PRELIMINARY SCOPING STATEMENT

Mad River Wind Farm
Oswego and Jefferson County, New York

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December 2017

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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	Atlantic Winds LLC
BBA	Breeding Bird Atlas (New York State)
BBS	Breeding Bird Survey
Avangrid	Avangrid Renewables LLC
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

Atlantic Wind LLC (the Applicant), a wholly-owned subsidiary of Avangrid Renewables LLC (AR) is proposing to submit an Application to construct a major electric generating facility under Article 10 of the Public Service Law (PSL). Pursuant to the rules of the New York State Board on Electric Generation Siting and the Environment (Siting Board), applicants proposing to submit an Application to construct a major electric generating facility under Article 10 must submit a Preliminary Scoping Statement (PSS). Under 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 PIP for the Mad River Wind Project was filed on December 16, 2016. This PSS is intended to satisfy the filing requirements set forth at NYCRR § 1000.5(c). Pursuant to NYCRR § 1000.5(g), within 21 days after filing of the 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 wind powered electric generating project with a nameplate capacity of up to 350 megawatts (MW) located within the Town of Worth, Jefferson County, and the Town of Redfield, Oswego County, New York. The regional Facility location and general Facility Area is depicted on Figures 1 and 2, respectively. The Facility components will be located on leased private land that is owned by a single company (WoodWise) and actively managed for timber production. The footprint of the proposed components will be located entirely within the leased land (the "Facility Site"), with the possible exception of an off-site Operations and Maintenance facility (O&M), and will enable the landowner to continue existing land uses, including forest management, recreational hunting, and snowmobiling. At this time the exact location of the O&M facility has not been determined, but it is anticipated that the O&M facility will either be located on the Facility Site or within the vicinity of the Facility Site. Depending on the final location of the O&M facility, there is the possibility that an additional on-site building (the "Winter Maintenance Building") may be needed to facilitate winter operations and maintenance activities (i.e. equipment storage). The precise locations of Facility components and the parcels that host them will be identified in detail in the Article 10 Application. However, in accordance with 16 NYCRR § 1000.5(l)(1), a preliminary layout of potential wind turbine locations is depicted on Figure 3.

The proposed Facility consists of the construction and operation of a commercial-scale wind power project, including the installation and operation of wind turbines, together with the associated collection lines (below grade and overhead), a project substation to raise the voltage to transmission line levels, access roads, meteorological towers, construction

staging areas, a temporary concrete batch plant, and operation and maintenance (O&M) facility. 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 proposed Facility will have nameplate capacity of up to 350 MW, and will generate enough electricity to meet the average annual consumption of approximately 60,000 of households in New York State (EIA, 2016).

To deliver electricity to the New York State power grid, the Applicant is assessing interconnection options and currently has a queue position for interconnection along the Volney – Marcy 345 kV line. The exact location is still under development and will be indicated in the Article 10 Application, if known at that time. The interconnection line will require separate review and approval under Article VII of the Public Service Law.

1.2 FACILITY BENEFITS

Large scale renewable projects, such as the Mad River Wind Facility, offer a wide variety of benefits including economic development and job creation for the host communities, cleaner air, improved energy infrastructure, and progress toward achievement of State clean energy goals. In addition, renewable energy sources, such as the Facility, represent important contributions toward New York's current energy portfolio, and increased competition among energy generators aids in bringing down the price of energy to consumers, driving efficiency and innovation, and creating new markets for customers to make more conscious choices about their energy consumption. See Order Adopting a Clean Energy Standard (PSC Case 15-E-0302) (August 1, 2016) (hereafter "CES Order") at 7-8. As noted in the Final Supplemental Environmental Impact Statement (FSEIS) for the Reforming the Energy Vision (REV) and the Clean Energy Standard (CES), the clean energy economy provides clean, reliable, and affordable power while creating jobs and producing other economic and environmental benefits (FSEIS in Case 15-E-0302 [May 19, 2016]).

The proposed Facility will help the State achieve the broad goals of the State Energy Plan. See NY State Energy Law 6-104 and 16 NYCRR 1001.10(g). The 2015 State Energy Plan contains a series of policy objectives to significantly reduce greenhouse gas (GHG) emissions and diversify the State's energy portfolio, while stabilizing energy costs and encouraging economic development and innovation. 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 that at least 50% of New York's electricity come from renewable energy sources like wind and solar by 2030, with an aggressive phase-in scheduled over the next several years. CES Order at 154-57. In the long run, as recognized by the State Energy Plan, benefits may be similar to those New York enjoys from the State's hydroelectric facilities today: lower electricity prices and a healthier environment. The Facility is consistent with these State policies, which encourage the development of renewable energy projects, seek solutions to fight climate change, and emphasize the need for a transition of New York's energy markets away from a reliance on fossil fuels for electricity generation.

