be a temporary disturbance. Compatibility of proposed underground interconnections and temporary disturbances associated with construction will be addressed in the Article 10 Application.

(l) Conformance with the Coastal Zone Management Act

The Facility Area is not located within a designated coastal area or in direct proximity of a designated inland waterway. Therefore, conformance with the Coastal Zone Management Act is not applicable.

(m) Aerial Photographs

Aerial photographs within a 1-mile radius of the Facility will be included with the Article 10 Application. This mapping will likely be prepared using 0.5-meter resolution natural color orthoimagery from the USDA's National Agriculture Imagery Program (NAIP) captured during the 2015 growing season.

(n) Aerial Photograph Overlays

The Article 10 Application will map Facility components overlaid on aerial photographs, along with the proposed limits of vegetation and soils disturbance. These maps will be created using ArcGIS software. Line symbols will be used to depict the centerlines of proposed access roads and electrical collection lines; point symbols to depict turbine and permanent meteorological tower locations; and polygon symbols to depict the substation, operation and maintenance buildings, and construction laydown areas. Buffers around each Facility component will show the limits of clearing and disturbance required (e.g., 20-foot permanent width and 50-foot temporary width for access roads). This mapping will

likely be prepared using 0.5-meter resolution natural color orthoimagery from the USDA's NAIP captured during the 2015 growing season.

(o) Source of Aerial Photographs

It is anticipated that mapping associated with (n) above will be prepared using 0.5-meter resolution natural color orthoimagery from the USDA's NAIP captured during the 2015 growing season. The ultimate source will be identified in the Article 10 Application.

(p) Community Character

The Facility is proposed to be located in a rural portion of Steuben County, which is characterized by a mix of agricultural and forested land as well as existing wind farm projects in the Towns of Howard and Cohocton.

The Article 10 Application will provide a description of community character that includes defining features and interactions of the natural, built, and social environment, and takes into account local land use and zoning. The Facility will introduce additional visible elements (i.e., wind turbines) into the existing landscape, which could be considered a change in community character in some instances. However, the visibility and visual impact of the wind turbines will be highly variable based upon distance, number of turbines in the view, weather conditions, sun angle, extent of visual screening from topography and vegetation, scenic quality, viewer sensitivity and/or existing land uses. In addition, much of the area within and surrounding the Facility currently experiences views of operating wind power projects. The Article 10 Application will assess the compatibility of the Facility with the existing and proposed future uses with respect to community character, and identify avoidance and mitigation measures that will be implemented to minimize adverse impacts on community character.

Any effect Land Use might have on the Elmira/Corning Regional (ELM) and Hornell Municipal (HTF) Airports, along with local airstrips and heliports, will be addressed in Exhibit 25 (Effects on Transportation) as required by the Article 10 regulations.

## 2.5 ELECTRIC SYSTEM EFFECTS

(a) System Reliability Impact Study

ABB Inc. (ABB) prepared a System Reliability Impact Study (SRIS) for the Facility on behalf of the New York Independent System Operator (NYISO) in 2015. The SRIS will be included with the Article 10 Application, but will be

filed separately under confidential cover, as NYISO requires the SRIS to remain confidential due to Critical Energy Infrastructure Information (CEII) Regulations.

(b) Potential Reliability Impacts

Based on NYISO scope, the SRIS was performed for Summer Peak, Winter Peak and Light Load system conditions. The study system included the West Region (Zone A), Genesee Region (Zone B) and Central Region (Zone C0 in the New York ISO system. The Article 10 Application will describe the impact of the proposed Facility and interconnection on transmission system reliability in the State in detail.

(c) Benefits and Detriments of the Facility on Ancillary Services

Based on the results of the SRIS, all identified benefits and detriments associated with the Facility will be discussed in the Application.

(d) Reasonable Alternatives to Mitigate Adverse Reliability Impacts

The SRIS will evaluate alternatives to eliminate adverse reliability impacts, if any. The results of the alternatives evaluation will be presented in the Article 10 Application.

(e) Estimated Change in Total Transfer Capacity

The Article 10 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 mitigation or eliminate said reduction.

(f) Criteria, Plans, and Protocols

(1) Applicable Engineering Codes, Standards, Guidelines, and Practices

The Facility will be designed in accordance with applicable standards, codes, and guidelines. For portions owned by the Applicant (e.g., collection system), best industry practices will be used, along with any standards/preferences set by the companies designing the Facility. For the POI station, NYSEG requirements will be followed.

34.5 kV Overhead Collection System

The overhead lines in the Facility will be designed in accordance with (but not limited to):

- RUS Bulletin 1724E-200
- National Electric Safety Code (NESC)
- ANSI – American National Standards Institute
- ASTM – American Society of Testing of Materials
- OSHA – Occupational Safety and Health Administration
- IEEE – Institute of Electrical and Electronic Engineers
- ASCE – American Society of Civil Engineers
- NEC – National Electric Code

34.5 kV Underground Collection System

The underground line design shall incorporate, but is not limited to, the following standards and codes when applicable:

- ANSI - American National Standards Institute
- ASTM - American Society for Testing and Materials
- IEEE 48 - Standard Test Procedures and Requirements for Alternating-Current Cable Terminations 2.5 kV through 765 kV
- IEEE 80 - Guide for safety in AC substation grounding
- IEEE 400 - Guide for Field Testing and Evaluation of the Insulation of Shielded Power Cable Systems
- IEEE 400.1 - Guide for Field Testing of Laminated Dielectric, Shielded Power Cable Systems Rated 5kV and Above with High Direct Current Voltage
- IEEE 400.3 - Guide for Partial Discharge Testing of Shielded Power Cable Systems in a Field Environment
- IEEE C2 - National Electric Safety Code (NESC)
- IEEE C57.12.10 - American National Standards for Transformers
- NFPA 70 - National Electric Code (NEC)
- TIA/EIA - Telecommunications Industry Association/Electric Industry Alliance
- NEMA - National Electrical Manufacturer's Association

Collection substation

The substation design will incorporate, but is not limited to, the following standards and codes when applicable:

- NESC - National Electric Safety Code.

- NFPA 70 - National Fire Protection Association - National Electric Code
- NFPA 850 - National Fire Protection Association – Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations
- ACI - American Concrete Institute
- ANSI - American National Standard Institute
- ASCE - American Society of Civil Engineers
- ASTM - American Society for Testing and Materials
- IBC - International Building Code
- IEEE 80 - IEEE Guide for safety in AC substation grounding
- IEEE C37.2 - IEEE standard electrical power system device function numbers and contact designation
- IEEE C37.90 - IEEE standard for relays, relay systems and associated with electrical power apparatus
- IEEE C37.110 - Guide for the application of current transformers used for protective relaying purposes
- IEEE C57.13 - IEEE standard requirement for instrument transformers
- IEEE 485 - IEEE Recommended Practice for Sizing Lead-Acid Batteries for Stationary Applications
- IEEE C57.12.10 - American national standards for transformers
- IEEE 998 - IEEE Guide for direct stroke shielding of lightning for substations
- IEEE C37.119 - IEEE Guide for Breaker Failure Protection of Power Circuit Breakers
- IEEE C37.605 - IEEE Guide for Design of Substation Rigid-Bus Structures
- IEEE 605 - Guide for Design of substation rigid-bus structures
- IEEE 693 - IEEE Recommended practices for seismic design of substation
- IEEE 980 - IEEE Guide for Containment and control of spills in substations

The Article 10 Application will provide additional detail on the Facility's electric system codes, standards, guidelines, and practices.

(2) Generation Facility Type Certification

The Article 10 Application will provide a type certification for one of the wind turbine models under consideration for the proposed Facility (assuming one is available at the time of application). The third-party type certificate, if provided, will be filed separately under confidential cover. The Applicant will ultimately select a turbine that has achieved the necessary third-party certification, and proposes to submit this information to the Siting Board as a post-Certification compliance filing.

(3) Procedures and Controls for Inspection, Testing, and Commissioning

The various aspects of the Facility will have a written inspection, testing and commissioning plan, as briefly summarized below, that is adhered to during all stages of construction as well as a post-construction inspection and testing phase. When completed, all documentation will be provided to the Siting Board and stored at the Facility Site for easy review/access in the future.

34.5 kV Overhead Collection System

The overhead lines will be inspected, tested and commissioned in accordance with various ANSI, IEEE, NFPA, IETA, ASTM, etc. requirements, as necessary. All tests will be performed with the line de-energized, except where specifically required for it to be energized for functional testing.

All material received for construction of the overhead lines will be visually inspected for defects and compatibility with the design/specifications. This includes, but is not limited to anchors, poles, conductor, fiber, insulators, hardware, and grounding material.

34.5 kV Underground Collection System

The collection system will be inspected, tested and commissioned in accordance with various ANSI, IEEE, NFPA, IETA, ASTM, etc. requirements, as necessary. All tests shall be performed with the equipment de-energized, except where specifically required for it to be energized for functional testing.

Underground cables systems have comparatively less components than the overhead lines or substation described above. All material received for construction of the underground lines will be visually inspected for defects and compatibility with the design/specifications. This includes, but is not limited to, cables, transformers, fiber, splices/junction boxes and grounding material.

Collection Substation

The station will be inspected, tested and commissioned in accordance with various ANSI, IEEE, NFPA, IETA, ASTM, etc. requirements, as necessary. All tests shall be performed with the equipment de-energized, except where specifically required for it to be energized for functional testing.

All material received for construction of the station will be visually inspected for defects and compatibility with the design/specifications. Various industry standard electrical and mechanical tests are performed on equipment before leaving the manufacturers' facilities. Some tests are performed on a "class" of equipment, such that the

passing tests results apply to all specific equipment produced. Other tests are required to be performed on each individual piece of equipment. Additional tests will be performed on specific equipment after installation at the Facility site to ensure that there was no damage during handling including, but not limited to:

- Main transformer
- High/medium voltage circuit breakers
- Disconnect switches
- Instrument transformers (current transformer, voltage transformer, etc.)
- Surge arresters
- Station service transformer
- High/medium voltage cables
- Capacitor bank or reactor banks
- DC battery bank and charger

Wind Turbines

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, as well as turbine foundations. Turbine foundation testing and inspection will be in accordance with guidance from AWEA/ASCE in the 2011 document entitled *Recommended Practice for Compliance of Large Land-based Wind Turbine Support Structures*. These procedures will be detailed in the Article 10 Application.

(4) Maintenance and Management Plans, Procedures, and Criteria

The Applicant will prepare a Preliminary Operations and Maintenance Plan (O&M Plan), which will be included in the Application. This plan is intended to be the foundation of the final O&M Plan that will be implemented at the Facility once it becomes operational, and will be based on the Applicant's experience and typical O&M maintenance requirements for wind power projects. Ultimately the Applicant's Facility Operators will be responsible for the O&M Plan's implementation. The objective of the O&M Plan is to optimize the Facility's operational capacity and availability through best in class maintenance guidelines and inspections that are designed to pro-actively detect any significant safety or maintenance issues.

Detailed operations and maintenance plans, procedures, and criteria related to the Facility's electrical components will be presented in the Application.

(g) Heat Balance Diagrams

Since there will be no thermal component to the Facility, this requirement is not applicable to the proposed Facility.

(h) Interconnection Substation Transfer Information

(1) Description of Substation Facilities to be Transferred and Timetable for Transfer

New York State Electric & Gas Corporation (NYSEG) is the connecting transmission owner for this Facility. The point of interconnection (POI) will be National Grid's existing 230 kV Canandaigua Switching Station, which will be upgraded to add a breaker, motor operators, and associated equipment. The Article 10 Application will include a General Arrangement Plan View drawing of the POI substation. The exact future transaction and timetable to transfer the POI substation to NYSEG will not be known until the Facilities Study is complete.

(2) Transmission Owner's Requirements

The POI substation will be designed by NYSEG (i.e., the transmission owner), and therefore the POI substation will be in accordance with their requirements. The description of the design will not be known until the Facilities Study is complete.

(3) Operational and Maintenance Responsibilities

NYSEG, as the transmission owner, will define the operational and maintenance responsibilities for the POI substation. The Applicant will assume such responsibilities, to be implemented in accordance with the transmission owner's standards, as directed by NYSEG.

(i) Facility Maintenance and Management Plans

The Applicant will be responsible for the operation, inspection, and maintenance requirements of all Facility components, except for the POI substation. These activities can generally be classified as scheduled inspection/maintenance, unscheduled maintenance/repairs, or electrical system inspection/maintenance. Each of these are briefly described below.

(1) Turbine Maintenance and Safety Inspections

All maintenance and repair activities will be in accordance with applicable permits and associated conditions. To the extent practicable, repairs will be facilitated through use of existing Facility-related infrastructure (e.g., permanent gravel access roads, crane pads, etc.). If existing infrastructure is not adequate to accommodate certain repairs, any additional infrastructure improvements will be conducted in accordance with the applicable regulations and road use agreements with the local municipalities (e.g., widening of an access road within or adjacent to a wetland will be conducted in accordance with Section 401 and 404 of the Clean Water Act, and Article 24 of the Environmental Conservation Law, as applicable).

Scheduled Inspection and Maintenance

Routine and preventative wind turbine maintenance activities are scheduled semi-annually with specific maintenance tasks scheduled for each maintenance visit. Maintenance is done by removing the turbine from service and having wind technicians climb the tower to spend a full day carrying out maintenance activities. Consumables such as various greases used to keep the mechanical components operating and oil filters for gearboxes and hydraulic systems are used for routine maintenance tasks. Following all maintenance work on the turbine, the area is cleaned up. All surplus lubricants and grease-soaked rags are removed and disposed of as required by applicable regulations. All maintenance activities will adhere to the same spill prevention industry best practices undertaken during the construction phase.

Unscheduled Maintenance/Repairs

Modern wind turbines are very reliable and the major components are designed to operate for up to 30 years. However, wind turbines are large and complex electromechanical devices with rotating equipment and many components. As a result, at times, turbines will require repair, most often for small components such as switches, fans, or sensors; typically, such repairs will take the turbine out of service for a short period of time until the component is replaced. These repairs can usually be carried out by a single technician visiting the turbine for several hours. Events involving the replacement of a major component such as a gearbox or rotor are not typical. If they do occur, the use of large equipment, sometimes as large as that used to install the turbines, may be required. Typically only a small percentage of turbines would need to be accessed with large equipment during their operating life.

(2) Electric Transmission and Collection Line Inspections

(i) Vegetation Clearance Requirements

Vegetation near the Facility 34.5 kV overhead collection system must be reviewed, inspected and cleared/maintained as necessary to avoid faults, outages and damages to the lines. These issues are generally due to vertical movement (sagging) in the wires caused by thermal and mechanical loads, as well as horizontal movement caused by wind (blowout). These issues can also be caused by uncontrolled growth of the vegetation itself.

The requirements for clearing vegetation around the overhead 34.5 kV lines will be illustrated in the Application. All vegetation within the clear cut boundary, with the exception of low lying growth as shown, will be completely cleared. In addition, vegetation extending above the danger tree clearance line (outside of the clear cut boundary) will be cleared to prevent a potential tree from falling into the line.

(ii) Vegetation Management Plans and Procedures

Initial vegetation management prior to and during construction utilizes manual/mechanical methods such as chainsaws, pruners or other heavy machinery. Portions of trees and other vegetation that extend into the clearing regions are typically trimmed. Vegetation that is completely within the clearing regions may be trimmed down such that they are classified as low lying growth, or may be removed completely (up-rooting, removal, etc.).

Continued maintenance may be through a variety of manual trimming methods, as well as environmentally friendly herbicide treatments used to inhibit vegetation growth (where permitted). The frequency of inspection and management will depend on the rate of growth at the particular location along the lines. Low-lying growth and vegetation extending into the clear cut boundary will be checked regularly each year. The Article 10 Application will provide typical details associated with vegetation management for the overhead 34.5 kV lines.

(iii) Inspection and Maintenance Schedules

The electrical system will require periodic preventative maintenance. Routine maintenance will include condition assessment for aboveground infrastructure and protective relay maintenance of the substation, in addition to monitoring of the secondary containment system for traces of oil. Please see (f)(4) above for information on the maintenance schedule for the electrical system.

(iv) Notifications and Public Relations for Work in Public Right-of-Ways

If work is to be performed in a public right-of-way, notification and any permit(s) to conduct such work will be addressed with the appropriate agencies prior to starting the work.

(v) Minimization of Interference with Distribution Systems

The Article 10 Application will describe measures that will be used to minimize interference with existing distribution systems.

(j) Vegetation Management Practices for Collection Substation Yard

The Application will illustrate clearing requirements for the areas outside of the collection substation fence.

Within the substation fence, and immediately surrounding, it is important to eliminate all above-ground growth. Vegetation in this area could come in contact with the substation's below grade grounding grid. If the vegetation extends above ground, coming in contact with a person could put them in danger in the event of an electrical system ground fault, which energizes the below grade grounding grid with high voltages and currents. Normally, a person is protected by the crushed stone on the surface of the station, but the vegetation could bridge the safety gap created by the stone. Pre-emergent herbicide is preferred to prevent vegetation from becoming established, but post-emergent herbicide and/or manual weed removal will be used in the event vegetation does begin to show.

(k) Criteria and Procedures for Sharing Facilities with Other Utilities

The Applicant will accept proposals for sharing of above ground facilities with other utilities as they are submitted. In consideration of such proposals, the Applicant will conduct a site visit with the party proposing the co-location. The Applicant will evaluate the proposal taking into account potential conflicts of interest, interference and reliability issues with the proposed co-location. If necessary, the Applicant may have a qualified third-party review the proposal to determine any detrimental impact of the proposal on the Applicant's Facility.

(l) Availability and Expected Delivery Dates for Major Components

The Applicant is not aware of any equipment availability restrictions. The Applicant currently plans to place the Facility in-service in late 2019. Based on this in-service time-frame, major Facility components would be expected to arrive onsite starting in Spring 2019 through Fall 2019

(m) Blackstart Capabilities

Blackstart is the procedure to recover from a total or partial shutdown of the transmission system. It entails isolated power stations being started individually, and then gradually being reconnected to each other to re-establish an interconnected system. In general, power stations need an electrical supply to start up; under normal operation this supply would come from the transmission or distribution system. Under emergency conditions, blackstart stations receive this electrical supply from small auxiliary generating plant located onsite. Not all power stations have or need blackstart capability. Wind energy facilities, such as the proposed Facility, are not suitable for blackstart because there is no guarantee that wind would be blowing at sufficient speed. Therefore, the Facility will not have blackstart capabilities.

(n) Identification and Demonstration of Compliance with Relevant Reliability Criteria

Reliability criteria are identified in the SRIS, which includes input from the NYISO and NYSEG. In addition, the Applicant will consult with DPS regarding reliability criteria to confirm that consultation completed through the SRIS will be sufficient for compliance with relevant reliability criteria.

## 2.6 WIND POWER FACILITIES

(a) Statement of Setback Requirements/Recommendations

The primary goal of wind turbine siting and design is to maximize the capture of wind energy to assure economic viability, while providing a design that minimizes environmental impacts, meets turbine vendor site suitability requirements, takes local law into consideration, and minimizes impacts at residential receptors related to sound or shadow flicker. As such, this is an iterative process with the final Facility design reflecting a balance of these factors. The proposed location and spacing of the wind turbines and support facilities is initially based upon site constructability, landowner participation, wind resource assessment, environmental resource factors, proximity to existing transmission and review of the Facility's zoning constraints. Factors considered during preliminary and final placement of turbines and other Facility components include the following:

- Wind resource assessment
- Distance from residences and other buildings, non-participating land parcels, roads, and other infrastructure
- Sufficient spacing between turbines

- Agricultural protection measures
- Biological and cultural resources
- Unusual landform areas
- Wetland avoidance
- Visual, shadow flicker and noise impacts

As indicated previously, the location of the Facility has a rural and low-density character, and high density residential land use is not widespread. The Facility will be sited to avoid and/or minimize interaction with sensitive natural and cultural resources (e.g., wetlands, streams, archaeological sites) to the maximum extent practicable. More detailed discussion on the Facility's proximity and proposed setbacks (as relevant) to these features and other resources, such as schools, and historic properties will be included in the respective sections of the Article 10 Application.

With respect to setbacks, the Article 10 Application will describe how setbacks will ultimately be applied to facility turbines to ensure the safety of the public and neighboring properties, minimize impacts at residential and other sensitive structures/resources, and ensure consistency with the intent of any applicable land use/zoning setback regulations. The Article 10 Application will also present representative turbine models that would be suitable for the Facility, and their respective dimensions.

(1) Manufacturer's Setback Specifications

The Applicant is not aware of any manufacturer's setback specifications for any of the turbine models under consideration for the Facility. Manufacturer's siting guidelines are typically focused on technical issues such as available wind resource at a given site (i.e., on selecting the appropriate technology/ turbine model) rather than on land use/zoning issues such as setbacks. The Article 10 Application will provide a review of manufacturer setback specifications (to the extent available) for the range of potential turbines under consideration for the Facility, and how the Applicant plants to meet such setback specifications, if any.

(2) Applicant's Internal Setback Standards

When identifying appropriate setbacks for a given project, the Applicant generally considers the following: a) ensuring the safety of the public and neighboring properties by siting turbines away from non-participating property lines, roads, and other public infrastructure at a distance of at least the maximum blade tip height, b) minimizing impacts at residential or other sensitive structures related to sound or shadow flicker, and c) abiding by any applicable land use/zoning setback regulations.

The Article 10 Application will provide more detailed information specific to the Applicant's setbacks for this facility.

(3) Setbacks Required by Local Law or Ordinance

Zoning jurisdiction within Steuben County is at the town level. The proposed turbines are sited in the Towns of Avoca, Cohocton, Dansville, Fremont, Howard, and Wayland. As of the date this PSS is filed, except for Wayland and Dansville, each of these Towns have adopted laws specific to wind energy development. Table 3 provides a summary of the turbine setbacks, where applicable, for each Town where turbines are proposed.

Table 3. Turbine Setback Requirements for the Towns of Avoca, Cohocton, Fremont, and Howard

| Setback Requirement | Town of Avoca | Town of Cohocton | Town of Fremont | Town of Howard |
|---|---|---|---|---|
| Site Boundaries | 1.1x the total turbine height | Total turbine height plus 100 feet | 1.5x total turbine height, minimum of 500 feet | 400 feet from front, side, and rear lots; and at least equal to the turbine fall zone |
| Public Roads | 1.1x the total turbine height | Total turbine height plus 100 feet | 1.5x total turbine height, minimum of 500 feet | 400 feet from road centerlines |
| Residences | 1,000 feet from off-site residences, measured from the exterior of the residence | 1,500 feet from all dwellings | 1.5x total turbine height, minimum of 500 feet from off-site residence | 1,000 feet from any existing residential structures; and at least equal to the turbine fall zone |
| Aboveground Utility | 1.1x the total turbine height from aboveground utilities, unless waived by utility company | Total turbine height plus 100 feet | n/a | n/a |
| Structures | 1.5x total turbine height from off-site permanent structures | 1,500 feet from all structures customarily used by the public | 1.5x total turbine height, minimum of 500 feet from any lodging facility, public building, church or other institution | 500 feet from any existing non-residential structure; and at least equal to the turbine fall zone |
| Wetlands | 100 feet from the edge of State wetlands, measured from any part of base or foundation | 100 feet from the edge of State wetlands | n/a | n/a |

[1] The Wind Laws adopted to date in the Town of Dansville are related to Real Property Tax and do not include any setback requirements.

(b) Explanation of the Degree to which the Facility Layout Accommodates Turbine Setbacks.

The Applicant will take into consideration the above referenced setbacks. It is anticipated that the Facility will meet or exceed all turbine setback requirements set forth in local zoning regulations. The Article 10 Application will provide an analysis of the conformance with these setback requirements.

(c) Third-party Review and Certification of Wind Turbines

Equipment reliability is an important criterion in turbine selection. The Article 10 Application will present a range of turbine models anticipated to be suitable for the Facility, but the Applicant may ultimately select a turbine model different than that presented in the Application, albeit within the range of potential impacts evaluated and assessed therein, after submission of the Application. However, the inability to identify the final turbine manufacturer and model in the Application will not delay the review of the Application since all turbine models are required to obtain independent certification. Turbine models are independently certified as meeting international design standards by independent product safety certification organizations such as Germanischer Lloyd and Underwriters Laboratories. These certifications require that the wind turbines have a design life of at least 20 years for the specified wind regime. The wind regime considers factors such as weather extremes, average wind speed, wind gusts, and turbulence intensity. An example of a type certification for one of the turbines under consideration at the time the Application is submitted will be provided to the Siting Board to the extent possible.

The Applicant will ultimately select a turbine that has achieved the necessary third-party certification and will submit this information to the Siting Board as a post-Certification compliance filing.

(d) Wind Meteorological Analyses

The Article 10 Application will include wind resource analyses that will confirm optimal turbine layout for maximum energy production within the context of existing, site-specific constraints. Wind resource analysis will be completed using the micro-scale wind modeling tools WAsP (www.wasp.dk) and WindSim CFD (Computational Fluid Dynamics - www.windsim.com) were utilized in order to develop the energy yield analysis for the Facility layout. One temporary meteorological tower was erected in the Town of Wayland within the Facility Area to collect the site-specific data necessary for modeling purposes. The location of the existing temporary met tower is shown in Figure 3. An additional temporary met tower is anticipated to be constructed in late 2016 in a location to be determined. The turbine layout to be presented in the Article 10 Application will be determined by correlating the most energetic layouts with the most constructible and logistically economical designs, while also factoring in siting constraints and impact avoidance measures. The Application will include a discussion of the suitability of the wind resource at the Facility Site based on publicly available wind resource maps.

The detailed results of these analyses are proprietary and retained as trade secrets. Therefore, a copy of the wind meteorological analyses will not be provided with the Article 10 Application, but rather will be provided under separate cover. The Applicant will seek the requisite trade secret protection for this information pursuant to NY Public Officer's Law Section 87(2)(d) and 16 NYCRR 6-1.3.

## 2.7 NATURAL GAS POWER FACILITIES

The proposed Facility is not a natural gas power facility, and as such, the requirements of 1001.7 are not applicable and will not be included in the Article 10 Application.

## 2.8 SECTION 2.8 ELECTRIC SYSTEM PRODUCTION MODELING

(a) Computer-based Modeling Tool

The analyses to be presented in Exhibit 8 of the Article 10 Application will be developed using GEMAPS. The Applicant will consult with the NYSDPS and NYSDEC immediately following submission of this PSS to develop an acceptable input data set to be used in the simulation analyses, including modeling for the Applicant's proposed Facility and inputs for the emissions analysis. Portions of the data to be provided are proprietary and/or Critical Energy Infrastructure (CEII) and will be filed under a protective agreement. The Applicant will seek the requisite trade secret protection for this information pursuant to NY Public Officer's Law Section 87(2)(d) and 16 NYCRR 6-1.4.

(1) Estimated Statewide Levels of Greenhouse Gas Emissions

The Article 10 Application will list the estimated statewide levels of SO2, NOx, and CO2 emissions, in short tons, with and without the Facility for the 2020 year.

(2) Estimated Prices Representative of all NYISO Zones

The Article 10 Application will list the estimated minimum, maximum, and average annual spot prices representative of the NYISO Zones within the New York Control Area, both with and without the proposed Facility for the studies 2020 year.

(3) Estimated Capacity Factor

A 8760 hourly generation profile will be developed using on site met tower measurements that, based on the observed time period of the measurements compared to a nearby long-term reference station, the observed mast data will be adjusted to represent a long-term average at the positions to reduce the variability with time. From this validated and long-term adjusted distributions at each turbine position, the overall wind farm gross production will be calculated based on the specific turbine power curve and the turbine specific wind distribution based on one turbine model to be presented in the Article 10 Application. Typical losses assumptions for availability,

environmental, curtailment and any other potential sources of energy losses will be taken from the gross production to yield a long term net energy yield and capacity factor.

(4) Estimated Annual and Monthly Output Capability Factors

The Article 10 Application will provide the monthly as well as the 2020 annual on-peak and off-peak MWhr output capability factors for the proposed Facility (based on one turbine model).

(5) Estimated Annual and Monthly Production Output

Monthly energy yield averages will be determined from the observed wind production profile data in each specific month and long-term adjustments will be made to the monthly data set. Based on the long-term adjusted average energy yield for each month, a gross monthly energy distribution for the year can be determined. Monthly specific loss assumptions for availability, environmental and curtailment will be taken from the gross monthly production distribution to yield the 12 estimated monthly productions in MWh. An annual production output will be determined from the sum of all monthly net energy yields in MWh.

The Article 10 Application will provide the monthly net production output, in MWhr, of the proposed Facility as well as the total annual MWhr production based on one turbine model to be presented in the Article 10 application.

(6) Estimated Production Curve Over an Average Year

Hourly production of the Facility will be calculated using GEMAPS and 8760 hours of wind production profile data provided by the Applicant. Estimates of hourly production and scheduled hourly production will be provided in tabular and graphical formats (based on one turbine model). However, this information will be filed separately under confidential cover. The Applicant will seek the requisite trade secret protection for this information pursuant to NY Public Officer's Law Section 87(2)(d) and 16 NYCRR 6-1.4.

(7) Estimated Production Duration Curve Over an Average Year

The Article 10 Application will provide the hourly production of the Facility, the hours count for milestones production (production duration only), and a graph that shows the production duration curve for the Facility (based on one turbine model).

(8) Effect of the Facility on the Energy Dispatch of Existing Must-run Resources

In order to assess the estimated effects of the proposed Facility on the energy dispatch of existing must-run resources (which includes existing wind, hydroelectric, and nuclear facilities, as well as co-generation facilities to the extent they are obligated to output their available energy because of their steam hosts), a Generation Dispatch Forecasting Analysis will be prepared based on one turbine model. However, this analysis will be filed separately under confidential cover.

To conduct the analysis, the NYISO 2020 system will be modeled to the extent that information is available, with and without the proposed Facility, and compared the generation dispatch of must run resources with the NYISO service territory between the two scenarios. This comparison will be performed using GE's Multi-Area Production Simulation (MAPS) and PowerWorld Corp. Simulator software which is heavily utilized for market studies within the NYISO service territory. The first step in the analysis will be to complete a powerflow study to identify any critical constraints in the vicinity of the proposed Facility, followed by conducting a generation and transmission nodal market study based on 8,760 hours-per-year simulation for the 2020 study year, while taking into consideration system constraints including the critical constraints identified in the powerflow calculations. The analysis will simulate the effect of energy schedules from energy resources on must run resources redispatching to reliably serve the grid and avoid curtailment.

The Article 10 Application will present the annual MWhr dispatch of the must run resources for the 2020 study year in the two scenarios (with and without the proposed Facility).

(b) Digital Copies of Inputs Used in the Above Simulations

The Article 10 Application will provide digital copies of all inputs used in the simulations required in subdivision (a) of this section. The Applicant will seek the requisite trade secret protection for this information pursuant to NY Public Officer's Law Section 87(2)(d) and 16 NYCRR 6-1.4.

## 2.9 ALTERNATIVES

(a) Description of Reasonable Alternative Location Sites

In order to create an economically viable wind-powered electrical-generating facility, which will provide a significant source of renewable energy to the New York power grid, the Applicant proposes to take advantage of the available wind resource and bulk power transmission system in Steuben County, New York. Based on the System Reliability

Impact Study (SRIS) prepared on behalf of the New York State Independent System Operators (NYISO), the existing transmission system near the Facility can accommodate the Applicant's proposed 300 MW of electric power generation and no other interconnections are proposed at the POI substation. Therefore, the preferred alternative is to construct a facility that can produce up to 300 MW of renewable energy.

The Applicant does not have and does not anticipate having, eminent domain authority. Therefore, the identification and description of reasonably available alternative site locations to be addressed in the Article 10 Application will be limited to sites owned by or under contract to the Applicant. Irrespective to this, it is worth noting that the preliminary selection of wind turbine locations on a regional or statewide basis is constrained by several factors that are essential for the Facility to operate in a technically and economically viable manner. These factors include the following:

- adequate wind resource
- adequate access to the bulk power transmission system, from the standpoints of proximity and ability of the system to accommodate the interconnection and accept and transmit the power from the Facility
- contiguous areas of available land
- compatible land use
- willing landowner participants and host communities
- limited population/residential development
- avoiding areas of statewide significant or high environmental sensitivity (e.g., Adirondack Park, Great Lakes shoreline)

The Article 10 Application will demonstrate that the location selected for the Facility is suitable for large scale wind energy production. Across New York State, the wind resource varies based upon a number of factors (and the interaction of these factors) including topography, prevailing wind direction, and location. Large scale wind power projects can only be located in certain locations within the state that are conducive to wind energy production. The higher the wind speed at a site the more desirable a site is; as the energy produced by a given turbine is a function of the cube of the wind speed. New York has a modest wind resource and this renewable resource is not evenly distributed throughout the state. Rather, the wind resource is limited to certain unique areas in the state, which generally include coastal areas, ridgelines, elevated plateaus, and mountain peaks. Further, the Facility Area proximity to an existing transmission line with adequate capacity also makes this location unique and desirable.

The Applicant selected the proposed site for the Facility because of the presence of the wind resource, the presence of available land and willing landowners, the relative ease of access to the site, and the proximity and relative ease of

connecting to the existing electric transmission grid. These factors combine to make the proposed site desirable from the standpoint of large scale wind power development.

(b) Comparison of Advantages and Disadvantages of Proposed and Alternative Locations

Given the unique nature and constraints associated with the siting of wind-powered electric generation facilities (i.e. adequate wind resource, willing landowner participants and host communities, and adequate access to the bulk power transmission system), the Article 10 Application will not include a fully developed evaluation of comparative advantages and disadvantages of alternate locations. It is not practicable to procure land contracts, perform environmental and engineering studies, enter into and progress through multiple interconnection permit processes, and conduct community outreach for alternative locations. The Article 10 Application will provide information regarding the general site selection process for the Facility, some of which is summarized below.

(1) Environmental Setting

The Facility is located within the Appalachian Plateau physiographic province of New York State. Elevations range from between 1,400 feet to 2,100 feet above mean sea level. The Appalachian Plateau in Steuben County is characterized by many broad, deep, flat-bottomed valleys, occupied by meandering streams. The areas between the valleys consist of rolling uplands and some flat-topped hills that formed partly because of the nearly horizontal bedding of the underlying bedrock (USDA, 1978). All of the bedrock in Steuben County is of Devonian age, and is generally formed from deltaic deposits. Most of the beds formed broad and open folds that trend to the northeast, and are about five to 10 miles apart. The bedrock underlying the Facility consists of members of the Canadaway, Java, and West Falls Group, all of the upper Devonian (Rickard & Fisher, 1970). Exhibit 21 of the Article 10 Application will provide additional information on geology and soils at the Facility Site.

(2) Recreational, Cultural, and Other Concurrent Uses of the Site

The Applicant has identified several recreational facilities in the area including, but not limited to trails (i.e., hiking, snowmobile, biking, etc.), state and local parks, and state forests. A Phase 1A Historic Architectural Resources Survey and Work Plan is currently being developed for the Facility. The information and recommendations included in this report will assist the Department of Public Service (DPS) and the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) in their review of the proposed Facility. In addition, a Phase 1A Archeological Survey Report and Work Plan is being developed for NYSOPRHP to determine if there are any potentially unidentified and/or previously identified cultural resources in the Facility Site. Exhibit 20 of the Article

10 Application will provide more detailed information on recreational, cultural, and other concurrent uses of the site.

(3) Engineering Feasibility

A Preliminary Geotechnical Evaluation will be prepared to specifically address the suitability of the on-site surface/subsurface conditions to support turbine foundations, and provide specific recommendations based on the site-specific conditions. The details associated with this evaluation will be presented in Exhibit 21 of the Article 10 Application. With respect to interconnections, please see (b)(4) below.

As discussed in Section 2.6(d) of this PSS, the Applicant is conducting a rigorous wind resource analysis for this Facility, the intent of which is to optimize the turbine layout to maximize energy production within the context of the existing, site-specific constraints. The detailed results of these analyses are proprietary and are retained as trade secrets. Therefore, a copy of the wind meteorological analysis will not be provided with the Article 10 Application, but rather will be provided to DPS under separate cover. The Applicant will seek the requisite trade secret protection for this information pursuant to NY Public Officer's Law Section 87(2)(d) and 16 NYCRR 6-1.3.

(4) Reliability and Electric System Effects

A System Reliability Impact Study (SRIS) was completed in January 2015 to evaluate the impact of the Facility on the reliability of the New York State Transmission System and to evaluate alternatives to eliminate adverse reliability impacts, if any, resulting from the Facility. The Facility is not expected to result in adverse impacts to transmission system. Exhibit 5 of the Article 10 Application will provide a more detailed description of the Facility's effects on the reliability of the regional transmission system.

(5) Environmental Impacts

Despite the positive effects anticipated as a result of the Facility, its construction and operation will necessarily result in certain unavoidable impacts to the environment. The majority of these environmental impacts will be temporary and will result from construction activities. Long-term unavoidable impacts associated with operation and maintenance of the Facility may include turbine visibility, and minor impacts to agricultural land, wildlife habitat, and wetlands/streams.

The presence of the turbines will likely result in a change in perceived land use from some viewpoints. Overall contrast with the landscape, as determined through evaluation by an expert panel of landscape architects, will be

detailed in Exhibit 24 of the Article 10 Application. The Facility layout will be designed, in part, through an iterative process of identifying sensitive environmental resources (e.g., agricultural land, wildlife habitat, wetlands/streams) and siting Facility components to avoid and minimize impacts to these resources wherever possible. Exhibit 22 of the Article 10 Application will provide detailed information on environmental resource impacts at the Facility Site.

It should also be noted that electricity generated from zero-emission wind energy can displace the electricity generated from conventional power plants, thereby reducing the emissions of conventional air pollutants, such as sulfur and nitrogen oxides (acid rain precursors), mercury, and carbon dioxide (linked to global climate change). Displaced emissions occur because renewable electric generation sources have low marginal operating costs (i.e., no fuel cost). Therefore, renewable energy sources become first option sources, displacing generation at fossil fuel plants that have higher marginal operating costs. The proposed Facility is anticipated to have significant, long-term beneficial effects on the use and conservation of energy resources. The operating Facility will generate up to 300 MW of electricity without consuming cooling water or emitting pollutants.

(6) Economic Considerations

The purpose of the Facility is to create an economically viable wind-powered electrical-generating facility that will provide a significant source of renewable energy to the New York power grid. To fulfil these goals, adequate wind resource and access to the existing transmission system are some of the most important considerations in selecting the Facility Site. The Facility Site has ample wind resource for the proposed Facility and is located in close proximity to the existing bulk power transmission system. Exhibit 6 of the Article 10 Application will provide information about the wind resource at the Facility Site, and Exhibit 34 will provide information about the electric interconnection.

With respect to cost, the Article 10 Application will provide an estimate of the total capital costs of the Facility in Exhibit 14. However, because capital cost information is considered proprietary and is retained as a trade secret, this data will be provided in the form of an internal work paper that also describes the assumptions in estimating the total capital costs. The Applicant will seek the requisite trade secret protection for this information pursuant to NY Public Officer's Law Section 87(2)(d) and 16 NYCRR 6-1.4.

The proposed Facility will have a positive impact on the local economy. Construction and operation will generate jobs, and the Facility will have a direct economic benefit from the first round of buying/selling, which includes the purchase of goods from local sources (such as fuel), the spending of income earned by workers, annual labor revenues, and the income effect of taxes (including income taxes, sales tax and real property taxes). These direct

effects will result in additional induced economic benefits in other sectors. The Facility will result in payment to local landowners in association with the landowner agreements, which will be in addition to any income generated from the existing land use (e.g. agricultural production). These payments will have a positive impact on the region, to the extent that landowners will spend their revenue locally. The proposed Facility will also have a significant positive impact on the local tax base, including local school districts and other taxing districts that service the area where the proposed Facility is to be located. Exhibit 27 of the Article 10 Application will provide detailed information on the socioeconomic effects of the proposed Facility.

(7) Environmental Justice

As indicated in Section 2.28 of this PSS, the Facility is not expected to impact any environmental justice areas.

(8) Security, Public Safety, and Emergency Planning

Overall safety and security risks associated with the Facility are anticipated to be minimal. Please see Section 2.18 of this PSS (Safety and Security), which provides additional detail on preliminary plans for site security during construction and operation. As indicated in Section 2.18, an Emergency Action Plan (EAP) will be developed before the start of construction and will outline the safety plans of the Facility throughout its lifecycle. The information contained in the EAP will be developed in conjunction with local emergency service providers, and will be made available to the employees of the Applicant and any visitors or workers to the Facility Site of the procedures to follow in the event of an emergency.

(9) Public Health

The Facility is not expected to result in any public health concerns. See Section 2.15 of this PSS for additional detail. Additional detail will also be presented in Exhibit 15 of the Article 10 Application.

(10) Vulnerability to Seismic Disturbances and Climate Change Impacts

Based on the 2014 New York State Hazard Map (USGS, 2014), the Facility is located in an area of relatively low seismic hazard, with a 2% or less chance that peak ground acceleration in a 50 year window is between 4% and 8% of standard gravity. The only recorded in earthquake in Steuben County since 1950 had a magnitude of 3.2 on the Richter scale, and occurred near Bath, New York (about 10 miles southeast of the Facility) in 2001 (USGS, 2015). Furthermore, the USGS Earthquake Hazards Program does not list any young faults, or faults that have

had displacement in the Holocene epoch within the vicinity of the Facility Site. Exhibit 21 of the Article 10 Application will provide a more detailed description of the Facility's potential vulnerability to seismic disturbances.