As a key component of the CES, new land-based wind energy projects can contribute 4,000 to 5,900 MW of economical, clean energy toward the State's energy portfolio and the CES's green energy generation goals (FSEIS in Case 15-E-0302 at 5-24 to 5-25 [May 19, 2016]). Contributions from land-based wind will be particularly important in the short term, since the CES assumes no offshore wind development by 2023[1], notes that development of new large-scale hydropower dams or nuclear facilities is unlikely [2], and emphasizes that, while energy efficiency and other behind-the-meter investments will aid in advancing the goals of the CES, ultimately the incremental renewable target will be met largely through addition of new large-scale renewables. See Staff White Paper on CES (January 25, 2016) at Appx B. In order to reach the nearer-term and long-term CES goals, the FSEIS assumes that at least half of the incremental renewable generation needed will come from land-based wind, accounting for more than 5,000 MW in additional installed renewable generation capacity through 2030. FSEIS at 4-3 and 4-4. Overall, the State anticipates that the CES-driven procurement of large-scale renewable generation between 2017 and 2021 will be more than twice the level of generation that was procured under New York's former procurement program for renewable energy, the Renewable Portfolio Standard ("RPS"), which added approximately 2,077 MW in renewables (NYSERDA, 20172017). See CES Order at 16. The total amount of energy needed in order for the State to meet its CES targets by 2030 is 33,700,000 MWh of additional renewable generation. CES Order at 36.

The proposed Facility fully advances the objectives of the State Energy Plan and potentially the CES, and assists the State in achieving the 50% renewable energy generation objective. Importantly, the Facility represents a significant addition to the State's incremental renewable capacity in the shorter term, since large-scale options like offshore wind are presumed to be unavailable until at least 2023. The Application will discuss further the State Energy Plan, CES and the Facility's role in achieving New York's clean energy goals.

[1] CES Order at 61.
[2] The FSEIS points out that future hydroelectric development in New York will likely be limited to upgrades of existing dams to increase their capacity and/or efficiency, and the conversion of non-powered dams into energy-producing dams. The estimated maximum cumulative energy potential of additional hydropower is 240 MW. FSEIS at 5-48 to 5-49. Further, the CES does not allow any new storage impoundment for hydroelectric facilities. CES Order at 106.

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 (79 Federal Register 34830, 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.

Further, it is anticipated that the proposed Facility will have significant positive impacts on socioeconomics in the area through economic development and job creation in the host communities. 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 a Plant Administrator. The Facility will also result in increased revenues to the County, school district, special use district, and local municipal tax base, and payments to participating landowners. The proposed scope of study to fully assess these potential direct and indirect benefits is provided in more detail under "Socioeconomics" below.

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. 16-F-0713). The initial draft of the PIP was submitted to the Siting Board on December 16, 2016, comments on the PIP were received from the New York State Department of Public Service (DPS) on January 17, 2017, and the PIP was updated, finalized and filed by the Applicant on February 17, 2017. 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=16-F-0713) and on the Facility-specific website maintained by the Applicant (http://www.avangridrenewables.us/madriver/).

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 process.

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.):

Mad River Wind Farm Project
c/o Jenny Briot
7560 North State Street, Suite 1
Lowville, New York 13367
Office Number: 315-874-4231
Toll Free Number: 1-844-308-4616
MadRiverWind@avangrid.com

The Lowville Office will be open Tuesdays and Thursdays from 10 a.m. to 2 p.m., and by appointment.

Local Project Office:

5010 County Route 17
Redfield, New York 13437
The Redfield Office will be open Tuesdays and Wednesdays from 9 a.m. to 2 p.m., and by appointment.

Local Document Repositories:

Worth Town Hall
24609 County Route 189
Rodman, New York 13682

Redfield Town Hall
4830 County Route 17
Redfield, New York 13437

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 PIP Tracking Log maintained by the Applicant, which has been updated and submitted to the Siting Board (also available on the case record website referenced above). The most recent PIP Tracking Log was filed with the Siting Board in December and is also included with this PSS as Appendix B. The Applicant will continue to prepare and file a Facility-specific PIP Tracking Log on an approximate bi-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):

Positive impacts to the local community include significant long-term economic benefits to participating landowners, as well as to the Towns of Redfield in Oswego County, and Worth in Jefferson County. Locally impacted school districts include the Sandy Creek and South Jefferson School Districts. When fully operational, the Facility could potentially provide up to 350 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 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 result in certain unavoidable impacts to the environment. 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(s), the O&M facility, the Winter Maintenance Building (if necessary), and the installation of access roads, turbine foundations, permanent meteorological tower(s), underground and overhead collection lines, and the substation. Earth moving, and general soil disturbance could 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 Section 2.22 and Section 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 upgrading local public roads, is anticipated to result in both permanent (loss of wetland/surface water acreage) and temporary impacts to wetlands/streams. 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 will temporarily disturb streams and wetlands during construction as a result of mechanized clearing. 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 collector lines or from pole installation along the overhead collection lines may occur.

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 large contiguous areas of wildlife habitat into multiple smaller areas, and can be detrimental to various forest and grassland 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 (see Section 2.22 of the PSS for additional information).

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 alteration, and some level of avian and/or bat mortality. Additional information regarding potential Facility impacts is included in Section 2.0 below. Potential impacts to multiple resources including, but not limited to visual impacts, potential impacts to historic, cultural or archeological resources, sound, and shadow flicker will be evaluated through Project/site-specific studies that are identified in this PSS, and the results of the studies will be provided in the Article 10 Application.

With careful planning and design, many of the potential impacts associated with wind facilities can be completely avoided or minimized to be compatible with the surrounding areas. At this time, because the studies characterizing these impacts have not yet been completed, it is difficult to identify specific avoidance, minimization and mitigation measures. However, the studies conducted in furtherance of the Article 10 Application (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 completed, based on the historical information regarding typical impact avoidance, minimization and mitigation measure 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 implemented. 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 sound impacts, shadow flicker, and public safety concerns.
- Using the extensive network of existing private logging roads for turbine access whenever possible, to minimize impacts to soil, and 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.
- Carefully evaluating the use of 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 levels specified 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.

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 public road conditions, undertaking public road improvement/repair as required to mitigate impacts to local roadways, and executing 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 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 AR is one of the largest producers of wind energy in the United States. AR is headquartered in Portland, Oregon, and has more than $10 billion of operating assets totaling more than 6,000 MW of owned and controlled wind and solar generation in the United States. AR has developed over 50 wind farms in the United States alone, including two in New York: Maple Ridge and Hardscrabble. The Maple Ridge Wind Farm is the largest wind power facility in New York State, and the experience of AR with the Maple Ridge 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 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 Atlantic Wind LLC (Atlantic Wind), a wholly-owned subsidiary of Avangrid Renewables LLC (AR). Atlantic Winds' business address is:

2 Radnor Corporate Center, Suite 200, 100 Matsonford Road, Radnor, Pennsylvania 19087.

(2) Facility Website

The Facility website can be found at http://www.avangridrenewables.us/madriver/index.html

(3) Public Contact

The Facility's public contact is Jenny Briot, Renewables Development. Her contact information is:

Mad River Wind Farm Project
c/o Jenny Briot
7560 North State Street, Suite 1
Lowville, NY 13367

Office Number: 315-874-4231
Toll Free Number: 1-844-308-4616
MadRiverWind@avangrid.com

The Lowville Office will be open Tuesdays and Thursdays from 10 a.m. to 2 p.m., and by appointment.

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

(4) Principal Officer

Atlantic Wind is a wholly owned subsidiary of Avangrid Renewables, LLC, and does not have a Principal Officer.

(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

Atlantic Wind LLC is an Oregon limited liability company. Atlantic Wind LLC was formed in 2008. Atlantic Wind LLC is a wholly-owned subsidiary of Avangrid Renewables LLC, which has a business address of 2 Radnor Corporate Center, Suite 200, 100 Matsonford Road, Radnor, Pennsylvania 19087.

(7) Documents of Formation

The Facility will be owned by Atlantic Wind LLC, or an affiliate of Avangrid Renewables. The certification of formation for Atlantic Wind LLC is included as Appendix C to this PSS.

2.2 OVERVIEW AND PUBLIC INVOLVEMENT SUMMARY

(a) Brief Description of the Proposed Facility

The proposed Facility is located in the Town of Worth, in Jefferson County, New York and in the Town of Redfield, in Oswego County, New York. The regional Facility location and general Facility Area are depicted on Figures 1 and 2, respectively. With the possible exception of an off-site O&M facility, the Facility will be located entirely on leased private land that is owned by a single landowner and managed for timber production. The actual footprint of the proposed Facility components will take advantage of an extensive network of existing private logging roads and skid trails, enabling the landowner to continue managing the property for timber production and compatible recreational uses (hunting and snowmobiling).

The preliminary layout of the Facility currently consists of 88 utility-scale wind turbines, with a potential nameplate generating capacity of up to 350 MW. Other proposed components will include: access roads, overhead and underground collection lines, a collection substation, permanent meteorological (met) towers, staging/laydown yards, a temporary concrete batch plant, an O&M facility, and if necessary an additional building to facilitate winter operations and maintenance activities.

A range of turbine models and sizes that are suitable for the Facility are under consideration. The Applicant will review various turbine models with the goal of achieving up to 350 MW of generating capacity. The Article 10 Application will provide a range of potential turbine models to account for potential changes in technology and product availability. The Application will clearly describe the possible range of Facility generating capacity based on the size of turbine models proposed.

The Article 10 Application will clearly depict proposed turbine locations, along with the footprint of all other Facility components known at the time.

(b) Brief Summary of the Application Contents

The Application will contain a detailed table providing a brief summary of all applicable exhibits 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 December 16, 2016, comments on the PIP were received from the DPS on January 17, 2017. The PIP was updated, finalized and filed by the Applicant on February 17, 2017.

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 D of this PSS. The Applicant has initiated consultations, and the results and summary of these meetings/consultations are in the PIP Tracking Log, which is presented in Appendix B of this PSS. The PIP Tracking Log will continue to be updated and filed on the DPS website through the entire PSS and Article 10 Application process.