With respect to climate change, as stated above electricity generated from zero-emission wind energy can displace the electricity generated from conventional power plants, thereby reducing the emissions of conventional air pollutants, such as sulfur and nitrogen oxides (acid rain precursors), mercury, and carbon dioxide (linked to global climate change). Displaced emissions occur because renewable electric generation sources have low marginal operating costs (i.e., fuel). Therefore, renewable energy sources become first option sources, displacing generation at fossil fuel plants that have higher marginal operating costs. The proposed Facility is anticipated to have significant, long-term beneficial effects on the use and conservation of energy resources. The operating Facility will generate up to 300 MW of electricity without consuming cooling water or emitting pollutants.

(11) Objectives and Capabilities of the Applicant

With respect to capabilities, the Applicant is a wholly owned subsidy of EverPower Wind Holdings, Inc. ("EverPower"). Headquartered in Pittsburgh, Pennsylvania with offices in New York and Ohio, EverPower is a developer of utility grade wind projects. Since its founding in 2002, EverPower has used a unique approach to wind power development by partnering with landowners and communities to establish itself as a premier developer, owner, and operator of wind projects in the U.S. To date, EverPower has seven operational wind facilities with a nameplate capacity of approximately 752 MW, including the Howard Wind Project in Steuben County, New York. The Howard Wind Project has a total generating capacity of 55.35 MWs and uses 27 Repower MM92 turbines. The first 25 turbines became commercial operational in 2011, and the two-turbine second phase became operational in 2012.

The objective of the Facility is to create an economically viable wind-powered electrical-generating facility that will provide a source of renewable energy to the New York power grid to:

- Satisfy regional energy needs in an efficient and environmentally sound manner;
- Supplement and offset fossil-fuel electricity generation in the region, with emission-free, wind-generated energy;
- Reduce the amount of electricity imported to New York State;
- Realize the full potential of the wind resource with Steuben County;
- Provide energy that is not susceptible to fluctuations in commodity prices;
- Produce electricity without the generation of carbon dioxide or other greenhouse gases that contribute to climate change;

- Promote the long-term economic viability of rural areas in New York; and
- Assist New York State in meeting its proposed Renewable Portfolio Standard and State Energy Plan goals for the consumption of renewable energy in the State.

(c) Description of Reasonable Alternatives to the Proposed Facility at the Proposed Location

Unlike state or municipal entities, private developers do not have the power of condemnation or eminent domain. Consequently, the Applicant does not have the unfettered ability to locate projects in any area or on any parcel of land. Facilities can only be sited on private property where the landowner has agreed to allow such construction.

(1) General Arrangement and Design

The general arrangement and design of the Facility is influenced by a number of factors, as discussed in (c)(4) below.

(2) Technology

Private landowner agreements strictly limit the use of land to a wind power project, and as such, do not allow for the siting of other alternative energy production facilities (e.g., solar, hydro, biomass, or fossil fuel). Accordingly, other power generation technologies are not reasonable alternatives, and do not warrant consideration in the Article 10 Application.

The turbines proposed for the Facility will utilize the latest in wind power generation technology to enhance project efficiency and safety. Additional detail regarding wind turbine technology will be provided in the Article 10 Application.

(3) Scale or Magnitude

As mentioned previously, various siting constraints dictate the size and layout of a wind power project. These constraints make a significantly larger number of turbines than what is proposed within the Facility Area highly unlikely. The Applicant is doing business in a wholesale electric market that is highly competitive and extremely price-sensitive. Given the economies of scale involved in the development and construction of a wind project, all other things being equal, a larger scale project produces lower cost energy. The Article 10 Application will address alternate scale and magnitude of the Facility in the context of the interconnection agreement (i.e., a 300 MW Facility). This will include a discussion of the economics of scale, and the ramifications of utilizing differently sized

turbines. Information regarding economic benefit to local communities such as PILOT payments, landowner payments, and construction expenditures related to a project of this size will also be addressed.

(4) Alternative Turbine Layouts

The proposed location and spacing of the wind turbines will be directly related to a number of factors, including landowner participation, a wind resource assessment, environmental resource factors, and the consideration of any potential zoning constraints. Factors considered during the layout design process include the following:

- *Wind Resource Assessment*: Through the use of on-site meteorological data, topographic and surface roughness data, wind flow modeling, and wind plant design software, the wind turbines will be sited to optimize exposure to wind from all directions, with emphasis on exposure to the prevailing southwest wind direction in the Facility Site.
- *Topograph*y. Elevation is a key component of maximizing the capture of wind energy, and higher elevations typically correspond to higher wind resource. In addition, turbine manufacturers require certain elevation and topography criteria be met (i.e., not locating a turbine on too steep of a slope or on too narrow a ridge), or else they will not certify the turbine location as suitable and the turbine cannot be constructed. To ensure turbines were placed in suitable locations, all potential turbine sites were evaluated to meet elevation and topography criteria.
- *Sufficient Turbine Spacing*. Siting turbines too close to one another can result in decreased electricity production and excessive turbine wear, due to the creation of wind turbulence between and among the turbines. Each operating wind turbine creates downwind turbulence in its wake. As the flow proceeds downwind, there is a spreading of the wake and recovery to free-stream wind conditions. The Facility turbines will be located with enough space between them to minimize wake losses and maximize the capture of wind energy.
- *Local Zoning*. Some of the host towns have adopted Wind Energy Regulations. These regulations specify criteria under which applications for commercial wind energy conversion systems will be evaluated. To the maximum extent possible, the Facility will attempt to meet the requirements contained Wind Energy Regulations, and any exceptions will be discussed in Exhibit 31 of the Article 10 Application.
- *Wetlands and Waterbodies.* Facility components will avoid and/or minimize impacts to wetlands and streams to the greatest extent practicable.
- *Communication Interference*. Turbines will be sited outside of known microwave pathways or Fresnel zones to minimize the effect that they may have on existing communications.

- *Recreational Resources*. Turbines will be sited in such a way that does not cause any material adverse effect to the Town's or County's existing or proposed trails, trail facilities, and recreation areas.
- *Cultural Resources*. Facility construction will be conducted in such a way that does not cause any significant impact to prehistoric or historic archeological resources.

The Facility's turbine layout is also a function of the turbine model that will ultimately be used. As previously mentioned, the Facility to be evaluated in the Article 10 Application consists of up to 120 wind turbine sites. The actual number of turbines constructed will depend on the capacity of the turbine model selected, in order to reach a total generating capacity of up to 300 MW. For example, if a 2.5 MW model is selected then up to 120 turbines will be constructed, whereas, if a 3.0 MW model is selected then up to 100 turbines will be constructed. The turbine model ultimately selected for this Facility will be based upon numerous factors, such as site suitability, availability and price. Turbine locations will ultimately be chosen from among the specific locations identified in the Article 10 Application, and will be based on the wind resource and other siting factors that include, but are not limited to, distance to the substation and environmental impacts. However, to assure a worst-case evaluation, the Article 10 Application will assess the impacts associated with up to 120 turbine locations, even though fewer turbines may be built.

This section of the Article 10 Application will also address why turbines of certain heights and dimensions are best suited for this Facility, including an analysis of compliance with existing local height restrictions. Additionally, this section of the Application will address the environmental impacts of the following alternative layouts:

1. The use of taller turbines in the same properties as the proposed layout and the associated increased setbacks from residences, property lines, and public roads such that turbine fall-down distances are wholly within the participating land parcel.
2. Alternative layout within the Facility Area.

(5) Timing of In-service Date in Relation to Other Capacity Changes to the Electric System

Based upon the findings in the SRIS, this Facility is not anticipated to have any adverse effects on the New York State Power Grid. See Section 2.5 for a more detailed discussed of electrical system effects.

(d) Why the Proposed Location Best Promotes Public Health and Welfare

The Applicant will design the Facility layout to optimize the balance between energy generation and the protection of agricultural, environmental, and aesthetic resources, as well as community safety and welfare. The Article 10 Application will include a statement of the reasons why the proposed location is best suited to promote public health and welfare.

(e) Why the Proposed Facility Best Promotes Public Health and Welfare

The benefits of the Facility are anticipated to include positive impacts on socioeconomics (e.g., increased employment, increased revenues to local municipalities and revenues to participating landowners), air quality (through reduction of emissions from fossil-fuel-burning power plants), and climate (reduction of greenhouse gases that contribute to global warming). By eliminating pollutants and greenhouse gases, the Facility will also benefit ecological and water resources and human health. The Article 10 Application will include a statement of the reasons why the proposed technology, scale, and timing of the Facility are best suited to promote public health and welfare.

(f) No Action Alternative

The no action alternative assumes that the Facility Area would continue to exist as is. This no action alternative would not beneficially or adversely affect current land use, ambient noise conditions, traffic or public road conditions, television/communication systems, and would maintain the area's current community character, socioeconomic, and energy-generating conditions as they currently exist. The Article 10 Application will include a statement of the reasons why the no action alternative to the Facility is not best suited to promote public health and welfare.

(g) Energy Supply Source Alternatives

Alternative power generation technologies, such as fossil-fuel and biomass combustion, would not meet the goals of the Facility, are not the area of expertise of the Applicant, and would pose more significant adverse environmental impacts, particularly on air quality but also on land use, water resources and public health and welfare. Therefore, the Article 10 Application will not evaluate alternative energy sources.

(h) Comparison of Advantages and Disadvantages of Proposed and Alternative Energy Sources

Due to the nature of the Facility (wind energy), source and demand – reducing alternatives will not be evaluated in the Article 10 Application.

(i) Why the Proposed Project Best Promotes Public Health and Welfare

As previously described in (d) and (e) above, the Article 10 Application will include a statement of the reasons why the proposed Facility is best suited to promote public health and welfare.

## 2.10 CONSISTENCY WITH ENERGY PLANNING OBJECTIVES

(a) Consistency with State Energy Plan

The Facility will help the State achieve the goals of the 2015 State Energy Plan (See NY State Energy Law 6-104). The latest iteration of the New York State Energy Plan was announced on June 25, 2015. The State Energy Plan contains a series of policy objectives to increase the use of energy systems that enable the State to significantly reduce greenhouse gas (GHG) emissions while stabilizing energy costs. Through the State Energy Plan, New York has committed to achieving a 40% reduction in GHG emissions from 1990 levels by 2030 and reducing total carbon emissions 80% by 2050. In addition, the State Energy Plan calls for 50% of generation of electricity from renewable energy sources by 2030. The proposed Facility fully advances the objectives of the State Energy Plan and assists the State in achieving the 50% renewable energy generation objective. The State Energy Plan states that "[r]enewable Energy sources, such as wind, will play a vital role in reducing electricity price volatility and curbing carbon emissions" (NYSEPB, 2015). In furtherance of these objectives, on August 1, 2016, the Commission issued approval of the State's Clean Energy Standard (CES), which represents the most comprehensive and ambitious clean energy mandate in the state's history, to fight climate change, reduce harmful air pollution and ensure a diverse and reliable energy supply. The CES will require 50% of New York's electricity to come from renewable energy sources like wind and solar by 2030, with an aggressive phase in scheduled over the next several years.

The Article 10 Application will explain how the Baron Winds Project advances the objectives of the State Energy Plan and the CES, and assists the State in achieving the renewable energy generation objective set forth therein. The Application will also provide a statement demonstrating the Facility's degree of consistency with the State Energy Plan. The Application will highlight how the Facility supports the five "Guiding Principles" identified in the Plan and will comment on how the Facility supports the seven goals listed in the "Initiatives and Goals" section of the Plan. The Application will also comment on how the Facility supports the New York 2030 Targets in the Plan.

(b) Impact on Reliability

ABB Inc. Power Systems Consulting prepared a System Reliability Impact Study (SRIS) for the Facility on behalf of the New York Independent System Operator (NYISO) in 2015. The scope of the SRIS was provided by the NYISO. A

number of power flow base cases were evaluated both with and without the proposed Facility in service, including 2018 summer peak, winter peak, and light load. The Article 10 Application will describe the impact of the proposed Facility on reliability in the State in greater detail using analyses conducted as part of the SRIS. The SRIS will be provided in the Application; however, certain sections of the SRIS will be submitted separately to the Hearing Examiner as they contain confidential information.

(c) Impact on Fuel Diversity

The proposed Facility will improve fuel diversity within the State by increasing the amount of electricity produced by wind power. The New York electric utility system relies on supply from numerous fuel sources, including natural gas, hydroelectric, nuclear, wind, solar, oil, and coal, as well as interconnections with its neighbors and demand-response resources. Maintaining and improving fuel diversity in New York will lead to less volatile electric prices, improved reliability, and positive environmental impacts (NYISO, 2008). The Article 10 Application will include discussion of the current electric generation capacity by fuel type to demonstrate that the addition of the Facility will increase fuel diversity. Current fuel mix data will be obtained from NYISO.

(d) Impact on Regional Requirements for Capacity

The regional capacity requirements of New York's wholesale electricity markets and location-based pricing encourage investments in areas where the demand for electricity is the highest. As a result, over 80 percent of the generating capacity brought online since 2000 is located in New York City, Long Island, and in the Lower Hudson Valley. Other additions to New York's power-producing resources are determined by physical factors, such as the suitability of wind conditions in the northern and western regions of the state, and upgrades to existing nuclear and hydropower plants in upstate regions (NYISO, 2014). The proposed Facility falls into the latter category, with siting driven by available wind resource. The Article 10 Application will identify the NYISO Zone within which the Facility will be located, and how the Facility relates to regional electricity demands, and reliable and viable electricity generation.

(e) Impact on Electric Transmission Constraints

New York State has a diverse mix of generation resources compared to many other states. However, much of the renewable power is provided by hydroelectric projects and wind farms located in the western and northern portion of the State, while the southeastern region hosts power plants fueled primarily by natural gas. Taking full advantage of statewide fuel diversity will require upgrades and enhancements of the transmission system (NYISO, 2014). These transmission enhancements will help move energy from upstate regions with a surplus of generating capacity to more populous areas with higher power demands, such as the Hudson Valley, New York City, and Long Island (NYISO,

2014). The Article 10 Application will discuss Facility impacts on electric transmission constraints, based on the *New York State Transmission Assessment and Reliability Study* and other NYISO reports/data.

(f) Impact on Fuel Delivery Constraints

The proposed Facility will generate electricity without the use of fuel. Consequently, there will be no adverse fuel delivery impacts. By producing additional electricity that does not require fuel, the Facility will contribute toward reducing overall demand for fuel, easing fuel delivery constraints and contributing toward the State Energy Plan's goal of 50% renewables by 2030.

(g) Impact on Energy Policy

The immediate benefits of utility scale renewable energy projects, such as the Facility, include economic development and jobs for the community, greater stability in customer bills, cleaner air, new energy infrastructure, and compliance with State and Federal mandates. As the recent Final Generic Environmental Impact Statement (FGEIS) for the Reforming the Energy Vision (REV) and the Clean Energy Fund (CEF) states, the clean energy economy provides clean, reliable, and affordable power while creating jobs and producing other economic and environmental benefits. As recognized by the State Energy Plan, long-term benefits may be similar to those New York currently enjoys from the State's hydroelectricity facilities: below-market electricity prices and a healthier environment. Through the State Energy Plan, New York has committed to achieving a 40% reduction in greenhouse gases (GHG) emissions from 1990 levels by 2030 and reducing total carbon emissions 80% by 2050. In addition, the State Energy Plan calls for 50% of generation of electricity from renewable energy sources by 2030 (NYSEPB, 2015).

In an effort to encourage and incentivize the shift of New York State's energy sector from reliance on GHG emitting fuel sources to renewable energy sources, the State has 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 (PSC, 2004). In an Order issued in January 2010, the New York Public Service Commission (PSC) expanded the RPS target from 25% to 30% and extended the target date from 2013 to 2015. The RPS is expected to reduce CO2 emissions by 50 million tons over the life of the projects (NYSERDA, 2015). NYSERDA has proposed a comprehensive Clean Energy Fund (CEF) to ensure continuity of the State's clean energy programs after 2015. The CEF is one part of New York State's Reforming the Energy Vision (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. Large-scale renewables (LSR), which are larger utility-scale renewable energy project developments, such as the Baron Winds Project, are a key component of the REV Order, which outlines the issues and tasks to begin to resolve the technical, marketplace, and regulatory challenges necessary to achieve the REV plan and goals. REV recognizes

that large-scale renewables, which require more capital and take more planning than other facilities, will be critically important to meeting greenhouse gas emissions reduction goals. As stated by the PSC in the REV Order, "A significant increase in the penetration of renewable resources is essential to meeting our objectives, state goals and proposed federal requirements" (PSC, 2015).

In May 2016 DPS released the Final Supplemental Environmental Impact Statement (FSEIS) for the REV and CEF plans. In the FSEIS the Department recognizes the vital rule that renewable resources such as wind play in helping the state met its goals under the State Energy Plan. Projects such as Baron Winds are pivotal in helping the State reach its energy goals.

In addition to policies in New York State, federal policy has also recognized the need for increased supply of energy to the U.S., and for new renewable energy resources. The Facility is consistent with Executive Order 13212 (dated May 18, 2001), which states, "The increased production and transmission of energy in a safe and environmentally sound manner is essential to the well-being of the American people. In general, it is the policy of this Administration that executive departments and agencies shall take appropriate actions, to the extent consistent with applicable law, to expedite projects that will increase the production, transmission, or conservation of energy." On June 25, 2013, President Obama announced the Climate Action Plan, a national plan for tackling climate change. The Plan directs the Environmental Protection Agency (EPA) to establish the first ever restrictions on carbon pollution from power plants, the largest source of unregulated CO2 emissions in the U.S. The Plan 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).

In fulfillment of President Obama's commitment under the 2013 Climate Action Plan, EPA proposed "Clean Power Plan" regulations in 2014 establishing a framework for states to regulate carbon dioxide emissions from existing fossil fuel-fired electric generating units (see 79 Federal Register 34830; June 18, 2014). Once the guidelines are issued, states must develop plans that explain how they will achieve those guidelines. Nationwide, the proposal calls for reducing CO2 from the power sector by approximately 30% from 2005 emission levels by 2030. The proposal establishes emission rate-based CO2 goals for each state as well as guidelines for the development, submission and implementation of state plans to achieve those goals. Each state must then develop a plan that explains how they intend to achieve their state-specific CO2 emission rate goal that includes enforceable CO2 emission limits applicable to each affected unit. States would be expected to begin making CO2 emission reductions by 2020, with full compliance to be achieved by 2030.

The Article 10 Application will address Facility impacts on overall state and federal energy policies.

(h) Comparison of Advantages and Disadvantages of Proposed and Alternative Locations

Given the unique nature and constraints associated with the siting of wind-powered electric generation facilities (i.e. adequate wind resource, willing land lease participants and host communities, and adequate access to the bulk power transmission system), the Applicant has not developed a full comparison between the proposed Facility Location and alternative locations. Rather, the Article 10 Application will focus on comparing alternative facility configurations within the proposed Facility Area. Such alternatives may include alternative project layouts, alternative project size, alternative turbine heights, and a no action alternative and as identified in Section 2.9.

(i) Why the Proposed Location and Source Best Promotes Public Health and Welfare

The Facility will have a positive impact on public health and welfare by producing electricity with zero emissions. Electricity delivered to the grid from wind energy projects can off-set the generation of energy at existing conventional power plants. According to a 2008 U.S. Department of Energy National Renewable Energy Laboratory report, "Wind energy is a preferred power source on an economic basis, because the operating costs to run the turbines are very low and there are no fuel costs. Thus, when the wind turbines produce power, this power source will displace generation at fossil fueled plants, which have higher operating and fuel costs." On a long-term basis, wind generated power also reduces the need to construct and operate new fossil fueled power plants (Jacobsen & High, 2008). Natural gas is the most frequent marginal fuel unit in New York's power pool, or the one that is turned on or off as the load fluctuates (Patton et al., 2015). When the proposed Facility is generating power, electricity generation from natural gas would be reduced within the region, thereby eliminating the associated emissions.

## 2.11 PRELIMINARY DESIGN DRAWINGS

The Preliminary Design Drawings prepared in support of Exhibit 11 of the Article 10 Application will be prepared using computer software (i.e., AutoCAD), and these drawings will be labeled "for permitting only, not for construction". The Preliminary Design Drawings will be prepared under the direction of a professional engineer, landscape architect or architect who is licensed and registered in New York State.

(a) Site Plan

The Preliminary Design Drawings will constitute the site plan for the Facility and likely will be prepared at a scale of 1" = 100'. These drawings will depict all Facility components (turbines, access roads, buried and above-ground collection

lines, permanent meteorological towers, O&M building, collection substation and point of interconnection substation). Typical details and/or general information for the O&M building and an on-site concrete batch plan (if proposed) will be included in the Article 10 Application.

(b) Construction Operations Plan

The Preliminary Design Drawings will depict the location of all anticipated construction staging/material laydown areas, which is where the contractor trailers/offices and parking areas will be located during construction. With respect to notable excavations associated with the Facility, the Preliminary Design Drawings will include plan and profile sheets, each of which will indicate the anticipated cut and fill associated with notable Facility construction activities. Excess soil will be stockpiled along the construction corridors and used in site restoration.

(c) Grading and Erosion Control Plans

Unlike a conventional energy generating facility in which a large tract of contiguous acreage must be graded in order to properly site the facility, the footprint of a wind power project is relatively small, is more spread out, and is designed to fit within the existing land form. An erosion control plan will be presented in the Application consistent with the requirements of 16 NYCRR 1001.11(c). Publicly available contour data will be obtained from Steuben County (10-meter contour intervals) and using AutoCAD software a three-dimensional (3D) surface will be created, from which 2-foot contour intervals will be interpolated. Existing and proposed contours (2-foot intervals) will be depicted on the plan view sheets of the Preliminary Design Drawings. In addition, a soils type map will be included with the drawing set. Exhibit 21 of the Article 10 Application will provide more detailed information such as depth to bedrock, preliminary cut and fill calculations, and a summary of test borings to be conducted at a sub-set of turbine locations and substation locations.

(d) Landscaping Plan

Based on the Applicant's experience with wind power development, the potential locations for landscaping plans are typically only associated with substations. The need for such a plan for the substations will be evaluated in the Article 10 Application.

With respect to those areas where trees may be removed due to Facility construction and operation, the Preliminary Design Drawings will depict the Facility footprint using recent aerial imagery. With respect to the anticipated acreage of tree removal, this will be discussed in Exhibit 22 of the Article 10 Application. However, an on-site survey of all trees to be removed will not be included in the Article 10 Application.

(e) Lighting Plan

The Article 10 Application will provide details of lighting associated with turbines, substations, and the O&M building.

(f) Architectural Drawings or Typical Details

The Article 10 Application will contain a typical drawing of an O&M building and substation based on the Applicant's experience. Specifically, the typical O&M drawing elevations will be based on the Applicant's standard O&M building design, layout and specifications, and current industry standards along with any specific state building code requirements or the local law provisions. The drawings will indicate the anticipated length, width, height, material of construction, color and finish of the building. Minor changes to the typical O&M building drawings may be necessary based on final design. Aside from the substation, the O&M building is the only stand-alone building the Applicant anticipates constructing as part of the Facility. Elevation information for turbines or met towers will consist of manufacturers catalogues information such as brochures.

(g) Typical Design Detail Drawings

The Preliminary Design Drawings and various appendices of the Application will contain typical design details associated with the Facility, anticipated to include:

- Access roads
- Turbine laydown areas
- Horizontal directional drilling
- Buried and above-ground collection lines
- Wind turbine foundations (to be filed separately under confidential cover)
- Wind turbine brochures
- Typical wind turbine technical and safety manuals (to be filed separately under confidential cover)

(h) Interconnection Facility Drawings

A single line drawing of the POI substation will be included in the System Reliability Impact Study (SRIS), which will be appended to the Application. However, the SRIS will be filed separately under confidential cover. Additional details on the POI substation will be available once the facilities study is complete. However, the facilities study will not be completed until after the Certificate is issued by the Siting Board. The general arrangement of the POI substation will also be included with the Article 10 Application.

(i) Engineering Codes, Standards, Guidelines, and Practices

The list of codes and standards that have been and will be considered during the design, construction, operation and maintenance of this Facility is extensive. The Article 10 Application will provide as a representative list of applicable codes and standards, which will be updated following Certification.

## 2.12 CONSTRUCTION

(a) Preliminary Quality Assurance and Control Plan

It is typically the responsibility of the Balance of Plant (BOP) contractor, who is responsible for the construction of the wind farm, to develop and implement the Quality Assurance and Control Plan. The Applicant will require the BOP to provide a final Quality Assurance and Control Plan prior to starting construction. All sub-contractors will be required to follow the Quality Assurance and Control Plan. The Quality Assurance and Control Plan is site specific and therefore not developed until the BOP has been selected and the Facility is proceeding with construction. The Applicant will submit the final Quality Assurance and Control Plan to the Siting Board prior to the start of construction.

Below is a general outline of the components of a Quality Assurance and Control Plan. This outline was developed based on the Applicant's historical experience and quality assurance and control plans for its operational wind farms. The Preliminary Quality Assurance and Control Plan that will be provided in the Application will be based upon this outline. In addition, the Preliminary Quality Assurance and Control Plan will be provided to all BOP contractors who bid on the construction of the Facility. The Preliminary Quality Assurance and Control Plan to be included with the Article 10 Application will include the following components.

1. Statement of Authority and Responsibility
2. Organization
3. Safety
4. Quality Assurance Program
5. Facility Communication
6. Document Control
7. Control of Client/Customer Supplied Material and Services
8. Inspections and Test Control
9. Non-conformance reporting
10. Corrective and Preventive Action & Continual Improvement

11. Documentation
12. Field Audits and Surveillances
13. Security

(b) Conformance with Public Service Commission Requirements

(1) Protection of Underground Facilities

The Applicant will require its contractors to conform to the requirements of the Public Service Commission's regulations regarding the protection of underground facilities (16 NYCRR Part 753) and that the Applicant will become a member of Dig Safely New York. The Applicant will require all contractors, excavators and operators associated with its facilities to comply with these requirements and comply with all requirements of the Commission's regulations regarding identification and numbering of above ground utility poles (16 NYCRR Part 217).

(2) Pole Numbering and Marking Requirements

The Applicant will comply with pole number and marking requirements, as implemented by 16 NYCRR Part 217.

(c) Plans to Avoid Interference with Existing Utility Systems

Because the Facility area is rural in nature, rather than a more suburban or urban setting, there are fewer existing utility systems with which the Facility may interfere. The first step in avoidance of interference with existing utility systems is to identify those entities that have utilities within the Facility area. Certain known utilities have been included in the stakeholder list for the Public Involvement Program. These utilities have received and will continue to receive updates and notifications on the Facility. The Applicant also talks to landowners regarding utilities located on their properties. This information on utilities will be taken into account during Facility component siting in order to avoid and minimize conflicts with utilities.

Furthermore, the Applicant has begun to gather data on utilities. This data includes natural gas power plants, natural gas pipelines, transmission lines, and substations, which was obtained from Platts, a division of S&P Global. In addition, the location of existing cable and fiber optic lines was acquired from GeoTel Communications LLC, which maintains existing cable and fiber optic lines. Data on natural gas and oil wells within the Facility vicinity has also been obtained from the NYSDEC and NYSDPS, and will be included in the Article 10 Application.

The Applicant will provide the results of any PIP and landowner utility contacts and information to the BOP. Prior to construction, the BOP will be required to conduct a one-call service to verify the extent and known location of all utilities. This effort will include a confirmation of utility response through the Dig Safely New York system. The BOP will also be required to mark out any locations of planned excavating. This will ensure that both the Facility excavation and existing utilities are marked to determine any conflicts.

The Article 10 Application will include a map of all existing utility systems known at that time. This map will not be comprehensive but will establish what has been identified to date and the plan for continuing to identify existing utilities. It is not appropriate to do a comprehensive utility-locating effort prior to construction, i.e. one-call, because utilities typically prefer to mark out their facilities once and there may be changes to utilities between the time the Facility is certificated and the initiation of construction. In addition, the Article 10 Application will provide a discussion of setback distances from existing utilities that the Facility will adhere to.

Post-construction the Applicant will register with one-call to ensure that its utilities and any underground collection lines are registered so that they are not impacted by future utility work.

(d) Procedures for Addressing Public Complaints and Disputes

The Applicant will develop a Complaint Resolution Plan that will be provided in the Application. The Complaint Resolution Plan will discuss specifically how public complaints and disputes should be raised, documented and resolved during construction and operation. The Complaint Resolution Plan will implement a five-point complaint response program for all registered complaints:

- Community Engagement
- Process for gathering and analyzing information regarding the complaint
- Complaint Response and Tracking
- Complaint Response follow up
- Further Action (If deemed necessary)

The Application will describe each of these steps in the Complaint Resolution process in significant detail.

## 2.13 REAL PROPERTY

(a) Real Property Map of Generating Site

The Article 10 Application will include a tax parcel map of the Facility Site which depicts the following: (i) the tax parcel IDs for land parcels that are part of the Facility; (ii) current land use and zoning for the parcels that are part of the Facility; (iii) necessary access and utility easements for the Facility; (iv) proposed laydown area(s) and operation and maintenance building; and (v) public roads planned for use as access to the Facility Site. The data for this map will be obtained from the Steuben County GIS (parcels) along with the United States Census Bureau (TIGER/line files) and the NYS GIS Clearinghouse. These data will also be used to identify owners of record of all parcels included within the Facility Site and for all adjacent properties (such information may be depicted on the maps and/or included on associated tables).

(b) Real Property Map of Interconnection Facilities

Using the data referenced above, maps showing all proposed interconnection facilities and associated access areas will be prepared and included in the Article 10 Application.

(c) Demonstration that the Applicant Has Obtained Title or Lease Interest in Facility Site

The Article 10 Application will provide a description of the agreements for parcels that are secured or under option for the Facility, including ingress/egress access to public roads, easements for transmission and collections lines and will provide a statement that the Applicant has or will obtain the necessary real property rights for all parcels needed for the Facility. The Applicant will continue its internal due diligence to assure that the Facility parcels are not encumbered in a manner that is inconsistent with future wind power use. Please also note that the Applicant has been working with all public and private landowners to obtain leasing or easement rights for the Facility since 2012, and will continue to work towards securing all land necessary to construct and operate the Facility.

(d) Demonstration that the Applicant Has Obtained Property Rights to Interconnection Site

The Article 10 Application will provide a statement that the Applicant has or will obtain the necessary property rights for the Facility interconnects.

(e) Improvement District Extensions

Based on preliminary discussion with local municipal representatives, the Facility will not need any improvement district extensions, and therefore demonstration that the Applicant can obtain such extensions is not anticipated to be needed.

## 2.14 COST OF FACILITIES

(a) Total Capital Costs

The Applicant will provide an estimate of the total capital costs of the Facility; however, this information will be submitted under separate and confidential cover. Construction and turbine costs vary year to year based on, but not necessarily limited to, availability, competition, commodity pricing and turbine model specification changes. Because a turbine order for the Facility will not be placed until after Certification, all costs presented will be an estimate based on the Applicant's knowledge of market prices and historical experience. Total estimated capital and intangible costs are provided in a range, which encompasses the estimated cost per kilowatt of turbine models presented in the Application. Specifically, the costs to be presented will represent the estimated upper and lower bounds of turbine model costs associated with the range of turbines to be presented in the Application. The cost estimate will provide a total cost using the lower and upper bounds of this range while keeping the rest of the cost components consistent. Development, legal and insurance costs are not expected to change based on the turbine model selected. Engineering and turbine related construction costs will vary depending on the turbine model ultimately selected due to foundation specifications, number of turbine locations constructed, access road specifications, etc.

Capital costs include development costs, construction design and planning, equipment costs, and construction costs, and are broken down by:

- Turbine
- Engineering
- Construction (including contingency)
- Insurance
- Development (including contingency)

(b) Source of Cost Estimates

The cost estimate is based on the following sources:

- Wind industry standards
- Applicant experience
- Historical and current price quotes

The cost estimate to be provided will be in 2016 or 2017 dollars.

(c) Work Papers

The Applicant will provide an internal work paper that describes the assumptions in estimating the total capital costs as described above in (a). However, this information is proprietary, confidential and consists of Company trade secrets that are not provided to the public. Therefore, the Applicant will submit this under separate and confidential cover, and will seek the requisite trade secret protection for this information pursuant to NY Public Officer's Law Section 87(2)(d) and 16 NYCRR 6-1.4.

## 2.15 PUBLIC HEALTH AND SAFETY

Wind generated power is safer and healthier than other forms of electricity generation. Unlike conventional power plants, wind farms produce energy without emitting pollutants that decrease air quality. This is a major public health benefit since the negative effects of air pollution and climate change are well established.

New York State's 2015 State Energy Plan involves reducing Greenhouse Gas (GHG) emissions from the energy sector, because this is critical to protecting the health and welfare of New Yorkers. Clean air is essential to New Yorkers' health and quality of life. New York's energy system is the source of many benefits for New Yorkers; however, it is also the cause of significant impacts on the State's natural resources and public health, principally because of emissions of a variety of substances, some of which find their way into water and other resources. Air pollutants emitted when carbon-based fuels are burned are associated with serious health conditions and contribute to the climate change that threatens New York's residents and natural resources. Combustion of fossil fuels is the dominant source of energy-related emissions. The kinds of health risks associated with the combustion of carbon-based fuels are not associated with wind, solar energy and hydroelectric power. While the use of these means of producing electric power is not risk-free, increasing the fraction of New York's electricity needs met by wind, solar, and water will, in general, decrease health risks associated with electricity production. The recognition of the benefits of renewable energy has significantly contributed to New York's nation-leading commitment to renewable energy development through the Clean Energy Standard and is in part a leading reason for New York establishing the 50% by 2030 goal set forth in the New York State Energy Plan.

The Article 10 regulations require the assessment of potential risks associated with the operation of the Facility, which, in the case of the Facility are generally limited in nature to effects associated with movement of the blades and electrical components within the nacelle. Some of the unlikely risks associated with a wind power include ice shedding, tower collapse, blade failure, and fire in the turbines. To the best of the Applicant's knowledge, there are no known instances where a member of the general public was injured at an operating wind farm in the United States. The Application will

demonstrate that the Facility will be sited in such a manner to include setbacks from dwellings, roads, and other existing facilities to minimize the potential risks from these types of incidents.

(a) Gaseous, Liquid, and Solid Wastes to be Produced During Construction and Operation

One of the advantage of producing electricity from wind is that it does not produce gaseous wastes during operation, and a minimal amount of liquid and solid wastes during operation. With respect to construction, the generation of gaseous, liquid and/or solid waste is primarily limited to standard operation of construction equipment and will be handled by the BOP contractor in accordance with all applicable laws and regulations pertaining to such wastes.

Facility construction will generate relatively minor amounts of solid waste, primarily, plastic, wood, cardboard and metal packing/packaging materials, construction scrap and general refuse. This material will be collected from turbine sites and other work areas and disposed of in dumpsters located at the construction staging area(s). A private contractor will empty the dumpsters on an as-needed basis and dispose of the refuse at a licensed solid waste disposal facility. The Article 10 Application will provide additional information regarding construction-generated wastes, including sanitary facilities and cleared vegetation.

(b) Anticipated Volumes of Wastes to be Released to the Environment

This is not applicable to wind power facilities. Please see (a) above and (e) below.

(c) Treatment Processes to Minimize Wastes Released to the Environment

This is not applicable to wind power facilities. Please see (a) above and (e) below.

(d) Procedures for Collection, Handling, Storage, Transport, and Disposal of Wastes

This is not applicable to wind power facilities. Please see (a) above and (e) below.

(e) Wind Power Facility Impacts

(1) Blade Throw and Tower Collapse

A potential public safety concern with wind power projects is the possibility of a wind turbine tower collapsing or a rotor blade dropping or being thrown from the nacelle. While extremely rare, such incidents have occurred;

however, to the best of the Applicant's knowledge, no member of the public has ever been injured as a result of these incidents and setbacks are sufficient to protect area homes and public roads.

The reasons for a turbine collapse or blade throw vary depending on conditions and tower type. The main causes of blade and tower failure are a control system failure leading to an over speed situation, a lightning strike, or a manufacturing defect in the blade (Garrad Hassan America, Inc., 2010). Technological improvements and mandatory safety standards during turbine design, manufacturing, and installation have significantly reduced the instances of blade throw (Garrad Hassan, 2007).

The Article 10 Application will include the results of additional literature review to identify the potential public health and safety concerns associated with potential blade throw and tower collapse and include setback distances for the proposed Facility to protect the public from tower collapse and blade throw, which are based on the dimensions of the wind turbines. A discussion of manufacturer recommendations (if available) and local provisions will also be provided.

(2) Audible Frequency and Low Frequency Noise

The 2015 Final Generic Environmental Impact Statement (FGEIS) for the Reforming the Energy Vision (REV) and the Clean Energy Fund (CEF) recognized data from multiple studies indicate that the sound levels created by wind turbines are not sufficient to damage hearing or cause other adverse health effects. The 2016 Supplemental Final Generic Environmental Statement for REV/CEF further recognized that those who felt more positively toward wind turbines were less likely to be annoyed by the noise.

Infrasound is sound pressure fluctuations at frequencies below about 20 Hz. Sound below this frequency is only audible at high magnitudes. Low frequency sound is in the audible range of human hearing, that is, above 20 Hz, but below 100 to 200 Hz depending on the definition. The Facility is not expected to result in any public health and safety issues due to infrasound and audible frequency noise. See Section 2.19 for additional information on the proposed noise analysis.

Although concerns are often raised with respect to low frequency or infrasonic noise emissions from wind turbines, most of the research quoted showing excessively high levels of low frequency sound and infrasound was performed on older wind turbine designs, such as NASA's MOD-0 and MOD-1, which placed the rotor behind the tower. When the rotor passed through the wake of the tower, it would result in an infrasonic and low frequency impulse. Modern pitch-regulated upwind-tower wind turbines of the type proposed for this Facility produce lower

levels of infrasound and low frequency sound than these early turbines. Research on modern turbines have shown that at receiver distances, infrasound levels are well below established hearing thresholds (RSG et al 2016) and research has not shown that inaudible infrasound has negative health impacts on humans (McCunney et al 2014, and Leventhall 2013). Although low frequency sound levels from modern turbines are lower than downwind turbines, it is frequently still audible, exceeding the human audibility threshold between 25 and 125 Hz (McCunney et al 2014 and RSG et al 2016). At the sound pressure levels experienced at typical receiver distances, low frequency noise has not been shown to cause adverse health effects (McCunney et al 2014). The level of infrasound at receiver distances is lower than some other environmental noise sources, such as vehicle traffic.

Human response to audio frequency wind turbine noise has been assessed by several studies (Pedersen et al 2008, Michaud 2015, and Yano et al 2013). These compared noise annoyance to modeled or measured wind turbine sound pressure levels. In all cases, a correlation was found between wind turbine sound and noise annoyance, with the percentage of residents highly annoyed less than 15 percent at equivalent sound pressure levels of 45 dBA or less. The World Health Organization's guidelines to prevent nighttime sleep disturbance are 45 dBA. $L_{Night}$ (the sound pressure level averaged over the night), and the Facility's predicted nighttime noise will be compared to this level.

A thorough literature review including government, scientific and professional studies and peer reviewed publications, including the guidelines and recommendations of the World Health Organization (WHO), regarding the effects on human health from to audio frequency sound, low frequency sound, and infrasound. Community complaint potential will be evaluated based upon identified factors, thresholds, and guidelines. Sound propagation modeling and sound level monitoring performed for the Facility will be compared with thresholds from the literature review to further discuss potential impacts.

(3) Ice Throw

Ice shedding and ice throw refer to the phenomena that can occur when ice accumulates on rotor blades and subsequently breaks free and falls to the ground. Although a potential safety concern, no serious accidents caused by ice being "thrown" from an operating wind turbine have been reported (Garrad Hassan Canada, Inc., 2007; Baring-Gould et al., 2012; Gipe, 2013). However, ice shedding and ice throw could occur, and could represent a potential safety concern.

The Article 10 Application will include the results of additional literature review to identify the potential public health and safety concerns associated with ice throw, operational measures that can be employed to minimize the potential for ice throw and siting criteria and setbacks to protect the public from falling ice.

(4) Shadow Flicker

Shadow flicker refers to the moving shadows that an operating wind turbine casts over an identified receptor (i.e., non-participating residence) at times of the day when the turbine rotor is between the sun and a receptor's position. Shadow flicker is most pronounced in northern latitudes during winter months because of the lower angle of the sun in the winter sky. However, it is possible to encounter shadow flicker anywhere for brief periods before sunset and after sunrise (U.S. Department of the Interior, 2005).

The distance between a wind turbine and a potential shadow-flicker receptor affects the intensity of the shadows cast by the blades, and therefore the intensity of flickering. Shadows cast close to a turbine will be more intense, distinct, and focused. This is because a greater proportion of the sun's disc is intermittently blocked by the turbine (BERR, 2009). At distances beyond roughly 10 rotor diameters, shadow-flicker effects are generally considered negligible (BERR, 2009; DECC, 2011).

The Article 10 Application will include a Facility-specific shadow flicker analysis. Specifically, a study of potential shadow flicker impacts on nearby residences will be conducted, including several potential receptors using predicted annual hours of shadow flicker at each receptor. A maximum distance of potential effect of 10 rotor diameters will be used for this analysis to ensure that all potentially impacted structures were assessed.