To date, the Applicant hosted the following open house meetings:

- Town of Redfield on March 8, 2017
- Town of Lorraine on September 20, 2017
- Town of Redfield on September 21, 2017

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. The Applicant also has attended and participated in many local meetings, including town board meetings, zoning board meetings, and other general public meetings at the local level.

In addition to the open houses and meetings, the Applicant has a Facility specific website as well as a toll-free number to call with any questions or comments. The Applicant has provided paper copies of all documents presented at the open houses at the following document repositories:

- Worth Town Hall; 24600 County Route 189 Lorraine, New York (315-232-4694)
- Redfield Town Hall; 4830 County Road 17, Redfield, New York (315-599-7125)

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 additional open house meetings 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 and updated in the PIP Tracking Log.

(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 concerning Facility components, and will continue to meet with other local public stakeholders, such as the Town and County Highway 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 the Mad River Hunting Club, which leases land within the Facility Area, and snowmobile clubs, which use trails that cross the Facility Area, regarding their use of the site. The Applicant plans to continue conversations with these organizations following submission of the Application to ensure that there are no conflicts between their use of the land/trails and the Facility.

All of the above continued PIP activities will continue to be tracked and filed in the bi-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.

The Applicant will also conduct a separate public outreach program for the associated transmission facilities that will be reviewed under Article VII. This program is anticipated to include an open house during the first quarter of 2018, along with informational mailings and follow-up meetings as design of the transmission facility advances.

(e) Brief Overall Analysis

This section will provide an overall analysis that assembles and presents the relevant and material facts from the Article 10 Application, together with information and analysis from studies conducted in support of the Article 10 Application, which will provide a basis for the Siting Board to make the required Findings on the proposed Facility and a decision on whether 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 resulting from construction and operation of the Facility on (a) ecological/natural resources, (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 whether: (a) the Facility is a beneficial addition to, or substitution for the 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) the Applicant will avoid, offset or minimize impacts caused by the Facility upon the local community for the duration of the Certificate to the maximum extent practicable using verifiable measures; (e) and 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 facilities associated with the proposed Mad River Wind Farm Project. The components include turbines, access roads, electrical collection lines, a collection substation, permanent meteorological towers, Winter Maintenance Building (if

necessary), an O&M facility, a temporary concrete batch plant, and construction staging/laydown areas. These components collectively referred to as the Facility, will be mapped on the U.S. Geological Survey (USGS) topographic tile cache base map service displayed at a scale of 1:24,000 or greater. 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. 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, 2016). 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, and as set forth in Section 3(a)(1) of the PSS, the Facility Site is defined as those parcels currently under, or being pursued for lease (or other real property interests) with the Applicant for the location of 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 facility (if located on-site)
- Winter Maintenance Building (if necessary)
- temporary concrete batch plant
- construction staging/laydown areas
- collection substation
- alternate turbine locations

If the O&M facility will be located off-site, the mapping/figures in the Article 10 Application will depict the location of the O&M facility in relation to the Facility Site.

As currently designed, it is not anticipated that any permanent storm water features of a significant nature (e.g., large detention basin) will be utilized during construction and operation of the Facility. However, if required, the location and design of these components will be shown in the Article 10 Application.

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 impacts to streams, wetlands or historic resources, such locations will be mapped.

(2) Interconnection Location

Mapping of the proposed location of the associated interconnection facilities (from the high end-voltage termination of the collection substation, and including the transmission line, and point of interconnection substation), will be included in the Article 10 Application. However, detailed mapping of the interconnection facilities will be included in a separate Article VII Application.

(3) Location of Ancillary Features

It is anticipated that the only off-site ancillary features associated with the Facility would be temporary public road improvements, and possibly an off-site O&M facility. These features will be depicted on mapping/figures in the Article 10 Application to the extent that they are known at the time of submittal.

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

As indicated previously, the Facility will require the support of components that are subject to Article VII of the PSL rather than Article 10. Although the precise route of the transmission line has not yet been determined, it is expected to connect to the Volney-Marcy 345 kV line south of the proposed Facility, between the Town of Amboy in Oswego County and the Town of Camden in Oneida County. The transmission line will be addressed in detail separately in the Article VII Application.

(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 will utilize resource-specific study areas, which will be described briefly in this section of the Article 10 Application and are described in more detail in the perspective section of this PSS. For example, see PSS Section 2.20 for a detailed description of the cultural resources study area.

(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. With respect to alternative locations, the mapping will not depict alternative locations because alternative locations that include areas beyond what is owned by or under option to the Applicant are unavailable.

(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 ATV or logging roads. This will be further described in the Article 10 Application.

(d) Facility Shapefiles

The Article 10 Application will include Facility shapefiles and will show the proposed location of turbines, access roads, collection lines, collection substation, construction staging/lay down area, a temporary concrete batch plant, and the O&M facility.

(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 a flown topographic survey of the Facility site.