The shadow flicker analysis for the proposed Facility will use *WindPRO 2.8.579* software (or similar version) and the associated Shadow module, which is a widely accepted modeling software package developed specifically for the design and evaluation of wind power projects. Input variables and assumptions used for shadow flicker modeling calculations will include:

- Latitude and longitude coordinates of all proposed wind turbine sites under consideration in the Application.
- Latitude and longitude coordinates for non-participating residential structures located within a 10 rotor diameter radius of all proposed turbine locations.
- USGS 1:24,000 topographic mapping and USGS digital elevation model (DEM) data (10-meter resolution).
- The rotor diameter and hub height of the largest proposed turbine model at the time of Application.
- Annual wind rose data.
- The average monthly percent of available sunshine for the nearest National Oceanic and Atmospheric Administration weather station.

The Applicant will work with the Towns to identify, within the 10 rotor diameter radius study area, all primary non-participating residential structures and any officially-announced, planned land use developments, such as residential sites or community buildings, under review or already approved for site plan development or building permit issuance at the time of filing the Article 10 Application. All data obtained will be used in the shadow flicker assessment.

Shadow flicker effects on receptors are expressed in terms of predicted frequency (hours per year). Shadow isolines (i.e., contours indicating total number of hours of shadowing per average year) are calculated based on the data and assumptions outlined above. These isolines define the theoretical number of hours per year that shadow flicker would occur at any given location within 10 rotor diameters of all proposed turbines. The model calculations will include the cumulative sum of shadow hours for all Facility turbines. This omni-directional approach reports total shadow flicker results at a receptor regardless of the presence or orientation of windows at that particular receptor (i.e., it assumes shadows from all directions can be perceived at a receptor, which may or may not be true). A receptor in the model will be defined as a one square meter area located one meter above ground; consistent with industry standards, actual house dimensions are not taken into consideration. In addition, shadow flicker contours that are generated by the WindPRO software will be overlain on mapping of known public recreational areas (e.g., trails, state forest land).

No consistent national, state, county, or local standards exist for allowable frequency or duration of shadow flicker from wind turbines at the proposed Facility Site. In general, quantified limits on shadow flicker are uncommon in the United States because studies have not shown it to be a significant issue (USDOE, 2008, 2012; NRC, 2007). However, standards developed by some states and countries provide guidance in this regard. A threshold of 30 shadow flicker hours per year will be applied to the analysis of the proposed Facility to identify any potentially significant impacts based upon the guidance obtained from the other states and countries. The New Hampshire Office of Energy and Planning (2008) issued a model ordinance for small wind energy systems (<100kW) that defines significant shadow flicker impacts as more than 30 hours per year on abutting occupied buildings. A model wind ordinance prepared by the North Carolina Wind Working Group in 2008 suggests a limit of 30 hours per year (generally less than 1% of annual daylight hours) at any occupied building on a non-participating landowner's property (NCWWG, 2008). The Wisconsin Administrative Code (WAC) specifies a limit of 30 hours per year at any non-participating residence or occupied community building (Wisconsin Public Service Commission, 2012). The WAC also requires mitigation for non-participating residences or occupied community buildings experiencing 20 hours or more per year of shadow flicker. The Ohio Power Siting Board uses 30 annual hours of shadow flicker as a threshold of acceptability in reviewing commercial wind power projects (OPSB, 2011a, 2011b, 2012). International guidelines from Europe and Australia have suggested 30 hours of shadow

flicker per year as the threshold of significant impact, which was determined to be the point at which shadow flicker is commonly perceived as an annoyance (NRC, 2007; DECC, 2011; DPCD, 2012).

The results of the shadow flicker analysis will be summarized in a stand-alone study, which will be included with the Article 10 Application.

(f) Public Health and Safety Maps

The required maps will be prepared and included in the Article 10 Application, and data sources are anticipated to include the NYS GIS Clearinghouse, FEMA, and the USGS.

(g) Significant Impacts on the Environment, Public Health, and Safety

As indicated above in subsections (a) through (d), the Facility is not expected to result in any significant public health or safety concerns associated with gaseous, liquid, or solid wastes. Wind energy facilities are safer than other forms of energy production, since significant use and storage of combustible fuels are not required. Public safety concerns associated with the operation of a wind power project are somewhat more unique. As discussed in subsection (e) above, such concerns include blade throw and tower collapse, audible frequency and low frequency noise, ice shedding and ice throw and shadow flicker. The Article 10 Application will include a summary of the potential impacts on the environment, public health, and safety associated with the information identified above in subsection (a) through (e).

(h) Unavoidable Adverse Impacts and Appropriate Mitigation/Monitoring Measures

The Article 10 Application will address potential adverse impacts on the environment, public health, and safety that cannot be reasonably avoided, and measures for monitoring and mitigating such impacts.

(i) Irreversible and Irretrievable Commitment of Resources

The proposed Facility will require the irreversible and irretrievable commitment of certain human, material, environmental and financial resources. Human and financial resources will be expended by numerous entities including the Applicant, the State of New York (i.e., various state agencies), Steuben County, and the Towns of Avoca, Cohocton, Dansville, Fremont, Hornellsville, Howard, and Wayland for the planning and review of the Facility. The expenditure of funds and human resources will continue throughout the permitting and construction phases of the Facility.

The Facility will also represents a commitment of land throughout its operational life, which is expected to be approximately 20-25 years, associated with its footprint (e.g., the land to be developed for wind turbines, access roads, the O&M building, meteorological towers, the overhead transmission line, collection substation and the point of interconnect facility). However, because the turbines /met towers may be removed at the end of their useful life, the commitment of this land to the Facility may not be irreversible or irretrievable.

Various types of manufacturing and construction materials and building supplies will be committed to the Facility. The use of these materials, such as gravel, concrete, reinforcement steel, cables etc., will represent a long-term commitment of these resources, which will not be available for other projects. However, some of these materials (e.g., steel, gravel) may be retrievable following the operational life of the Facility.

The Article 10 Application will provide additional detail regarding the Facility's irreversible and irretrievable commitment of resources.

(j) Impact Minimization Measures

Impact minimization efforts begin early in the development of a wind power project, and initially is associated primarily with appropriate siting of the individual wind turbines. To the extent practicable, the Applicant will seek to adhere to the setbacks established in the local zoning ordinances for the location of the wind turbines. Based on the Applicant's experience developing and operating other wind power projects, such setbacks should adequately protect nearby residents and motorists from falling/thrown ice or blade failure/tower collapse. In addition, unauthorized public access to the site will be limited by posting signs to alert the public (and maintenance workers) of potential ice shedding risks. Based upon the results of studies/field observations at other wind power projects, the siting criteria, and the proposed control of public access to the turbine sites, it is not anticipated that the Facility will result in any measurable risks to the health or safety of the general public due to ice shedding, ice throw, blade failure, or tower collapse. The Article 10 Application will provide additional detail regarding any measures proposed by the Applicant to minimize such impacts, including any measures identified in the Facility-specific studies associated with noise and shadow flicker.

(k) Mitigation Measures

In the Applicant's experience, when a project, such as the Facility, is properly sited and designed, mitigation measures are generally not necessary because significant impacts to public health and safety typically do not occur. To the extent necessary, any mitigation measures that are warranted based on the Facility-specific studies associated with noise and shadow flicker will be identified in the Article 10 Application. For example, if a non-participating residence is modeled to experience in excess of 30 hours of shadow flicker per year, mitigation measures may include

implementation of screening(s) at the residence. In addition, as previously mentioned the Applicant will implement a Complaint Resolution Plan, which include the following:

- Communications protocol and contacts for construction and operation
- Registering a complaint
- Process for gathering and analyzing information regarding the complaint
- Complaint Response and Tracking
- Complaint Response follow up

The Application will describe each of these steps in the Complaint Resolution process in significant detail, and will identify any other measures proposed by the Applicant to mitigate such impacts. The Article 10 Application will incorporate mitigation measures, where feasible, to meet the impact standards and Facility goals. The shadow flicker report will specify mitigation options and discuss what additional measures could feasibly be implemented once the Facility is constructed.

(l) Proposed Monitoring

The Applicant is committed to develop and operate its projects in a safe and environmentally responsible manner. In addition to the mitigation measures described/referenced above, an environmental compliance program will be implemented and the Applicant will provide funding for an independent, third party environmental monitor to oversee compliance with environmental commitments and permit requirements. The environmental compliance program will focus on planning, effective training of monitors, preconstruction coordination, and construction and restoration inspections. The Article 10 Application will include detailed descriptions of each of these components.

## 2.16 POLLUTION CONTROL FACILITIES

The proposed Facility will not require pollution control facilities, and as such, the requirements of 1001.16 are not applicable and will not be included in the Article 10 Application. Please see Section 2.17 of this PSS for information on temporary emissions during construction, and Section 2.23 for information on the Facility's State Pollution Discharge Elimination System (SPDES) General Permit for construction.

## 2.17 AIR EMISSIONS

Global climate change has been recognized as one of the most important environmental challenges of our time (NYSCAC, 2010; NYSDEC, 2009, 2010). There is scientific consensus that human activity is increasing the concentration of greenhouse gases (GHGs) in the atmosphere and that this, in turn, is leading to serious climate

change. By its nature, climate change will continue to impact the environment and natural resources of the State of New York (NYSDEC, 2009). Historically, New York State has been proactive in establishing goals to reduce GHG emissions, including Executive Order 24, which seeks to reduce GHG emissions by 80% by the year 2050 and also includes a goal to meet 45% of New York's electricity needs through improved energy efficiency and clean renewable energy by 2015 (Paterson, 2009). Fuel combustion accounts for approximately 89% of total GHG emissions in New York State (NYSDEC, 2009).

(a) Compliance with Applicable Federal, State, and Local Regulatory Requirements

In accordance with Section 111 of the Clean Air Act Extension of 1970, the U.S. Environmental Protection Agency (EPA) established New Source Performance Standards (NSPSs) to regulate emissions of air pollutants from new stationary sources. These standards apply to a variety of facilities including landfills, boilers, cement plants, and electric generating units fired by fossil fuels. The New York State Department of Environmental Conservation (NYSDEC) Division of Air Resources administers an air permitting program as required by the Clean Air Act and 6 NYCRR Part 201. The two most common types of permit for air contamination sources are State facility and Title V facility permits. Since wind turbines generate electricity without releasing pollutants into the atmosphere, the proposed facility will not be subject to NSPSs, and will not require air pollution control permits under the Clean Air Act or New York State law or regulation.

The 1984 State Acid Deposition Control Act required the reduction of sulfur dioxide (SO2) emissions from existing sources and nitrogen oxides (NOx) emission controls on new sources in New York State. SO2 and NOx are the primary causes of acid rain. The Acid Rain Program was created under Title IV of the 1990 Clean Air Act Amendments, with the goal of reducing emissions of SO2 and NOx for the environmental and public health benefits. These regulations are also not applicable to the Facility because it will generate electricity without releasing SO2 or NOx.

There are no applicable local regulatory requirements pertaining to air emissions.

(b) Assessment of Existing Ambient Air Quality Levels and Trends in the Region

The NYSDEC Division of Air Resources publishes air quality data for New York State annually. The most recent summary of air quality data available for the state is the *New York State Air Quality Report for 2014* (NYSDEC, 2015). Included in this report are the most recent ambient air quality data, as well as long-term air quality trends derived from data that have been collected and compiled from numerous state and private (e.g., industrial, utility) monitoring stations across the state. These trends are assessed and reported by NYSDEC regions. The proposed facility is located in NYSDEC Region 8, which encompasses Monroe, Seneca, Schuyler, Tompkins, Wayne, Chemung, Steuben,

Livingston, Ontario, Orleans, and Genesee Counties. There are five monitoring stations in Region 8, two in Monroe County (Rochester Near Road and Rochester 2), one in Chemung County (Elmira), one in Wayne County (Williamson) and one in Steuben County (Pinnacle). The Pinnacle Station measures CO, $O_3$, $SO_2$, and $PM_{2.5}$, the Williamson Station measures $O_3$, the Elmira Station measures $O_3$, and $SO_2$, and the two stations in Rochester measure CO, $O_3$, $SO_2$, Lead ($PM_{10}$), $PM_{10}$, $PM_{2.5}$.

The Clean Air Act requires the EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. In 2014, all Region 8 sampling points were within the acceptable levels established by the NAAQS for all tested parameters (NYSDEC, 2015). No local air monitoring data is available to further characterize air quality in the immediate vicinity of the proposed facility.

(c) Emissions by Combustion Sources Table

Wind turbines generate electricity without combusting fuel or releasing pollutants into the atmosphere. Therefore, the table required by 1001.17(c) summarizing the rate and amount of emissions is not applicable to the Facility and will not be included in the Article 10 Application.

(d) Potential Impacts to Ambient Air Quality

The Article 10 Application will include a discussion of the potential impacts to air quality that may be expected from Facility construction and operation. Since wind turbines generate electricity without combusting fuel or releasing pollutants into the atmosphere, the specific requirements of 1001.17(d) pertaining to pollutant emissions are not applicable to the proposed Facility and will not be included in the Article 10 Application.

The operation of this Facility is anticipated to have a positive impact on air quality by producing electricity with zero emissions (except for negligible emissions from vehicles that may periodically servicing the Facility). The operation of the Facility will offset air emissions from other sources of electrical generation such as fossil fuel powered generation plants. The Article 10 Application will evaluate the estimated annual displacements resulting from Facility operation for the following pollutants: CO2, NOx, SO2, mercury compounds, and lead compounds.

Potential impacts to ambient air quality resulting from the construction of the Facility will be discussed in the Article 10 Application. Such impacts could occur as a result of emissions from engine exhaust and from the generation of fugitive dust during earth moving activities and travel on unpaved roads. The increased dust and emissions will not be of a magnitude or duration that will significantly impact local air quality. Dust control procedures will be implemented to minimize the amount of dust generated by construction activities in a manner consistent with the Standards and

Specifications for Dust Control, as outlined in the *New York State Standards and Specifications for Erosion and Sediment Controls* (NYSDEC, 2005).

(e) Offsite Consequence Analysis for Ammonia Stored Onsite

No ammonia will be stored onsite during Facility construction or operation. Therefore, the offsite consequence analysis required by 1001.17(e) is not applicable to the Facility and will not be included in the Article 10 Application.

## 2.18 SAFETY AND SECURITY

Overall safety and security risks associated with the Facility are anticipated to be minimal. The Applicant has developed, based on its experience with other wind projects and reasonable expectations associated with the Facility, preliminary plans for site security, health and safety, and emergency action. The Applicant will coordinate with the County emergency department, local first responders, and the New York State Division of Homeland Security and Emergency Services to ensure appropriate actions are taken in the event of an emergency.

(a) Preliminary Plans for Site Security During Facility Construction

To reduce safety and security concerns, public access to the Facility shall be limited. The BOP and all subcontractors will be required to provide a site security plan for Facility construction, which will be developed by the BOP contractor prior to construction of the Facility will be provided to the Siting Board upon completion. The Application will provide preliminary provisions for security during construction in the Health and Safety Plan, which will include the following:

(1) Access Controls

Typical safety and security plans employed include restricting public access to the Facility Site during construction by locked gates and signage. The general public would not be allowed on the construction site, and, after hours, vehicular access to such sites would be blocked by parked equipment or temporary fencing. Temporary construction fencing or other visible barriers would be placed around excavations that remain open during off hours.

(2) Electronic Security and Surveillance Facilities

Trespassing is generally not an issue during construction of wind power projects. However, if problems arise, video cameras or other surveillance technology may be set up to monitor activity.

(3) Security Lighting

Security lighting activities associated with Facility construction will include lighting of the staging area(s) and areas immediately around the office trailers. Lighting will be directed downward where possible to minimize the effects of light pollution and will be minimized to the extent practical in order to reduce potential wildlife attraction. The Article 10 Application will include a discussion on additional security lighting considerations such as task lighting and full cut-off fixtures.

(4) Setback Considerations

The Application will provide a detailed outline associated with setbacks and related safety concerns.

(b) Preliminary Plans for Site Security During Facility Operation

It is anticipated that the Applicant will own and operate the Facility. Therefore, the Applicant will be responsible for site safety and security during operation and preparation of the associated plan. The Article 10 Application will contain a preliminary site security plan for operation, which will likely include the following:

(1) Access Controls

Access roads will have gates that are kept locked to keep the general public out. All wind turbines have access doors at their bases that are closed and locked, and substations are fenced, gated, and locked at all times. In the Applicant's experience, door locks have proven to be sufficient to prevent access by unauthorized personnel. However, if tower trespass and access becomes a problem, intrusion detection can be added as needed.

(2) Electronic Security and Surveillance Facilities

Substations will have alarms systems and video recording in place. No other electronic security is currently anticipated for the Facility. However, as mentioned above, intrusion detection can be added to the wind turbine towers if needed.

(3) Security Lighting

External lighting on all buildings will be designed in consideration of required ingress and egress during emergency situations. Lighting will be directed downward where possible to minimize the effects of light pollution to the extent practical in order to minimize potential wildlife impacts. Lights will be kept turned off when not in use, either manually or through the use of motion sensors, heat sensors, timers, or other automatic means. The Article 10

Application will provide a detailed description of security lighting activities associated with the Facility, including additional considerations such as task lighting and full-cutoff fixtures.

(4) Aircraft Safety Lighting

Lighting of the turbines (and other infrastructure as needed) will be in accordance with FAA regulations, and will follow specific design guidelines to reduce collision risk. The Article 10 Application will provide details associated with preliminary consultation with the FAA, including correspondence received specific to the Baron Winds Facility.

(5) Setback Considerations

Exhibit 6 of the Application will provide a detailed discussion of Facility setbacks.

(6) Cyber Security Program

The Article 10 Application will provide a discussion on how the Applicant will comply with the North American Electric Corporations (NERC's) CIP standards. These mandatory Reliability Standards include CIP standards 001 through 009, which address the security of cyber assets essential to the reliable operation of the electric grid. To date, these standards (and those promulgated by the Nuclear Regulatory Commission) are the only mandatory cybersecurity standards in place across the critical infrastructures of the United States. Subject to FERC oversight, NERC and its Regional Entity partners enforce these standards, which are developed with substantial input from industry and approved by FERC, to accomplish NERC's mission of ensuring the security and reliability of the electric grid (NERC 2013).

The Applicant is partnered with an Industry Leading Managed Security Services Provider that is compliant with the necessary NERC CIP standards. All firewalls and servers are monitored 24 hours/day, 7 days/week by a Security Operations Center.

(c) Preliminary Safety Response Plan

A Preliminary Emergency Action Plan (EAP) which will outline the safety plans of the Facility throughout its lifecycle will be developed by the Applicant and will be provided with the Article 10 Application. The information contained in the EAP will be developed in conjunction with local emergency service providers, and will be made available to all employees of the BOP and all subcontractors or authorized visitors to the Facility Site and will outline the procedures to follow in the event of an emergency. In addition to identifying specific emergencies that could arise at the Facility, the EAP, also provides awareness to the following:

- Identify alarm and emergency evacuation procedures
- Identify procedures to be followed by site personnel who operate critical operations before they evacuate.
- Identify rescue and medical duties for all on-site personnel of Applicant, the BOP and its subcontractors following emergency evacuation.
- Identify persons who can be contacted for further information or explanation of duties under this plan.
- Establish training guidelines for site personnel regarding this plan to support safe practices in the event of an emergency.

(1) Identification of Contingencies that Would Constitute an Emergency

The EAP as described above will outline the contingencies that would constitute a safety or security emergency.

(2) Emergency Response Measures by Contingency

In the event an emergency response measure is necessary the EAP described above will provide detailed instructions to site personnel, the general public, and emergency responders.

(3) Evacuation Control Measures by Contingency

Unlike a nuclear facility or a natural gas facility, a wind power project does not create safety concerns of a magnitude that would necessitate an evacuation. Therefore, Facility-related operations are not anticipated to require evacuation. Although unlikely, natural disasters (e.g., tornadoes, earthquakes) represent the only possible circumstances that may require excavation. However, in the event an evacuation from the Facility Site is necessary the EAP described above will provide detailed instructions to on-site personnel of Applicant, the BOP and its subcontractors, the general public, and emergency responders.

(4) Community Notification Procedures by Contingency

The EAP as described above will outline the community notification procedures should an emergency situation occur.

(d) Provision of Security and Safety Plans to NYS Division of Homeland Security

The Application will include documentation of submittal of the preliminary Security and EAP to the New York State Division of Homeland Security and Emergency Services.

(e) Provision of Security and Safety Plans to Local Office of Emergency Management

The Facility Area is not located within any part of a city that has a population over one million and therefore a review by the local office of emergency management is not required. However, the Applicant will coordinate with the Steuben County Emergency Services Department and provide a copy of the Emergency Action Plan to them.

(f) Onsite Equipment to Respond to Fire Emergencies or Hazardous Substance Incidences

The EAP, as described above, will include a detailed list of all equipment available for responding to fire emergencies or hazardous substance incidences. In general, the Applicant will provide fire extinguishers in all turbines, automated external defibrillators, first aid kits, spill kits, and Spec Pak at all sites. There will also be emergency descent rescue devices in the nacelles of every unit to allow personnel to escape from a turbine in the event of a serious injury, fire, etc. Sliders for the fall arrest system will be provided to emergency responders who have been specifically qualified to climb wind turbines.

(g) Contingency Plans for Fire Emergencies or Hazardous Substance Incidences

The EAP will contain a section describing actions that would be implemented in the event a fire emergency or hazardous substance incident occurs. In addition, a Spill Prevention, Control and Countermeasure (SPCC) plan will be prepared, and implemented, for both the construction and operation phases of the Facility. The SPCC plans will provide a detailed assessment of potential hazardous substances that could be utilized during the construction, operation or maintenance of the Facility. Typically, potential hazardous substances would consist of oils such as fuel oil, hydraulic oil, mineral oil, and lubricating oil.

(h) Provision of Security and Safety Plans to Local Emergency First Responders

The EAP, as described above, will be provided to the local emergency first responders that serve the Facility prior to Application submission, and such consultation will be documented in the Article 10 Application.

## 2.19 NOISE AND VIBRATION

(a) Sensitive Sound Receptor Map

A map showing the location of sensitive sound receptors in relation to the Facility will be provided in the Application. Sensitive sound receptors include non-participating residences, schools, hospitals, care centers, libraries, places of worship, public parks and non-participating seasonal homes. Residences on participating parcels are not considered

sensitive receptors, and impacts to such receptors will not be included in the analyses presented in Exhibit 19. A desktop analysis using aerial imagery and field verification will be used to develop and classify sensitive sound receptors within the Facility Site boundary. For sensitive receptors outside the Facility Site boundary, only aerial imagery and limited field verification will be used to identify those receptors within 1 mile of the nearest turbine. If access for field verification is not possible and aerial imagery cannot provide an obvious classification of a structure (i.e. residential vs. non-residential) then the structure will be classified as a sensitive sound receptor (i.e. residential).

(b) Ambient Pre-Construction Baseline Noise Conditions

*Ambient Noise Monitoring Locations*

On behalf of the Applicant, RSG completed winter (leaf off) and summer (leaf on) background sound level monitoring at 7 representative locations in and around the Facility Area. Monitoring sites were chosen to capture a variety of existing sound level conditions. Metrics characterizing potential soundscapes of the area were developed and sites that were diversified amongst these metrics were selected for monitoring. The various representative areas include rural residential, farming, town, low and high traffic roads, high truck traffic, recreational areas and remote areas. The monitoring report is included as Appendix E to this PSS.

*Baseline Noise Monitoring Results*

Baseline noise data were analyzed and are reproduced in both temporal and spectral formats. Results were presented in three different ways, described in the bullets below.

- Time history graphics – for each location, results are presented as graphs of sound level and maximum wind gust speed as a function of time throughout the monitoring period. Each point on the graph represents data summarized for a single 10-minute interval. Equivalent continuous sound levels ($L_{EQ}$) are the energy-average level over 10 minutes. 10th-percentile sound levels ($L_{90}$) are the statistical value above which 90% of the sound levels occurred during 10 minutes. The data from periods which were excluded from processing are included in the graphs but shown in lighter colors. The bands at the bottom of the graph indicate that data were excluded in the particular 10-minute period; the color designates the reason that data were excluded. Wind speed data came from the four anemometers (five in the summer) which were paired with monitoring locations as discussed above. Wind data are presented as the maximum gust speed occurring at any time during the 10-minute interval; they are not averaged.

- One-third octave band summaries – Plots of overall unweighted spectral levels for all valid periods are provided for each monitoring site. Each point on the plot represents the statistical level of the respective one-

third octave band for the specified period. Four sets of $L_{50}$s are presented in each plot: day and night for winter and summer monitoring periods.

- Tonal prominence of one-third octave bands were quantified for all valid periods for each monitor in each season. Tonality is defined by S12.9-2013 Part 3 – Annex B which sets a frequency dependent quantity, $K_T$, to indicate if a one-third octave band is tonal or not. A particular one-third octave band is considered tonal if it exceeds the level of the adjacent one-third octave by the prescribed limit. Every second of monitor data was analyzed for tonality, which is expressed as seconds of tonality per 10-minute period (up to 600 seconds).

A summary of ambient noise monitoring results at each of the monitoring sites in the winter and summer is provided in the Ambient Monitoring Report in Appendix E of this PSS.

*Comparison of Sound Levels to Windspeed*

The results of the Pre-construction noise study indicate that there is a correlation between hub-height wind speed and sound level, however the correlation is not very high, particularly during the day. There is a considerable amount of variability in the sound level at a given wind speed, and the lack of a strong correlation between wind speed and sound level indicates there are many influences on sound level other than wind speed.

*Temporal Accuracy*

Temporal accuracy was analyzed to determine the representativeness of the measurement data for a particular measurement location. The 95$^{th}$ percentile confidence interval was determined for the day-night average sound level ($L_{DN}$) for each day. The confidence intervals were categorized into three classes. Class "A" is for precision measurements, with Class "B" and Class "C" being less precise. All sites except one met the "A" status for precision measurements and all sites fit normality criteria. The Site that did not meet the "A" precision class is more exposed than most others and has a variety of intermittent sound sources (farm equipment, dog barks, etc.,) that may not occur equally on every day.

(c) Future Noise Levels at Receptors During Facility Construction

Construction of wind power projects requires the operation of heavy equipment and construction vehicles for various activities including construction of access roads, excavation and pouring of foundations, the installation of buried and above ground electrical interconnects, and the erection of turbine components. Construction of the turbines will take place primarily on remote hills and/or in the middle of farm fields throughout the Facility Site, generally away from

residences. Any work done on roads and utilities could be close to sound receptors, but this work will be conducted for only a short duration.

Noise resulting from construction will be modeled using the Cadna/A software or similar, predicted construction traffic levels, construction equipment and construction activities sound emissions, and by following the guidelines and recommendations of FHWA Highway Construction Noise Handbook FHWA-HEP-06-015 as applicable. The results will be presented in the Article 10 Application.

(d) Estimated Sound Levels to be Produced by Operation of the Facility

This section of the Application will provide an estimate of the sound levels to be produced by operation of the proposed Facility using computer noise modeling under the ISO 9613-2 conditions relating to a moderate nighttime inversion or, equivalently, downwind propagation, and the least attenuation due to temperature and humidity. Noise contours for these conditions representing the maximum one-hour equivalent average (Leq 1-h) sound levels for the highest wind turbine sound power levels will be provided.

For calculation of annualized statistical sound levels, sound modeling will be performed using the CONCAWE adjustments meteorological adjustments incorporated in the Cadna A software. We will include 64 different meteorological CONCAWE meteorological conditions, including variations in wind speed, wind direction, and atmospheric stability. Specific meteorological data for the site will be obtained from Facility meteorological towers and nearby weather stations. Meteorological data will be combined wind speed-specific turbine sound emissions data to provide estimates of hourly turbine sound emissions for an entire year. This will be used to provide worst case ($L_{10}$) and typical ($L_{50}$) sound levels at all sensitive sound receptors, as required by Section (f) below. The model will also include relevant noise sources from substations. The Application will include a brief discussion about the accuracy of selected outdoor propagation models, methodologies, ground absorption values, assumptions and the correlation between measurements and predictions for documents cases as compared to other alternatives, if available.

(e) Future Noise Levels at Receptors During Facility Operation

This section of the Article 10 Application will provide the following:

(1) Future Noise Levels During Operation

Future noise levels during operation of the proposed Facility including predicating A-weighted sound levels and un-weighted full octave band low frequency levels at all sensitive sound receptors;

(2) Tonal Evaluation

A tonal evaluation based on the reported sound power of the wind turbines and substation transformers.

(3) Turbine Model Selection and Avoidance/Minimization Measures

Noise modeling to be performed for the turbine model with the highest sound power levels presented in the Application. The final turbine model selected may have a different sound power level than those presented in the Application. There will be discussion on the Applicant's avoidance and minimization of sound impacts presented in the Application.

(4) Potential for Low Frequency and Infrasound

A discussion of the potential for low frequency and infrasound emissions using literature and manufacturer data, extrapolated as applicable and appropriate, and manufacturer low frequency and infrasound data if available.

(5) Basis of Sound Power Levels Used

The Application will state the basis for the sound power levels used.

(6) Amplitude Modulation Generation Estimates

Amplitude modulation generation estimates will reference the methods outlined in the IEC 61400- 11 Annexes B and D as applicable and appropriate. The potential for excessive amplitude modulation will be evaluated by determining whether the area has unusually high wind shear or turbulence that could contribute to the phenomenon. One year of meteorological data will be evaluated.

(f) Predicted Sound Levels Table

The predicted sound levels based on ambient noise monitoring and sound propagation modeling will be included in the Article 10 Application in tabular and/or graphical format. Graphical format sound contours will be depicted in 1 dBA increments for representative external property boundaries, and Tables and Figures will provide sound pressure levels to be modeled as further described in Exhibit 19(e)(5) of the Article 10 Application.

(g) Applicable Noise Standards

Noise standards applicable to the Facility, as well as noise design goals, will be described in the Article 10 Application including local municipality regulations, NYSDEC standards, WHO Guidelines, EPA Guidelines, and the National Academy of Sciences.

(h) Noise Standards Comparison

Noise standards applicable to the Facility will be provided in the Article 10 Application in tabular form including municipality standards, NYSDEC, WHO, EPA, and Federal Interagency Task Force. In addition, the Application will address if the Facility is in compliance with applicable the standards, including any noise design goals.

(i) Noise Abatement Measures for Construction Activities

A Complaint Resolution Plan for the Facility will be included in the Application. The Applicant takes seriously any complaints that it receives from members of the public. Complaints will be able to be made in person at the Facility's O&M building, via phone, or by writing, and the Applicant will contact the individual within 48 hours of receipt of the complaint. The Applicant will implement a comprehensive complaint response for all registered complaints, which will include community engagement, gathering information, response to the complaint, a follow up after the response has been issued, and further action if the complainant believes that the issue continues to exist.

Although impacts related to construction noise will be temporary, and are not anticipated to be significant, measures employed to minimize and mitigate temporary construction noise shall include:

- Implementing best management practices for sound abatement during construction, including use of appropriate mufflers and limiting hours of construction where practicable, and turning off construction vehicles when not in use.

(j) Noise Abatement Measures for Facility Design and Operation

Due to the inherent size of wind turbines, physical noise control measures, such as noise barriers, active noise control, and tree plantings, are impractical. In-spite of this, some mitigation measures for noise are available. Wind turbine noise can be abated using either factory-installed measures, siting methods implemented during final Facility design, or measures implemented after the Facility is constructed. These methods will be described in the Article 10 Application.

(k) Community Noise Impacts

This section of the Application will include the following:

(1) Potential for Hearing Damage

The potential for the Facility to result in hearing damage based on OSHA standards, the recommendations of the United States Environmental Protection Agency and the guidelines of the World Health Organization.

(2) Potential for Speech Interference

A discussion of the potential for indoor and outdoor speech interference based on guidelines from the United States Environmental Protection Agency and the World Health Organization.

(3) Potential for Annoyance/Complaints

A review of studies, peer reviewed, government, scientific and professional publications, specific to the relationship between wind turbine noise and annoyance/complaints will be included. Community complaint potential will be evaluated based upon identified factors, thresholds and guidelines and;

(4) Potential for Sound-Induced Vibration and Annoyance

The potential for sound-induced vibration and annoyance at the low frequency bands of 16, 31.5 and 63 Hz will be assessed using outdoor criteria established in annex D of ANSI standard S12.9 -2005/Part 4. Applicable portions of ANSI 12.2 (2008) may be used for the evaluation of frequency bands as appropriate.

(5) Potential for Structural Damage and Interference Technological, Industrial, or Medical Activities that are Sensitive to Sound

The Article 10 Application will discuss the potential for structural damage; and the potential for interference with technological, industrial or medical activities that are sensitive to vibration or infrasound within 1 mile of the Facility Site.

(l) Post-construction Noise Evaluation Studies

A post-construction noise monitoring and compliance protocol will be included in the Article 10 Application.

(m) Operational Controls and Mitigation Measures to Address Reasonable Complaints

A Complaint Resolution Plan will be presented in the Application. Please see Section 2.19(i) above for additional information.

(n) Input Parameters, Assumptions, and Data Used for Modeling

Specific modeling input parameters will be included with the Application. GIS files containing data used for modeling including topography, turbine and substation locations, sensitive sound receptors, and all representative external boundary lines identified by Parcel ID number will be provided under separate cover in digital format.

## 2.20 CULTURAL RESOURCES

Consistent with 16 NYCRR § 1001.20 and the New York State Office of Parks, Recreation, and Historic Preservation's (NYSOPRHP's) *Guidelines for Wind Farm Development Cultural Resources Survey Work* (the SHPO Wind Guidelines; NYSOPRHP, 2006), the Applicant has initiated consultation with the NYSOPRHP to develop the scope and methodology for cultural resources studies for the Facility. To date, formal consultation with NYSOPRHP has included initiating Facility review and consultation through NYSOPRHP's Cultural Resources Information System (CRIS) website[1] and submission of technical reports/work plans. These submissions are described in greater detail below.

(a) Archaeological Resources

(1) Summary of Impacts and Avoidance Measures

A Phase 1B survey will be conducted and any archaeological resource identified will be summarized, along with potential impacts to such resources and proposed avoidance measures. In general, based on previous experience with wind project development, it is expected that once identified, archeological resources will be avoided.

(2) Phase 1A Cultural Resources Study

EDR prepared a *Phase 1A Archaeological Resources Survey & Phase 1B Fieldwork Plan* (see Appendix F of this PSS), which was submitted through the CRIS website on July 5, 2016 and is summarized below. The purpose of the Phase 1A archaeological resources survey and work plan was to: 1) define the Facility's area of potential effect

[1] NYSORPHP's Cultural Resources Information System is accessible at: http://www.nysparks.com/shpo/online-tools/.

(APE) relative to archaeological resources based on the anticipated area of disturbance for Facility components; 2) determine whether previously identified archaeological resources are located in the APE; and, 3) propose a methodology to identify archaeological resources within the APE, evaluate their eligibility for the National Register of Historic Places (NRHP), and assess the potential effect of the Facility on those resources. Following review and approval of this work plan by NYSOPRHP, a Phase 1B archaeological survey will be conducted. The Phase 1A report was prepared by professionals who satisfy the qualification criteria per the Secretary of the Interior's Standards for archaeology (36 CFR 61) and in accordance with the SHPO Wind Guidelines (NYSOPRHP, 2006) and applicable portions of NYSOPRHP's *Phase 1 Archaeological Report Format Requirements* (NYSOPRHP, 2005).

Relative to the potential for archaeological sites to be located in the Facility, the results of the Phase 1A archaeological resources survey for the proposed Facility can be summarized as follows:

- There are two previously reported archaeological sites located within approximately one mile of the Archaeological Study Area, as summarized in Table 3 of the Appended Phase 1A Archaeological Report:
    - The Malter Site (USN 10113.000008) consists of a historic debris scatter and foundation which represent the remains of a pre-1918 farmstead. The site was recommended as not eligible for listing on the NHRP by PAF (2006a). The site occurs within the Archaeological Study Area; however, based on current Facility design, the site does not occur within the APE for Direct Effects.
    - The Indian Burial site (USN 10109.000024) consists of a possible Native American burial site located outside the Archaeological Study Area (but within 1-mile of the Archaeological Study Area) noted on an 1889 map of the James Cleland Farm in the Town of Cohocton. As described in further detail in Section 2.4 of the Appended Phase 1A Archaeological Report, the site may actually represent a historic Euroamerican grave from the 19th century (Folts, 1999).
- Sensitivity for prehistoric archaeology within the Facility Site is considered to be low, given the low density of previously recorded archaeological sites in the vicinity and the low density of prehistoric archaeological sites identified during surveys in similar environments (i.e., uplands within the Allegheny Plateau physiographic province in western New York).
- Sensitivity for historic archaeology is considered to be high in proximity to structures identified on historic maps (Figures 6-8 of the appended Phase 1A Archaeological Report). Archaeological resources associated with these sites could include foundations, structural remains, artifact scatters,

and/or other features. The remainder of the Facility away from historic map-documented structures is considered to be of low sensitivity for historic archaeology.

In addition, the Phase 1A report acknowledges that proposed construction of the Facility will include ground disturbing activities that have the potential to impact archaeological resources. The APE for Direct Effects (i.e., archaeological resources) includes all areas of soil disturbance associated with proposed turbine pad and assembly areas, access roads, buried and overhead collection lines, meteorological towers, laydown and staging areas, operations and maintenance facilities, and substations. Any archaeological sites located within the Facility Site but that are not within the limits of disturbance for the proposed Facility will not be affected by the Facility.

(3) Phase 1B Cultural Resources Study

A Phase 1B Archaeological Survey will be conducted to determine whether archeological sites are located in the areas of proposed ground disturbance for the Facility. The Phase 1B survey will be conducted under the supervision of a RPA in a manner consistent with the *SHPO Wind Guidelines,* and in accordance with NYSOPRHP's *Phase 1 Archeological Report Format Requirements* (NYSOPRHP, 2005).

As indicated above, the scope and methodology for the Phase 1B Archaeological Survey is proposed in the *Phase 1A Archaeological Resources Survey & Phase 1B Fieldwork Plan*, which was submitted to NYSOPRHP on July 5, 2016. The *SHPO Wind Guidelines* suggest following the approach detailed in *Archeological Investigations in the Upper Susquehanna Valley, New York State* (Funk, 1993a, 1993b) in the design of archaeological surveys for wind projects. The approach involves identification of broad environmental zones with local habitat (or landscape class) subdivisions. The archaeological survey subsequently includes intensive sampling of selected areas within each of the identified landscape classes, rather than undertaking an even distribution of sampling throughout the APE. Following this approach, EDR used Geographic Information System (GIS) software to identify landscape classes within the Facility Area and proposed an archaeological sampling strategy. The *Phase 1A Archaeological Resources Survey & Phase 1B Fieldwork Plan* summarizes the methodology used for the GIS analysis and presents the landscape classification analysis in tabular and graphical formats.

The primary methods used during the archeological survey included pedestrian surface surveys (in active agricultural settings where ground-surface visibility was greater than 80%); the excavation of shovel tests (in hayfields, forest, and shrubland areas); and pedestrian reconnaissance (in steeply sloped areas). The locations of areas selected for intensive archaeological sampling within the archaeological APE will be determined in the field using professional judgment under the direction of a RPA. Areas where proposed Facility components are located

in proximity to structures that are depicted on historic maps of the area will be prioritized during the selection of areas for shovel testing, as will be areas deemed to have high sensitivity for prehistoric archaeological materials. These latter included flat areas of well-drained soils in close proximity to perennial streams or large wetlands.

The Facility's APE for Direct Effects is currently 808.6 acres in size. Please note that the Facility layout will be reviewed prior to conducting the Phase 1B survey. It is also worth noting that prior to conducting the Phase 1B survey, the Facility APE for Direct Effects and survey effort will be adjusted in accordance with Facility layout modifications consistent with the assumptions and methodology for determining the APE for Direct Effects as presented herein.

Based on the current Facility design and EDR's proposed Phase 1B archaeological research design and work plan (see Sections 4.2-4.4 in appended Phase 1A Archaeological Report), it is anticipated that the Phase 1B archaeological survey for the Baron Winds Facility will include:

- The excavation of approximately 2,686 shovel tests and the pedestrian surface survey of approximately 297.2 acres of the APE for Direct Effects located within agricultural fields.
- Preparation of a Phase 1B archaeological survey report, to be submitted to NYSOPRHP via the CRIS website. The report will be prepared in accordance with NYSOPRHP's *Phase 1 Archaeological Report Format Requirements* (NYSOPRHP, 2005).
- Submission of site information for any archaeological sites identified during the Phase 1B survey via the CRIS website.

EDR provided the *Phase 1A Archaeological Resources Survey & Phase 1B Fieldwork Plan* to NYSOPRHP on July 5, 2016 to confirm the landscape classification model, proposed sampling strategy, and anticipated field methodology for the Facility and to ensure that the proposed scope of the survey is consistent with NYSOPRHP's expectations. In a letter dated July 25, 2016 the NYSOPRHP concurred with the work plan (see Appendix F). The completed Phase 1B Archaeological Survey Report will be submitted as part of the Article 10 Application.

(4) Phase 2 Study

If recommended avoidance measures (e.g., such as removing or re-locating Facility components away from identified archaeological sites) are insufficient to avoid impacts, a Phase 2 study may be conducted to assess the boundaries, integrity and significance of cultural resources identified during the Phase 1B archaeological survey. If warranted based on Phase 1B study results, as determined in consultation with NYSOPRHP, any necessary

Phase 2 studies would be designed to obtain detailed information on the integrity, limits, structure, function, and cultural/historic context of an archaeological site, as feasible, sufficient to evaluate its potential eligibility for listing on the State or National Register of Historic Places (S/NRHP). The need for and scope of work for such investigations would be determined in consultation with NYSOPRHP and DPS upon completion and review of the Phase 1B survey report.

(5) Archaeological Material Recovered During Cultural Resources Studies

In the event that any artifacts are recovered during the cultural resources studies for the Facility, archaeologists will record standard provenance information in the field and collect each artifact in sealed plastic bags per standard archeological field practices. All recovered materials will be washed, dried, and cataloged per standard archeological laboratory procedures. Recovered artifacts will be described to a level of detail sufficient to prepare an artifact inventory for inclusion in Phase 1B and/or Phase 2 archaeological reports, which will include descriptions of each artifact's material, temporal or cultural/chronological associations, style and function. In addition, it is anticipated that a selection of representative artifacts will be photographed for inclusion in the reports, but complete photo documentation of all recovered materials is not anticipated. The Applicant understands that all artifacts recovered during this contract will be the property of the land owner from which the artifacts were recovered. The Applicant also anticipates that the Facility's cultural resources consultant will identify appropriate local repositories (such as local historical societies or archeological museums) for disposition of recovered artifacts so that artifact assemblages remain available and accessible to local and regional researchers and interested members of the public. It is anticipated that all artifacts will be processed in a manner consistent with professional standards, such as the New York Archaeological Council's (NYAC) *Standards for Cultural Resource Investigations and Curation of Archaeological Collections in New York State* (NYAC, 1994; the NYAC *Standards*), and suitable for accessioning to the New York State Museum (Albany), in the event that appropriate local repositories cannot be identified.

A complete listing of all recovered artifacts will be included in the Phase 1B Archaeological Survey Report, to be submitted with the Article 10 Application.

(6) Unanticipated Discovery Plan

The Article 10 Application will include an Unanticipated Discovery Plan that identifies the actions to be taken in the unexpected event that resources of cultural, historical, or archaeological importance are encountered during Facility construction. The plan will include a provision for work stoppage upon the discovery of possible archaeological or human remains. Evaluation of such discoveries, if warranted, will be conducted by a professional archaeologist,

qualified according to the NYAC *Standards*. The Unanticipated Discovery Plan will specify the degree to which the methodology used to assess any discoveries follows the NYAC *Standards*.

(b) Historic Resources

(1) A complete Historic Architectural Survey

EDR prepared a *Phase 1A Historic Architectural Resources Survey & Work Plan,* which was submitted through the CRIS website on July 5, 2016 (see Appendix G). The purpose of the Phase 1A Historic Architectural Resources Survey Report and Work Plan is to define the Facility's APE relative to historic architectural resources; determine whether previously identified historic architectural resources are located in the APE; and propose a methodology to identify historic architectural resources within the APE, evaluate their eligibility for the National Register of Historic Places (NRHP), and assess the potential effect of the Facility on those resources.

Area of Potential Effect Relative to Historic Architectural Resources

The Facility will have no physical impacts to historic architectural resources (i.e., no historic structures will be damaged or removed). The Facility's potential effect on a given historic property would be a change (resulting from the introduction of wind turbines) in the property's visual setting. Therefore, the APE for visual effects on historic resources must include those areas where Facility components (including wind turbines) will be visible and where there is a potential for a significant visual effect. Per the requirements set forth in 16 NYCRR § 1000.2(ar), the study area to be used for analysis of major electric generating facilities is defined as:

> *(ar) Study Area: an area generally related to the nature of the technology and the setting of the proposed site. For large facilities or wind power facilities with components spread across a rural landscape, the study area shall generally include the area within a radius of at least five miles from all generating facility components, interconnections and related facilities and alternative location sites. For facilities in areas of significant resource concerns, the size of a study area shall be configured to address specific features or resource issues.*

Per the *SHPO Wind Guidelines*, the APE for visual impacts on historic properties for wind projects is defined as those areas within 5 miles of proposed turbines which are within the potential viewshed (based on topography) of a given project (NYSOPRHP, 2006). The five-mile-radius study area for the Facility includes parts of the towns of Avoca, Bath, Cohocton, Dansville, Fremont, Howard and Wayland in Steuben County, New York (see Figure 3 in the appended Phase 1A Historic Architectural Report).

The Facility's APE relative to historic-architectural resources will include the areas of potential Facility visibility based on the topographic viewshed to be conducted within 5 miles of the Facility. This area represents a conservative, "worst case" assessment of potential Facility visibility.

Previously Identified Historic Architectural Resources Located in the Area of Potential Effect

EDR reviewed the Cultural Resources Information System (CRIS) website maintained by NYSOPRHP to identify significant historic buildings and/or districts located within five miles of the Facility. The "Previously Identified Historic Architectural Resources" map (see Figure 4 in the appended Phase 1A Historic Architectural Report) indicates the locations of historic architectural resources identified during the architectural surveys conducted in support of the Windfarm Prattsburgh (PAF, 2006b), the Cohocton Wind Power (PAF, 2006c), the Howard Wind Farm (JMA, 2006), as well as those resources identified through review of the APE for the Facility using the CRIS database.

There are three properties listed on the NRHP, 92 properties determined eligible for listing on the NRHP, and 115 properties whose NRHP eligibility is currently undetermined located within five miles of the Facility (see Table 1 and Figure 4 in the appended Phase 1A Historic Architectural Report). Of the NRHP-listed or NRHP-eligible properties located within the Facility study area, 86 were surveyed as part of the previous three studies conducted in 2006, and six additional resources were identified using the CRIS database.[2] All of the properties within the Facility study area whose NRHP eligibility is currently undetermined were identified using the CRIS database. Three of the properties determined to be eligible as part of previous historic architectural resources surveys appear (based on desktop research) to have been demolished since the date of the previous surveys. No properties listed on or determined eligible for the NRHP are located within the Facility area.

The Cohocton Town and Village Municipal Building, also known as the Larrowe House, (90PR02998) and the contributing Larrowe Garage and Cohocton Public Library (USN 10149.000017) are located in the village of Cohocton in the northeastern portion of the five-mile study area (see Figure 4 in the appended Phase 1A Historic Architecture Report). The Larrowe House was constructed in 1856 by Albertus Larrowe, one of the founders of Cohocton. It was the main structure of a larger farm complex of which it is the sole surviving building. The building exterior and interiors retain a high level of integrity. The chimneys are presumed to be the only later additions to the house. The contributing Larrowe Garage building was constructed in the 1920s as a one-story automobile garage with an attic loft for the chauffeur to reside. The property remained in the Larrowe family until 1950, when the lot was deeded to the Town of Cohocton. The building was listed in the NRHP in 1990 (Ardito, 1989).

[2] It is worth noting that a number of resources were surveyed multiple times as part of the historic resources surveys conducted for Windfarm Prattsburgh, Howard Wind and Cohocton Wind. In addition, several of these resources were also noted in CRIS. Therefore, the number of resources surveyed (92) reflects a total number of unique previously surveyed resources from those surveys (86) as well as any others identified using the CRIS database (6).

The Rowe House (07NR05717) is located on County Road 38 in the Town of Wayland, on the northeast edge of the five-mile study area. The Rowe House property is comprised of a two-story, seven-bay Tudor Revival-style house constructed circa 1926 on over 28 acres of land. The house was constructed for the Rowe family by the prominent Rochester architect J. Foster Warner, and retains a high degree of historic and architectural integrity, and is a highly prominent and intact example of the Tudor Revival style in a predominantly rural, agrarian setting (Englert, 2007).

The Presbyterian Church of Atlanta (09NR06057) is located in the hamlet of Atlanta, in the Town of Cohocton, in the northeast portion of the five-mile study area. The church was originally constructed circa 1895 in the Queen Anne style, designed by noted Elmira architect Otis Dockstader. The church retains much of its original interior and exterior details, and is architecturally significant as a highly intact example of a Queen Anne-style church constructed in the Akron Plan, which uniquely programmed the internal rooms of churches around a central rotunda (Englert, 2009).

The NRHP-eligible properties within the study area include residences, churches, cemeteries, fraternal and agricultural society buildings, educational buildings, and commercial structures. Numerous nineteenth- and early-twentieth-century structures (primarily residences and farmsteads) are located within the study area that have not been previously evaluated by NYSOPRHP to determine if they are NRHP-eligible. These types of resources are typically determined NRHP-eligible under NRHP Criterion C (i.e., they "embody the distinctive characteristics of a type, period, or method of construction" [CFR, 2004a]), and often derive their significance from being representative examples of vernacular nineteenth-century architectural styles that retain their overall integrity of design and materials. Within the study area, many nineteenth-century residences were originally Italianate or Italianate-inspired vernacular houses with modest details, with some pockets of Gothic Revival-inspired houses. Most of the historic farmhouses are Greek Revival or Greek Revival-inspired vernacular houses. The architectural integrity of historic resources throughout the five-mile radius study area is highly variable, with many showing noticeable alteration, or deterioration due to the elements.

Methodology to Identify Historic Architectural Resources and Assess Potential Effects of the Facility

Historically significant properties are defined herein to include buildings, districts, objects, structures and/or sites that have been listed on the NRHP, as well as those properties that NYSOPRHP has formally determined are eligible for listing on the NRHP. Criteria set forth by the National Park Service for evaluating historic properties (36 CFR 60.4) state that (per CFR, 2004a; NPS, 1990):

> The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

(A) that are associated with events that have made a significant contribution to the broad patterns of our history; or
(B) that are associated with the lives of persons significant in our past; or
(C) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
(D) that have yielded, or may be likely to yield, information important in prehistory or history.

The Facility's APE is defined in above (and in Section 1.4 of the appended Phase 1A Historic Architecture Report); however, it is worth noting that significant portions of the study area for the Facility are located within the areas previously surveyed for the Windfarm Prattsburgh, Cohocton Wind Power, and Howard Wind Farm projects (see Section 2.1 and Figure 3 of the appended Phase 1A Historic Architecture Report). As a result, EDR assumes that no additional historic architectural resources survey will be necessary within this recently surveyed area, and proposes only conducting a survey within the remaining portions of the study area that have not been formally surveyed for historic architectural resources.

EDR will conduct a historic resources survey the Facility's APE (with the exception of the area noted above). The historic resources survey will be conducted by a qualified architectural historian who meets the Secretary of Interior's Standards for Historic Preservation Projects (36 CFR Part 61). The historic resources survey will identify and document those buildings within the study area that, in the opinion of EDR's architectural historian, appear to satisfy National Register of Historic Places (NRHP) eligibility criteria. In addition, the survey will also be conducted for the purpose of providing updated photographs and recommendations of eligibility for NRHP-eligible resources, as well as previously surveyed resources within the APE whose NRHP eligibility has not formally been determined (see Section 2.2 and Table 1 of the Appended Phase 1A Historic Architecture Report).

Historic resources survey fieldwork will include systematically driving all public roads within the study area to evaluate the NRHP-eligibility of structures and properties within the study area. When sites that appeared to satisfy NRHP-eligibility criteria are identified, the existing conditions of the property will be documented by EDR's architectural historian. This includes photographs of the building(s) (and property) and field notes describing the style, physical characteristics and materials (e.g., number of stories, plan, external siding, roof, foundation, and sash), condition, physical integrity, and other noteworthy characteristics for each resource.

EDR's evaluation of historic resources within the study area will focus on the physical condition and integrity (with respect to design, materials, feeling, and association) to assess the potential architectural significance of each resource. If deemed appropriate, individual buildings located within villages and hamlets will not be documented as individual properties, but instead will be described collectively as clusters or districts. For previously surveyed historic properties, EDR will make a recommendation of NRHP-eligibility for structures and properties within the study area previously determined NRHP-eligible or whose NRHP eligibility has not formally been determined. An updated photograph (or photographs) of previously surveyed properties will be taken, and an updated recommendation of NRHP-eligibility will occur where applicable.

If significant changes to materials or form are found to have occurred, or if a property is found to no longer be standing, an updated recommendation of NRHP eligibility will be provided. Previously identified resources whose NRHP eligibility has not formally been determined will be given an updated recommendation of NRHP eligibility.

Note that all properties included in the historic resources survey will be photographed and assessed from public rights of way. The condition and integrity of all resources will be evaluated based solely on the visible exterior of the structures. No inspections or evaluations requiring access to the interior of buildings, or any portion of private property, will be conducted as part of this assessment. In accordance with the *SHPO Wind Guidelines*, and based on previous consultation with NYSOPRHP for previous wind projects,[3] buildings that are not sufficiently old (i.e., are less than 50 years in age), that lack architectural integrity, or otherwise were evaluated by EDR's architectural historian as lacking historical or architectural significance will *not* be included in or documented during the survey.

Based on previous NYSOPRHP consultation for other wind projects, it is assumed that no additional documentation of resources of the area previously surveyed for the Windfarm Prattsburgh, Cohocton Wind Power, and Howard Wind Farm projects will be necessary.[4] The five-mile study area for the Facility includes approximately 246 square miles.[5] The previous five-mile surveys for Windfarm Prattsburgh, Cohocton Wind Power, and Howard Wind Farm projects included approximately 184 square miles (75 percent) of the Facility study area, leaving approximately 162 square miles (25 percent) unsurveyed. Figure 4 in the appended Phase 1A Architectural Report depicts the previously surveyed area as well as the proposed survey area. EDR proposes to conduct a historic resources survey of *only areas not previously surveyed* within the Facility study boundary using the methodology described above.

[3] See Historic Resources Survey for the Cassadaga Wind Project (15PR02730) (EDR, 2016).
[4] NYSOPRHP, through a post on CRIS, recently concurred with EDR's work plan. Specifically, NYSOPRHP stated, "*We concur with the Architectural Survey Work Plan…"* (see Appendix G).
[5] Based on the current Facility Area boundary, which is likely to change as the Facility layout is refined and Facility Site defined. The final survey area will reflect a five-mile buffer around the final layout of the Facility, which will be specified in the Historic Resources Survey Report.

EDR will provide initial survey results and recommendations of NRHP eligibility for historic architectural properties surveyed, including photographs, brief property descriptions, and location maps, to NYSOPRHP via the CRIS website. EDR is requesting that NYSOPRHP review these results and provide determinations of eligibility prior to EDR completing a historic resources visual effects analysis for the Facility, so that only the potential effects of the Facility on historic properties determined eligible by NYSOPRHP are considered.

The methods and results of the survey will be summarized in an illustrated report, along with an annotated properties table that will include an entry for each identified property. The annotated properties table will include one or more photographs of each property, a brief description of the property (name, address, estimated age, architectural style, materials, etc.), an assessment of its condition, and an evaluation of significance.

The report will also include an analysis of the potential visual effect of the Facility on identified properties recommended by EDR to be NRHP-eligible, including consideration of distance and the effect of vegetation and other landscape features that may screen or minimize views of the Facility from historic resources.

16 NYCRR § 1001.24 (Exhibit 24: Visual Impacts) describes the necessary components of a Visual Impact Assessment (VIA) that must be conducted as part of the Article 10 application. The VIA must include "identification of visually sensitive resources, viewshed mapping, confirmatory visual assessment fieldwork, visual simulations (photographic overlays), cumulative visual impact analysis, and proposed visual impact mitigation". In addition, 16 NYCRR § 1001.24 requires that "the applicant shall confer with municipal planning representatives, DPS, DEC, OPRHP, and where appropriate, APA in its selection of important or representative viewpoints" (Article 10, Exhibit 24, Part 1001.24[b][4])[6]. To address this requirement, the historic resources survey report will identify those historic resources where visual setting is an important factor in their significance and where viewshed analysis indicates potential visibility of the Facility. The report will recommend those historic resources where preparation of a visual simulation would be appropriate to assess the Facility's potential effect.

The final report, including all figures and simulations, will be provided to NYSOPRHP via the CRIS website. The report will also include recommendations for mitigation efforts, if appropriate.

The completed Historic Architectural Survey Report will be submitted as part of the Article 10 Application.

[6] Note: "DPS" is the New York State Department of Public Service, "DEC" is the New York State Department of Environmental Conservation, "OPRHP" is the New York State Office of Parks, Recreation, and Historic Preservation, and "APA" is the Adirondack Park Agency.

(2) A summary of the nature of the probable impact of Facility construction and operation on any historic resources.

Construction of the Facility will not require the demolition or physical alteration of any buildings or other potential historic resources. No direct physical impacts to historic-architectural resources will occur as a result of the Facility.

The Facility's potential effect on historic resources would be a change (resulting from the introduction of wind turbines) in the visual setting associated with a given historic resource. The potential effect of the Facility on the visual setting associated with historic resources is highly variable, and is dependent on a number of factors including the distance to the project, the number of visible turbines, the extent to which the Facility is screened or partially screened by buildings, trees, or other objects, and the amount of existing visual clutter and/or modern intrusions in the view. It is also worth noting that visual setting may or may not be an important factor contributing to a given property's historical significance. Scenic views and/or association with the landscape are not specifically identified as contributing to the significance of any of the historic resources in the study area.

A summary of the Facility's impact on Historic Resources will be included in the Article 10 Application.

## 2.21 GEOLOGY, SEISMOLOGY, AND SOILS

This exhibit will include a study of the geology, seismology, and soils impacts of the Facility consisting of the identification and mapping of existing conditions, an impact analysis, and proposed impact avoidance and mitigation measures to the extent such impacts are discovered.

(a) Existing Slopes Map

A map delineating existing slopes (0-3%, 3-8%, 8-15%, 15-25%, 25-35%, 35% and over) on and within the drainage area potentially influenced by the Facility Site and interconnections will be prepared using the USGS National Elevation Dataset. Digital Elevation Model (DEM) data will be processed using ESRI ArcGIS® Software to delineate a drainage area and develop slope mapping.

(b) Proposed Site Plan

Preliminary design drawings showing existing and proposed contours at 2-foot intervals will be included in the Article 10 Application. The Applicant will use publicly available 10-meter resolution elevation data to interpolate the 2-foot contours necessary to fulfill the Application requirements.

(c) Cut and Fill

The Article 10 Application will include preliminary and approximate cut and fill calculations based on 2-foot contours interpolated from publicly available 10-meter resolution elevation data, including separate approximations for topsoil, sub-soil and bedrock. A description of typical scenarios that would result in cut and fill necessary to construct the facility will also be included

(d) Fill, Gravel, Asphalt, and Surface Treatment Material

A preliminary calculation of the amount of required fill, gravel, etc. based on the proposed layout of turbines, access roads, collection lines, staging areas and all other project facilities and construction areas will be included with the Article 10 Application.

(e) Type and Amount of Materials to be Removed from the Facility and Interconnection Sites

No materials will be removed. Stockpiled soils along the construction corridors will be used in site restoration, and all such materials will be re-graded to approximate pre-construction contours.

(f) Excavation Techniques to be Employed

The activities associated with constructing wind power projects in New York State are well understood, and although a given site can have unique characteristics in comparison to other sites, construction methodologies can be reasonably anticipated based on the Applicant's experience (in New York and other states) and available site conditions data. The majority of excavation activities will be associated with turbine foundation and substation construction, while additional excavations will likely be associated with other aspects of Facility construction in specific locations as needed. For example, it is anticipated that the majority of the Facility's buried electrical interconnect will be installed through use of a cable plow or blade; however, in select locations a backhoe may excavate a trench for cable installation due to the subsurface characteristics.

The Applicant does not expect Facility-related excavation will result in adverse impacts to geology or soils. The Article 10 Application will provide a detailed description of construction methodologies and activities associated with the Facility, including the anticipated excavation techniques to be employed. This information and analysis will be based on the site-specific Preliminary Geotechnical Investigation, which is described in Section 2.21(h) below.

(g) Temporary Cut and Fill Storage Areas

The process of determining excavation locations will be described, and preliminary cut and fill locations will be described, in the Article 10 Application. Final cut and fill storage areas will be identified following Certification, and included in the final construction drawings

(h) Suitability for Construction

The Article 10 Application will include the results of a Preliminary Geotechnical Investigation, which will include the following:

- Test borings at a sub-set of turbine locations and the substation locations
- Literature review and obtaining publicly available data regarding surface and subsurface soil, bedrock, and groundwater conditions
- Data analysis
- A report that describes the following:
    - Surface Soils
    - Subsurface Soils
    - Bedrock Conditions
    - Hydrogeologic Conditions
    - Chemical and Engineering Properties
    - Laboratory Testing
    - Seismic Considerations
    - Construction Suitability Analysis and Recommendations

The Preliminary Geotechnical Investigation will be summarized in Exhibit 21 of (and included as an appendix to) the Article 10 Application. This stand-alone report will be based on a Facility-specific site visit conducted by a geotechnical expert, review of publicly available data (anticipated to include the Surficial Geologic Map of New York, Geologic (Bedrock) Map of New York, Soil Survey of Steuben County, Deep Wells in New York State, Geology of Steuben County, Tectonic Units and Preliminary Brittle Structures of New York, Aquifers of New York State, Geology of New York – A Simplified Account, New York State Building Code), and test borings to be completed at a subset of turbine/substation locations.

In addition, before construction commences, a site survey will be performed to stake out the exact location of proposed Facility components. Once the surveys are complete, a detailed geotechnical investigation will be performed to verify subsurface conditions and allow development of final wind turbine foundation and electrical design, and other Facility components as necessary. The geotechnical investigation involves a drill rig obtaining borings to identify the subsurface soil and rock types, strength and chemical properties (such as establishing sulfate content etc.), and will

also document the presence and depth of any groundwater encountered. Testing is also done to measure the soil's electrical properties to ensure proper grounding system design. Geotechnical borings will be conducted as determined necessary by a professional engineer to allow foundation design to be finalized for turbine and substation locations.

(i) Preliminary Blasting Plan

Based upon review of publicly available data, a general constructability review conducted by the Applicant's construction manager on-site at the Facility, and the Applicant's experience with wind facility construction, it is anticipated that no blasting will be required. The Preliminary Geotechnical Investigation will provide the information necessary to confirm that no blasting is required, which will be discussed in further detail in the Article 10 Application.

(j) Potential Blasting Impacts

Blasting is not anticipated, and as indicated above, the Article 10 Application will provide additional detail, including the results of a Facility-specific Preliminary Geotechnical Investigation. With respect to water wells, please see Section 2.23 of this PSS for additional information. With respect to natural gas production, according to the NYSDEC (2015), the Facility Area contains approximately four natural gas wells (producing wells, non-commercial wells, and plugged and abandoned wells). The wells are typically drilled to a depth of approximately 3,000 feet. All turbines will be sited a minimum of 500 feet from gas wells, which will are expected to eliminate potential impacts associated turbine foundation construction.

(k) Mitigation Measures for Blasting Impacts

Blasting is not anticipated. However, should any blasting be required, it will be conducted in accordance with the Facility-specific blasting plan, and any necessary blasting will receive oversight by an Environmental Monitor. In addition, pre- and post-blasting surveys will be conducted as a groundwater well mitigation measure if blasting is needed. The Facility Sponsor will conduct structural, water quality, and water quantity inspections of any wells located within 500 feet of blasting activities before (to establish baseline quality and quantity) and after construction. Although not anticipated, any impacts identified through these inspections will be addressed on a case-by-case basis and appropriately mitigated.

(l) Regional Geology, Tectonic Setting, and Seismology

The Facility Area is located within the Appalachian Plateau physiographic province of New York State. Elevations in the Facility Area range from between 1,400 feet to 2,100 feet (amsl). The Appalachian Plateau in Steuben County is

characterized by many broad, deep, flat-bottomed valleys, occupied by meandering streams. The areas between the valleys consist of rolling uplands and some flat-topped hills that formed partly because of the nearly horizontal bedding of the underlying bedrock (USDA 1978). All of the bedrock in Steuben County is of Devonian age, and is generally formed from deltaic deposits. Most of the beds formed broad and open folds that trend to the northeast, and are about 5 to 10 miles apart. The bedrock underlying the vicinity of the Facility Area consists of members of the Canadaway, Java, and West Falls Group, all of the upper Devonian (Rickard and Fisher, 1970). The formations that comprise the Canadaway Group are chiefly composed of shales, sandstone, and siltstone. The Canadaway Group averages about 1,000 feet in thickness. The Java Group is predominately comprised of sandstone and shale. The West Falls formation has seven members, which are predominately sandstone, shale, and siltstone.

The surficial geology underlying the Facility Area and vicinity is dominated by glacial till, which exhibits a wide range of particle and rock fragment size. The layer of glacial till itself is often of varying thickness and can range from a few feet on some ridge tops to more than 10 feet below higher ridges (USDA 1978). The surficial geology of the lower portions of the Facility Area such as the Cohocton River valley is characterized by lacustrine silt and clay of varying thickness as well as proglacial fluvial outwash.

Based on the 2014 New York State Hazard Map (USGS 2014), the Facility Area is located in an area of relatively low seismic hazard, with a 2 % or less chance that peak ground acceleration in a 50 year window is between 4% and 8% of standard gravity. The only recorded in earthquake in Steuben County since 1950 occurred near Bath, New York (about 10 miles southeast of the Facility Area) in 2001 with a Richter scale magnitude of 3.2 (USGS 2015). The USGS Earthquake Hazards Program does not list any young faults, or faults that have had displacement in the Holocene epoch within the vicinity of the Facility Area.

(m) Facility Impacts on Regional Geology

Facility components will be sited to avoid or minimize either temporary or permanent impacts to physiography, geology, and soils, to the extent practical. The Facility is not anticipated to result in any significant impacts to geology. However, depth to bedrock in the Facility Area is expected to be variable and it is possible that some turbine foundations may be set into bedrock (additional detail will be provided in the Article 10 Application based on the Preliminary Geotechnical Investigation discussed above). If bedrock is encountered, it is anticipated to be rippable, and would thus be excavated using backhoes, rock rippers, or chipping hammers. In the event that the bedrock is not rippable, pneumatic jacking or hydraulic fracturing may be utilized. Based on the Applicant's experience constructing other wind power projects (including in New York State), only temporary, minor impacts to physiography and geology are expected as a result of

construction activities. For example, where turbine and access road sites are not located on completely level terrain, some cut and fill or addition of fill will be required; however, the impact to overall topography will be negligible.

As previously indicated in Section 2.21(h) above the Applicant will conduct test borings at a subset of turbine/substation locations, and an analysis of that information will be provided in the Article 10 Application. In addition, prior to commencing construction the Applicant will carry out additional subsurface investigation activities that will consist of soil borings and rock coring as determined necessary by a professional engineer to allow foundation design to be finalized for the proposed wind turbine locations, along with test pits, seismic testing, and additional laboratory testing that will be performed to further evaluate the subsurface soil, bedrock, and groundwater conditions. The results of the site specific subsurface investigation will inform the final Facility design and determine the need for additional analysis. For example, design of concrete and steel structures will be based on analysis of the soils including electrical resistivity, pH, chloride, and sulfate testing. At proposed construction sites identified during the subsurface investigation as being located adjacent to steep slopes, a slope stability analysis will be performed for any structures (i.e., turbine foundations, substations, and buildings). At proposed construction sites with soils identified during the subsurface investigation as having the potential for significant volume changes, the final designs may require soils to be over-excavated and replaced with structural fill beneath structures. Alternatively, the Applicant may employ specialized foundation designs that utilize micro piles or other techniques to assure the foundation's buoyancy and stability.

Additional detail regarding impacts on regional geology will be provided in the Article 10 application based on the Facility-specific Preliminary Geotechnical Investigation.

(n) Impacts of Seismic Activity on Facility Operation

As previously indicated, faults within the vicinity of the Facility are not associated with any historic earthquakes. In addition, the USGS Earthquakes Hazards Program does not identify any young faults within the vicinity of the Facility. Therefore, this topic will not be further addressed in the Article 10 Application.

(o) Soil Types Map

A map delineating soil types on the facility and interconnections sites will be prepared using data from the USDA NRCS Web Soil Survey. It is anticipated that soil data from this source will be categorized by mapping unit and hydric characteristics, at a minimum.

(p) Characteristics of Each Soil Type and Suitability for Construction

The Soil Survey of Steuben County, New York (USDA, 1978) indicates that the Facility Area predominantly consists of four General Soil Associations. These are the Freemont-Mardin, Hornell-Freemont-Mardin, Volusia-Mardin, and the Lordstown-Arnot associations. From these associations, there are 28 soil series within the Facility Area, of which there are 47 individual soil map units. The Mardin, Volusia, Freemont, and Lordstown soil series comprise approximately 67% of the soils within the Facility Area. General descriptions of these four series are provided in Table 4 below.

Table 4. Soil series and their characteristics within the Facility Area.

| Soil Series | Main Characteristics |
|---|---|
| Mardin Series | • Moderately well drained, medium textured<br>• Depth to bedrock greater than 78 inches<br>• Gently sloping to moderately steep on upland plateaus<br>• Well expressed fragipan at a depth of 14–23 inches<br>• Rate of water movement is moderate above the fragipan and slow in and below the fragipan |
| Volusia Series | • Somewhat poorly drained<br>• Depth to bedrock greater than 78 inches<br>• Found on long uniform slopes that are on valley sides and broad divides on uplands.<br>• Well defined fragipan at a depth of 10-20 inches<br>• Rate of water movement is moderate through both the surface layer and often highly impeded at or below the fragipan layer |
| Lordstown Series | • Well drained<br>• Moderately deep, depth to bedrock 20-40 inches<br>• Found on gently sloping to very steep bedrock-controlled ridges, hilltops, and steep valley sides<br>• Rate of water movement is moderate throughout soil |
| Freemont Series | • Somewhat poorly drained, medium to moderately fine textured<br>• Depth to bedrock greater than 78 inches<br>• Found on broad upland flats, in saddles, and on side slopes (0% to 25% slopes)<br>• Rate of water movement is moderately slow in the surface layers and very slow in the substratum |

Source: Soil Survey of Steuben County (USDA, 1978)

The Article 10 Application will include the results of a detailed geotechnical study that will be conducted for the proposed Facility. The geotechnical study will extensively characterize the soil conditions in the proposed locations of Facility components, and address the suitability of these soils for construction of the Facility.

(q) Bedrock Analyses and Maps

Maps, figures, and analyses will be prepared using information obtained from the USGS Online Spatial Geology Data, the USDA NRCS Web Soil Survey, and the Preliminary Geotechnical Analysis conducted for the Facility. These data will identify depth to bedrock and underlying bedrock types, including vertical profiles showing soils, bedrock, water table, and seasonal high groundwater, in relation to typical foundation depths on the Facility Site, and any area to be disturbed for roadways to be constructed, and all off-site interconnections required to serve the Facility.

(r) Foundation Evaluation

Foundation construction occurs in several stages, which typically includes excavation, pouring of concrete mud mat, rebar and bolt cage assembly, outer form setting, casting and finishing of the concrete, removal of the forms, backfilling and compacting, and site restoration. Excavation and foundation construction will be conducted in a manner that will minimize the size and duration of excavated areas required to install foundations. In addition, foundations will be constructed and inspected in accordance with relevant portions of the NYS building code and in conformance with the preliminary geotechnical report.

(1) Preliminary Engineering Assessment

As previously indicated, a Preliminary Geotechnical Evaluation is planned including a literature review of publicly available data, a site visit to observe surficial features and assess general constructability of the proposed Facility, and a preliminary subsurface investigation conducted at a subset of test borings. This information will be used to specifically address the suitability of the on-site surface/subsurface conditions to support turbine foundations, and provide specific recommendations based on the site-specific conditions. The suitability analysis will be included in the Preliminary Geotechnical Evaluation, which will be summarized in Exhibit 21 of (and appended to) the Article 10 Application.

Following Facility certification, additional geotechnical borings will be performed as determined necessary by a professional engineer to allow foundation design to be finalized for turbine locations. This information will be used to support the final structural design of the Facility.

(2) Pile Driving Assessment

It is not anticipated that pile driving will be needed for this Facility.

(3) Mitigation Measures for Pile Driving Impacts

It is not anticipated that pile driving will be needed for this Facility.

(s) Vulnerability to Earthquake and Tsunami Events

As previously indicated, the Facility appears to have minimal vulnerability associated with seismic events based on review of publicly available data. In addition, because the Facility is located approximately 60 miles from the nearest large water body (Lake Ontario), there is no vulnerability associated with tsunami events.

## 2.22 TERRESTRIAL ECOLOGY AND WETLANDS

(a) Plant Communities

For the purposes of the Article 10 Application, plant communities will be broadly identified based on desktop review and reconnaissance-level field review, as summarized below.

Desktop Review

Land Cover in the Facility Area was determined using National Land Cover Data (NLCD) information, which is compiled by the United States Geological Survey (USGS) (Homer et. al, 2015). The Facility Area encompasses approximately 23,870 acres and is primarily forests (51% including deciduous forests, mixed forests, and evergreen forests) and agricultural land (41% including pasture/hay and cultivated crops) as shown in Table 5. According to the NLCD, the Facility Area also includes 5% or less of developed open space, shrub/scrub, and woody wetlands, and less than 1% of coverage of open water, emergent herbaceous wetlands, herbaceous grasslands, and medium intensity development.

Table 5. Land Cover Classes Found within the Facility Area

| Land Cover Class | Area (acres) | Percent Cover (%) |
|---|---|---|
| Deciduous Forest | 8530 | 36 |
| Pasture/Hay | 5312 | 22 |
| Cultivated Crops | 4469 | 19 |
| Evergreen Forest | 1904 | 8 |
| Mixed Forest | 1746 | 7 |
| Developed, Open Space | 734 | 3 |
| Shrub/Scrub | 528 | 2 |
| Woody Wetlands | 489 | 2 |
| Open Water | 60 | <1% |

| Land Cover Class | Area (acres) | Percent Cover (%) |
|---|---|---|
| Developed, Low Intensity | 45 | <1% |
| Emergent, Herbaceous Wetland | 36 | <1% |
| Grassland/Herbaceous | 15 | <1% |
| Developed/Medium Intensity | 1 | <1% |
| Total | 32,328 | |

Source: NLCD 2011

Field Review

Plant communities found within the Facility Area were identified and characterized during reconnaissance level field surveys conducted by EDR during the spring of 2015. All of the major plant communities found within the Facility Area are common to New York State. Forestlands and agricultural lands are the dominant community types in the Facility Area while successional old field and developed/disturbed communities occur to a lesser extent. Brief descriptions are provided below for each of these ecological communities.

### Mixed Deciduous/Coniferous Forestland

Forestland constitutes the largest ecological community type within the Facility Area, and resemble the beech-maple mesic forest and the hemlock-northern hardwood forest communities described in the *Ecological Communities of New York State* (Edinger *et. al.,* 2014). These forests occur throughout the Facility Area, on ridgetops, steep hillsides, and interspersed between agricultural areas. Tree species vary based on the orientation of the slope, but dominant or co-dominant species in most locations include sugar maple, red maple, American beech, eastern hemlock, red spruce, black cherry, white oak, northern red oak, chestnut oak, and yellow birch.

### Successional Old Field

As defined by the *Ecological Communities of New York State* (Edinger *et. al.,* 2014), a successional old field is a meadow dominated by forbs and grasses that occurs on sites that have been cleared and plowed (for farming or development), and then abandoned. Within the Facility Area, this community is located primarily along roadsides, or adjacent to active agricultural fields. Species found in these areas include orchard grass, timothy, goldenrods, clovers, milkweed, asters, Queen Anne's lace, and burdock. Shrubs such as honeysuckle and arrowwood are also components of this community, but represent less than 50% of total vegetative cover.

### Disturbed/Developed

Disturbed/developed land consists of a combination of several "cultural communities" as defined in the *Ecological Communities of New York State* (Edinger *et. al.,* 2014). Disturbed/developed lands occur throughout the Facility Area, and are characterized by the presence of buildings, parking lots, paved and unpaved roads, lawns, gravel mines, and

gas/oil infrastructure. Vegetation in these areas is generally either lacking or highly managed (i.e., mowed lawns or plants seeded along roadsides for erosion control). Volunteer vegetation in these areas is generally sparse, and comprised of old-field, often non-native, herbaceous species such as pokeweed, bull thistle, ragweed, curly dock, and various upland grasses.

### Agricultural Land

As defined by the United States Department of Agriculture (USDA 2007), and for the purposes of this application, agricultural land or crop land consists of cropland harvested, crop failure, cultivated summer fallow, cropland used only for pasture, and idle cropland. Each of these categories consists of variation in vegetation type, intensity of agricultural operations (tillage, seeding, harvesting etc.) and overall land use. What was predominantly found within the Facility Area was row crops that are planted on tilled soil and then harvested, cover crops used to stabilize exposed soils/replenish soil nutrients/provide feedstock for livestock, and pasture land used for livestock grazing and silage production. Vegetation species found on cropland vary from planted crops, including; corn, wheat, soybeans, barley, oats, etc. to pasture crops, meaning; timothy, rye or other perennial grasses. The pasture land is similar in vegetation composition to successional old field with the difference depending on usage for grazing or silage purposes versus a fallow or abandoned agricultural field.

The Article 10 Application will build on the information presented above, and will contain the following specific information:

- Plant community mapping, which will be created using GIS software and will be based on Facility-specific field investigations, along with roadside observations and aerial photo interpretation for adjacent properties.
- Detailed description of all ecological communities identified within the Facility Site
- Plant species list based on Facility-specific field investigations.

(b) Impact to Plant Communities

Impacts to plant communities presented in the Article 10 Application will be calculated using GIS software. Specifically, Facility-related impacts to all plant communities depicted in the mapping described above in support of 1001.22(a) will be calculated in ArcGIS based on the following assumptions:

Table 6. Impact Assumptions.

| Facility Components | Typical Area of Vegetation Clearing | Typical Area of Total Soil Disturbance (temporary and permanent) | Typical Area of Permanent Soil Disturbance |
|---|---|---|---|
| Wind Turbines and Workspaces | Up to 200' radius per turbine | Up to 200' radius per turbine | 0.20 acre per turbine (pedestal plus crane pad) |
| Access Roads | 75' wide per linear foot of road | 60' wide per linear foot of road | 20' wide per linear foot of road |
| Buried Electrical Collection Lines | 40' wide per linear foot of line per collection line circuit | 40' wide per linear foot of line per collection line circuit | None |
| Overhead Electrical Collection Lines | 100' wide per linear foot of line | 15' wide per linear foot of line | 0.10 acre per pole |
| Permanent Meteorological Towers | 1 acre per tower | 0.10 acre per tower | 0.10 acre per tower |
| O&M Building and associated site (4,000 – 6,000 sf) | 2.5 acres | 2.5 acres | 2 acres |
| Staging Area | 5 acres per staging area | 5 acres per staging area | None |
| Collection substation | 4 acres | 4 acres | 3 acres |

The impact assumptions will be used to calculate the total impact to various resources that could result from Facility construction and operation. The method of calculating impacts typically results in a very conservative estimate, because impacts will be calculated by each Facility component, which does not account for overlap of Facility Component areas. For example, in areas where collection line and access roads are co-located, the disturbance resulting from the access road will be added to the disturbance from collection line, without accounting for overlap in these areas. This method accounts for differences in timing of vegetation disturbance. For example, if access roads are constructed prior to installation of collection line, the vegetation may be restored along access road margins but then re-disturbed during collection line installation. This method is especially conservative for impacts to forests, because forests cleared at any point during construction will not have regenerated by the time the vegetation would be re-disturbed.

The Article 10 Application will include an Invasive Species Control Plan (ISCP), which will describe methods for conducting a pre-construction invasive plant survey. This survey will not be conducted prior to the Article 10 Application, but rather will take place as close to the start of construction data as possible, in order to accurately identify conditions existing at the commencement of construction. The ISCP included in the Article 10 application will describe measures to control the spread of invasive species, including construction materials inspection; target species treatment and removal; construction equipment sanitation; and restoration. The ISCP will also outline post-construction monitoring to take place after the Facility is operational. The complete ISCP will be provided in the Application.

(c) Measures To Avoid or Mitigate Plant Community Impacts

The Article 10 Application will include a description of measures that will be implemented to avoid or minimize any impacts to plant communities within the Facility Site. Such measures may include siting considerations, demonstrated avoidance of sensitive vegetative communities, locating Facility Components within existing disturbances (e.g., logging roads), and access restrictions to be implemented during construction and operation.

(d) Vegetation, Wildlife, and Wildlife Habitats

Vegetation

See Plant Communities discussion above in Section (a).

Wildlife

Mammals

Publicly available information regarding the occurrence of mammalian species in the Facility Area is generally not available. Therefore, the occurrence of mammals will be documented through observations made during on-site field surveys for other studies such as wetland and stream delineations, including signs of occurrence such as tracks or scat, and evaluation of available habitat. Mammals species expected to be found in the Facility Area include raccoon, porcupine, gray squirrel, eastern chipmunk, whitetail deer, opossum, beaver, skunk, muskrat, woodchuck, mink, weasels, foxes, and a variety of small mammals (mice and shrews).

To characterize and document bat activity within the Facility Area, Stantec has conducted on-site acoustic bat surveys. The protocols for these surveys were developed in consultation with the NYSDEC and USFWS. Specifically, a draft *Work Plan for Pre-construction Avian and Bat Studies* was provided to the USFWS and the NYSDEC in June 2013 (see Appendix H) and subsequently revised to incorporate agency comments (minutes from various agency meetings are included in Appendix H). The results of the bat surveys will be provided in the Article 10 Application.

### Birds

To determine the type and number of bird species present within the Facility Area, the Article 10 Application will draw on surveys conducted on site, including:

- Fall Migration Surveys conducted by Stantec during the Fall of 2013
- Habitat Assessment conducted by Stantec during the Fall of 2013
- Spring Breeding Bird Surveys conducted by Stantec during the Spring of 2015
- Eagle Point Count Surveys conducted by Stantec in 2013 and 2014

As previously mentioned, the protocols for the on-site avian studies conducted by Stantec were developed in consultation with the NYSDEC and USFWS. Copies of all associated reports were provided to USFWS and NYSDEC personnel on June 20, 2016, which will be finalized upon receipt of comments, if any, and included in the Article 10 Application.