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 Area boundary: 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 New York State Department of Agriculture and Markets (NYSDAM) Law; and (iii) any land subject to a conservation program, including lands described in the Tug Hill Reserve Act. The location of conservation program lands in the vicinity of the Facility Site was determined using publicly available resources including 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, in the Article 10 Application. This map will identify all proposed crossings of known existing gas lines and liquid petroleum pipelines by proposed electric components of the Facility.

This information along with the location of existing cable and fiber optic lines will be obtained from publicly available sources. Data on natural gas and oil wells within the Facility vicinity will also be obtained from the United States Energy Information Administration, NYSDEC and NYDPS. A preliminary review of utility pipelines was conducted with available information from the United States Energy Information Administration. Based on the review, no utility pipelines are present within a 5-mile radius of the proposed facility.

(c) Tax Parcel Map

Existing parcel boundaries containing Facility components and surrounding parcels will be identified and mapped in the Article 10 Application. Given that the Facility is located within two towns, the identified and mapped parcels included in the Article 10 Application will coincide with each town's set of local laws. 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 Oswego County and Jefferson County GIS Departments and through consultations with the Towns.

(d) Zoning District Map

Zoning jurisdiction in Oswego and Jefferson Counties is at the town/village level. The Town of Worth has a zoning ordinance that was adopted in 1977 (see Appendix E). The Town of Redfield is in the process of drafting zoning regulations. 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 Article 10 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 Town of Worth in Jefferson County, and the Town of Redfield in Oswego County, New York. Oswego County (http://oswegocounty.com/planning/compplan.pdf) has adopted a Comprehensive Plan, while Jefferson County has not. As indicated above, each town has their own set of local ordinances, but neither has an adopted comprehensive plan. The Article 10 Application will include a review of the Comprehensive Plan for Oswego County.

In addition, the Article 10 Application will discuss other applicable plans and policies which outline compatible land uses. Such plans and policies include the Tug Hill Reserve Act of 1992, and three NYSDEC Unit Management Plans for Tug Hill North, Upper Salmon River, and Winona Forest. 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 within a 5-mile radius from the Facility 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 could result in data associated with existing/proposed local snowmobile trails, hunting camps, or pending conservation easements. Any information gathered will be mapped in the Article 10 Application.

(g) Map of Specially Designated Areas

Article 10 requires the identification of any designated coastal areas, inland waterways, agricultural districts, special flood hazard areas, Local Waterfront Revitalization Program (LWRP) communities, Critical Environmental Areas (CEAs). These 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 Jefferson County, one CEA (Sandy Ponds) is present in Oswego County located 15 miles west of the study area (NYSDEC, 2016c). 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, Federal Emergency Management Agency (FEMA)
Critical Environmental Areas	NYSDEC

The Article 10 Application will also discuss the presence of Tug Hill Special Areas as identified in the Tug Hill Reserve Act. These areas have been identified by the Tug Hill Council, but the decision to incorporate the locations into a management or zoning plan falls to the jurisdiction of the towns and villages in which they exist. No Special Areas are identified in the Town of Worth, however there are locations in the Town of Redfield, including areas of contiguous forest, major river corridors, and deer wintering areas. Exhibit 4 of the Article 10 Application will provide more detail regarding the Tug Hill Special Areas.

(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 Article 10 Application. The NYSDEC holds the conservation easements rights for four parcels within the Study Area, both located in Lewis County, New York. The first parcel is managed for biodiversity purposes where disturbance events proceed or are mimicked. The second parcel is managed for multiple uses subject to extractive operations such as logging or mining and allows for public access. The third parcel is privately owned with the Tug Hill Tomorrow Land Trust as the easement holder and an unknown mandate for protection. The fourth conservation easement is held by the U.S. Natural Resources Conservation Service to protect environment systems present on the privately-owned property. These parcels and their respective management regimes will be identified on the map. In addition, the Cooperative Tug Hill Council has designated multiple locations within the Tug Hill region as “Special Areas” under the Tug Hill Reserve Act of 1992. These areas in relation to the Facility will also be shown on the map. 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; The Nature Conservancy
State and federal scenic byways	NYSDOT; NYS GIS Clearinghouse
Nature preserves	NYS GIS Clearinghouse
Designated trails	NYS GIS Clearinghouse, local Governments, NYSDEC
Public-access fishing areas	NYS GIS Clearinghouse, NYSDEC
Oil and gas production	NYSDEC
Gas pipelines	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 historic, recreational and other sensitive land uses that may be affected by potential views 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 identification of potential locally significant resources) within a 5-mile radius 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 Area occupied by each land use type. Proposed land uses will be identified through review of town plans, county 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:

- Oswego County Comprehensive Plan
- Tug Hill Commission
- Development Authority of the North Country (DANC)
- Fort Drum Growth Management Strategy
- New York State Open Space Conservation Plan

Only minor changes in land use are anticipated within the Facility Site as a result of Facility construction and operation, and no changes are predicted outside the Facility Site, with the possible exception of an off-site O&M facility. The presence of the turbines bases, access roads, substations, collection lines, 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. Due to the absence of agricultural activities in the Facility Area, these guidelines may not be applicable to the proposed Facility. However, if impacts to agricultural land are required for off-site improvements (e.g., temporary roads or road intersection widening), siting and construction of these improvements, and restoration of affected agricultural land, 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 Article 10 Application will specify which provisions, if any, may not apply to the Facility, and will provide rationale for why that may be the case. In addition, 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 collection lines where the usage of underground lines would cause greater environmental impacts, and/or are cost prohibitive, including (but not limited to) crossing steep terrain, protected streams, and sensitive wetlands. The compatibility of proposed above-ground collection lines will be assessed with existing and proposed land uses in the Article 10 Application.