In addition to information from on-site surveys, the Article 10 Application will present information on birds from the New York State Breeding Bird Atlas (BBA), which is a comprehensive, statewide survey that indicates the distribution of breeding birds in the State. Point counts are conducted by volunteers within 5-km by 5-km survey blocks across the state (McGowan and Corwin, 2008). The Facility Area is located within or immediately adjacent to 12 survey blocks, including 2770B, 2770D, 2869A, 2869B, 2869C, 2869D, 2870A, 2870B, 2870C, and 2870D. The Article 10 Application will compile information on birds within the vicinity of the Facility based on records from these survey blocks.

Two other publicly available data sources that contain information about bird species are the North American Breeding Bird Survey (BBS) and Audubon Christmas Bird Count (CBC). The BBS, overseen by the Patuxent Wildlife Research Center of the USGS, is a long-term, large-scale, international avian monitoring program that tracks the status and trends of North American bird populations. Each survey route is 24.5 miles long, with 3-minute point counts conducted at 0.5-mile intervals. During the point counts, every bird seen or heard within a 0.25-mile radius is recorded. Since the closest BBS route (the Swain route) is over 10 miles west of the Facility Area, data from the BBS is not applicable due to the distance between the Facility Site and the survey route and will not be included in the Article 10 Application.

The primary objective of the CBC is to monitor the status and distribution of wintering bird populations across the Western Hemisphere. Counts take place on a single day during a three-week period around Christmas, when volunteers comb a 15-mile (24 km) diameter circle in order to tally up all bird species and individuals observed. Since the edge of the closest count circle to the Facility Site (the Conesus-Hemlock-Honeoye Lakes circle) is approximately

14 miles north of the Facility Area, data from the CBC is not applicable to the Facility Site and will not be included in the Article 10 Application.

### Amphibians and Reptiles

The New York State Amphibians & Reptile Atlas Facility (Herp Atlas) was a survey conducted over ten years (1990-1999), that was designed to document the geographic distribution of New York State's herpetofauna. The USGS 7.5 minute topographic quadrangle is the unit of measurement for data collection for the Herp Atlas. Data from this survey will be queried for the Avoca, Canisteo, Haskinville, and Wayland USGS 7.5 minute quadrangles, which encapsulate the Facility Area. Information based on this query, as well as assessments of suitable habitat in the vicinity of the Facility Area and reptile and amphibian distribution ranges, will be included in the Article 10 Application.

### Invertebrates

Publicly available data on terrestrial invertebrate species are generally not available for upstate New York. The New York Natural Heritage Program (NYNHP) is an agency that maintains data on rare, threatened, and endangered plant and animal species, as well as significant ecological communities in the State. NYNHP does track several invertebrate groups, however, not all invertebrate groups are monitored (NYNHP, undated). A site-specific request for data on rare wildlife species was submitted to NYNHP on April 20, 2016. The NYNHP provided a response on May 31, 2016, which did not identify any rare, threatened, and endangered invertebrates within the Study Area (see Appendix I of this PSS). The Article 10 Application will also provide information on major taxonomic groups of invertebrates likely to be found in the Facility Site, based on available habitat, but will not identify these invertebrates to the species or generic level.

### Wildlife Habitat

Any plant community types identified in 2.22(a) will serve as habitat for various wildlife species, and these communities, if any, will be discussed in the context of wildlife habitat in Exhibit 22 (d) of the Article 10 Application.

As stated above, a request for data on occurrence of significant natural communities was submitted to NYNHP on April 20, 2016. In its response, the NYNHP did not identify any significant natural communities within the Study Area.

The Article 10 Regulations state that Exhibit 22(d) shall include an identification and depiction of any Significant Coastal Fish and Wildlife Habitats (SCFWH) designated by the New York Department of State and NYSDEC. The Facility Area is not within any coastal areas. Therefore, the Facility will not result in impacts to any SCFWH, and SCFWH will not be discussed in the Article 10 Application.

(e) Species List

A Plant Species Inventory and a Wildlife Species Inventory will be included in the Article 10 Application, both of which will be based on existing data, on-site surveys, and/or the availability of suitable habitat, and will identify species that may occur in the Facility Site at some time during the year.

(f) Impacts to Vegetation, Wildlife, Wildlife Habitats, and Wildlife Travel Corridors

Any impacts to vegetation will be addressed in the Article 10 Application as described above in 1001.22(b).

With respect to wildlife and wildlife habitat impacts, the Article 10 Application will address any construction-related impacts that may occur, including incidental injury and mortality due to construction activity and vehicular movement, construction-related silt and sedimentation impacts on aquatic organisms, habitat disturbance/loss associated with clearing and earth-moving activities, and displacement of wildlife due to increased noise and human activities. Potential operational impacts, if any, will also be addressed, which may include minor loss of habitat, possible forest fragmentation, wildlife displacement due to the presence of the wind turbines, and avian and bat collisions with the wind turbines. To the extent any documented wildlife travel corridors are identified within or adjacent to the Facility Site, impacts to such corridors will be addressed.

The Article 10 Application will also present information regarding the presence of threatened and endangered (T&E) species, species of conservation concern, rare species, and Species of Greatest Conservation Need (SGCN), and the Facility's potential to impact such species or their habitats. A table containing information on all species within these categories will be compiled and included in the Article 10 Application. Species included in this table will come from a number of sources, including site-specific correspondence with NYNYP, mentioned above. In addition, the USFWS maintains the Information for Planning and Conservation (IPaC) tool that identifies threatened, endangered, and candidate species listed under the Endangered Species Act for a given project site. IPaC was queried for such records on April 11, 2016 (see Appendix I). The only federally-listed species identified for the Facility Area is the threatened northern long-eared bat (*Myotis septentrionalis*) and will be include in the table. Finally, any protected species documented on-site through wildlife surveys, ecological surveys, or wetland/stream delineations will be included in this table. A discussion of potential impacts to the species included in the table from the construction and operation of the Facility will be included in the Article 10 Application.

(g) Measures to Avoid or Mitigate Impacts to Vegetation, Wildlife and Wildlife Habitat

With respect to measures to avoid or mitigate impacts to plant communities (including vegetation), please see 1001.22(c) above.

The Article 10 Application will include a description of measures to be implemented to avoid or mitigate impacts to wildlife and wildlife habitat within the Facility Site. It is anticipated such measures will include careful site design (e.g., utilizing existing roads, avoiding sensitive habitat, and minimizing disturbance to the extent practicable), adherence to designated construction limits and avoidance of off-limit sensitive areas, adhering to seasonal restrictions (e.g., tree clearing dates), and adhering to construction best management practices.

(h) Avian and Bat Impact Analysis and Monitoring Program:

(1) Avian and Bat Impacts

As previously mentioned numerous pre-construction avian and bat studies are being conducted, which were based on the 2013 *Work Plan for Pre-Construction Avian and Bat Surveys.* Copies of all reports prepared in accordance with this work plan were provided to NYSDEC personnel in June 2016, and these reports will be updated based on NYSDEC comments, if any, and included with the Article 10 Application. Based on the results of these studies, and standard industry practice, the Article 10 Application will discuss potential construction and operation-related impacts to protected avian and bat species, including northern long-eared bat.

In addition, the Article 10 Application will include a cumulative analysis of potential impacts to avian and bat species that could result from operation of the Facility. The cumulative analysis will utilize post-construction monitoring data from similar wind Facilities throughout New York State to assess potential impacts to bird and bat species given the proposed Facility's location relative to other wind-power projects.

(2) Avian and Bat Post-Construction Monitoring

The Article 10 Application will provide information associated with a proposed post-construction monitoring program to be implemented to assess direct and indirect impacts of the wind facility on avian and bat species. The monitoring program will ultimately be developed in consultation with the NYSDEC and USFWS.

(3) Avian and Bat Impact Avoidance and Mitigation Plan

The Article 10 Application will include an outline of a Bird and Bat Conservation Strategy (BBCS) plan, which will briefly describe measures to avoid, minimize, and mitigate impacts to avian and bat species.

(i) Map Showing Delineated Wetland Boundaries

Wetland delineations within the Facility Site will be conducted within a 200-foot wide corridor centered on linear Facility components (e.g., access roads, buried electrical interconnect, overhead transmission line), and within a 200-foot radius of turbines and other components such as permanent meteorological towers, operations and maintenance (O&M) building, staging areas, and the collection substation. This area where delineations will take place is referred to as the Delineation Study Area. Wetland delineations will be conducted in accordance with the three-parameter methodology described in the U.S. Army Corps of Engineers (Corps) *Wetland Delineation Manual* (Environmental Laboratory, 1987), and further described by the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: North Central and Northeastern Region* (USACE, 2012). Wetland boundaries will be defined in the field by sequentially numbered pink surveyor's flagging marked "wetland delineation", the locations of which will be documented using Global Positioning System (GPS) technology with sub-meter accuracy. Wetlands identified by these methods will be referred to as delineated wetlands.

In order to define boundaries out to 500 feet from Facility components, the Applicant's consultant will use interpretation of aerial imagery signatures, on-site observations, analysis of topography, and existing data bases of wetland mapping maintained by National Wetland Inventory (NWI) and NYSDEC. Wetlands identified in this way will be referred to as approximate wetlands.

On-site wetland delineations, and desktop approximations, will be supported by existing databases of state- and federally-mapped wetlands. Review of NYSDEC mapping indicates that a number of freshwater wetlands occur within the Facility Area (see Figure 4). These wetlands are interspersed throughout the Facility Area and many are associated with mapped streams and/or are found within the valleys of Neils Creek, Page Brook, Castle Creek, and tributaries of Carrington Creek. Table 7 provides a summary of State-regulated wetlands in the Facility Area.

Table 7. NYSDEC-Mapped Wetlands

| Wetland | Class[1] | Total Size | Size Within Facility Area (Acres) |
|---|---|---|---|
| HK-2 | III | 12.6 | 12.6 |
| HK-3 | II | 12.2 | 12.2 |
| HK-3 | II | 144.9 | 143.2 |
| HK-3 | II | 17.9 | 17.9 |
| HK-4 | III | 61.3 | 0.3 |
| HK-6 | II | 15.4 | 15.4 |
| HK-7 | III | 43.2 | 39.3 |
| HK-7 | III | 18.8 | 18.8 |
| HK-8 | III | 11.1 | 3.2 |
| HK-8 | III | 40.1 | 40.1 |
| HK-9 | III | 0.9 | 0.9 |
| HK-10 | III | 9.6 | 9.6 |
| HK-11 | III | 13.9 | 13.9 |
| HK-12 | II | 3.9 | 3.9 |
| HK-13 | III | 4.7 | 4.7 |
| HK-14 | III | 16.3 | 16.3 |

[1]NYS classification system. Four separate classes that rank wetlands according to their ability to provide functions and values (Class I having the highest rank, descending through Class IV).

National Wetland Inventory (NWI) mapping indicates 208 wetland communities exist within the Facility Area, which cumulatively total 528 acres. The NWI data indicate that freshwater forested/shrub wetlands comprise the majority of wetland communities on-site, totaling approximately 397 acres. Other NWI-mapped wetland communities on-site include freshwater emergent wetlands (62 acres), and freshwater ponds (69 acres).

(j) Description of Wetlands

The characteristics of all field delineated wetlands will be described in the Article 10 Application, which will also include a summary of the field data collected regarding vegetation, soils, and hydrology. In addition, it is anticipated that copies of the Corps *Wetland Determination Data Form* completed for each field delineated wetland will be included with the Wetland Delineation Report attached to the Article 10 Application.

(k) Wetland Functional Assessment

A functions and values assessment will be included in the Article 10 Application. It is anticipated that this assessment will follow the general methodology described in the *Wetlands Functions and Values: Descriptive Approach* in the September 1999 supplement to *The Highway Methodology Workbook* (Supplement) by the New England Division of the USACE (USACE, 1995).

Wetland functions are ecosystem properties that result from the biologic, geologic, hydrologic, chemical and/or physical processes that take place within a wetland. These functions include:

1. Groundwater Recharge/Discharge
2. Floodflow Alteration
3. Fish and Shellfish Habitat
4. Sediment/Pollutant Retention
5. Nutrient Removal/Retention/Transformation
6. Production (Nutrient) Export
7. Sediment/Shoreline Stabilization
8. Wildlife Habitat

Wetland values are the perceived benefits for society that can be derived from the ecosystem functions and/or other characteristics of a wetland. Values attributed to wetlands in the Supplement include the following:

1. Recreation
2. Education/Scientific Value
3. Uniqueness/Heritage
4. Visual Quality/Aesthetics
5. Threatened or Endangered Species Habitat

These functions and values will be evaluated in the Article 10 Application.

(l) Offsite Wetlands Analysis

As described above in 22(i), wetland boundaries within 500 feet of all Facility components will be mapped using interpretation of aerial imagery signatures, on-site observations, analysis of topography, and existing data bases of wetland mapping maintained by NWI and NYSDEC. This mapping will be used to inform an analysis of hydrological connections to offsite wetlands, including those that are state mapped wetlands protected by NYSDEC.

(m) Wetland Impacts

During construction, potential direct or indirect impacts to wetlands and surface waters may occur as a result of the installation of access roads, the upgrade of local public roads, the installation of above-ground or buried electrical interconnects, and the development and use of temporary workspaces around the turbine sites. Direct impacts, including clearing of vegetation, earthwork (excavating and grading activities), and the direct placement of fill in wetlands and surface waters, are typically associated with the development of access roads and workspaces around turbines. The construction of access roads is anticipated to result in both permanent (loss of wetland/surface water acreage) and temporary impacts to wetlands. The development and use of temporary workspaces will result in only temporary impacts to wetlands/streams. The installation of above-ground or buried collection lines will temporarily disturb streams and wetlands during construction as a result of clearing (brushhogging, or similar clearing method requiring no removal of rooted woody plants), and soil disturbance from burial of the electrical collection lines. Indirect impacts to wetlands and surface waters may result from sedimentation and erosion caused by adjacent construction activities (e.g., removal of vegetation and soil disturbance). This indirect impact may occur at wetlands adjacent to work areas where no direct wetland impacts are anticipated, including areas adjacent to proposed access road upgrade/construction, electrical collection and transmission routes, turbine sites, staging area(s), wind measurement towers, or the substations.

The Article 10 Application will quantify both temporary and permanent impacts to wetlands, based on the level of detail available at the time of submittal (i.e., potential impacts based on application of impact assumptions).

(n) Measures to Avoid/Mitigate Wetland Impacts

The Article 10 Application will discuss measures to be implemented to avoid and mitigate wetland impacts. It is anticipated that direct impacts to wetlands/streams will be minimized by utilizing existing or narrow crossing locations whenever possible. Additional measures may include special crossing techniques, equipment restrictions, herbicide use restrictions, and erosion and sedimentation control measures. Compensatory mitigation measures may be considered, depending on level of impacts anticipated.

(o) State and Federal Endangered or Threatened Species

State and federal T&E species documented within or adjacent to the Facility Site, along with potential impacts, if any, to such species, will be identified in the Article 10 Application. Please see the T&E discussion above in association with 1001.22(f) for more information.

(p) Invasive Species Prevention and Management Plan

Please see (b) above for a description of the Invasive Species Control Plan (ISCP) to be prepared.

(q) Agricultural Impacts

The presence of agricultural land will be documented based on site-specific field investigations and review of aerial imagery. The type of agricultural use (e.g., row crops, hayfields, pasture) will also be documented in the Article 10 Application. All impacts to agricultural land will be based on GIS calculations, as described above in association with 1001.22(b), and mitigation is anticipated to generally follow the guidelines established by the New York State Department of Agriculture and Markets (NYSDAM).

## 2.23 WATER RESOURCES AND AQUATIC ECOLOGY

Exhibit 23 of the Article 10 Application will include a study of the groundwater, surface water, and aquatic ecology impacts of the Facility consisting of the identification and mapping of existing conditions, an impact analysis, and proposed impact avoidance and mitigation measures.

(a) Groundwater

(1) Hydrologic Information

Based on preliminary evaluations conducted in support of this PSS, depth to groundwater ranges from the ground surface to greater than 200 centimeters throughout the Facility Area, with high water tables most common in low-lying areas in and adjacent to wetlands. Depth to bedrock ranges from 33 centimeters to greater than 200 centimeters, the large majority of the Facility Area having soils greater than 200 centimeters (Soil Survey Staff, 2016). The Article 10 Application will include maps showing depth to bedrock and depth to water table throughout the Facility Site, based on the Soil Survey of Steuben County, New York.

(2) Groundwater Aquifers and Recharge Areas

Based on preliminary evaluations conducted in support of this PSS, the northern portion of the Facility Area overlays part of one primary aquifer, a designation applied by US Geological Survey (USGS) and New York State Department of Environmental Conservation (NYSDEC) to aquifers that are highly productive and utilized by major municipal water supply systems (NYSDEC, 2011). Part of this primary aquifer overlaps the Valley Fill Aquifer

Critical Environmental Area (CEA), which was designated by the Town of Wayland due to its use a primary source of drinking water (NYSDEC, undated).

The Facility Area also overlays parts (in some cases very small parts) of seven unconsolidated aquifers mapped by NYSDEC Division of Water, Bureau of Water Resources Management (NYSDEC, 2008). The US Environmental Protection Agency (USEPA) maintains data on sole source aquifers, which are those that supply at least 50% of the drinking water in a given area. Cattaraugus Creek Sole Source Aquifer is the nearest sole-source aquifer, located over 44 miles west of the Facility Area (USEPA, 2011). Therefore, it is anticipated that the Facility will not result in impacts to sole-source aquifers. This will be confirmed in the Article 10 Application.

To identify existing water wells in the area, a Freedom of Information Law request letter was sent to the NYSDEC on April 20, 2016 and to Steuben County on April 28, 2016. These letters requested any information pertaining to groundwater wells (including location, construction logs, depths, and descriptions of encountered bedrock) within the Facility Area. The Article 10 Application will include information received from the NYSDEC and Steuben County on water wells, including location, depth, yield, and use, if such data are available.

In addition, private wells will also be identified by sending a well survey to all residences/businesses located within a 2,000-foot radius of the proposed Facility. A summary of responses received from the well survey will be included in the Article 10 Application, along with a corresponding GIS-based parcel map. However, the Applicant cannot guarantee that a response to all (or even a majority of the) surveys will be received.

(3) Groundwater Impacts

Many of the proposed turbines will be located in higher elevation uplands, generally above and outside of the aquifer footprints located in the valleys. One exception is in the northeastern portion of the Facility Area, where a large area is underlain by the Upper Cohocton aquifer. This is labeled as a “Primary Aquifer Region” in a GIS dataset maintained by NYSDEC Division of Water, Bureau of Water Resources Management entitled *Unconsolidated Aquifers at 1:250,000* (NYSDEC, 2008). However, most of this area is not identified as a primary aquifer based on a GIS dataset entitled *Primary Aquifers – 1:24,000* (NYSDEC, 2011). The Applicant will consult with the NYSDEC in an attempt to identify the exact location of any primary aquifers in this area. Please see Figure 5 for locations of mapped aquifers in the Facility Area.

Despite proximity to mapped aquifers, the Facility is not anticipated to result in any significant impacts to groundwater quality or quantity, drinking water supplies, or aquifer protection zones. Excavations for foundations,

roadways, and underground collection lines are expected to be relatively shallow, and are not anticipated to intercept groundwater within the surrounding aquifers. The Facility will add only small areas of impervious surface, which will be dispersed throughout the Facility site, and will have a negligible effect on groundwater recharge. Additional detail regarding groundwater impacts will be provided in the Article 10 Application, including results from a geotechnical evaluation, as well as specific avoidance, minimization, and mitigation measures that will be implemented to protect groundwater resources during construction of the Facility.

(b) Surface Waters

(1) Surface Waters Map

A map will be prepared identifying all surface waters within the Facility site, including intermittent streams (to the extent such streams are identified in publicly available data). Sources of information will include publicly available data from the NYSDEC and ESRI, along with stream data collected during on-site wetland and stream delineations. This map will be included with the Article 10 Application.

(2) Description of Surface Waters

The Facility Area is located in a topographically high position at the boundaries between three watersheds. The majority of the Facility Area (approximately 71%), including all of the eastern portion, lies within the Chemung drainage basin (USGS Hydrologic Unit 02050105). The northwestern portion of the Facility Area (approximately 7%) drains into the Upper Genesee drainage basin (USGS Hydrologic Unit 04130002), while the southwestern portion of the Facility Area (approximately 22%) drains into the Tioga drainage basin (USGS Hydrologic Unit 02050104). The Chemung River Basin drains approximately 1,740 square miles of New York State, and is a significant tributary of the Susquehanna River. There are approximately 2,940 miles of rivers and streams and 90 significant lakes and ponds in the Chemung River Basin. The Genesee River Basin drains approximately 2,480 square miles, the majority of which is in New York State, and includes most of Livingston and Allegany Counties, large parts of Monroe, Genesee and Wyoming Counties, and portions of Orleans, Ontario, Steuben and Cattaraugus Counties.

Under Article 15 of the Environmental Conservation Law (Protection of Waters), the New York State Department of Environmental Conservation (NYSDEC) has regulatory jurisdiction over any activity that disturbs the bed or banks of protected streams. Any stream, or particular portion of a stream, that has been assigned by the NYSDEC any of the following classifications or standards is considered a protected stream: 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 and non-contact activities, and Class D waters represent the lowest classification standard. Streams designated (t) indicate that they support trout, and also include those more specifically designated (ts) which support trout spawning. The Article 10 Application will identify the classification for all NYSDEC mapped streams within the Facility Site (see Figure 6). Characteristics of the streams in the Facility Site will be described in the Article 10 Application, based on publicly available data and when available, supplemented by field data collected during any on-site wetland and stream delineations.

With respect to fish species, an email request was submitted to the NYSDEC on June 3, 2016 for data on fish communities in streams associated with the Facility Area. A response from the NYSDEC was received on July 7, 2016, which contained a spreadsheet of results from a statewide database query (see Appendix J for a copy of all related correspondence). These data provide information on fish species that have been caught or identified in the streams of interest. The data were compared to the state and federal databases of threatened and endangered species, which indicated that these streams contain no documented federally-listed threatened or endangered species. In addition, according to the data received from the NYSDEC, there are no occurrences of State-listed endangered, threatened, or special concern fish species in these streams.

Please note that aquatic invasive species as identified by the NYSDEC (http://www.dec.ny.gov/animals/50272.html), which are observed while conducting delineations and field investigations, will be documented and included in the Article 10 Application. However, a comprehensive inventory of aquatic species or aquatic invasive species will not be included.

(3) Drinking Water Supply Intakes

A FOIL request on the location of downstream surface drinking water intake sites was submitted to Steuben County Department of Public Health on April 28, 2016. The inquiry requested data on public surface drinking water intake sites within 1 mile of the proposed Facility or, if there are no such intake sites, the nearest intakes downstream of the Facility Area. Because the proposed Facility would be located within three watersheds, the Applicant requested data for the Chemung, Tioga, and Upper Genesee watersheds. The Article 10 Application will identify the surface drinking water intake sites identified through this correspondence, and discuss the type, nature, and extent of services provided by each source based on the information received.

(4) Impacts to Surface Waters

Facility components will be sited to avoid or minimize both temporary and permanent impacts to surface waters to the extent practicable. Large built components of the Facility, including wind turbine foundations, the O&M facility, and substation, are anticipated to avoid surface waters to the maximum extent practicable. In addition, large temporary construction areas (e.g., staging areas) will avoid surface water impacts to the maximum extent practicable. Number and overall impacts due to access road and collection line crossings will be minimized by utilizing existing crossings and narrow crossing locations to the extent practicable.

During construction, potential direct or indirect impacts to surface waters may occur as a result of the installation of access roads and wind turbine foundations, the upgrade of local public roads, the installation of above ground or buried electrical interconnects, the development and use of temporary workspaces around the turbine sites and temporary workspaces around the substation. Direct impacts include 1) an increase in water temperature and conversion of cover type due to clearing of vegetation, 2) siltation and sedimentation due to earthwork, such as excavating and grading activities, 3) disturbance of stream banks and/or substrates resulting from buried cable installation, and 4) the direct placement of fill in surface waters to accommodate road crossings. Indirect impacts to surface waters may result from sedimentation and erosion caused by construction activities (e.g., removal of vegetation and soil disturbance).

As previously stated, an on-site wetland and stream delineation will be conducted and a Wetland and Stream Delineation Report will be prepared and included with the Article 10 Application. Based on the Facility layout (i.e., proposed footprint of all Facility components) and the delineated stream and wetland boundaries, GIS calculations will be performed to determine the approximate acreage of surface waters that may be temporarily and permanently impacted. The Article 10 Application will also address potential Facility-related impacts to drinking water supplies. No dredging is proposed as part of this Facility. Therefore, the Article 10 Application will not identify precautions taken to avoid or minimize the need for dredging.

(5) Measures to Avoid or Mitigate Surface Water Impacts

Direct impacts to surface waters will be minimized by designing the Facility layout to avoid surface water impacts where practicable, and other measures such as utilizing existing or narrow crossing locations whenever possible. Upgrading existing crossings that are under-maintained/undersized will have a long-term beneficial effect on water quality, as it will help to keep farm equipment or other vehicles out of surface waters. Special crossing techniques, equipment restrictions, herbicide use restrictions, and erosion and sedimentation control measures will be utilized

to reduce adverse impacts to water quality, surface water hydrology, and aquatic organisms. In addition, clearing of vegetation along stream banks will be kept to a minimum.

Where crossings of surface waters are required, Best Management Practices will be utilized, as required by the NYSDEC and the USACE. Specific mitigation measures for protecting surface water resources will be described in the Article 10 Application, and may include the following:

- *No Equipment Access Areas:* Except where crossed by permitted access roads or through non-jurisdictional use of temporary matting, streams will be designated "No Equipment Access," thus prohibiting the use of motorized equipment in these areas.
- *Restricted Activities Area:* A buffer zone of 100 feet, referred to as "Restricted Activities Area", will be established where Facility construction traverses streams, wetlands and other bodies of water. Restrictions will include:
    - No deposition of slash within or adjacent to a waterbody;
    - No accumulation of construction debris within the area;
    - Herbicide restrictions within 100 feet of a stream or wetland (or as required per manufacturer's instructions);
    - No degradation of stream banks;
    - No equipment washing or refueling within the area;
    - No storage of any petroleum or chemical material; and
    - No disposal of excess concrete or concrete wash water.
- *Sediment and Siltation Control*: A soil erosion and sedimentation control plan will be developed and implemented as part of the SPDES General Permit for the Facility. Silt fences, hay bales, and temporary siltation basins will be installed and maintained throughout Facility construction. Exposed soil will be seeded and/or mulched to assure that erosion and siltation is kept to a minimum along wetland boundaries. Specific control measures will be identified in the Facility Stormwater Pollution Prevention Plan (SWPPP), and the location of these features will be indicated on construction drawings and reviewed by the contractor and other appropriate parties prior to construction. These features will be inspected on a regular basis to assure that they function properly throughout the period of construction, and until completion of all restoration work.

(c) Stormwater

(1) Stormwater Pollution Prevention Plan

Prior to construction, the Applicant will seek coverage under the NYSDEC State Pollution Discharge Elimination System (SPDES) General Permit with a Notice of Intent for Stormwater Discharges from Construction Activity issued in January 2015 and effective on January 29, 2015 (modified July 15, 2015) (please see http://www.dec.ny.gov/docs/water_pdf/gp015002.pdf). This authorization is subject to review by NYSDEC, and is independent of the Article 10 process. The Article 10 Application will contain a Preliminary SWPPP, which will describe in general terms the erosion and sediment control practices that will likely be implemented during construction activities. The Preliminary SWPPP will provide typical information on temporary and permanent erosion and sediment control measures (vegetative and structural), construction phasing and disturbance limits, waste management and spill prevention, and site inspection and maintenance.

(2) Post-Construction Erosion and Sediment Control Practices

As described above, the Preliminary SWPPP and associated erosion and sedimentation control plan will address the anticipated stormwater management practices that will be used to reduce the rate and volume of stormwater runoff after Facility construction has been completed. The Article 10 Application will include a description of the green infrastructure practices (e.g., vegetative filters) for stormwater quality to be implemented at the Facility Site, as described in the Preliminary SWPPP.

Following Certification of the Facility, it is anticipated that hydrologic models (e.g., Hydraflow Hydrographs Extension for AutoCAD Civil 3D software) based upon measurable watershed characteristics will be utilized by professional engineers to calculate stormwater discharges. Stormwater runoff rates discharged from the site under existing conditions (pre-construction) will provide the basis for evaluation and comparison to proposed conditions (post-construction). Design points of interest will be established where stormwater runoff exits the site (e.g., where proposed Facility access roads intersect with existing public roads/roadside ditches). These design points will provide fixed locations at which existing and proposed stormwater quantities can be compared. The areas draining to these design points will be delineated using land survey information and proposed grading plans, and a hydrologic analysis of each of the drainage areas will be conducted to model their discharges (typically for the 1, 2, 10, 25, 50 and 100-year storm events). Because final engineering will not be completed until the Facility has been certified, and because the Applicant will ultimately seek coverage under the SPDES General Permit independent of the Article 10 process, a final SWPPP will not be included in the Application.

(d) Chemical and Petroleum Bulk Storage

(1) Spill Prevention and Control Measures

The Article 10 Application will describe the Best Management Practices to be implemented during construction to prevent and contain spills. In addition, the Article 10 Application will contain a Preliminary Spill Prevention, Containment and Counter Measures (SPCC) Plan that will be implemented during Facility operation to minimize the potential for unintended releases of petroleum and other hazardous chemicals. This plan is anticipated to contain information about water bodies to be included in the final SPCC, procedures for loading and unloading transfers of oil, discharge or drainage controls, procedures in the event of discharge discovery, a discharge response procedure, a list of spill response equipment to be maintained on-site,), methods of disposal of contaminated materials in the event of a discharge, and spill reporting information.

(2) Compliance with New York State Chemical and Petroleum Bulk Storage Regulations

It is not anticipated that the Facility will require the on-site storage or disposal of large volumes of any substances subject to regulation under the State of New York's chemical and petroleum bulk storage programs (e.g., fuel oil, petroleum, etc.). This will be confirmed in the Article 10 Application.

(3) Compliance with Local Laws for Storage of Chemicals or Petroleum

It is not anticipated that the Facility will require the on-site storage or disposal of large volumes of any substances subject to regulation under local laws. This will be confirmed in the Article 10 Application.

(e) Aquatic Species and Invasive Species

(1) Impact to Biological Aquatic Resources

The Article 10 Application will contain the results of the on-site wetland and stream delineation field effort, which will be used to micro-site various Facility components (as needed) so as to further minimize impacts to surface waters, as practicable. Based on the Facility layout and the delineated stream and wetland boundaries, calculations will be performed to determine the anticipated acreage of surface waters to be temporarily and permanently impacted, as discussed above in Section 2.23(b)(4). The identification of the locations of surface waters to be impacted will allow for an analysis of potential impacts on biological aquatic resources, including any listed endangered, threatened, or special concern species that may occupy potentially affected waters.

For additional information on how aquatic invasive species will be addressed in the Article 10 Application, please see Section 2.23(b)(2) above.

(2) Measures to Avoid or Mitigate Impacts to Aquatic Species

Avoidance measures implemented to minimize impacts to surface waters will also serve to avoid or mitigate impacts to aquatic resources. Please see Section 2.23(b)(5) above for additional information.

(f) Cooling Water

The proposed Facility does not involve the use of cooling water, and as such, the requirements of this section are not applicable to this Facility. Therefore, information related to cooling water systems, intake, and discharge will not be included in the Article 10 Application.

## 2.24 VISUAL IMPACTS

(a) Visual Impact Assessment

A Visual Impact Assessment (VIA) will be conducted to determine the extent, and assess the significance of, Facility visibility. The VIA procedures used for this study will be consistent with methodologies developed by various state and federal agencies, including the U.S. Department of the Interior, Bureau of Land Management (1980), U.S. Department of Agriculture, National Forest Service (1974), the U.S. Department of Transportation, Federal Highway Administration (1981), U.S. Army Corps of Engineers (Smardon, et al., 1988) and the NYSDEC (not dated, 2000). The components of the VIA will include identification of visually sensitive resources, viewshed mapping, confirmatory visual assessment fieldwork, visual simulations (photographic overlays), cumulative visual impact analysis, and proposed visual impact mitigation.

(1) Character and Visual Quality of the Existing Landscape

Per the definition set forth at 1000.2(ar), the visual study area to be used for analysis of major electric generating facilities is defined as "*an area generally related to the nature of the technology and the setting of the proposed site. For large facilities or wind power facilities with components spread across a rural landscape, the study area shall generally include the area within a radius of at least five miles from all generating facility components, interconnections and related facilities and alternative location sites. For facilities in areas of significant resource concerns, the size of a study area shall be configured to address specific features or resource issues*."

A 10-mile visual study area will be established for the purpose of identifying visually sensitive resources of regional and/or statewide significance. Although a five-mile study area is typical in some instances, a 10-mile study area will be used in order to identify any potential "significant resource concerns" beyond five miles that would warrant the use of a larger study area. A more inclusive inventory of locally significant visually sensitive resources will be conducted for the area within five miles of the proposed Facility.

The Application will discuss the physiographic and vegetative community characteristics of the 10-mile-radius visual study area. Per the requirements set forth in 16 NYCRR § 1000.24(b)(1), Landscape Similarity Zones must be defined within the visual study area to be shown along with other indicators of potential visual impact (i.e. viewshed maps). Definition of discrete landscape types within a given study area provides a useful framework for the analysis of a project's potential visual effects. These landscape types, referred to in the PSS and Application as Landscape Similarity Zones (LSZs), are defined based on the similarity of various landscape characteristics including landform, vegetation, water, and/or land use patterns, in accordance with established visual assessment methodologies (Smardon et al., 1987; USDA Forest Service, 1995; USDOT Federal Highway Administration, 1981; USDI Bureau of Land Management, 1980). Distinct LSZs within the visual study area will be identified, defined, and the approximate location of these LSZs will be illustrated in the Application.

(2) Visibility of the Facility

The VIA will include an analysis of potential visibility and identify locations within the visual study area where it may be possible to view the proposed Facility turbines or substations. This analysis will include identifying potentially visible areas on viewshed maps and verifying line of sight conditions in the field. The purpose of these field visits will be to verify the existence of direct lines of sight to the Facility as indicated by viewshed analysis, and to obtain photographs for subsequent use in the development of visual simulations. With respect to line of sight, please see Section (b)(1) below.

Topographic and Vegetation viewshed maps will be created to identify potential visibility of wind turbines. The methodology for these analyses is described in detail below in Section (b)(2). In addition, visual field review will be conducted in the study area. During these site visits, public roads and public vantage points will be visited to document locations from which the turbines would likely be visible, partially screened, or fully screened. This determination will be made based on the visibility of the distinctive Facility site ridges/landforms, as well as existing tall structures (such as silos and temporary meteorological towers) on the Facility site, which will serve as locational and scale references. These site visits will result in photographs from many (in excess of 100) representative viewpoints within the study area. The viewpoints will document potential visibility of the Facility from the various

LSZs, distance zones, directions, visually sensitive resources, and area of high public use throughout the visual study area.

During the site visits, photos will be taken using digital SLR cameras with a minimum resolution of six megapixels. All cameras will utilize a focal length between 28 and 35 mm (equivalent to between 45 and 55 mm on a standard 35 mm film camera). This focal length is the standard used in visual impact assessment because it most closely approximates normal human perception of spatial relationships and scale in the landscape (CEIWEP, 2007). Viewpoint locations will be documented using hand-held global positioning system (GPS) units and high resolution aerial photographs (digital ortho quarter quadrangles). The time and location of each photo will be documented on all electronic equipment (cameras, GPS units, etc.) and noted on field maps and data sheets. The results of the field review will be presented in detail with visual aids in the VIA.

(3) Visibility of Above-ground Interconnections and Roadways

Access roads will be included in all visual simulations in which they would be visible. With respect to any proposed overhead collection line, the engineering design (e.g., pole locations and height) will not be completed at the time of the Article 10 Application is submitted. However, to address the potential visual effect of the overhead collection line, representative photographs from built facilities will be included in the Application.

(4) Appearance of the Facility Upon Completion

To show anticipated visual changes associated with the proposed Facility, high-resolution computer-enhanced image processing will be used to create realistic photographic simulations of the proposed Facility from selected viewpoints. The photographic simulations will be developed by using appropriate software (e.g., Autodesk 3ds Max Design 2015®) to create a simulated perspective (camera view) to match the location, bearing, and focal length of each existing conditions photograph. Existing elements in the view (e.g., topography, buildings, roads) will be modeled based on aerial photographs and DEM data, and a three dimensional ("3-D") topographic mesh of the landform (based on DEM data) will be brought into the 3-D model space. At this point minor adjustments will be made to camera and target location, focal length, and camera roll to align all modeled elements with the corresponding elements in the photograph. This assures that any elements introduced to the model space (i.e., the proposed turbines) will be shown in proportion, perspective, and proper relation to the existing landscape elements in the view. As a result, the alignment, elevations, dimensions and locations of the proposed Facility structures will be accurate and true in their relationship to other landscape elements in the photograph.

A computer model of the proposed turbine layout will be prepared based on specifications and data provided by the Applicant. All turbine rotors will be modeled facing into the prevailing wind (e.g., oriented to the west). Using the camera view as guidance, the visible portions of the modeled turbines will be imported to the landscape model space described above, and set at the proper coordinates.

Once the proposed Facility is accurately aligned within the camera view, a lighting system will be created based on the actual time, date, and location of the photograph. Thus, light reflection, highlights, color casting, and shadows will be accurately rendered on the modeled Facility based on actual environmental conditions represented in the photograph. The rendered Facility will then be superimposed over the photograph and portions of the turbines that fall behind vegetation, structures or topography will be masked out.

In addition, for some views, "wireframe renderings" may be prepared to illustrate the potential screening effect of vegetation or other features in the photograph from a given viewpoint that screen or partially screen views of the Facility. In these wireframe renderings, the portions of the proposed turbines that would be screened by vegetation (or other factors) will be shown in a bright color (for illustrative purposes). These wireframe renderings may be prepared for viewpoints that are being considered as candidates for visual simulations, or for the explicit purpose of illustrating the effects of screening.

(5) Lighting

The potential visibility of FAA warning lights for the proposed turbines is described in Section (b)(1) below.

(6) Photographic Overlays

To show anticipated visual changes associated with the proposed Facility, high-resolution computer-enhanced image processing will be used to create realistic photographic simulations of the completed turbines from each of the selected viewpoints. See Section (a)(4) above for discussion of the methodology to be used for creating the simulations.

(7) Nature and Degree of Visual Change from Construction

Visual impacts during construction are anticipated to be relatively minor and temporary in nature. Representative photographs of construction activities will be included in the VIA. Anticipated visual effects during construction will also be described. Construction and operation of the Facility will likely result in impacts to soils and on-site plant communities. These impacts may include vegetation clearing and disturbance from construction, as well as permanent loss of vegetated habitats by conversion to built facilities.

(8) Nature and Degree of Visual Change from Operation

To evaluate anticipated visual change, the photographic simulations of the completed Facility will be compared to photos of existing conditions from each of the selected viewpoints. These "before" and "after" photographs, identical in every respect except for the Facility components to be shown in the simulated views, will be provided as 11 x 17 inch color prints to three registered landscape architects, who will determine the effect of the proposed Facility in terms of its contrast with existing elements of the landscape. The methodology to be utilized was developed by EDR in 1999 for use on wind projects and is a simplified version of the U.S. Bureau of Land Management (BLM) contrast rating methodology (USDI BLM, 1980). It involves using a short evaluation form, and a simple numerical rating process to assign visual contrast ratings on a scale of 0 (insignificant) to 4 (strong). A copy of this form is included as Appendix K to this PSS. Along with having proven to be accurate in predicting public reaction to wind power Facilities, this methodology 1) documents the basis for conclusions regarding visual impact, 2) allows for independent review and replication of the evaluation, and 3) allows a large number of viewpoints to be evaluated in a reasonable amount of time. Landscape, viewer, and Facility related factors to be considered by the landscape architects in their evaluation will include the following:

- *Landscape Composition:* The arrangement of objects and voids in the landscape that can be categorized by their spatial arrangement. Basic landscape components include vegetation, landform, water and sky. Some landscape compositions, especially those that are distinctly focal, enclosed, detailed, or feature-oriented, are more vulnerable to modification than panoramic, canopied, or ephemeral landscapes.

- *Form, Line, Color, and Texture*: These are the four major compositional elements that define the perceived visual character of a landscape, as well as a Facility. Form refers to the shape of an object that appears unified; often defined by edge, outline, and surrounding space. Line refers to the path the eye follows when perceiving abrupt changes in form, color, or texture; usually evident as the edges of shapes or masses in the landscape. Texture in this context refers to the visual surface characteristics of an object. The extent to which form, line, color, and texture of a Facility are similar to, or contrast with, these same elements in the existing landscape is a primary determinant of visual impact.

- *Focal Point*: Certain natural or man-made landscape features stand out and are particularly noticeable as a result of their physical characteristics. Focal points often contrast with their surroundings in color, form, scale or texture, and therefore tend to draw a viewer's attention. Examples include prominent trees, mountains and water features. Cultural features, such as a distinctive barn or steeple can also be focal

points. If possible, a proposed Facility should not be sited so as to obscure or compete with important existing focal points in the landscape.

- *Order*: Natural landscapes have an underlying order determined by natural processes. Cultural landscapes exhibit order by displaying traditional or logical patterns of land use/development. Elements in the landscape that are inconsistent with this natural order may detract from scenic quality. When a new Facility is introduced to the landscape, intactness and order are maintained through the repetition of the forms, lines, colors, and textures existing in the surrounding built or natural environment.

- *Scenic or Recreational Value*: Designation as a scenic or recreational resource is an indication that there is broad public consensus on the value of that particular resource. The particular characteristics of the resource that contribute to its scenic or recreational value provide guidance in evaluating a Facility's visual impact on that resource.

- *Duration of View*: Some views are seen as quick glimpses while driving along a roadway or hiking a trail, while others are seen for a more prolonged period of time. Longer duration views of a Facility, especially from significant aesthetic resources, have the greatest potential for visual impact.

- *Atmospheric Conditions*: Clouds, precipitation, haze, and other ambient air related conditions, which affect the visibility of an object or objects. These conditions can greatly impact the visibility and contrast of landscape and Facility components, and the design elements of form, line, color, texture, and scale.

- *Lighting Direction*: Backlighting refers to a viewing situation in which sunlight is coming toward the observer from behind a feature or elements in a scene. Front lighting refers to a situation where the light source is coming from behind the observer and falling directly upon the area being viewed. Side lighting refers to a viewing situation in which sunlight is coming from the side of the observer to a feature or elements in a scene. Lighting direction can have a significant effect on the visibility and contrast of landscape and Facility elements.

- *Scale*: The apparent size of a proposed Facility in relation to its surroundings can define the compatibility of its scale within the existing landscaping. Perception of Facility scale is likely to vary depending on the distance from which it is seen and other contextual factors.

- *Spatial Dominance*: The degree to which an object or landscape element occupies space in a landscape, and thus dominates landscape composition from a particular viewpoint.

- *Visual Clutter*: Numerous unrelated built elements occurring within a view can create visual clutter, which adversely impacts scenic quality.

- *Movement*: Moving Facility components can make them more noticeable, but in the case of wind turbines, have also been shown to make them appear more functional and visually appealing. Numerous studies have documented that viewers prefer to see wind turbines in motion.

(9) Operational Effects of the Facility

To determine operational effects of the Facility a Shadow Flicker analysis will be conducted. The analysis will look at the potential shadow flicker occurrence on nearby potential receptors, including number of potential receptors and predicted annual hours of shadow flicker at each receptor within the shadow flicker study area. Shadow flicker methodology is previously discussed in Section (15)(e)(4) of this PSS.

(10) Measures to Mitigate for Visual Impacts

Mitigation options are anticipated to be limited, given the nature of the Facility and its siting criteria (very tall structures typically located in open fields at the highest locally available elevations). However, in accordance with NYSDEC Program Policy (NYSDEC, 2000), various mitigation measures will be considered, These include the following:

- Professional Design
- Screening
- Relocation
- Camouflage
- Low Profile
- Downsizing
- Alternate Technologies
- Non-specular Materials
- Lighting
- Maintenance

- Offsets

Not all of these mitigation measures are anticipated to be feasible for the Facility. The Application will discuss feasibility of the various mitigation options.

(11) Description of Visual Resources to be Affected

Visually sensitive resources of statewide significance will be identified within the larger 10-mile Facility study area. As defined in the NYSDEC Visual Policy, these include any of the following types of resources:

- Properties listed on or determined eligible for listing on the National Register of Historic Places.
- State Parks.
- Urban Cultural Parks (or New York State designated Heritage Areas).
- The State Forest Preserve (i.e., the Adirondack or Catskill Parks).
- National Wildlife Refuges, State Game Refuges, and State Wildlife Management Areas.
- National Natural Landmarks.
- The National Park System, Recreation Areas, Seashores, or Forests.
- Rivers designated as National or State Wild, Scenic or Recreational Rivers.
- A site, areas, lake, reservoir, or highway designated or eligible for designation as scenic.
- Scenic Areas of Statewide Significance.
- A State or federally designated trail, or one proposed for designation.
- Adirondack Park Scenic Vistas.
- State Nature and Historic Preserve Areas.
- Palisade Park.
- Bond Act Properties purchased under Exceptional Scenic Beauty or Open Space category.

In addition, resources of local significance within the 5-mile study area will also be identified. These scenic areas include places of concentrated activity such as village centers and heavily used roadways, or landscapes of high aesthetic merit that may be considered important by local residents. See (b)(3) below for additional detail on visually sensitive resources.

(b) Viewshed Analysis

The Visual Impact Assessment will include identification of locations within the visual study area where it may be possible to view the proposed wind turbines and other proposed above ground facilities from ground-level vantage points. This analysis includes identifying potentially visible areas on viewshed maps. The methodology to be employed is described below.

(1) Viewshed Maps

Viewshed maps define the maximum area from which any turbine within the completed Facility could potentially be seen within the study area. Maps showing the results of viewshed analysis will be prepared based on the screening effect of topography alone, and the combined screening effect of mapped forest vegetation and topography. Viewshed analysis will be based on maximum blade tip height and FAA warning light height. These maps will be presented on both USGS DEM Hillshade and the most recent edition 1:24,000 scale topographic base map. Additionally, results of the viewshed analysis will also be shown on maps that depict visually sensitive sites, viewpoint locations, and LSZs.

With respect to line of sight profiles, please note that the computer model program defines the viewshed (when evaluating topography only for instance) by reading every cell of the digital elevation model (DEM) data and assigning a value based upon the existence of a direct, unobstructed line of sight to turbine location/elevation coordinates from observation points throughout the entire visual study area. Therefore, for the purposes of the Article 10 Application, the viewshed analyses will also serve to document the line of sight profiles for resources of statewide concern.

(2) Viewshed Methodology

Topographic viewshed maps for the Facility will be prepared using 10-meter resolution USGS digital elevation model (DEM) data (7.5-minute series) for the visual study area, the location and height of all proposed turbines, an assumed viewer height of 1.7 meters, and ESRI ArcGIS® software with the Spatial Analyst extension. Two ten-mile radius topographic viewsheds will be mapped, one to illustrate “worst case” daytime visibility (based on a maximum blade tip height above existing grade) and the other to illustrate potential visibility of turbine lights (based on an assumed height for the lights on top of the nacelle above existing grade).

The ArcGIS program defines the viewshed by reading every cell of the DEM data and assigning a value based upon the existence of a direct, unobstructed line of sight to proposed facility location/elevation coordinates from

observation points throughout the ten-mile study area. The resulting viewshed maps define the maximum area from which any portion of any turbine in the completed Facility could potentially be seen within the study area during both daytime and nighttime hours based on a direct line of sight, and ignoring the screening effects of existing vegetation and structures. A turbine count analysis will also be performed to determine how many wind turbines are potentially visible from any given point within the viewshed. The results of this analysis will then be grouped by number of turbines potentially visible and presented on a viewshed map.

Because the screening provided by vegetation and structures is not considered in this analysis, the topographic viewshed represents a true "worst case" assessment of potential Facility visibility. Topographic viewshed maps assume that no trees exist, and therefore are very accurate in predicting where visibility will not occur due to topographic interference. However, they are less accurate in identifying areas from which the Facility could actually be visible. Trees and buildings can limit or eliminate visibility in areas indicated as having potential Facility visibility in the topographic viewshed analysis.

To supplement the topographic viewshed analysis, a vegetation viewshed will also be prepared to illustrate the potential screening provided by forest vegetation. A base vegetation layer will be created using the USGS National Land Cover Dataset (NLCD) to identify the mapped location of forest land within the visual study area. Based on standard visual assessment practice, the mapped locations of the forest land will be assigned an assumed height of 40 feet and added to the DEM. The viewshed analysis will then be re-run, as described above. As with the topographic viewshed analysis, two vegetation viewsheds will be mapped, one to illustrate “worst case” daytime visibility and the other to illustrate potential visibility of turbine lights. The vegetation viewshed is based on the assumption that in most forested areas, outward views will be well screened by the overhead tree canopy. During the growing season the forest canopy will fully block views of the proposed turbines, and such views will typically be almost completely obscured, or at least significantly screened by tree trunks and branches, even under “leaf-off” conditions. Although there will be certainly areas of mapped forest that may have natural or man-made clearings that could provide open outward views, these openings are rare, and the available views would typically be narrow/enclosed and include little of the proposed Facility.

Because it accounts for the screening provided by mapped forest stands, the vegetation viewshed will be a much more accurate representation of potential Facility visibility. However, it is important to note that because screening provided by buildings and street/yard trees, as well as characteristics of the proposed turbines that influence visibility (color, narrow profile, distance from viewer, etc.), are not taken consideration in the viewshed analyses, being within the viewshed does not necessarily equate to actual Facility visibility.

Per the requirements set forth in 16 NYCRR § 1000.24(a), the potential cumulative visual effect of the Facility as well as other wind energy projects proposed in the surrounding region must be considered. Cumulative impacts are two or more individual environmental effects which, when taken together, are significant or that compound or increase other environmental effects. The individual effects may be effects resulting from a single project or from separate projects. The Application will address the potential cumulative visual impacts that may arise from interactions between the proposed Facility and other nearby operating wind projects. Specifically, the cumulative visual analysis will include the Cohocton, Dutch Hill, and Howard Projects, all of which are currently built and operating.

To evaluate the potential cumulative visual impact of these multiple wind power projects, cumulative viewshed analyses will be prepared. The 10-mile radius vegetation viewshed analysis for the proposed Facility (based on maximum blade tip height) will be overlaid on viewshed analyses prepared using the same methodology described herein for the above nearby operating projects. The viewsheds for these projects will then be plotted on a base map, and areas of viewshed overlap identified.

(3) Sensitive Viewing Areas

In accordance with standard visual impact assessment practice in New York State, visually sensitive resources will be identified in accordance with the New York State Department of Environmental Conservation (NYSDEC) Program Policy DEP-00-2 Assessing and Mitigating Visual Impacts (NYSDEC, 2000), which define specific types of properties as visually sensitive resources of statewide significance. The types of resources identified by NYSDEC in Program Policy DEP-00-2 are consistent with the types of resources identified in 16 NYCRR § 1000.24(b)(4) and include landmark landscapes; wild, scenic or recreational rivers administered respectively by either the DEC or the APA pursuant to ECL Article 15 or Department of Interior pursuant to 16 USC Section 1271; forest preserve lands, scenic vistas specifically identified in the Adirondack Park State Land Master Plan, conservation easement lands, scenic byways designated by the federal or state governments; Scenic districts and scenic roads, designated by the Commissioner of Environmental Conservation pursuant to ECL Article 49 scenic districts; Scenic Areas of Statewide Significance; state parks or historic sites; sites listed on National or State Registers of Historic Places; areas covered by scenic easements, public parks or recreation areas; locally designated historic or scenic districts and scenic overlooks; and high-use public areas.

To identify visually sensitive resources within the visual study area, a variety of data sources will be consulted including digital geospatial data (shapefiles) obtained primarily through the NYS GIS Clearinghouse or the Environmental Systems Research Institute (ESRI); numerous national, state, county and local agency/program

websites as well as websites specific to identified resources; the DeLorme Atlas and Gazetteer for New York State; USGS 7.5-minute topographical maps; and web mapping services such as Google Maps. Aesthetic resources of statewide significance will be identified within 10 miles of the Proposed Facility, and locally significant aesthetic resources and areas of intensive land use will be identified within five miles of the proposed Facility.

In addition, per the requirements set forth in 16 NYCRR § 1000.24(b)(4), the Applicant will conduct a systematic program of public outreach to assist in the identification of visually sensitive resources. A detailed summary of this process will be included in the VIA.

(4) Viewpoint Selection

16 NYCRR § 1000.24(b)(4) includes the requirements that "*the applicant shall confer with municipal planning representatives, DPS, DEC, OPRHP, and where appropriate, APA in its selection of important or representative viewpoints*". The Applicant will conduct outreach to agency staff and stakeholder groups to determine an appropriate set of viewpoints for the development of visual simulations. This outreach is anticipated to include:

- The Applicant will distribute a request to appropriate agency personnel, municipal representatives, and other visual stakeholders, seeking feedback regarding the identification of important aesthetic resources and/or representative viewpoints in the Facility vicinity to inform field review efforts and the eventual selection of candidate viewpoints for the development of visual simulations. The materials to be provided as part of this request are anticipated to include: a summary of the purpose and necessity of consultation per the requirements of Article 10; a definition, explanation, and map of the visual study area; a preliminary inventory and map of visually sensitive resources identified in accordance with the NYSDEC Program Policy DEP-00-2 *Assessing and Mitigating Visual Impacts*; a preliminary viewshed (visibility) analysis; a discussion of anticipated subsequent steps, including additional consultation regarding the eventual selection of viewpoints for development of visual simulations; and, a request for feedback regarding additional visually sensitive resources to be included in the analysis.
- Following the visual fieldwork and associated data processing, the Applicant will distribute a memorandum related to recommendations for Visual Simulations to the visual stakeholders. This memo is anticipated to include: a summary of research and consultation undertaken to date; description of the field review/photography for the Facility; a rationale for viewpoint selection; and, recommendations for viewpoints to be considered by agencies and stakeholders from which a subset will be selected for the preparation of visual simulations. Viewpoint selection will include the following factors:

- Providing representative views from the various LSZs and Distance Zones within the study area.
- The locations of visually sensitive resources/sites within the study area, including recommendations for sensitive sites received from stakeholders.
- The predicted visibility of the Facility based on viewshed analysis.
- The availability of open views towards the proposed Facility as determined by field review/site visits.

- The Applicant will host up to 2 on-line meetings, which will include a conference call and link to a computer screen in order to solicit comments from visual stakeholders on the viewpoints selected. These meetings will include: a review of the visual studies conducted to date; discussion of proposed and alternate viewpoints for use as simulations; and, a discussion of any additional suggestions or comments regarding: viewpoint selection.

Ultimately, viewpoints will be selected for simulation based upon the following criteria:

1. They provide open views of proposed turbines (as indicated by field verification), or provide representative views of the screening effects of vegetation and/or buildings from selected areas.
2. They illustrate Facility visibility from sensitive resources with the visual study area identified by local stakeholders and state agencies.
3. They illustrate typical views from LSZs where views of the Facility will be available.
4. They illustrate typical views of the proposed Facility that will be available to representative viewer/user groups within the visual study area.
5. They illustrate typical views of different numbers of turbines, from a variety of viewer distances, and under different lighting conditions, to illustrate the range of visual change that will occur with the Facility in place.
6. The photos obtained from the viewpoints display good composition, lighting, and exposure.

(5) Photographic Simulations

In order to show anticipated visual changes associated with the Facility, high-resolution computer-enhanced image processing will be used to create photo-realistic simulations of the completed turbines from each of the selected viewpoints. As indicated in (b)(4) above, viewpoints will be selected, in part, for their open views and as such there will be no significant screening of the proposed Facility due to vegetation in the photographic simulations. Therefore, it is not anticipated that both leaf-on and leaf-off simulations will be required.

(6) Additional Simulations Illustrating Mitigation

Due do the typical height of individual turbines and the geographic extent of a given wind power project, mitigation measures such as screening of individual turbines with earthen berms, fences, or planted vegetation will generally not be effective in reducing visibility. Therefore, additional simulations specific to mitigation will not be prepared.

(7) Simulation Rating and Assessment of Visual Impact

Three registered landscape architects (LAs) will evaluate the visual impact of the proposed Facility. Utilizing 11 x 17-inch digital color prints of the selected viewpoints, the LAs will review the existing and proposed views, evaluate the contrast/compatibility of the Facility with various components of the landscape (landform, vegetation, land use, water, sky, land use and viewer activity), and assign quantitative visual contrast ratings on a scale of 0 (insignificant) to 4 (strong). The average contrast score assigned by each LA will be calculated for each viewpoint, and an average score for each viewpoint will be determined. Copies of the rating forms will be included in the VIA. The methodology for the rating panel exercise is described in detail above in Section (a)(8).

Based on the results of numerous visual impact assessments of wind power projects conducted or reviewed by EDR since 1999, along with published studies of viewer reaction to proposed or constructed projects, the perceived contrast and visual impact of wind turbines is highly variable. Wind turbines are unlike most other energy/infrastructure facilities, such as transmission lines or conventional power plants that are almost universally viewed as aesthetic liabilities. Wind turbines have a clean sculptural form that is considered attractive by some viewers (Pasqualetti e al., 2002). The greatest perceived visual impact typically occurs when numerous turbines are visible, where the turbines are close to the viewer, or where the turbines appear out of place in their setting (e.g., in a residential context). These conditions tend to heighten the Facility's contrast with existing elements of the landscape in terms of line, form, and especially scale.

Although at times offering appreciable contrast with elements of the landscape, the proposed Facility is not anticipated to necessarily be perceived by viewers as having an adverse visual impact. In EDR's experience, operating wind power projects in New York State have generally received a positive public reaction following their construction. This observation is supported by recent annual surveys conducted by Jefferson County Community College in Lewis County, New York (location of the 195-turbine Maple Ridge Farm Facility in operation since 2006), which revealed strong community support for wind power (JCCS, 2008, 2010, 2011, 2012). A significant majority (approximately 90%) of Lewis County residents who participated in these surveys expressed support for the development of additional wind energy projects (JCCS, 2010, 2011, 2012). Approximately 70% of respondents have consistently indicated that wind farms have had a positive impact on Lewis County (JCCS, 2009, 201, 2012).

The 2008 survey indicated that 77% of individuals that were able to see and/or hear turbines from their homes indicated that the wind farms have had a positive impact on Lewis County. Additionally, only 7.5% of participants who live within 1 mile of the nearest wind turbine felt that wind farms have had a negative impact (JCCS, 2008).

(8) Visible Effects Created by the Facility

As previously mentioned, part of the visual impact analysis will include a study of potential shadow flicker impacts on nearby receptors. Details of this study are discussed in in Section 2.15 of the PSS.

## 2.25 EFFECT ON TRANSPORTATION

(a) Conceptual Site Plan

For the purposes of the Article 10 Application, the preliminary design drawings prepared in association with Exhibit 11 will serve as the conceptual site plan, and those drawings will identify access road locations and widths, and the number of turbines to be accessed per road. A Transportation Study will be prepared, which will establish a Transportation Study Area, identify public road constraints (e.g., inadequate turning radii/intersections and road widths) and anticipated haul routes, and will be used to inform the preliminary design drawings through haul route identification and associated access to various turbines. The final haul routes for the turbines and necessary components will be finalized in coordination with the turbine manufacturer.

(b) Description of the Pre-construction Characteristics of Roads in the Area

(1) Traffic Volume and Accident Data

Data will be obtained from the New York State Department of Transportation (NYSDOT) Traffic Data Online Viewer to review existing traffic volumes along proposed approach and departure routes for the Facility. Accident information along those routes contained in the Accident Location Information System (ALIS) will be requested from the local police agencies and/or NYSDOT regional office. These data will be compared with the Transportation Study Area, which will be identified and presented in the Article 10 Application. However, the final haul routes ultimately will be defined in coordination with the turbine manufacturer.

(2) School District Bus and Routes

The Article 10 Application will include a review of school district routes for those districts that serve the Facility Site. This will be accomplished by obtaining school bus routes, number of buses, and times from the Wayland-

Cohocton Central School District, Arkport Central School District, Avoca Central School District, and the Hornell City School District.

(3) Emergency Service Providers

This section of the Article 10 Application will provide a review of locations of emergency service provider stations (police, fire, ambulance, and hospitals) that serve the Facility Site, including approximate distances to turbine locations. In addition, the Article 10 Application will detail consultations that have occurred between the Applicant and local emergency service providers, including local fire departments, police, and ambulance services.

These consultations will result in the fire departments learning about the Facility, the Article 10 process, and how Applicant typically interacts with fire and emergency service providers during construction and operation. The Applicant will alert all Fire Departments that there will be a fire and emergency training and communication plan developed as part of the Article 10 process.

Further consultation with each service provider will determine specific routes that are currently used by service providers within the vicinity of the Facility Area. The Article 10 Application will provide a map of service provider locations and routes. A map of all emergency service provider locations and routes will be posted in the Facility's O&M building (and provided to the emergency service providers) and all turbines will have a unique 911 ID/address.

(4) Available Load Bearing and Structural Rating Information

The Applicant's consultant will drive all potential haul routes roads to identify Load Restricted Bridges and/or roadways along the proposed approach and departure routes for the Facility. For non-posted bridges along those routes, information from the NYSDOT's Highway Data Services website will be reviewed to determine potential load capacity restrictions. In addition, the Applicant has corresponded with local highway supervisors and follow up with meetings. Such consultations will continue throughout the Article 10 process and prior to construction. This information will be summarized in the Article 10 Application.

(5) Traffic Volume Counts

The Facility is not within a congested urbanized area, therefore twenty-four-hour traffic counts are not applicable and will not be included in the Article 10 Application.

(c) Facility Trip Generation Characteristics

(1) Number, Frequency, and Timing of Vehicle Trip

An estimate of the number, frequency and timing of vehicle trips will be based on the above-referenced haul routes, site plan and location of turbines as presented in the Article 10 Application, along with the number of phases, estimated quantities of earthwork and materials to construct Facility Components. Exact scheduling of construction work and required vehicles will be determined by the Applicant's contractor. Therefore, the study to be conducted and included in the Article 10 Application will only provide an estimate based on typical volume of materials and number of vehicles per turbine installation. The Application will tabulate construction vehicle volumes for the Facility broken down by Facility component/truck type.

(2) Approach and Departure Routes for Trucks Carrying Water, Fuels, or Chemicals

During Facility construction, all trucks carrying water, fuels, or chemicals will utilize the same haul routes used by other construction vehicles/component delivery haulers.

(3) Cut and Fill Activity

The Article 10 Application will provide an estimate of cut and fill activity, based on typical volume of materials and number of vehicles, and the preliminary design drawing prepared in support of Exhibit 11. In addition, an estimate of construction vehicle volumes for each turbine site will be mapped and included.

(4) Conceptual Haul Routes and Approach and Departure Routes for Workers and Employees

Any workers and employees in regular vehicles (pick-up truck size and smaller) will access the construction site and worker parking areas through use of whichever public road route is most logical and efficient for the respective individual/vehicle. Employees and workers accessing the site with heavy haul/construction equipment (i.e., dump trucks or larger), or anything that exceeds the posted weight limits on public roads, will follow the final haul routes.

Please note that the final haul routes cannot be determined until the turbine manufacture has been selected and has reviewed and approved, or amended, the haul routes, and therefore the final haul routes will be provided to the Siting Board prior to Facility construction. However, conceptual haul routes will be identified by an experience transportation engineer, the details of which will be included in the Article 10 Application.

(d) Traffic and Transportation Impacts

(1) Levels of Service along Linear Segments of Highway

Based on the experience of the Applicant and analysis on traffic volumes from other wind projects, typical operations of the Facility will have a negligible increase over existing traffic volumes during operation. Synchro and HCS software will be utilized to determine levels of service for linear segments of highways used by construction and delivery vehicles. As indicated above, the Facility is not in a congested urbanized area requiring detailed intersection analysis.

(2) Route Evaluation Study

As indicated above, the Article 10 Application will identify the anticipated haul routes to be utilized, and the adequacy of these routes to accommodate construction and operation of the Facility. A detailed description of potential haul routes will be provided, and will include information associated with roadway condition, width, bridges, culverts, and any observed potential obstacles such as low hanging branches or distribution lines.

Once the Facility is commissioned and construction activities are officially concluded, traffic will be negligible and likely concentrated around the O&M building resulting from Facility employees traveling to and from the O&M building. Some of these personnel will need to visit each turbine location and return to the O&M building. Each turbine typically requires routine maintenance visits once every 3 months, but certain turbines or other Facility improvements may require periods of more frequent service visits should a maintenance issue arise. Such service visits typically involve 1 to 2 pick-up trucks. However, because all turbines and associated access road are located on (and accessed from) private land, public road use due to routine maintenance activities will be very limited. If major maintenance is needed, such as maintenance involving a crane, the language in the Road Use Agreement between the Applicant and the host communities will dictate the procedures followed by the Applicant to ensure that any impacts to public roads are avoided or mitigated.

(3) Over-sized Deliveries

The Route Evaluation Study will include turning radii requirements of anticipated delivery vehicles, and a review of aerial photography and online street view maps in conjunction with driving all potentially impacted roads will be conducted to identify physical restrictions. Anticipated temporary improvements will be identified and a location map will be developed and included in the Article 10 Application. The following construction activities may be required as part of road width and turning radii improvements:

- Clearing and grubbing of existing vegetation.
- Grading of the terrain to accommodate the improvement.
- Extension of existing drainage pipes and/or culverts.
- Re-establishment of ditch line (if necessary).
- Construction of a suitable roadway surface to carry the construction traffic (based on the existing geotechnical conditions).

(4) Measures to Mitigate for Impacts to Traffic and Transportation

No new traffic control devices are anticipated to be necessary, and no damage to roads due to normal operation of the Facility are expected to occur. The Applicant will likely enter in to a Road Use Agreement with the towns that will host the Facility. This agreement will establish the measures that the Applicant will implement to ensure that any impacts to local roads resulting from Facility construction will be mitigated in a manner that is amenable to the towns and the Applicant. The Road Use Agreement will also include mitigation measures for impacts that may be incurred to local roads during maintenance of the Facility.

Prior to construction, any public road upgrades that may be required to accommodate construction vehicles will be identified. These improvements will be made at the Applicants' expense prior to the arrival of oversized/overweight vehicles. Final transportation routing will be designed in consultation with the County and each Town's Highway Superintendent to avoid and/or minimize, to the extent practical, safety issues associated with the use of the approved haul routes, which will confine the heavy truck travel to a few select roads.

Additional detail regarding measures to mitigate traffic and transportation impacts may be included in the Article 10 Application and the Route Evaluation Study (or similar).

(5) Road Use and Restoration Agreements

This section of the Article 10 Application will identify and tabulate all anticipated County and Town road use agreements that will be required for construction and post-construction use of public roads, including highway work permits and special use permits from the NYSDOT. The Applicant will provide a draft road use agreement as an Appendix to the Article 10 Application.

In addition, the Article 10 Application will detail the meetings and consultations that the Applicant has had with the local road departments of the municipalities within the Facility Area. During these meetings the Applicant discussed

the proposed Facility, Article 10 process, road use agreements and general construction and transportation process when constructing a wind farm.

(e) Impact of the Facility on Mass Transit Systems

No rail or bus mass transit systems are expected to be impacted by this Facility. Steuben County - Dansville and Hornell municipal airports, along with additional smaller airports and heliports, are known to be within 15-20 miles of the Facility. The Article 10 Application will provide in-depth description of the Facility tower locations and heights in relation to the local airports.

(f) Federal Aviation Administration Review

The Applicant has submitted the proposed Facility layout to the FAA so that aeronautical studies of the location of each proposed turbine, and permanent meteorological towers, if needed, can be conducted under the provisions of Title 49 of the U.S. Code, Section 44718. The FAA can issue two types of determinations, one that identifies a potential hazard and another that identifies no hazard. A letter is issued called a Notice of Presumed Hazard (NPH) if the proposed structure is over 499 feet or if a potential hazard to air navigation is identified based on the structure's location and/or height. Structures over 499 feet automatically receive an NPH and must be publicly circulated prior to a final FAA determination. Otherwise, this notification identifies a potential hazard that must be further studied and/or mitigated in some manner. Mitigation could include changes by the Applicant, such as relocating a turbine or reducing turbine height, upgrading a radar system, or by the government, such as changing flight procedures, cancelling underutilized approaches, or a number of other methods. The aeronautical studies for the proposed Facility will be included in the Article 10 Application, along with a discussion of potential impacts to air traffic control and air navigation.

The Article 10 Application will provide the status of FAA consultations.

(1) Department of Defense Review

The Applicant has submitted applications for FAA determinations. This submission initiates formal consultation and review by the DoD of the applications, which is coordinated by the FAA. Once formal consultation has begun the DoD prefers to not also conduct informal coordination. The results of the FAA review and formal will be discussed in the Article 10 Application.

(2) Consultation with Nearby Airports/Heliports

Letters regarding the Facility's development and status have been sent to the Hornell Municipal Airport in accordance with the PIP. To date, no response has been received. Following submission of the PSS, the Applicant plans to meet with the airport manager of the Hornell Municipal Airport and Dansville Municipal Airport. The Article 10 Application will discuss the results of those consultations

(3) Responses from the FAA and DoD

Please see Section (f) and (f)(1) above.

## 2.26 EFFECT ON COMMUNICATIONS

(a) Existing Broadcast Communication Sources

This section of the Application will identify existing broadcast communication sources in the area, including:

(1) AM Radio

A review of Federal Communications Commission (FCC) license data, and a list complied, of AM and FM radio stations within approximately 30 kilometers (18.6 miles) of the proposed Facility. The results will be presented in the Article 10 Application.

(2) FM Radio

A review of FCC license data, and a list complied, of AM and FM radio stations within approximately 30 kilometers (18.6 miles) of the proposed Facility. The results will be presented in the Article 10 Application.

(3) Television

Off-air television stations broadcast signals from terrestrially-based facilities directly to television receivers. Off-air reception does not include cable or satellite television reception, neither of which are affected by the presence of wind turbines. The coverage of television stations and communities in the area that could potentially have degraded television reception as a result of Facility operation will be evaluated in the Article 10 Application.

(4) Telephone

Wireless operators are granted area-wide licenses from the FCC to deploy their cellular networks, which often include handsets with Emergency 911 capabilities. Mobile phone market boundaries differ from service to service. The carriers' licensed areas will be disaggregated down to the county level. The type of service (e.g., cellular [CELL], advanced wireless service [AWS], personal communication service [PCS]) for each mobile phone carrier in Steuben County will be provided in the Application:

(5) Microwave Transmission

Microwave bands that may be affected by the installation of wind turbine facilities operate over a wide frequency range (900 MHz – 23 GHz). These systems are the telecommunication backbone of the country, providing long-distance and local telephone service, backhaul for cellular and personal communication service, data interconnects for mainframe computers and the Internet, network controls for utilities and railroads, and various video services. To assure an uninterrupted line of communication, a microwave link should be clear, not only along the axis between the center point of each microwave dish, but also within a formulaically calculated distance around the center axis of the radio beam, known as the Fresnel Zone. A study evaluating the potential impact of the Facility wind turbines on licensed, proposed, and applied non-federal government microwave systems in the area will be included in the Application. These will also be depicted on a Figure to be included in the Application.

(6) Emergency Services

An assessment of the emergency services communication sources in the vicinity of the Facility Site will be conducted, to identify potential impacts from the planned turbines. Registered frequencies for the following types of first responder entities will be evaluated: police, fire, emergency medical services, emergency management, hospitals, public works, transportation and other state, county, and municipal agencies. Land mobile and emergency services incumbent data will be derived from the FCC's Universal Licensing System and the FCC's Public Safety & Homeland Security bureau.

The Applicant will work with the public safety entities described above to remedy any interference related to the wind farm. If there was a compromise in coverage, the public safety entity would have many options to improve its signal coverage to the area through optimization of a nearby base station or even adding a repeater site. Utility towers, meteorological towers or even the turbine towers within the Facility Site can potentially serve as the platform for a base station or repeater site.

(7) Municipal/School District Services

Municipal and school district communication sources will be included in the assessment of emergency services communication sources described above in (a)(6).

(8) Public Utility Services

The Article 10 Application will identify public utility communication sources within 2 miles of the proposed Facility and interconnection, to the extent known by the Applicant.

(9) Doppler/Weather Radar

NEXRAD (next-generation radar) or Doppler weather radar are operated by the National Weather Service (an agency of the National Oceanic and Atmospheric Administration [NOAA]), the Federal Aviation Administration (FAA), and the U.S. Air Force. NEXRAD detects precipitation, winds, and temperature and humidity discontinuities. From these data, computer algorithms generate a suite of meteorological and hydrological products and alerts used for determining short-term forecasts, advisories, and warnings for significant weather events such as tornadoes, large hail, wind shear, downbursts, flash floods, and other weather phenomena. The data are also used by FAA air traffic controllers for the safe and efficient operation of the National Airspace System.

Wind turbine and weather spectra can span the same Doppler frequencies and share a similar dynamic range, causing conventional radar clutter filtering algorithms, which only filter energy returned from nearly stationary objects (buildings, terrain, etc.), to fail in isolating the weather signal. When wind farms are located in a NEXRAD radar beam/radar line of sight, the spinning blades can reflect unfilterable energy back to the radar system and appear as clutter in the base data. The unfiltered wind turbine clutter can adversely impact radar data quality and the performance of the radar's internal weather detection algorithms. Turbines sited within 18 kilometers (11.2 miles) of a NEXRAD begin to impact multiple elevation scanning angles and create multipath scattering returns that show up as spikes of enhanced reflectivity down range of the wind farm (Vogt et al., 2011; Norin and Haase, 2012).

The Applicant will send written notification of the proposed Facility to the National Telecommunications and Information Administration (NTIA) of the U.S. Department of Commerce. The NTIA will provide copies of the plans for the proposed Facility to the federal agencies represented in the Interdepartment Radio Advisory Committee (IRAC), which include the NOAA, FAA, and U.S. Air Force, among other agencies. The NTIA will review the

proposed Facility and identify any concerns with Doppler weather radar interference or other federal communications systems.

Potential impacts associated with the Facility will be addressed in the Application.

(10) Air Traffic Control

The FAA is the organization in the United States government responsible for air traffic control and for evaluating and issuing determinations on petitions for objects that penetrate the nation's airspace. The Applicant will submit the proposed Facility layout to the FAA so that aeronautical studies of locations of each proposed turbine can be conducted under the provisions of Title 49 of the U.S. Code, Section 44718. The FAA can issue two types of determinations, one that identifies a presumed hazard and another that identifies no hazard. As a part of this process, an interim letter is issued called a Notice of Presumed Hazard if the proposed structure is over 499 feet or if a potential hazard to air navigation is identified based on the structure's location and/or height. Structures over 499 feet automatically receive an NPH and must be publicly circularized prior to a final determination being issued. Otherwise, this notification identifies a potential issue that must be further studied or mitigated in some manner. Mitigation could include changes by the Applicant, such as relocating a turbine or reducing turbine height, upgrading a radar system, or by the government, such as changing flight procedures, cancelling underutilized approaches, or a number of other methods. The aeronautical studies for the proposed Facility will be included in the Article 10 Application, along with a discussion of potential impacts to air traffic control and air navigation.

In addition, the FAA is one of the federal agencies represented in the IRAC, which has reviewed the proposed Facility as part of the NTIA review, as discussed in (a)(9) above.

(11) Armed Forces

As discussed above, the NTIA provides plans for the proposed Facility to the federal agencies represented in the IRAC, which include the Department of Homeland Security, U.S. Air Force, U.S. Army, U.S. Navy, U.S. Coast Guard, and Department of Veteran Affairs. The Department of Defense (DoD), through its Siting Clearinghouse, can either respond informally or formally to a project. Informal consultations may be initiated by a project proponent. Formal consultations may be initiated either by the FAA or project proponent. The Applicant has initiated FAA review of turbine locations and the DoD will formally be consulted with by the FAA through its review process.

(12) GPS

Global Positioning System (GPS) is a U.S.-owned utility that provides users with positioning, navigation, and timing services. This system consists of three segments: the space segment, the control segment, and the user segment. The U.S. Air Force develops, maintains, and operates the space and control segments. The GPS control segment consists of a global network of ground facilities that track the GPS satellites, monitor their transmissions, perform analyses, and send commands and data to the constellation. The GPS ground facility located closest to the proposed Facility will be identified in the Application. The National Executive Committee coordinates GPS-related matters across multiple federal agencies to ensure the system addresses national priorities as well as military requirements. The National Executive Committee is chaired jointly by the Deputy Secretaries of Defense and Transportation, and membership includes top leaders from the Departments of State, the Interior, Agriculture, Commerce, and Homeland Security, the Joint Chiefs of Staff, and NASA (National Coordination Office for Space-Based Positioning, Navigation, and Timing, 2015).

Each of the agencies represented in the National Executive Committee are also represented in the IRAC.

(13) LORAN

LORAN was a long range navigation system developed during World War II that has since been deemed obsolete. Radio signals were sent through a series of towers across long distances as an aid to keep ships and aircraft on course. In accordance with the 2010 Department of Homeland Security Appropriations Act, the U.S. Coast Guard terminated the transmission of all U.S. LORAN signals in 2010. Therefore, no further discussion of LORAN will be provided in the Application.

(14) Amateur Radio Licenses

Database searches of all amateur radio licenses registered to users with zip codes overlapping a two-mile radius of the Facility will be conducted via the FCC License Data Search on the website of the American Radio Relay League (AARL, 2015) and via RadioQTH's database of call signs (Lewis, 2015).

(b) Existing Underground Cable and Fiberoptic Lines within Two Miles

Locations of underground fiber optic cable within two miles of the Facility Site will be identified in the Application, to the extent known. This information was obtained from GeoTel Communications LCC, which maintains a database of this information.

(c) Anticipated Effects on Communication Systems

Section (a) of Exhibit 26 of the Application will provide a description of the communication systems in and around the Facility and any expected impacts to those systems. A more general discussion of the anticipated effects of the proposed Facility and the electric interconnection on the communication systems identified above in Sections (a) and (b), will be provided as Exhibit 26(c) of the Application, organized as follows:

(1) Potential Structure Interference with Broadcast Patterns
(2) Potential for Structures to Block Lines-of-sight
(3) Physical Disturbance by Construction Activities
(4) Adverse Impacts to Co-located Lines due to Unintended Bonding
(5) Other Potential for Interference

(d) Evaluation of Design Configuration

A map illustrating Facility components and relevant communication system constraints (e.g., Fresnel zones, radio station exclusion zones, etc.) will be provided in the Application. The Facility will be designed to avoid impacts to communication systems to the extent practicable.

(e) Post-construction Activities to Identify and Mitigate Adverse Effects on Communication Systems

The Applicant takes seriously any complaints that it receives from members of the public. The Applicant will develop a Complaint Resolution Plan through which residents can issue a formal complaint should any issues, such as degraded television service, arise as a result of construction or operation of the Facility. This plan will be attached to the Application. Complaints will be able to be made in person at the Facility's O&M building, via phone, or by writing, and the Applicant will contact the individual within 48 hours of receipt of the complaint. The Applicant will implement a five-point complaint response for all registered complaints, which will include community engagement, gathering information, response to the complaint, a follow up after the response has been issued, and further action if the complainant believes that the issue continues to exist. Additional detail regarding potential mitigation options will be provided in the Application.

(f) Potential Interference with Radar

As described above, the Applicant will send a written notification of the proposed Facility to the NTIA. Upon receipt of notification, the NTIA provides plans for the proposed Facility to the federal agencies represented in the IRAC, which include the Federal Aviation Administration, National Oceanic and Atmospheric Administration, Department of Defense, Department of Homeland Security, National Aeronautics and Space Administration, and National Science Foundation.

## 2.27 SOCIOECONOMIC EFFECTS

The Facility is located in rural Steuben County. Information regarding population, educational attainment and race within the Towns of Avoca, Cohocton, Dansville, Fremont, Howard, and Wayland is summarized as follows:

| *Population* | *Avoca* | *Cohocton* | *Dansville* | *Fremont* | *Howard* | *Wayland* |
|---|---|---|---|---|---|---|
| 2010 Total Population [1] | 2,264 | 2,561 | 1,842 | 1,008 | 1,467 | 4,102 |
| 2014 ACS 5-Year Population Estimate | 2,771 | 2,567 | 1566 | 1,012 | 1,391 | 4,077 |
| Median Age | 43.3 yrs | 41.2 yrs | 49.4 yrs | 42.1 yrs | 39.7 yrs | 44.4 yrs |
| *Educational attainment* | | | | | | |
| % high school graduate or higher | 90.7% | 84.6% | 88.9% | 94.1% | 91.9% | 86.7% |
| Total housing units | 1,087 | 1,208 | 821 | 519 | 741 | 1,987 |
| Median household income | $41,858 | $46,818 | $41,700 | $54,219 | $43,611 | $42,054 |
| Foreign born population | 42 | 10 | 14 | 36 | 24 | 44 |
| Individuals below poverty level | 22.3% | 17.7% | 13.5% | 9.8% | 16.0% | 16.3% |
| Veterans | 289 | 175 | 138 | 77 | 115 | 321 |
| *Race and Hispanic Origin* | | | | | | |
| White alone | 2,212 | 2,500 | 1,549 | 1,002 | 1,377 | 3,931 |
| Black or African American alone | 13 | 5 | 9 | 0 | 11 | 43 |
| American Indian and Alaska Native alone | 0 | 6 | 0 | 0 | 0 | 18 |
| Asian alone | 0 | 0 | 3 | 0 | 0 | 30 |
| Native Hawaiian & Other Pacific Islander | 5 | 0 | 0 | 0 | 0 | 0 |
| Some Other Race alone | 18 | 16 | 5 | 0 | 0 | 0 |
| Two or More Races | 23 | 40 | 0 | 10 | 3 | 55 |
| Hispanic or Latino (of any race) | 40 | 16 | 15 | 29 | 9 | 41 |
| White alone, Not Hispanic or Latino | 2,187 | 2,500 | 1,539 | 937 | 1,368 | 3,890 |

[1] Demographic profile of 2010 US Census. All other data from the 2009-2013 American Community Survey 5-Year Estimates

Quantifying the economic impacts of the Facility is essential to understanding the benefits for the local economy. Wind power development, like other commercial development facilities, expand the local economy by direct and indirect means. Income generated from direct employment during the construction and operation phases is subsequently used to purchase local goods and services, creating a ripple effect throughout the local economy. The Article 10 Application will analyze three levels of impact that the proposed Facility will have on the economy:

- On-site labor impacts: These are the direct impacts experienced by the companies engaged in the construction and operation of the Facility. This value estimates the dollars spent on labor and professional services by Facility developers, consultants, and construction contractors, as well as and operation and maintenance (O&M) personnel. On-site labor impacts do not reflect material expenditures.
- Local revenue and supply chain impacts: These impacts measure the estimated increase in demand for goods and services in industry sectors such as local food and hotel industries, that supply or otherwise support the companies engaged in construction and operation (also known as "backward-linked" industries).
- Induced impacts: Induced impacts measure the estimated effect of increased household income resulting from the Facility. Induced impacts reflect the reinvestment of earned wages, as measured throughout the first two levels of economic impact. This reinvestment can occur anywhere within the economy, on household goods, entertainment, food, clothing, transportation, etc.