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

The Facility's proposed underground collection lines will generally not prohibit the continued use of the land as the impact will only be a temporary disturbance. Compatibility of the proposed underground collection lines, and temporary disturbances associated with their 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 2016 flown aerial imagery for the Facility Site, and the most recent 0.5-meter resolution natural color orthoimagery from the USDA's National Agriculture Imagery Program (NAIP) captured during the 2015 growing season for the surrounding area.

(n) Aerial Photograph Overlays

The Article 10 Application will map Facility components overlaid on aerial photographs, along with the proposed limits of vegetation and soil 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, O&M facility, Winter Maintenance Building (if necessary), the temporary concrete batch plant, 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 75-foot temporary width for access roads). This mapping will be prepared using 2016 flown aerial imagery of the Facility Site.

(o) Source of Aerial Photographs

It is anticipated that mapping associated with (n) above will be prepared using 2016 flown aerial imagery of the Facility Site and 0.5-meter resolution natural color orthoimagery from the USDA's NAIP captured during the 2015 growing season. The definitive source will be identified in the Article 10 Application.

(p) Community Character

The Facility is proposed to be located in a sparsely populated portion of Jefferson and Oswego Counties, which is actively managed for timber production. The Facility Site also contains an extensive network of private roads, including 30-40 miles of logging roads and skid trails, used for year-round truck, heavy equipment and/or snowmobile access to the site.

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, existing scenic quality, viewer sensitivity and land use. 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 the Facility might have on the transportation facilities such as Oswego County Airport (FZY), Watertown International Airport (ART) Airports, and 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

A consultant hired by the NYISO will prepare a System Reliability Impact Study (SRIS) for the Facility on behalf of the New York Independent System Operator (NYISO) by mid-2018. 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 will be performed for Summer Peak, Winter Peak and Light Load system conditions. The study system included the Mohawk Valley Region (Zone E), Capital Region (Zone F), and Central Region (Zone C) in the NYISO 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 Article 10 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.

<u>34.5 kV Overhead Collection System</u>

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 5 kV 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. Requirements for the transmission line and POI substation will be specified in the Article VII Application.

(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

National Grid is the connecting transmission owner for this Facility. The point of interconnection (POI) is anticipated to be a new 345 kV station on the National Grid Volney-Marcy 345 kV transmission line located between the Town of Amboy and the Town of Camden. The exact future transaction and timetable to transfer the POI substation to National Grid will not be known until the Facilities Study is complete, and will be addressed in the Article VII Application.

(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).

<u>Scheduled Inspection and Maintenance</u>

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. Measures taken by the Applicant to protect environmental and agricultural resources during major maintenance/repairs will be described in the Article 10 Application.

(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 into contact with the substations below grade grounding grid. If the vegetation extends above ground, encountering 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 2020 or early 2021. Based on this in-service time-frame, major Facility components would be expected to arrive on site from Spring 2020 through Fall 2020.

(m) Blackstart Capabilities

Blackstart is a procedure to recover from a total or partial shutdown of the transmission system. It entails isolated power stations having the capability to be started individually, and then gradually being reconnected to each other to re-establish an interconnected system. Under emergency conditions, stations with blackstart capability utilize small auxiliary power sources to initiate power station operation. Wind energy facilities, however, are not suitable for blackstart because they need a connection to the voltage and operating frequency of a power system in order to generate power. 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 National Grid. 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 sound impacts

As indicated previously, the location of the Facility is actively managed for timber production and has a rural and forested character. The location of the Facility also contains 30-40 miles of logging roads and skid trails actively maintained for year-round truck, heavy equipment and/or snowmobile use. The Facility has been 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 to the maximum extent practicable.

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 Jefferson and Oswego Counties are at the town level. The proposed turbines are sited in the Towns of Worth and Redfield. The Town of Worth has a zoning ordinance that was adopted in 1977 (see Appendix E). The Town of Redfield does not currently have zoning regulations; however, the Town of Redfield is in the process of adopting zoning regulations and it is expected that the Town of Redfield will enact zoning regulations prior to the filing of the Article 10 Application. The Article 10 Application will include a table with the local setback and height requirements applicable to the construction or operation of the proposed Facility in effect at the time of the filing of the Application.