Each of these three categories can be measured in terms of three indicators: jobs (as expressed through the increase in employment demand), the amount of money earned through those jobs, and the overall economic output associated with each level of economic impact. These indicators are described in further detail below:

- Jobs: Jobs refer to the increase in employment demand as a result of Facility development. These positions are measured across each level of impact, so that they capture the estimated number of jobs on site, in supporting industries, and in the businesses that benefit from household spending. For the purposes of this analysis, this term refers to the total number of year-long full-time equivalent (FTE) positions created by the development. Persons employed for less than full time or less than a full year are included in this total, each representing a fraction of a FTE position (e.g. a half-time, year-round position is 0.5 FTE).
- Earnings: This measures the wages earned by the employees described above.
- Output: Output refers to the value of industry production in the state or local economy, across all appropriate sectors, associated with each level of impact. For the manufacturing sector, output is calculated by total sales plus or minus changes in inventory. For the retail sector, output is equal to gross profit margin. For the service sector, it is equal to sales volume.

To quantify the local economic impacts of constructing and operating the Facility, the Job and Economic Development Impact (JEDI) model will be used, which was created by the National Renewable Energy Laboratory (NREL), a facility of the United States Department of Energy. The JEDI model requires Facility-specific data input (such as year of construction, size of Facility, turbine size and location), and then calculates the impacts described above through the use of state-specific multipliers. These multipliers account for the change in jobs, earnings, and output likely to occur throughout the local, regional, and statewide economy as a result of Facility-related expenditures. The resulting data are paired with industry standard values (e.g., wage rates) and data reflecting personal spending patterns (e.g., percent of household income dedicated to housing expenditures) to calculate on-site, supply chain, and induced impacts. This model allows impacts to be estimated for both the construction and operation phases of the proposed development. The Article 10 Application will present the results of the JEDI model.

(a) Construction Workforce

The Article 10 Application will identify the estimated construction workforce associated with the Facility, as indicated above. The results of the JEDI model output will be evaluated by the Applicant's construction management team to provide an estimate of the average work force, by discipline, for each quarter during construction.

(b) Construction Payroll

The Article 10 Application will identify the estimated annual construction payroll and non-payroll expenditures associated with the Facility, as indicated above. The results of the JEDI model output will be evaluated by the Applicant's construction management team to provide an estimate of the annual construction payroll by trade.

(c) Secondary Employment and Economic Activity Generated by Facility Construction

The Article 10 Application will identify the estimated secondary employment and economic activity associated with Facility construction, as indicated above. The results of the JEDI model output will be included in the Application and the economic multiplier factors or other assumption(s) used will be described.

(d) Workforce, Payroll, and Expenditures During Facility Operation

The Article 10 Application will identify the estimated number of jobs associated with Facility operation, as indicated above. The Article 10 Application will also provide an estimate of other expenditures likely to be made in the vicinity of the Facility during operation.

In addition, Facility operation will also result in payment to local landowners in association with the lease agreements executed to host Facility components. The Article 10 Application will provide additional information regarding the economic benefit associated with these expenditures.

(e) Secondary Employment and Economic Activity Generated by Facility Operation

The Article 10 Application will identify the estimated secondary employment and economic activity associated with Facility operation, as indicated above.

(f) Incremental School District Operating and Infrastructure Costs

The Facility is not expected to result in any additional operating or infrastructure costs to the local school districts. The Article 10 Application will confirm this expectation.

(g) Incremental Municipal, Public Authority, or Utility Operating and Infrastructure Costs

The Facility is not expected to result in any additional operating or infrastructure costs to local municipalities, authorities, or utilities. The Article 10 Application will confirm this expectation.

(h) Jurisdictions that Will Collect Taxes or Benefits

The Facility is anticipated to result in economic benefits for the following jurisdictions:

- Steuben County
- Town of Avoca
- Town of Cohocton
- Town of Dansville
- Town of Fremont
- Town of Howard
- Town of Wayland
- Wayland-Cohocton Central School District
- Arkport Central School District
- Avoca Central School District
- Hornell City School District

(i) Incremental Amount of Annual Taxes or Payments

The Applicant expects to enter into a 20-year term PILOT agreement with local tax jurisdictions but the specific terms of the PILOT agreement have not yet been negotiated. The PILOT payments will increase the revenues of the local taxing jurisdictions, and will represent a significant portion of their total tax levy. The Applicant also intends to enter into a Host Community Agreement (HCA).

The Article 10 Application will provide more detail regarding the anticipated PILOT agreement with local tax jurisdictions.

(j) Comparison of Incremental Costs and Incremental Benefits

As indicated above, the Facility is not expected to result in any additional costs to local tax jurisdictions, but will result in significant benefit through implementation of a PILOT Agreement and the potential increase in sales tax revenue.

(k) Equipment or Training Deficiencies in Local Emergency Response Capacity

As indicated in Section 2.18 of this PSS, Exhibit 18 of the Article 10 Application (along with a Preliminary Health and Safety Plan and Emergency Action Plan to be appended to the Application) will provide specific detail on emergency equipment that the Applicant will maintain for the Facility. The local emergency responders are not expected to have specialized equipment in order to respond to a fire, hazardous substance, or medical emergency beyond the typical first aid, medical emergency and fire vehicles and equipment that would be at a local fire and emergency department. For example, fire and emergency responders are not expected to have the necessary equipment to bring injured personnel down from the tower to ground level. The Applicant has had initial conversations with all local fire departments regarding equipment necessary to respond to a potential fire, hazardous substance, or medical emergency at the Facility. The Applicant will continue consultation with local fire departments and first responders in order to confirm all necessary equipment will be available for fire and medical emergencies either by the Applicant or fire and emergency responders.

(l) Consistency with State Smart Growth Public Infrastructure Criteria

The New York State Smart Growth Public Infrastructure Policy Act is meant to maximize the social, economic, and environmental benefits from public infrastructure development by minimizing the impacts associated with unnecessary sprawl. State infrastructure agencies, such as the NYSDOT, shall not approve, undertake, or finance a public

infrastructure Facility, unless, to the extent practicable, the Facility is consistent with the smart growth criteria set forth in ECL § 6-0107.

Although there are no state infrastructure agencies, as defined in the ECL, impacted by this Facility, and although the Applicant does not intend to install infrastructure that will promote or facilitate secondary growth covered by this law, the Application will address the Facility's consistency with the criteria provided in ECL 6-0107(2).

## 2.28 ENVIRONMENTAL JUSTICE

Exhibit 28 of the Article 10 Application requires the Applicant to provide sufficient information for the New York State Department of Environmental Conservation (NYSDEC) and others to assess the potential impact of the Facility on Environmental Justice communities. However, it should be noted that the intent of an Environmental Justice evaluation is to determine if air quality and associated health impacts are disproportionately affecting certain communities or populations. As previously indicated, the Facility is a wind powered electric generation facility that will not result in emissions or air quality impacts (see Section 2.15). Therefore, for the purposes of the Environmental Justice evaluation, and based on the criteria set forth in 6 NYCRR 487.4, the Applicant has defined the "Impact Study Area" to consist of a 0.5 mile radius around each of the Facility components.

Based on data obtained from the *NYSDEC's Geospatial Information System (GIS) Tools for Environmental Justice* website (www.dec.ny.gov/public/911.html), there are four Potential Environmental Justice Areas in the southern portion of the Study Area. The nearest Potential Environmental Justice Areas to the Facility are within the City of Hornell and approximately 2.2 miles from the Facility boundary. There are three distinct potential Environmental Justice Areas located within the city limits. Approximately 31.73%, 30.84%, and 27.00% of the population of each census block group have a household income below the federal poverty level. These three potential Environmental Justice Areas are all within the 5-mile Study Area. There is also a potential Environmental Justice Area located in the Towns of Alfred and Ward in Allegany County. This potential Environmental Justice Area is approximately 9.0 miles from the Facility Area; 28.76% of the population of this census block group also have a household income below the federal poverty level. Please see Appendix L of this PSS for Potential Environmental Justice Areas in Steuben and Allegany County, which was obtained from the NYSDEC website. A map of these potential Environmental Justice Areas, in relation to the Facility Site, will be provided in the Article 10 Application.

The Applicant provided this information in the PIP and, to date, no comments have been received regarding potential impacts to these Environmental Justice Areas. Because of the distance between the proposed Facility and the Potential Environmental Justice Areas described above, the Facility is not expected to have an impact on these or any

other Environmental Justice areas and the full Environmental Justice Analysis outlined in 6 NYCRR 487.6 is not required, and will not be provided in the Article 10 Application.

## 2.29 SITE RESTORATION AND DECOMMISSIONING

(a) Performance Criteria

The Article 10 Application will provide a statement of the performance criteria proposed for the restoration or decommissioning of the Facility. It is currently anticipated to include an acceptable form of security, in the form of a decommissioning bond, taking into account the independently estimated salvage value and/or resale value of the Facility components for the decommissioning of the Facility at the end of its useful life (approximately 25 years) including site restoration.

(b) Decommissioning and Restoration Plan

Megawatt-scale wind turbine generators typically have a life expectancy of 20 to 25 years. The current trend in the wind energy industry has been to replace or "re-power" older wind energy projects by upgrading older equipment with more efficient turbines. Performance criteria applicable to decommissioning would also be applicable to re-powering (please see discussion of performance criteria above in (a)).

However, if not upgraded or if the turbines are not expected to return to operation), they will be decommissioned, in accordance with a Decommissioning Plan. This Plan will be included in the Article 10 Application and will address the following provisions:

- Decommissioning would be triggered if a wind turbine is non-operational for not less than two years, unless otherwise agreed to by the Towns and DPS staff.
- All above-ground structures, including turbines, blades, nacelles, towers, transformers, above-ground collection cables and poles, permanent meteorological towers, and the collection substation, will be removed. The POI substation will not be removed during decommissioning, because it will be owned and operated by NYSEG following its construction.
- Foundations and collection lines buried above a depth of 36 inches in non-agricultural lands and 48 inches in agricultural lands will be removed, but components buried lower than these depths will remain in place.
- Ground disturbance during decommissioning will be minimized to the extent practicable and the site will be restored to its original ground contours to the extent practicable.

- The Applicant will provide written notification to the Towns two weeks prior to the commencement of site restoration following decommissioning activities.
- The types of financial assurance, as needed and secured by the Applicant, for the purpose of adequately performing decommissioning, in an amount equal to the Professional Engineer's certified estimate of decommissioning cost, less the expected salvage value and/or resale value of the wind farm components. The decommissioning estimate will be prepared on a per-turbine basis and submitted for DPS Staff and Town review to ensure consistency with the methodology approved in the Certificate.
- The first decommissioning estimate shall be provided prior to Facility construction, the second estimate after one year of Facility operation, and subsequent estimates every fifth year thereafter.
- The Applicant plans to enter into Road Use Agreements with the Towns in which it plans to use Town roads for delivery of turbine components. *See* Section 2.25. The provisions of the Road Use Agreements will also apply to the decommissioning of the Facility in order to ensure that roads are adequately restored to their condition preceding decommissioning following decommissioning activities.
- The time when the Applicant will post and maintain financial assurance in the amount of the net decommissioning costs.
- When the Applicant posts the financial assurance, it will provide the Towns with clear instructions as to how they can access the financial assurance should the Applicant violate the provisions of the Decommissioning Plan.
- The Decommissioning Plan will be binding upon the Applicant, or any of its successors, assigns, or heirs.
- The Towns in which decommissioning activities have occurred will have access to the Facility, pursuant to reasonable notice to the Applicant, to inspect the completed decommissioning activities.

Additional detail will be provided in the Article 10 Application.

(c) Description of Decommissioning/Restoration Agreements Between Applicant and Landowners

All Facility components will be located on private land under lease agreement with the landowners, and all leases with private landowners contain a provision on decommissioning. Although the specific terms of these lease agreements are confidential, decommissioning will involve the removal of all above and below ground Facility components to a depth of at least three feet. Information on the method and schedule for updating the cost of decommissioning and restoration, the method of ensuring funds will be available for decommissioning and restoration, and the method by which the Facility will be decommissioned and the site restored will be provided in Exhibit 29(b) of the Application.

(d) Nuclear Power Facilities

This section is not applicable and therefore is not addressed in this Article 10 Application.

## 2.30 NUCLEAR FACILITIES

The proposed Facility is not a nuclear facility, and as such, the requirements of 1001.30 are not applicable and will not be included in the Article 10 Application.

## 2.31 LOCAL LAWS AND ORDINANCES

The Facility is proposed within the Towns of Avoca, Cohocton, Dansville, Fremont, Howard, Wayland, in Steuben County, New York.

During preparation of the Article 10 Application, the Applicant will continue its consultation with the municipalities whose requirements are the subject of Exhibit 31 to determine whether all such requirements have been correctly identified, and to determine whether any potential request by the Applicant that the Board elect not to apply any such local requirement could be obviated by design changes to the proposed Facility or potential modifications to local laws.

(a) List of Applicable Local Ordinances and Laws of a Procedural Nature

The Applicant has compiled the following preliminary listing of local ordinances, laws, resolutions, regulations, standards, and other requirements of a procedural nature required for the construction or operation of the proposed Facility:

Town of Avoca Local Law 1 of 2009, Wind Energy Facilities

- Article I §5 Permits Required; Transfer; Modifications (A)(2), (A)(4);
- Article II § 9 Applications for Wind Energy Permits for Wind Turbine Generators
- Article II § 10 Application Review Process
- Article II § 15 Noise and Setback Easements
- Article II § 16 Issuance of Wind Energy Permits
- Article II § 18 Permit Revocation; Abatement (B) and (C)
- Article V § 27 Waivers
- Article VI § 28 Fees
- Article VI § 29 Enforcement; Penalties and Remedies for Violations

Town of Cohocton Article XI of the Zoning Law of the Town of Cohocton (Local Law 2 of 2006 Amending the Zoning Law of the Town of Cohocton, New York to Regulate Windmills and Windmill Facilities and as amended by Local Law 1 of 2011)

- Section 1110 Required Approvals
    - Including Section 1110 3. Certificate of Completeness which was added by amendment by Local Law 1 of 2011
- Section 1120 Environmental Review
- Section 1140 Modifications and Waivers
- Section 1150 Duration of Special Use Permit and Continuing Obligations
- Section 1160 Enforcement
- Section 1170 Penalties

Town of Dansville

- Local Law No. 1 of the year 2012, Town of Dansville Road Preservation Law
    - Section 6 Requirement that a Vehicle Permit be Obtained by High Frequency Truck Traffic
    - Section 7 Permit Issuing Authority and Enforcement Authority
    - Section 8 Application and Permit Form
    - Section 9 Alternative to Permit: Road Use Agreement
    - Section 11 Insurance
    - Section 12 Maintenance Bond and Letter of Credit
    - Section 13 Indemnity and Save Harmless
    - Section 14 Extent of Permittee's Liability and Obligation Hereunder
    - Section 15 Stop Work Orders
    - Section 16 Revocation of Permit
    - Section 17 Special Conditions and Exclusions
    - Section 18 Violation of Local Law, Penalties Therefore
    - Section 20 Escrow
    - Section 21 Request for Waiver

Town of Fremont Local Law No 3 of the year 2016 to Amend the Zoning Law of the Town of Fremont

- Section 100.30 Energy Generating Systems Large-Scale and Small-scale Wind
    - E. General Provisions
    - F. Application Requirements
    - I. Traffic Routes and Road Maintenance
    - L. Issuance of Special Use Permit
    - N. Permit Revocation

Town of Howard Local Law 3 of 2007 Town of Howard Wind Energy Facilities Law

- Article 5 Section 1 Permit Approval, Delegation of Authority
- Article 5 Section 2 Application; Fee; Procedure; Public Hearing; Decision
- Article 6 License
- Article 7 Review
- Article 8 Penalties
- Article 9 Review Fees; Consultation Costs

Town of Wayland

- Local Law No. 2 of the year 2012 Town of Wayland Road Preservation Law
    - Section 6 Requirement that a Vehicle Permits be Obtained by High Frequency Truck Traffic
    - Section 7 Permit Issuing Authority and Enforcement Authority
    - Section 8 Application and Permit Form
    - Section 9 Alternative to Permit: Road Use Agreement
    - Section 11 Insurance
    - Section 12 Maintenance Bond and Letter of Credit
    - Section 13 Indemnity and Save Harmless
    - Section 14 Extent of Permittee's Liability and Obligation Hereunder
    - Section 15 Stop Work Orders
    - Section 16 Revocation of Permit
    - Section 17 Special Conditions and Exclusions
    - Section 18 Violation of Local Law, Penalties Therefore
    - Section 20 Escrow
    - Section 21 Request for Waiver
- Town of Wayland Protection and Conservation and Development Law
    - Section 1 General Provisions
    - Section 2 Area Regulations
    - Section 4.1 Building Permit
    - Section 4.2 Special Permit
    - Section 5 Content of Application, General Provisions
        - 5.2 Building Permit
        - 5.3 Special Permit
        - 5.4 Certificate of Occupancy
        - 5.5 Administrative Review
        - 5.6 Variance

These local procedural requirements are supplanted by PSL Article 10, as a matter of law, unless the Board expressly authorizes the exercise of the procedural requirement by the local municipality or agency.

(b) Local Procedural Requirements Requiring Board Authorization

To the extent that the Towns require permits or other approvals for work performed on Town roads or within the Towns' right of way, at this time, it is the Applicant's intent to request that the Board expressly authorize the Towns to issue such permits or alternatively enter into road use agreements with the Applicant.

The Applicant will work with the Towns to follow their procedural and substantive requirements for the permitting of highway work permits. Highway work and similar road permits are primarily an issue of local concern and ministerial in nature provided the Applicant meets the applicable standards.

(c) Identification of Municipal Agency Qualified to Review and Approve Building Permits

The Towns of Avoca, Cohocton, Dansville, Fremont, Howard, and Wayland are responsible for reviewing and approving building plans, inspecting construction work, and certifying compliance with the New York State Uniform Fire Prevention and Building Code, and the Energy Conservation Code of New York State to the extent that a municipal official is a qualified individual.

Due to the complex nature of the Facility, there is the potential that the Applicant will arrange with the Towns to pay for consultant services for the review, approval, inspection and compliance certification for work required to comply with the New York State Uniform Fire Prevention and Building Code, and the Energy Conservation Code of New York State, if necessary. For a wind powered electric generating facility, typically, this work is limited to turbine foundations and operations and maintenance buildings.[7] The Applicant will work with the Towns prior to submission of the Article 10 Application to identify the appropriate individuals to conduct this review and the Article 10 Application will include a description of any preliminary arrangements between the Applicant and the Towns and the process for review.

(d) List of Applicable Local Ordinances and Laws of Substantive Nature

The Applicant has compiled the following preliminary listing of local ordinances, laws, resolutions, regulations, standards, and other requirements of a substantive nature required for the construction or operation of the proposed facility:

Town of Avoca Local Law 1 of 2009, Wind Energy Facilities

- Article I §5 Permits Required; Transfers; Modifications (A)(1) and (A)(3)
- Article I §5 Permits Required; Transfers; Modifications (B)
- Article I §7 Applicability
- Article II § 11 Standards for Wind Energy Facilities
- Article II § 12 Required Safety Measures
- Article II § 13 Roads and Traffic
- Article II § 14 Sound Levels and WTG Setbacks
- Article II § 17 Limitations on Approvals; Easements on Town Property
- Article II § 18 Permit Revocation; Abatement (A), (D), (E) and (F)

[7] The NYS DOS has stated that the Building Code of New York State does not regulate wind generators or free standing communication towers. See NYSDOS, Division of Code Enforcement and Administration, Technical Bulletin January 1, 2003, Communication Towers, Cellular Towers and Wind Generators.

Town of Cohocton Article XI of the Zoning Law of the Town of Cohocton (Local Law 2 of 2006 Amending the Zoning Law of the Town of Cohocton, New York to Regulate Windmills and Windmill Facilities and as amended by Local Law 1 of 2011)

- Article III Zoning Schedule of the Town of Cohocton
- Article XI Section 1130 Review Standards (2) Industrial Windmills

Town of Dansville

- Local Law No. 1 of the year 2012, Town of Dansville Road Preservation Law
    - Section 5 Permanent Weight Restriction and Truck Route
    - Section 10 Damage to Town Roads

Town of Fremont Local Law No 3 of 2016 to Amend the Zoning Law of the Town of Fremont

- Section 100.30 Energy Generating Systems, Large-scale and Small-scale Wind
    - G. Wind Energy Systems Development Standards (1-11)
    - H. Required Site Safety Measures
    - J. Setbacks
    - K. Noise and Setback Easements
    - M. Abatement

Town of Howard Local Law 3 of 2007 Town of Howard Wind Energy Facilities Law

- Article 5 Section 3 Setback Standards; Measurements; Landscaping; Sound; Fall Zones; Roads
- Article 5 Section 4 Operational Considerations; Decommissioning
- Article 5 Section 5 Emergency Shutdown/Safety
- Article 5 Section 6 Lighting
- Article 5 Section 7 Height
- Article 5 Section 8 Security Provisions

Town of Wayland

- Local Law No. 2 of the year 2012 Town of Wayland Road Preservation Law
    - Section 5 Permanent Weight Restriction and Truck Route
    - Section 10 Damage to Town Roads
    -
- Town of Wayland Protection and Conservation and Development Law
    - Section 2.2.2 (2) General Uses, Monitoring Wells
    - Section 3.3 Yards
    - Section 3.4.1 Utility Distribution Lines, Utility Facilities, Communication Towers, and Water Supplies
    - Section 4.3.6 Special Permit Standards and Findings

The location of the proposed Facility will conform to all such local substantive requirements, except any that the Applicant requests that the Board elect to not apply. Copies of zoning, floodplain, and similar maps, tables and/or documents related to local substantive requirements will be included in the Article 10 Application.

(e) List Of Substantive Local Ordinances/Laws That the Applicant Requests the Board Not Apply

The Facility will comply with all substantive requirements of the local laws, except those laws which are unreasonably burdensome in view of existing technology, i.e. certain height limits and construction time restrictions. The Applicant

will continue to consult with the local municipalities and will provide more detail in the Article 10 Application, including a statement justifying why any identified local law is unreasonably burdensome as applied to the Facility.

(f) List Of Procedural Local Ordinances/Laws Related to Use of Water, Sewer, or Telecommunication Lines

The Applicant does not anticipate connecting to any water, sewer, telecommunication or steam lines in public rights of ways. Therefore, the Applicant has not identified any local ordinances, laws, resolutions, regulations, standards or other requirements applicable to the interconnection related to the use of water, sewer, telecommunication and steam lines in public rights of way that are of a procedural nature. The Article 10 Application will confirm that the Facility will not be connecting to any water, sewer, telecommunication or steam lines in public rights of ways.

(g) List Of Substantive Local Ordinances/Laws Related to Use of Water, Sewer, or Telecommunication Lines

The Applicant does not anticipate connecting to any water, sewer, telecommunication or steam lines in public rights of ways. Therefore, the applicant has not identified any local ordinances, laws, resolutions, regulations, standards or other requirements applicable to the interconnection related to the use of water, sewer, telecommunication and steam lines in public rights of way that are of a substantive nature. The Article 10 Application will confirm that the Facility will not be connecting to any water, sewer, telecommunication or steam lines in public rights of ways.

(h) Local Ordinances/Laws Related to Use of Water/Sewer that the Applicant Requests the Board Not Apply

At this time the Applicant has not identified any local substantive ordinances or laws related to the use of water/sewer that are applicable to the proposed Facility and that they anticipate requesting the Board not apply; however, the Applicant will continue to consult with the local municipalities and will provide more detail in the article 10 Application.

(i) Summary Table of Substantive Local Requirements

The Article 10 Application will provide a summary table that has two columns, one consisting of applicable substantive requirements to the Facility and the second containing a description of how the Applicant plans to meet compliance.

(j) Zoning Designation

Zoning regulations within the Facility Site are described within the applicable Town Zoning Laws. The Article 10 Application will outline where the turbine locations within the Facility Site will be located and how they will comply with zoning districts to allow for the construction of wind energy generation facilities by special permit or otherwise.

## 2.32 STATE LAWS AND REGULATIONS

During preparation of the Article 10 Application, the Applicant will consult with the state agencies and authorities whose requirements are the subject of Exhibit 32, to determine whether all such requirements have been correctly identified. To the extent that the requirements below are applicable, the Applicant intends to comply with such requirements unless the Applicant specifically requests relief from the Siting Board.

(a) List of State Approvals, Consents, Permits, Certificates, or Other Conditions of a Procedural Nature

The Applicant has compiled a preliminary listing of state approvals, consents, permits, or other conditions of a procedural nature required for the construction or operation of the proposed Facility, as summarized in the Table 8.

Table 8. List of All State Approvals for the Construction and Operation of the Facility that are Procedural in Nature and supplanted by PSL Article 10

| State Agency | Requirement | Discussion |
|---|---|---|
| New York State Department of Environmental Conservation | Water Quality Certification (WQC), Section 401 of the Clean Water Act | The request for a 401 WQC will not be filed until a federal U.S. Army Corps of Engineers permit application is filed (if necessary). Under the Siting Board regulations, the WQC will be issued by the Siting Board. |
| New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) | Consultation Pursuant to §14.09 of the New York State Historic Preservation Act | The Applicant has initiated (and will continue) consultation with the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) to ensure compliance with §14.09 of the New York State Historic Preservation Act. |
| New York State Department of Environmental Conservation | Endangered and Threatened Incidental Take Permit Article 11, 6 NYCRR Part 182 | The NYSDEC may issue a license or permit to "take" any species listed as endangered or threatened. This permit may be required if, in consultation with state agencies, it is determined that the project could result in incidental take of any state-listed endangered or threatened fish or wildlife species from occupied habitat. If this permit is required, the procedural requirements are supplanted by Article 10. |
| New York State Department of Environmental Conservation | Permit for Protection of Waters Article 15, 6 NYCRR Part 608 | This permit would be required for the crossing of protected streams by Facility components. Protected streams are particular portions of streams designated by the NYSDEC with one of the following classifications: AA, AA(t), A, A(t), B, B(t) or C(t). The permit is required for any change, modification, or disturbance of any protected streams, streambeds, or stream banks. If this permit is required, the procedural requirements are supplanted by Article 10. |

| State Agency | Requirement | Discussion |
|---|---|---|
| New York State Department of Environmental Conservation | Permit for Freshwater Wetlands<br>Article 24, 6 NYCRR Part 663 | This permit would be required for the crossing of regulated freshwater wetlands or adjacent areas by Facility components. Regulated freshwater wetlands are designated and mapped by the NYSDEC, and are generally 12.4 acres or larger. Around every regulated freshwater wetland is an adjacent area of 100 feet that is also regulated to provide protection for the wetland. If this permit is required, the procedural requirements are supplanted by Article 10. |
| New York State Department of Environmental Conservation | SPDES General Permit for Construction Activity | This permit is required for construction projects that disturb one or more acres of soil. In accordance with 16 NYCRR 1001.32(a) this is identified as a state procedural requirement issued by the NYSDEC pursuant to federal recognition of state authority. This approval is subject to review by the NYSDEC independent of the Article 10 process. |
| New York State Public Service Commission | Certificate of Public Convenience and Necessity<br>NY PSL §68 | No electric corporation shall begin construction of an electric plant, having a generating capacity of at least 80 MW, without first having obtained the permission and approval of the commission. The procedural requirements of Section 68 are supplanted by Article 10. |

As indicated in the table above, some of these state procedural requirements are supplanted by PSL Article 10, except for permits to be issued by the New York State Department of Environmental Conservation (NYSDEC) pursuant to Federal recognition of State authority, or pursuant to federally delegated or approved authority, in accordance with the Clean Water Act, the Clean Air Act and the Resource Conservation and Recovery Act, and permits pursuant to Section 15-1503, Title 9 of Article 27, and Articles 17 and 19 of the ECL, unless the Board expressly authorizes the exercise of such authority by the state agency.

(b) List of Procedural State Approvals/Permits/Etc. that the Applicant Requests the Board Not Apply

As indicated in the chart above, the Applicant anticipates requesting that the Siting Board authorize the DOT to issue the applicable over-sized vehicle permits, highway work permits and other ministerial permits associated with road work in State highways or rights-of-ways. Generally, these approvals are issued immediately prior to construction and are submitted by the contractor. It is anticipated that the information required to be included in the submission will not be available until after a contractor is selected and post-certification. The Applicant will provide an additional explanation of why such an authorization would be desirable and/or appropriate in the Article 10 Application.

(c) List of State Approvals, Consents, Permits, Certificates, or Other Conditions of a Substantive Nature

The Applicant will construct and operate the Facility in a manner that conforms to all State substantive requirements for those approvals, consents, permits, certificates, or other conditions. The following is a list of all substantive state requirements:

- Water Quality Certification (WQC), Section 401 of the Clean Water Act 6 NYCRR Part 621.4e (Water Quality Certifications in Accordance with Section 401 of the Clean Water Act)
- Consultation Pursuant to Section14.09 of the New York State Historic Preservation Act
- Permit for Protection of Waters, Article 15, 6 NYCRR Part 608.7b (Permit Application Review) and 608.8 (Standards)
- Permit for Freshwater Wetlands, Article 24, 6 NYCRR Part 663.5 (Standards for Issuance of Permits and Letters of Permission)
- SPDES General Permit for Construction Activity, Article 3, 6 NYCRR Part 750-1.11 (Application of Standards, Limitations, and other Requirements)

(d) Summary Table of Substantive State Requirements

The substantive state requirements preliminarily identified above in (c) will be presented in a table in the Article 10 Application, and formatted per the associated requirements.

(e) State Approvals/Permits/Etc. for Offsite Features Not Encompassed by Major Electric Generating Facility

To the extent that offsite ancillary features, which are not considered part of the Major Electric Generating Facility, are needed, a list of all state approvals, consents, permits, certificates, or other conditions for the construction or operation of said offsite ancillary features will be listed in the Article 10 Application.

## 2.33 OTHER APPLICATIONS AND FILINGS

(a) Other Applications or Filings Concerning the Subject Matter of the Proceeding

Besides the list of approvals identified in Section 2.32 and below in subparagraph (B) the Applicant does not have, and is not aware of, any other application or filing before any governmental agency, department or court which concerns the subject matter of this proceeding (i.e., Baron Winds).

(b) Federal Permits, Consents, Approvals, or Licenses Required for Construction or Operation

Table 9 summarizes any anticipated federal permit, consent, approval, or license needed for the proposed Facility. This information will be confirmed and/or updated in the Article 10 Application.

Table 9. Federal Permits and Approvals for the Facility

| Agency | Anticipated Application Date[1] | Description of Permit or Approval Required |
|---|---|---|
| U.S. Army Corps of Engineers | TBD | Section 10 of the Rivers and Harbors Act of 1898<br>Section 404 or Nationwide Permit for Placement of Fill in Federal Jurisdictional Wetlands/Waters of the U.S.<br>NEPA Compliance<br>Compliance with Section 106 of the NHPA<br>Compliance with Section 7 of the Endangered Species Act |
| Federal Aviation Administration | TBD | Lighting Plan and Clearances for Potential Aviation Hazard. Includes formal consultation with Department of Defense |

[1] The anticipated application submittal date will be identified in the Article 10 Application.

## 2.34 ELECTRIC INTERCONNECTION

Interconnection of the Facility to the electric transmission system will be achieved using multiple systems. The wind turbines themselves produce power at a low voltage, which is stepped up to a medium voltage at the output of each turbine. A medium voltage collection system comprised of underground and overhead wires transmits the power to a collection substation. The collection substation then transforms the power up to 230 kV and delivers the power to the adjacent, existing POI substation. The POI substation connects the Facility to the NYSEG transmission system.

(a) Design Voltage and Voltage of Initial Operation

A pad mount transformer located near the base of each wind turbine tower, or internally within the tower, will raise the voltage of electricity produced by the turbine generator from approximately 650 volts up to 34.5 kilovolts (kV); the voltage level of the collection system. The length and anticipated number of circuits for the electrical collection system will be described in the Article 10 Application.

(b) Type, Size, Number, and Materials of Conductors

The length of the collection system, broken down by anticipated length of overhead and underground lines, will be described in the Article 10 Application. The underground system will be comprised of numerous cable sections in parallel, connecting each of the wind turbines to the collection substation. Each section is anticipated to be comprised of 3 type URD aluminum conductors, each surrounded by electrical insulation (typically tree-retardant cross linked

polyethylene, TRXLPE) and an overall jacket (typically linear low density polyethylene, LLDPE). The size of each conductor will depend on how many turbines are producing power into that conductor, but will typically range from 4/0 to 1500 kcmil AWG.

The overhead system is similar in concept to the underground section. Each section is anticipated to be comprised of 3 ACSR (aluminum conductor, steel reinforced) conductors. The size will range from 336.4 to 795 kcmil. Determination of specular or non-specular material construction will be made during final design.

(c) Insulator Design

Typical utility-grade ceramic/porcelain or composite/polymer insulators, designed and constructed in accordance with ANSI C29, are anticipated to be used. Insulators in the POI substation are anticipated to be porcelain.

(d) Length of the Transmission Line

The Facility is not proposing a transmission line. The collection substation and the existing POI substation are expected to be located fence to fence.

(e) Typical Dimensions and Construction Materials of the Towers

It is anticipated that the overhead collection line will be carried on treated wood pole structures, and anticipated pole heights will be presented in the Article 10 Application.

(f) Design Standards for Each Type of Tower and Tower Foundation

It is anticipated that the towers used for the overhead collection line will be wooden. The design standards for the overhead collection line wooden pole will be described in the Article 10 Application.

The foundation for each pole is granular fill that is installed into the voids around the pole in the hole drilled for embedment. The fill is compacted in small lifts to ensure a solid, compacted base for each pole.

(g) Type of Cable System and Design Standards for Underground Construction

From the transformer within each wind turbine, three power cables along with the fiber optic communication cables that comprise a single circuit will collect the electricity produced by wind turbine generators. Direct burial methods through use of a cable plow, rock saw, rock wheel trencher and/or similar equipment will be used during the installation of

underground electrical collection system whenever possible. If a rock saw is used, water or other nonhazardous compound would be used as a lubricant. Direct burial will involve the installation of bundled cable (electrical and fiber optic bundles) directly into a "rip" in the ground created by the plow, saw blade or rock wheel. The rip disturbs an area approximately 24 inches wide with bundled cable installed to a minimum depth of 36 inches in most areas, and 48 inches in active agriculture and pasture lands. Sidecast material will be replaced with a small excavator or small bulldozer. All areas will be returned to approximate pre-construction grades and restored.

(h) Profile of Underground Lines

A typical drawing of the underground collection cable and associated material will be provided in the Article 10 Application.

(i) Equipment to be Installed in Substations or Switching Stations

The POI substation equipment and collection substation will be described in the Article 10 Application. The Application will include a plan/overview of the POI substation and collection substation.

(j) Any Terminal Facility

The only terminal facilities expected are the POI and collection substation and are described/shown above in section (i).

(k) Need for Cathodic Protection Measures

There are no cathodic protection measures expected to be required for installation of the underground systems, as no metallic pipelines are anticipated to be used. Therefore, cathodic protection measures will not be discussed further in the Article 10 Application.

## 2.35 ELECTRIC AND MAGNETIC FIELDS

The information presented in Exhibit 35 of the Article 10 Application will be derived from an electric and magnetic field (EMF) study to be prepared for the Baron Winds Project.

(a) Every Right-of-way Segment Having Unique Electric and Magnetic Field Characteristics

None of the electrical lines from the turbines to the collection station/POI station will exceed 34.5 kV; therefore, the Facility will not have a Right-of-way (ROW) associated with high voltage transmission power lines. However, the Article 10 Application will identify 34.5 kV ROW segments with unique EMF characteristics, which will be evaluated in the EMF study. The strength and location of EMFs will be modeled on representative areas of these segments. Modeling calculations will identify existing EMFs and future EMFs that would result from construction and operation of the Facility. For the purposes of calculations, the ROW is assumed to be 100 feet (50 feet from centerline) for all of the segments. The Article 10 Application will identify the name and calculation number of each segments.

(b) For Each Right-of-way Segment, Base Case and Proposed Cross Sections Showing:

For each of the unique ROW segments, the EMF study will provide both base case (where existing facilities are present) and proposed cross sections that will show, to scale, the following features:

- any known overhead electric transmission, sub-transmission, and distribution facilities showing structural details and dimensions and identifying phase spacing, phasing, and any other characteristics affecting EMF emissions;
- any known underground electric transmission, sub-transmission (i.e., 34.5 kV collection system), and distribution facilities;
- ROW boundaries; and
- structural details and dimensions for all structures (dimensions, phase spacing, phasing, and similar categories) and an overview map showing locations of structures.

The station numbers associated with each of the unique ROW segments will be included in the Article 10 Application.

(c) Enhanced Aerial Photos/Drawings Showing Exact Locations of Each:

The EMF study to be included in the Article 10 Application will include a set of aerial photos/drawings showing the exact location of each unique ROW segment and each cross-section, and any residences or occupied buildings within the ROW segments. If no residence or occupied building is within the ROW segments, the measurement of the distance between the edge of the ROW segment and the nearest residence or occupied building will be provided.

(d) Electric and Magnetic Field Study

(1) Licensed Professional Engineer

The EMF study included in the Article 10 Application will be signed and stamped/sealed by a licensed professional engineer registered and in good standing in the State of New York.

(2) Computer Software Program

The software to be used in the EMF study will be identified in the Article 10 Application.

(3) Electric Field Calculation Tables and Field Strength Graphs

The EMF study will model the strength and locations of electric fields to be generated by the Facility. Modeling will be conducted at rated voltage, and the measurement location and interval will be described in the Application. Electric field strength graphs depicting electric fields along the width of the entire ROW and out to the property boundary of the Facility will be included in the EMF study. Digital copies of all input assumptions and outputs for the calculations will be provided under separate cover.

(4) Magnetic Field Calculation Tables and Field Strength Graphs

The EMF study will modeled the strength and locations of magnetic fields to be generated by the Facility. Modeling will be conducted at rated voltage, and the measurement location and interval will be described in the Application. There is no expected change in amperage under any of the following conditions: summer normal, summer short term emergency, winter normal, winter short term emergency. Therefore, the magnetic field modeling to be performed will be applicable to any of these conditions. Magnetic field strength graphs depicting magnetic fields along the width of the entire ROW and out to the property boundary of the Facility will be included in the EMF study. Digital copies of all input assumptions and outputs for the calculations are being provided under separate cover.

(5) Magnetic Field Calculation Tables and Field Strength Graphs for Maximum Annual Load within 10 Years

There is no expected change in amperage in maximum average load initially versus for 10 years after initiation of operation. Therefore, the modeling of magnetic fields described above in 1001.35(d)(4) (including both the graphs and tables included in the EMF study) will be applicable to both initial operation and operation after 10 years.

(6) Base Case Magnetic Field Calculation Tables and Field Strength Graphs

There are no proposed high voltage transmission lines, therefore this analysis is not applicable to the proposed Facility.

## 2.36 GAS INTERCONNECTION

The proposed Facility will not require gas interconnection facilities, and as such, the requirements of 1001.36 are not applicable and will not be included in the Article 10 Application.

## 2.37 BACK-UP FUEL

The proposed Facility will not require back-up fuel, and as such, the requirements of 1001.37 are not applicable and will not be included in the Article 10 Application.

## 2.38 WATER INTERCONNECTION

The proposed Facility is not expected to require water interconnection facilities, and as such, the requirements of this exhibit are not applicable. Specific to the O&M building, if a new building is constructed it is anticipated that water supply needs will be satisfied through use of a water well, which would be drilled by a NYSDEC-approved water well driller. The Applicant will work with the Steuben County Department of Health during this process. If an existing building is used for O&M purposes, the Applicant will evaluate the adequacy of existing water supply.

## 2.39 WASTEWATER INTERCONNECTION

The proposed Facility is not expected to require wastewater interconnection, and as such, the requirements of this exhibit are not applicable. Specific to the O&M building, if a new building is constructed wastewater needs will be satisfied through use of an individual on-site wastewater treatment system (e.g., septic system). The Applicant will work with the Steuben County Department of Health throughout this process. If an existing building is used for O&M purposes, the Applicant will evaluate the adequacy of existing wastewater treatment systems.