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

The Applicant has taken the referenced setbacks into consideration. It is anticipated that the Facility will closely follow turbine setback requirements set forth in local zoning regulations, as further discussed in section 2.31 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. The Article 10 Application will include a table showing wind turbine classes with corresponding turbulence levels that are suitable for use in the Facility Area. The table will include the wind regime factors described above. In addition, 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 a proprietary coupled mesoscale (MASS) and microscale (SiteWind) model and the Openwind Enterprise software package, or comparable, in order to develop the energy yield analysis for the Facility layout. Nine temporary 60-meter meteorological towers are erected within the Facility Area to collect the site-specific data necessary for modeling purposes. An additional 100-meter temporary met tower is anticipated to be constructed. 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 Article 10 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 will be treated as such. Therefore, a copy of the wind meteorological analyses will be provided under separate cover, and the Applicant will seek the requisite protection for this proprietary information pursuant to NY Public Officer's Law Section 87(2)(d) and 16 NYCRR 6-1.4.

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 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 or a similar industry accepted tool. The Applicant will consult with the NYSDPS and NYSDEC 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 (CEI) and will be filed under a protective agreement. The Applicant will seek the requisite protection for this proprietary 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 in the year 2020.

(3) Estimated Capacity Factor

A 8760 hourly generation profile will be developed using the measurements from the multi-year and in-progress wind resource assessment campaign currently comprised of nine meteorological towers and three remote sensing LIDAR units. Tower measurement parameters include multi-level 10-minute averages of wind speed, wind direction, and ambient temperature and pressure to approximately 58 meters above ground level. The lidar measurement parameters include multi-level 10-minute averages of wind speed and wind direction data from approximately 40 meters through 150 meters at 10-meter intervals at the proposed 150 meter to 180 meter turbine blade tip heights. Validated datasets will be created for each tower by removing all suspect and erroneous data. Data from each mast will be adjusted to be representative of the long-term wind climates at those locations using suitable long-term reference stations and reanalysis datasets to create long-term wind speed and direction distributions. Wind speed measurements from at least two mast and LiDAR monitoring heights will be used to extrapolate the mast long-term wind speeds to the proposed wind turbine hub height. Mesoscale and microscale computer models will use these mast datasets to estimate the hub height wind speed and direction distributions across the project area. 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 loss 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 annual and monthly, on-peak, shoulder, and off-peak MWhr output capability factors for the proposed Facility (based on one turbine model).

The gross average energy yield for each month will be determined from the validated 10-minute data described in (3) above with each monthly dataset adjusted to the monthly long-term. From this the monthly gross energy distribution for the year will be determined. The net long-term energy yield for each month will be estimated by applying monthly specific loss assumptions to include availability, environmental and curtailment. The monthly net capacity factor is calculated based on the number of days in each month, and overall annual net capacity factor from the sum of all monthly net energy yields and the total per year.

(5) Estimated Annual and Monthly Production Output

The Article 10 Application will provide the estimated average annual and 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 protection for this proprietary 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 power flow 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 power flow calculations. The analysis will simulate the effect of energy schedules from energy resources on must run resources re-dispatching 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 protection for this proprietary 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 Sites

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 the vicinity of the Project Area in Oswego and Jefferson Counties, New York. The SRIS that will be submitted to NYISO is anticipated to accommodate up to 350 MW of electric power generation by the proposed Facility. Therefore, the preferred alternative is to construct a facility that can produce up to 350 MW of renewable energy.

The Applicant does not have 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 significance 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 few factors (and the interaction of these factors) including topography, prevailing wind direction, and location. Large scale wind power projects within the state can only be sited in certain locations conducive to wind energy production. The higher the wind speed at a specific site the more desirable the site. New York has a relatively modest wind resource unevenly distributed throughout the state. Winds adequate to support a commercial wind-powered generating facility are limited to certain unique areas in the state, which generally include coastal areas, ridgelines, elevated plateaus, and mountain peaks.

The Applicant selected the proposed Facility site due to the presence of a wind resource, available land and willing landowners, as well as easy access to the site and lack of surrounding residences. 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 the 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. It is also not practicable to expand other Projects proposed by the Applicant as reasonable alternative for siting of the proposed Mad River Project. Therefore, 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 Tug Hill Plateau physiographic province of New York State on approximately 20,000 acres of working forest actively managed for timber production. The Facility Area also includes 30-40 miles of logging roads and skid trails actively maintained for year-round access by trucks, heavy equipment and/or snowmobiles. The area gently rises in elevation from the south west to the east from 350 feet to 2,000 feet. The Tug Hill Plateau in Jefferson and Oswego Counties is characterized by rolling hills covered by hardwood forest, small streams, and surficial features left behind by various erosive processes of the last ice-age. The surface geology consists of glacial till deposits of various coarseness (NYSM, 1986). The bedrock of the study area is a mixture of sedimentary rock including shale and sandstone of Upper Ordovician period (NYSM, 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 Facility Site is currently leased by the Mad River Club for recreational hunting. The Applicant has also identified several recreational facilities in the area including, but not limited to snowmobile trails, fishing streams and state forests. A Phase 1A Historic Architectural Resources Survey and Work Plan was developed for the Facility, and background data on visually sensitive resources were collected in support of a Visual Impact Assessment for the Project (Appendices F and J). The information and recommendations included in these reports 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 will be developed for NYSOPRHP to determine if there are any potentially unidentified and/or previously identified cultural resources in the Facility Site. Exhibits 20 and 24 of the Article 10 Application will provide more detailed information on recreational, cultural, and other concurrent uses of the area.