## 2.40 TELECOMMUNICATIONS INTERCONNECTION

Generally, it is not anticipated that the Facility will require telecommunication interconnections as defined by Article 10, 16 NYCRR 1000.40, in that new off-site telecommunication lines are not anticipated at this time. It is likely that data

will be transmitted to NYSEG and others using existing telecommunications facilities as the area is generally served by existing cellular and broadband services. In addition, Facility communications will be installed on-site as part of substation and O&M building improvements.

(a) Operational Data Transmitted to NYISO

The Facility's generating operational data will be transmitted to NYISO/NYSEG through a fiber-optic shield wire from the collection substation into the POI, and will include generation data (MW output, MVAR, and any curtailment) and meteorological data (wind speed, wind direction, barometric pressure, ambient temperature, dew point, and humidity). The Article 10 Application will provide additional information on a Facility's meter location, the means of providing the operational data to NYSEG, and the secure communications network for this operational data.

(b) Facility Operations Communications Methods

The Article 10 Application will provide information regarding a high speed internet (T-1 or other provider) to be established, and the means of transmitting the necessary data and other information to the appropriate parties for monitoring and reporting purposes.

The Article 10 Application will also discuss a telecommunications network to be setup at the O&M building, allowing for telecommunications to the public and first responders/emergency responders if necessary, and communications to the Applicant's corporate offices for monitoring and access to the Facility.

(c) Status of Negotiations

The Regulations require a description of the status of negotiations, or a copy of agreements that have been executed, with companies or individuals for providing the communications interconnection including any restrictions or conditions of approval placed on the Facility imposed by the provider, if applicable. Such negotiations have not yet been initiated for the Facility because at this time, the need for these agreements has not been identified. Although not anticipated, any changes in status will be discussed in the Article 10 Application.

## 2.41 APPLICATIONS TO MODIFY OR BUILD ADJACENT

The Applicant is not proposing to modify or build adjacent to an existing facility, and as such, the requirements of this exhibit are not applicable and will not be included in the Article 10 Application.

# 3.0 SUMMARY AND CONCLUSIONS

This Preliminary Scoping Statement has been prepared for the Baron Winds Project, which is proposed to include up to 120 turbines and generate up to 300 MW of renewable energy with no emissions of pollutants or greenhouse gases to the atmosphere and without the need for the use of significant quantities of water. Other proposed components will include: access roads, above and underground collection lines, collection substation, point of interconnection substation, up to three permanent meteorological (met) towers, up to four staging/laydown yards, and an Operations and Maintenance (O&M) building. This document has been prepared to facilitate an understanding of the proposed Facility, to further solicit input from the various stakeholders, and to satisfy the requirements of 1000.5(l) of the New York Public Service Law.

The proposed Facility is a utility scale wind project located in Steuben County, New York in the following six Towns: Avoca, Cohocton, Dansville, Fremont, Howard, and Wayland. The proposed Facility Area boundary (see Figure 2) consists of approximately 23,874 acres of private land, and the general landscape is a mix of agricultural and forest land. There are no Villages or other urban areas within the Facility Area boundary.

The Application will provide a range of turbine models that may ultimately be selected. In no case will the Facility consist of more than 120 turbines or be greater than 300 MW. For example, if a 2.5 MW model is selected then up to 120 turbines will be constructed, whereas, if a 3.0 MW model is selected then up to 100 turbines will be constructed. (See Appendix M for representative turbine information, which is provided as an example of the types of turbine models that are currently available on the market – the Article 10 Application will likely identify additional turbine models that may be used for this Facility).

The Applicant prepared a Public Involvement Program (PIP) plan in accordance with 16 NYCRR § 1000.4. The initial draft of the PIP was submitted to the Siting Board on February 26, 2015, comments on the PIP were received from the New York State Department of Public Service (DPS) on March 30, 2015, and the PIP was updated, finalized and filed by the Applicant on May 1, 2015. The PIP can be accessed, viewed and downloaded on the online case record maintained by the Siting Board and on the Facility-specific website maintained by the Applicant:

- (http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?Mattercaseno=15-F-0122)
- (http://everpower.com/baron-winds-wind-project-steuben-county-ny/)

In addition to the websites identified above, the Applicant has established a toll free number (1-844-680-WIND) to call with any questions and comments on the Facility, and set up a Facility Facebook page through which stakeholders and

the public can submit comments and questions on the Facility. The Applicant also held three open houses, which included the following information:

- Facility and company fact sheet
- Article 10 Consumer Presentation
- Facility maps from the PIP

The Applicant has provided paper copies of all documents presented at the open houses at the following repositories:

- Cohocton Public Library
- Hornell Public Library

During the time before the submission of the Article 10 Application, the Applicant intends to continue stakeholder outreach. The Applicant will do a mass mailing to all stakeholders following submission of the PSS to provide an update on the Facility, invite comments, and remind the stakeholders of the comment period timeframe. The Applicant will continue to attend municipality meetings and will hold at least one additional open house prior to submitting the Application. Finally, the Applicant will also attempt to identify additional community events in which it would participate.

Section 2.0 (Content of Application) of this PSS has been organized in accordance with 16 NYCRR § 1001 (Content of an Application). Specifically, all sub-sections of Section 2.0 correspond directly to 16 NYCRR § 1001 (e.g., Section 2.1 corresponds to 16 NYCRR § 1001.1, Section 2.2 corresponds to 16 NYCRR § 1001.2, etc.). These subsections of the PSS identify numerous Facility-specific support studies that will be conducted and included in the Article 10 Application, including:

- Preliminary Emergency Action Plan
- Complaint Resolution Plan
- Noise Impact Assessment
- Phase 1B Archeological Survey
- Historic Architectural Resources Survey
- Preliminary Geotechnical Investigation
- Invasive Species Control Plan
- Preliminary Stormwater Pollution Prevention Plan
- Preliminary Spill Prevention Containment and Countermeasure Plan
- Plant and Wildlife Species Inventory
- Wetland and Stream Delineation Report
- Visual Impact Assessment

- Shadow Flicker Assessment
- Route Evaluation Study
- Draft Decommissioning Plan
- AM and FM Radio Analysis
- Off-Air Television Analysis
- Microwave Analysis
- Electric and Magnetic Field Study

Finally, as previously indicated, the Applicant has prepared a content matrix to allow for a comparison of the content of this document with the requirements of 1000.5(l), which is provided below as Table 10.

Table 10. PSS Content Matrix

| PSL 1000.5(l) Section | Requirement | Corresponding Section of the Baron Winds PSS | Notes |
|---|---|---|---|
| PSL 1000.5 (l)(1) | as much information as is reasonably available concerning the proposed facility, generally in the form (though in less detail) that it will appear in the application; | Section 2.0 | This Section, and all associated subsections, of the PSS contain reasonably available information related to existing conditions, potential impacts and minimization/mitigation. |
| PSL 1000.5 (l)(2) | a preliminary scope of an environmental impact analysis containing a brief discussion, on the basis of reasonably available information, of the following items: | Section 1.3 | This section includes general information regarding Project-related impacts. |
| PSL 1000.5 (l)(2)(i) | a brief description of the proposed facility and its environmental setting; | Section 1.1, Sections 2.21(l), 2.22(a), 2.22(d), 2.23(a), 2.23(b) | Section 2.1 provides a brief description of the Project, while Sections 2.21(l), 2.22(a), 2.22(d), 2.23(a), 2.23(b) provide a brief description of its environmental setting |
| PSL 1000.5 (l)(2)(ii) | potentially significant adverse environmental and health impacts resulting from the construction and operation of the proposed facility including also an identification of particular aspects of the environmental setting that may be affected, including any material impacts or effects identified in consultations by the public, affected agencies, and other stakeholders, and a responsive analysis by the Applicant as to those issues identified in consultations; | Section 1.3, Sections 2.15(e) and 2.17(d), Sections 2.21 (m), 2.22 (b), 2.22(f), 2.22(m), 2.22(q), 2.23(b)(4), 2.23(e)(1), 2.24(b)(7), 2.25(d)(2) | Section 1.3 includes general information regarding Project-related impacts, Sections 2.15(e) and 2.17(d) provide information regarding potential health impacts, and Sections 2.21 (m), 2.22 (b), 2.22(f), 2.22(m), 2.22(q), 2.23(b)(4), 2.23(e)(1), 2.24(b)(7), 2.25(d)(2) provide information regarding potential environmental impacts. As of the date of the filing of this PSS, no material impacts have been identified during any consultations. |
| PSL 1000.5 (l)(2)(iii) | the extent and quality of information needed for the application to adequately address and evaluate each potentially significant adverse environmental and health impact, including existing and new information where required, and the methodologies and procedures for obtaining the new information; | Section 2.0 | This Section, and all associated subsections, identify the extent and quality of information that is proposed to be included in the Article 10 Application, including numerous stand-alone support studies. |

| PSL 1000.5(l) Section | Requirement | Corresponding Section of the Baron Winds PSS | Notes |
|---|---|---|---|
| PSL 1000.5 (l)(2)(iv) | for proposed wind-powered facilities, proposed or on-going studies during pre-construction activities and a proposed period of post-construction operations monitoring for potential impacts to avian and bat species; | Sections 2.22(d) and 2.22(h)(1), Section 2.22(h)(2) | Sections 2.22(d) and 2.22(h)(1) discuss the methodology by which the Applicant proposed and implemented pre-construction avian and bat surveys, while Section 2.22(h)(2) discusses post-construction monitoring. |
| PSL 1000.5 (l)(2)(v) | a description of how the applicant proposes to avoid adverse impacts to the environment and health; | Section 1.3, Sections 2.15(j) and 2.17(d), Sections 2.22 (c), 2.22(g), 2.22(n), 2.22(q), 2.23(b)(5), 2.23(e)(2), 2.24(a)(10), 2.25(d)(4) | Section 1.3 includes general information regarding Project-related avoidance, minimization and mitigation measures, Sections 2.15(j) and 2.17(d) describe avoidance, minimization and mitigation measures associated with health impacts, and Sections 2.22 (c), 2.22(g), 2.22(n), 2.22(q), 2.23(b)(5), 2.23(e)(2), 2.24(a)(10), 2.25(d)(4) describe avoidance, minimization and mitigation measures associated with environmental impacts. |
| PSL 1000.5 (l)(2)(vi) | for those adverse environmental and health impacts that cannot be reasonably avoided, an identification of measures proposed to mitigate such impacts; | see above | see above |
| PSL 1000.5 (l)(2)(vii) | where it is proposed to use petroleum or other back-up fuel for generating electricity, a discussion and/or study of the sufficiency of the proposed on-site fuel storage capacity and supply; | Not applicable to this Project | |

| PSL 1000.5(l) Section | Requirement | Corresponding Section of the Baron Winds PSS | Notes |
|---|---|---|---|
| PSL 1000.5 (l)(2)(viii) | a description and evaluation of reasonable and available alternative locations for the proposed facility, including a description of the comparative advantages and disadvantages of the proposed and alternative locations, except that a private facility applicant may limit its description and evaluation of alternative locations to parcels owned by, or under option to, such private facility applicant or its affiliates; | Section 2.9 | This Section of the PSS specifically addresses alternatives, including reasonable and available alternative locations and the comparative advantages and disadvantages of the proposed and alternative locations. However, as indicated in Section 2.9, this Project is being proposed by a private facility applicant and therefore the description and evaluation of alternative locations will be limited to parcels owned by, or under option to, such private facility applicant or its affiliates. |
| PSL 1000.5 (l)(2)(ix) | If the proposed facility affects any land or water use or natural resource of the coastal area and federal authorization or funding is necessary, a preliminary analysis of the consistency of the proposed facility with the enforceable policies of the New York State coastal management program or, where the action is in an approved local waterfront revitalization program area, with the local program; | Not applicable to this Project | |

| PSL 1000.5(l) Section | Requirement | Corresponding Section of the Baron Winds PSS | Notes |
|---|---|---|---|
| PSL 1000.5 (l)(2)(x) | a statement of the reasons why the primary proposed location and source, taking into account the potentially significant and adverse environmental impacts, is best suited, among the alternatives, including a "no action" alternative, to promote public health and welfare, including the recreational and other concurrent uses that the site may serve, except that a private facility applicant may limit its description and evaluation of alternative locations to parcels owned by, or under option to, such private facility applicant or its affiliates and its description and evaluation of alternative sources to those that are reasonable alternatives to the proposed facility that are feasible considering the objectives and capabilities of the sponsor; | Section 2.9 | This Section of the PSS specifically addresses alternatives, including a "no action" alternative and a statement of the reasons why the primary proposed location and source, taking into account the potentially significant and adverse environmental impacts, is best suited, among the alternatives, to promote public health and welfare, including the recreational and other concurrent uses that the site may serve. However, as indicated in Section 2.9, this Project is being proposed by a private facility applicant and therefore the description and evaluation of alternative locations will be limited to parcels owned by, or under option to, such private facility applicant or its affiliates. |
| PSL 1000.5 (l)(2)(xi) | a preliminary identification of the demographic, economic and physical attributes of the community in which the facility is proposed to be located and in which any alternative location identified is located, and a preliminary environmental justice evaluation of significant and adverse disproportionate environmental impacts of the proposed facility and any alternative facility identified that would result from construction and operation considering, among other things, the cumulative impact of existing sources of emissions of air pollutants and the projected emission of air pollutants from the proposed or alternative facility in a manner that is in accordance with any requirements for the contents of an Article 10 preliminary scoping statement contained in 6 NYCRR Part 487 promulgated by the DEC for the analysis of environmental justice issues; and | Sections 2.27 and 2.28 | Section 2.27 provides demographic information for the host towns, while Section 2.28 specifically address Environmental Justice, including identification of the nearest Potential Environmental Justice Area |

| PSL 1000.5(l) Section | Requirement | Corresponding Section of the Baron Winds PSS | Notes |
|---|---|---|---|
| PSL 1000.5 (l)(2)(xii) | an identification of any other material issues raised by the public and affected agencies during any consultation and the response of the applicant to those issues. | Appendix D | As of the date of filing this PSS, no material issues have been raised by the public or affected agencies. However, Appendix D of the PSS includes the most recently filed Meeting Log, which outlines all consultation activities conducted by the Applicant since January 2015. |
| PSL 1000.5 (l)(3) | an identification of all other state and federal permits, certifications, or other authorizations needed for construction, operation or maintenance of the proposed facility; | Sections 2.32 and 2.33 | Section 2.32 addresses state laws and regulations, which Section 2.33(b) addresses anticipated federal permits and approvals. |
| PSL 1000.5 (l)(4) | a list and description of all state laws and regulations issued thereunder applicable to the construction, operation or maintenance of the proposed facility and a preliminary statement demonstrating an ability to comply; | Section 2.32 | Section 2.32 addresses state laws and regulations. |
| PSL 1000.5(l)(5) | a list and description of all local laws, and regulations issued thereunder, applicable to the construction, operation, or maintenance of the proposed facility and a statement either providing a preliminary assessment of an ability to comply or indicating specific provisions that the applicant will be requesting the Board to elect not to apply, in whole or in part, and a preliminary explanation as to why the Board should elect not to apply the specific provisions as unreasonably burdensome in view of the existing technology or the needs of or costs to ratepayers whether located inside or outside of such municipality; | Section 2.31 | Section 2.21 addresses local laws and ordinances. |
| PSL 1000.5 (l)(6) | a description of the applicant, its formation, status, structure, holdings, affiliate relationships, powers (including whether it has or will seek to obtain the power of eminent domain, either directly or indirectly), franchises and consents; | Section 2.1 | Section 2.1 describes the applicant, including the type of business and its formation. The Applicant does not plan to seek to obtain the power of eminent domain. |

| PSL 1000.5(I) Section | Requirement | Corresponding Section of the Baron Winds PSS | Notes |
|---|---|---|---|
| PSL 1000.5 (I)(7) | a description of the applicant's property rights and interests or those it proposes to acquire to all lands of the proposed facility and any private or public lands or private or public streets, highways or rights-of-way crossed by any interconnections necessary to serve the facility such as, but not limited to, electric lines, gas lines, water supply lines, waste water or other sewage treatment facilities, communications and relay facilities, access roads, rail facilities, or steam lines; and | Section 2.13 | Section 2.13 provides information regarding the applicant's property rights and interests. |
| PSL 1000.5 (I)(8) | any other information that the Applicant may deem to be relevant. | Entire PSS | Any other information deemed relevant by the Applicant has been included in the PSS. |

# 4.0 REFERENCES


AirNav.com. 2016. *Buffalo Niagara International Airport*. Last updated February 4, 2016. Available at http://www.airnav.com/airport/KBUF. (Accessed March, 2016).

American Radio Relay League (ARRL). 2015. *FCC License Data Search*. Available at: http://www.arrl.org/advanced-call-sign-search. (Accessed July 14, 2015).

Ardito, Anthony. 1989. *The Larrowe House*. National Register of Historic Places Registration Form. On file, New York State Office of Parks, Recreation, and Historic Preservation, Waterford, NY. Available at https://cris.parks.ny.gov/Uploads/ViewDoc.aspx?mode=A&id=33253&q=false.

Baring-Gould, I., R. Cattin, M. Durstewitz, M. Hulkkonen, A. Krenn, T. Laakso, A. Lacroix, E. Peltola, G. Ronsten, L. Tallhaug, and T. Wallenius. 2012. *Wind Energy Projects in Cold Climates*. Expert Group Study on Recommended Practices, Submitted to the Executive Committee of the International Energy Programme for Research, Development, and Deployment on Wind Energy Conversion Systems. May 22, 2012.
BERR, 2009

Bifaro, K. 2016. *Telephone Conversation between Karen Bifaro, Town Clerk of the Town of Ellington, and Sara Stebbins, Environmental Design and Research, Landscape Architecture, Engineering & Environmental Services*. March 21, 2016.

Bishop and Proctor. 1994. *Love Them or Loathe Them? Public Attitude Towards Wind Farms in Wales*. Cardiff, Wales.

British Epilepsy Association. 2007. *Photosensitive Epilepsy.* Epilepsy Action, Yeadon Leeds, UK.

Cattaraugus County. 2016. *Municipalities without Zoning, Cattaraugus County, New York*. Prepared by Cattaraugus County Real Property and GIS Services, Little Valley, NY. Map created January 28, 2016.

Code of Federal Regulations (CFR). 2004a. Title 36 - Parks, Forests, and Public Property, Chapter I - National Park Service, Department of the Interior, Part 60 - National Register of Historic Places, Section 60.4 - Criteria For Evaluation. http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title36/36cfr60_main_02.tpl.

Committee on Environmental Impacts of Wind Energy Facilitys (CEIWEP). 2007. Appendix D: A Visual Impact Assessment Process for Evaluating Wind-Energy Facilitys. In, *Environmental Impacts of Wind Energy Facilitys*, pp. 349-376. National Research Council, The National Academies Press, Washington, D.C.

Crossley. D.H. 2016. *Telephone Conversation between David H. Crossley, Code/Zoning Officer of the Town of Villenova, and Sara Stebbins, Environmental Design and Research, Landscape Architecture, Engineering & Environmental Services*. April 15, 2016.

Data.gov. 2015. *Military Bases (National).* GIS Dataset maintained by Department of Transportation. Dataset available at https://catalog.data.gov/dataset/military-bases-national. (Accessed March, 2016).

Department of Energy and Climate Change (DECC). 2011. *Update of UK Shadow Flicker Evidence Base: Final Report.* Parsons Brinckerhoff, London, UK, p. 5.

Department of Planning and Community Development (DPCD). 2012. *Policy Planning and Guidelines for Development of Wind Energy Facilities in Victoria.* The State of Victoria, Department of Planning and Community Development, Melbourne, Australia.

Edinger, G.J., D.J. Evans, S. Gebauer, T.G. Howard, D.M. Hunt, and A.M. Olivero (editors). 2014. *Ecological Communities of New York State.* Second Edition. A revised and expanded edition of Carol Reschke's Ecological Communities of New York State. New York Natural Heritage Program, New York State Department of Environmental Conservation, Albany, NY.

Ellenbogen, J.M., S. Grace, W.J. Heigher-Bernays, J.F. Manwell, D.A. Mills, K.A. Sullivan, M.G. Weisskopf. 2012. *Wind Turbine Health Impact Study: Report of Independent Expert Panel*. January 2012. Prepared for Massachusetts Department of Environmental Protection and Massachusetts Department of Public Health. Available at: http://www.mass.gov/eea/docs/dep/energy/wind/turbine-impact-study.pdf (Accessed: January 28, 2016).

EMD. 2013. *WindPRO 2.8 User Manual*. Available at: http://help.emd.dk/knowledgebase/ (Accessed February, 2016).

Englert, Robert T. 2007. National Register of Historic Places Nomination Form: Rowe House (07NR05717). Electronic Form on File in the New York State Office of Parks, Recreation, and Historic Preservation's (NYSOPRHP's) Cultural Resources Information (CRIS) Database.

Englert, Robert T. 2009. National Register of Historic Places Nomination Form: Presbyterian Church of Atlanta (09NR06057). Electronic Form on File in the New York State Office of Parks, Recreation, and Historic Preservation's NYSOPRHP's CRIS Database.

Environmental Design & Research, Landscape Architecture, Engineering, & Environmental Services, D.P.C. (EDR). 2015a. Re: Cassadaga Wind Facility, Identification of Visually Sensitive Resources. Letter from Patrick Heaton, Director of Cultural Resources, EDR, Syracuse, NY, to Municipal Planning Representatives and State Agencies [various). April 1, 2015.

EDR. 2015b. Re: Cassadaga Wind Facility. Letter from Patrick Heaton, Director of Cultural Resources, EDR, Syracuse, NY, to Diana Carter, Director Planning at New York State Office of Parks, Recreation, and Historic Preservation, Albany, NY. May 6, 2015.

EDR. 2015c. *Phase 1A Historic Architectural Resources Survey and Work Plan: Cassadaga Wind Facility, Towns of Charlotte, Cherry Creek, Arkwright and Stockton, Chautauqua County, NY*. EDR, Syracuse, NY.

EDR. 2016. *Historic Architectural Resources Survey: Cassadaga Wind Project.* Report submitted to Everpower Wind Holdings by Environmental Design and Research Landscape Architecture, Engineering, & Environmental Services, D.P.C., Syracuse, NY.

(EDR). 2016a. *Shadow Flicker Report, Cassadaga Wind Facility, Towns of Arkwright, Charlotte, Cherry Creek, and Stockton, Chautauqua County, New York.* Prepared for Cassadaga Wind, LLC, a subsidiary of EverPower Wind Holdings, Inc. April 2016.

Environmental Laboratory. 1987. *Corps of Engineers Wetland Delineation Manual*. Technical Report Y-87-1. U.S. Army Corps of Engineers: Waterways Experiment Station; Vicksburg, MS.

Executive Office of the President. 2013. *The President's Climate Action Plan*. The White House, Washington, DC. June 2013.

Federal Aviation Administration (FAA). 2005. *Development of Obstruction Lighting Standards for Wind Turbine Farms*. DOT/FAA/AR-TN 05/50. U.S. Department of Transportation, Washington, D.C.

Fenneman and Johnson. 1946. *Physiographic Divisions of the Conterminous U.S.* [shapefile]. Available at: http://water.usgs.gov/lookup/getspatial?physio (Accessed March 10, 2015).

Funk, R.E. (editor). 1993a. Archaeological *Investigations in the Upper Susquehanna Valley, New York State*. Volume I. Persimmon Press, Buffalo, NY.

Funk, R.E. 1993b. Subsistence, Settlement, and Seasonality. In *Archaeological Investigations in the Upper Susquehanna Valley, New York State*. Volume I, pp. 245-312. Persimmon Press, Buffalo, NY.

Garrad Hassan Canada, Inc. 2007. *Recommendations for Risk Assessments of Ice Throw and Blade Failure in Ontario*. Prepared for the Canadian Wind Energy Association. Document No. 38079/OR/01. May 31, 2007.

Gipe, P. 1993. The Wind Industry's Experience with Aesthetic Criticism. *Leonardo*, No. 26, pp. 243-248.

Gipe, P. 2003. *Tilting at Windmills: Public Opinion Toward Wind Energy* [website]. Available at: www.wind-works.org/articles/tilting.html (Accessed January 20, 2011).

Gipe, P. 2013. *A Summary of Fatal Accidents in Wind Energy*. Available at http://www.wind-works.org/cms/index.php?id=43&tx_ttnews[tt_news]=414&cHash=5a7a0eb3236dd3283a3b6d8cf4cc508b (Last updated May 1, 2013; Accessed January 29, 2016).

Gross, L. 2016. *Email Correspondence between Lisa A. Gross, Village Clerk of the Village of Cherry Creek, and Sara Stebbins, Environmental Design and Research, Landscape Architecture, Engineering & Environmental Services*. March 21, 2016.

Homer, C.G., J.A. Dewitz, L. Yang, S. Jin, S., P. Danielson, G. Xian, J. Coulston, N.D. Herold, J.D. Wickham, and K. Megown. 2015. *Completion of the 2011 National Land Cover Database for the Conterminous United States-Representing a Decade of Land Cover Change Information*. Photogrammetric Engineering and Remote Sensing 81(5):345-354.

Jacobsen, D. and C. High. 2008. Wind Energy and Air Emissions Reduction Benefits: A Primer. U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, National Renewable Energy Laboratory. Golden, CO. NREL/SR-500-42616. February 2008.

Jefferson County Community College (JCCC). 2008. *Presentation of Results: Second Annual Lewis County Survey of the Community December 2008.* Jefferson County Community College, Center for Community Studies, Watertown, NY. Available at: http://www.sunyjefferson.edu/ccs/index.html.

JCCC. 2010. *Presentation of Results: Third Annual Lewis County Survey of the Community February 2010.* Jefferson County Community College, Center for Community Studies, Watertown, NY. Available at: http://www.sunyjefferson.edu/ccs/index.html.

JCCC. 2011. *Presentation of Results: Fourth Annual Lewis County Survey of the Community February 2011.* Jefferson County Community College, Center for Community Studies, Watertown, NY. Available at: http://www.sunyjefferson.edu/ccs/index.html.

JCCC. 2012. *Presentation of Results: Fifth Annual Lewis County Survey of the Community February 2011.* Jefferson County Community College, Center for Community Studies, Watertown, NY. Available at: http://www.sunyjefferson.edu/ccs/index.html.

John Millner Associates (JMA). 2006. *Historic Architectural Resource Survey, Howard Wind Farm Project*. John Milner Associates, Croton-on-Hudson, NY.

Kirst, P. 2005. Chautauqua County. In *The Encyclopedia of New York State*, edited by P. Eisenstadt, p. 306-309. Syracuse University Press, Syracuse, NY.

Lewis, E.L. 2015. *RadioQTH Call Sign Lookup*. Available at: http://www.radioqth.net/lookup. (Accessed July 14, 2015).

Macaulay Land Use Research Institute. 2010. *Perceptual Studies of Windfarms* [website]. Available at: http://www.macaulay.ac.uk/ccw/task-two/strategies.html (Accessed March 10, 2016).

McGowan, K.J., and K.J. Corwin. 2008. *The Second Atlas of Breeding Birds in New York State*. Cornell University Press, Ithaca, NY.

National Coordination Office for Space-Based Positioning, Navigation, and Timing. 2015. Official U.S. Government Information about the Global Positioning System (GPS) and Related Topics. Available at: http://www.gps.gov/ (Accessed July 2015; last updated July 2015).

National Health and Medical Research Council (NHMRC). 2010. *Wind Turbines and Health: A Rapid Review of the Evidence.* Australian Government, July 2010.

National Park Service (NPS). 1990. *How to Apply the National Register of Historic Places Criteria for Evaluation*. National Register Bulletin No. 15. National Register Branch, National Park Service, U.S. Department of the Interior, Washington, D.C. http://www.nps.gov/nr/publications/bulletins/pdfs/nrb15.pdf.

National Research Council (NRC). 2007. *Environmental Impacts of Wind Energy Projects*. Committee on Environmental Impacts on Wind Energy Projects. The National Academies Press, Washington, D.C., pp. 160-162.

National Weather Service, NOAA. 2011. *National Weather Service Enhanced Radar Image*. Page last modified June 3, 2011. Available at: http://radar.weather.gov/ridge/radar.php?rid=buf&product=N0R&overlay=11101111&loop=no. (Accessed February 29, 2016).

New Hampshire Office of Energy and Planning. 2008. Model Small Wind Energy Systems Ordinance. http://www.nh.gov/oep/resource-library/energy/documents/model-wind-ordinance.doc (Accessed May 2015).

New York Archaeological Council (NYAC). 1994. *Standards for Cultural Resources Investigations and the Curation of Archaeological Collections in New York* State. New York State Office of Parks, Recreation, and Historic Preservation, Waterford, NY.

New York Independent System Operator. 2008. *Fuel Diversity in the New York Electricity Market*. A NYISO White Paper, prepared by S.F. Tierney, A. Okie, R. Mukerji, M. Swider, R. Safuto, and A. Jaggi. October 2008.

NYISO. 2014. *Power Trends 2014: Evolution of the Grid*. June 2014.

NYISO. 2016. View Interconnection Queue. Available at: http://www.nyiso.com/public/markets_operations/services/planning/planning_resources/index.jsp.

New York Natural Heritage Program (NYNHP). Undated. *New York Natural Heritage Program Homepage*. Available at http://www.dec.ny.gov/animals/29338.html. (Accessed April 11, 2016).

New York State Climate Action Council (NYSCAC). 2010. *Climate Action Plan Interim Report*. November 9, 2010.

New York State Department of Environmental Conservation (NYSDEC). Not Dated. *D.E.C. Aesthetics Handbook*. NYSDEC. Albany, NY.

New York State Department of Environmental Conservation (NYSDEC). Undated. *Valley Fill Aquifer Critical Environmental Area (CEA)*. Effective date of designation August 12, 1996. Available at: http://www.dec.ny.gov/docs/permits_ej_operations_pdf/valley.pdf. (Accessed April 13, 2016).

NYSDEC. 2000. *Program Policy: Assessing and Mitigating Visual Impacts*. DEP-00-2. Division of Environmental Permits, Albany, NY.

New York State Department of Environmental Conservation (NYSDEC). 2005. *New York State Standards and Specifications for Erosion and Sediment Control*. Division of Water. August 2005.

NYSDEC. 2007. The 2004 Chemung River Basin Watershed Inventory and Priority Waterbodies List. Available at: http://www.dec.ny.gov/docs/water_pdf/pwlchmg07.pdf. (Accessed June 2, 2016).

NYSDEC. 2008. *Unconsolidated Aquifers at 1:250,000 – Main – Upstate NY*. Division of Water, Bureau of Water Resources. GIS Dataset. Available at: http://gis.ny.gov/gisdata/inventories/details.cfm?DSID=1141.

NYSDEC. 2009. *Assessing Energy Use and Greenhouse Gas Emissions in Environmental Impact Statements.* DEC Policy. Issued July 15, 2009.

NYSDEC. 2010. *Climate Change and DEC Action.* DEC Policy CP-49. Issued October 22, 2010.

NYSDEC. 2011. *Primary Aquifers – 1:24,000 – NYS.* Division of Water, Bureau of Water Resources. GIS Dataset. Available at: http://gis.ny.gov/gisdata/inventories/details.cfm?DSID=1232.

NYSDEC. 2013. *Chautauqua Unit Management Plan: Towns of Chautauqua, Sherman, Clymer, Harmony, North Harmony, Busti, Stockton, Charlotte, Cherry Creek, Gerry, and Ellington, County of Chautauqua*. NYSDEC, Region 9, Dunkirk, NY. August 2013.

NYSDEC. 2015. *New York State Ambient Air Quality Report for 2014.* Bureau of Air Quality Surveillance.

NYSDEC. 2015. Oil, Gas, and Other Regulated Wells [GIS data]. Release date: Published Nightly. NYSDEC Division of Mineral Resources. Available at: https://gis.ny.gov/ (Downloaded May, 2015).

NYSDEC. 2016a. *480-a Forest Tax Law*. Available at: http://www.dec.ny.gov/lands/5236.html (Accessed March 2016).

NYSDEC. 2016b. *Critical Environmental Areas.* Available at: http://www.dec.ny.gov/permits/6184.html (Accessed April 2016).

New York State Energy Planning Board (NYSEPB). 2015. *2015 New York State Energy Plan.* June 25, 2015.

NYSERDA. 2015. *The New York State Renewable Portfolio Standard, Annual Performance Report through December 31, 2014*. Final Report. March 2015.

New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP). 2005. *New York State Historic Preservation Office (SHPO) Phase 1 Archaeological Report Format Requirements*. NYSOPRHP, Waterford, NY.

NYSOPRHP. 2006. *New York State Historic Preservation Office Guidelines for Wind Farm Development Cultural Resources Survey Work*. New York State Office of Parks, Recreation, and Historic Preservation, Waterford, NY.

Nielsen, F.B. 1996. *Wind Turbines and the Landscape: Architecture and Aesthetics*. Prepared for the Danish Energy Agency's Development Programme for Renewable Energy. 63 pp.

Norin, L. and G. Haase. 2012. *Doppler Weather Radars and Wind Turbines*. In: Doppler Radar Observations – Weather Radar, Wind Profiler, Ionospheric Radar, and Other Advanced Applications, edited by J. Bech and J.L. Chau. InTech, April 2012.

North American Electric Reliability Corporation. 2013. *Critical Infrastructure Protection Compliance*. Available at: http://www.nerc.com/pa/CI/Comp/Pages/default.aspxphp (Accessed June, 2015).

North Carolina Wind Working Group (NCWWG). 2008. *Model wind ordinance for wind energy facilities in North Carolina*. http://wind.appstate.edu/sites/wind.appstate.edu/files/NCModelWindOrdinance_July2008.pdf (Accessed February, 2016).

Parsons Brinckerhoff. 2011. *Update of UK Shadow Flicker Evidence Base*. Prepared for the Department of Energy and Climate Change. March 2011.

Pashek Associates. 2012. *Chautauqua County Greenway Plan*. Prepared by Pashek and Associates in cooperation with Chautauqua County Department of Planning & Economic Development. Available at: http://www.planningchautauqua.com/?q=content/greenways-plan (Accessed March 7, 2016).

Paterson, D.A. 2009. *Establishing a Goal to Reduce Greenhouse Gas Emissions Eighty Percent by the Year 2050 and Preparing a Climate Action Plan*. Executive Order No. 24. Issued August 6, 2009.

Patton, D.B., P.L. VanSchaick, and J. Chen. 2015. 2014 State of the Market Report for the New York ISO Markets. Prepared by Potomac Economics, Market Monitoring Unit for the NYISO. May 2015.

Pine Valley Central School District. 2015. *Pine Valley Central School* [website]. Available at: http://www.pval.org/domain/3 (Accessed March 10, 2015).

Public Archaeology Facility, State University of New York at Binghamton (PAF). 2006a. *Archaeological Reconnaissance Survey PIN 6084.32.101/BIN 1016400 NY 21 Over Neils Creek Tributary, Town of Fremont, Steuben County, New York*. Prepared for the New York State Museum, State Education Department by the Public Archaeology Facility, State University of New York at Binghamton, Binghamton, NY.

Public Archaeology Facility (PAF). 2006b. *Cultural Resource Management Report Phase 1B Archeological/Architectural Reconnaissance Windfarm Prattsburgh.* Binghamton University, Binghamton, NY.

PAF. 2006c. *Cultural Resource Management Report Phase 1B Archeological/Architectural Reconnaissance Cohocton Wind Power Project.* Binghamton University, Binghamton, NY.

Public Service Commission (PSC). 2004. *Order Regarding Retail Renewable Portfolio Standard.* Issued and Effective September 24, 2004.

PSC. 2015. *Order Adopting Regulatory Policy Framework and Implementation Plan*. Case 14-M-0101, Proceeding on Motion of the Commission in Regard to Reforming Energy Vision. Issued and Effective February 26, 2015.

Ohio Power Siting Board (OPSB). 2011a. *Opinion, Order, and Certificate in the Matter of Hog Creek Windfarm, LLC.* Case No. 10-654-EL-BGN, Section V, (44), p. 32.

OPSB. 2011b. *Opinion, Order, and Certificate in the Matter of Hardin Wind Energy, LLC.* Case No. 11-3446-EL-BGA. Opinion Section D, p. 5.

OPSB. 2012. *Opinion, Order, and Certificate in the Matter of Champaign Wind, LLC.* Case No. 12-160-EL-BGN. Section VI, (F), P. 48.

Rickard, L.V. and Fisher, D.W. 1970. *Geologic Map of New York, Niagara Sheet*. New York State Museum – Geological Survey. Available at: http://www.nysm.nysed.gov/gis/bedrock_scans/Niagara_Bedrock_Sheet.jpg (Accessed April 2016).

Smardon, R.C., J.F. Palmer, A. Knopf, K. Grinde, J.E. Henderson and L.D. Peyman-Dove. 1988. *Visual Resources Assessment Procedure for U.S. Army Corps of Engineers*. Instruction Report EL-88-1. Department of the Army, U.S. Army Corps of Engineers. Washington, D.C.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. 2016. Web Soil Survey. Available at: http://websoilsurvey.nrcs.usda.gov/. Accessed April 7, 2016.

Stanton, C. 1996. *The Landscape Impact and Visual Design of Windfarms*. ISBN 1-901278-00X. Edinburgh College of Art, Heriot-Watt University. Edinburgh, Scotland.

Sweeting, Sharon. 2015. Re: Cassadaga Wind Facility, Identification of Visually Sensitive Resources. Correspondence from Sharon Sweeting (Historian, Town of Cherry Creek) to EDR. May 1, 2015.

Thayer, R.L. and C.M. Freeman. 1987. Altamont: Public Perception of a Wind Energy Landscape. *Landscape and Urban Planning*. Vol. 14, pp. 379-398.

Thayer, R.L. and C.M. Freeman. 1988. Wind on the Land. *Landscape Architecture*. Vol. 78, No. 2, pp. 69-73.

United States Army Corps of Engineers (USACE). 1995. *The Highway Methodology Workbook Supplement*. Wetland Functions and Values: A Descriptive Approach. U.S. Army Corps of Engineers, New England Division. NENEP-360-1-30a. 32PP.

USACE. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: North central and Northeastern Region*.

United States Department of Agriculture Economic Research Service (USDA ERS). 2007. *Major Land Uses: Glossary*. *Available at:* http://www.ers.usda.gov/data-products/major-land-uses/glossary.aspx#cropland (Accessed July 26, 2016).

United States Department of Agriculture (USDA). 1978. *Soil Survey of Steuben County*. USDA Soil Conservation Service, in Cooperation with the Cornell University Agricultural Experiment Station. Available at:

http://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/new_york/steubenNY1978/steuben.pdf (Accessed April 2016).

USDA, National Forest Service. 1995. Landscape Aesthetics, A Handbook for Scenery Management. Agricultural Handbook 701. Washington D.C.

*USDA NRCS. 2013. Web Soil Survey. Available at:* http://websoilsurvey.sc.egov.usda.gov *(Accessed May, 2015).*U.S. Department of Energy (USDOE) National Renewable Energy Laboratory. 2008. *An Overview of Existing Wind Energy Ordinances*. Available at: http://www.windpoweringamerica.gov/pdfs/policy/2008/ordinances_overview.pdf (Accessed February, 2016).

U.S. Department of Energy (USDOE). 2012. *Wind Energy Ordinances*. Wind Program. Available at: http://www.windpoweringamerica.gov/policy/ordinances.asp (Accessed February, 2016).

United States Department of the Interior, Bureau of Land Management. 1980. *Visual Resource Management Program*. U.S. Government Printing Office. 1980. 0-302-993. Washington, D.C.

United States Energy Information Administration (USEIA). 2015. *Electric Sales, Revenue, and Average Price: 2014 Average Monthly Bill – Residential*. Data from Forms EIA-864 schedules 4A-D, EIA-861S, and EIA-861U. Available at: http://www.eia.gov/electricity/sales_revenue_price/pdf/table5_a.pdf (Accessed February 2016).

U.S. Environmental Protection Agency (USEPA). 2011. *National Sole Source Aquifer GIS Layer*. GIS Dataset. Published March 17, 2011; metadata updated March 31, 2016. Available at: https://catalog.data.gov/dataset/national-sole-source-aquifer-gis-layer.

U.S. Department of the Interior. 2005. *Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States.* Bureau of Land Management.

United States Department of Transportation, Federal Highway Administration. 1981. *Visual Impact Assessment for Highway Facilitys*. Office of Environmental Policy. Washington, D.C.

United States Geological Survey (USGS). 2014. *New York State 2014 Seismic Hazard Map*. USGS National Seismic Hazard Maps. Available at: http://earthquake.usgs.gov/earthquakes/states/new_york/hazards.php (Accessed April 2016).

USGS. 2015. *New York Earthquake History*. *USGS Earthquake Hazards Program*. Available at: http://earthquake.usgs.gov/earthquakes/states/new_york/history.php (Accessed April 2016).

Van de Wardt, J.W. and H. Staats. 1998. *Landscapes with wind turbines: environmental psychological research on the consequences of wind energy on scenic beauty*. Research Center ROV Leiden University.
Warren, C.R., C Lumsden, S. O'Dowd, and R.V. Birnie. 2005. 'Green On Green': Public Perceptions of Wind Power in Scotland and Ireland. *Journal of Environmental Planning and Management*. Vol. 48, No. 6, pp 853-875.

Vogt, R. J., T.D. Crum, W. Greenwood, E.J. Ciardi, and R.G. Guenther. 2011. *New Criteria for Evaluating Wind Turbine Impacts on NEXRAD Radars*. WINDPOWER 2011, American Wind Energy Association Conference and Exhibition, Anaheim, CA.

Wisconsin Public Service Commission. 2012. *Wisconsin Administrative Code, PSC 128.15*.