(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 regarding foundation design. 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 will be treated as such. Therefore, a copy of the 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 protection for this proprietary information pursuant to NY Public Officer's Law Section 87(2)(d) and 16 NYCRR 6-1.4.

(4) Reliability and Electric System Effects

A SRIS will be completed by the spring of 2018 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 based on the results of the SRIS.

(5) Environmental Impacts

Despite the positive effects anticipated as a result of the Facility, its construction and operation is expected to result in certain unavoidable impacts to environment and resources on and adjacent to the Facility Site. 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 impacts to forest land, wildlife habitat, birds and bats, and wetlands/streams. Any cumulative environmental impacts resulting from the construction and operation of the proposed Facility and the associated 345 kV transmission line will be described in the Article 10 Application. Impacts specific to the transmission line will be evaluated in detail, along with the impacts of transmission alternatives, in a separate Article VII application.

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 existing access routes and disturbed sites, as well as sensitive environmental resources (e.g., wildlife habitat, wetlands/streams) and siting Facility components to avoid and minimize impacts to these resources to the extent practicable. Exhibit 22 of the Article 10 Application will provide detailed information on terrestrial ecology and wetland resource impacts in the Facility Site.

It should also be noted that electricity generated from zero-emission wind energy can displace some of 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 relative to alternative sources of electric power. The operating Facility will generate up to 350 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 fulfill 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 construction of a 345 kV transmission line is proposed to connect with the existing bulk power transmission system yielding the potential generating capacity of the Facility. Exhibit 6 of the Article 10 Application will provide information about the wind resource at the Facility Site, and Exhibit 34 will provide overview information regarding 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 will be treated as such, 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 protection for this proprietary 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 the landowner, which will help maintain the existing land use (e.g. timber production and hunting). 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

The proposed Facility Site is located in a remote and relatively undeveloped area and 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 other local officials, 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

Construction and operation of the Facility on the proposed site 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 proposed Facility is located in an area with a 3-4% probability that peak ground acceleration in a 50-year period is exceeded, indicating relatively low seismic hazard. There have been no recorded earthquakes in the area. Since 1973, only two 3.0 magnitude earthquakes have occurred in the region, both near Glenfield, New York (roughly 25 miles southeast of the Facility Site) (USGS, 2014). Furthermore, the USGS Earthquake Hazards Program does not list any young faults, or faults that have displaced within the vicinity of the Facility Site during the Holocene epoch. 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, mercury, and carbon dioxide. 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 relative to other generation sources. The operating Facility will generate up to 350 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 Avangrid Renewables LLC (AR). Headquartered in Portland, Oregon, AR is a developer of utility grade wind projects. Since its founding in 2002, AR has partnered with landowners and communities to establish itself as a premier developer, owner, and operator of wind projects in the U.S. To date, AR has operational wind facilities with a nameplate capacity of approximately 6,000 MW, including New York's largest wind farm, the 322 MW Maple Ridge Wind Project in Lewis County, New York.

The proposed Facility Site can meet the objective of creating 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;
- Take advantage of the full potential of the wind resource of Jefferson and Oswego Counties;
- 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. After identifying a suitable general area for establishing a wind energy generation facility, developing a final layout for Facility components involves continuous evaluation of various constraints and alternatives. Determining the number and locations of wind turbines, and the placement of ancillary features within a facility site is based on the complex interplay between a variety of landowner, regulatory (local, state, and federal), engineering, and environmental considerations. An initial layout of the Project was developed based on the above-mentioned site constraints, a desktop review of site features, and wind resource data. Since then, multiple revisions to the Facility design have been made, including reductions in the number of turbines, the overall footprint of the Facility, and changes to the placement of certain components to avoid environmental resources. Therefore, most of the alternatives discussed will be those that can be accommodated within the proposed Facility Site where a lease agreement with the landowner is in place. On-site alternatives will address the following considerations:

(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 alternate wind turbine technology will be provided in the Article 10 Application.

(3) Scale or Magnitude

The Applicant's goal is to maximize the generating capacity of the proposed Facility Site using the smallest number of turbines possible. 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 Site highly unlikely. A smaller number of turbines (with less generating capacity) is not economically advantageous. 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 350 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 payments to local taxing jurisdictions, 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 a wind resource assessment, the location of existing access roads, environmental resource factors, constructability issues, and the consideration of adjacent land uses. Factors considered during the layout design process for any on-site alternative must 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 that 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*. The host towns have not adopted Wind Energy Regulations.
- *Wetlands and Waterbodies.* The proposed Facility Site includes numerous wetlands and streams. Facility components will avoid and/or minimize impacts to wetlands and streams to the greatest extent practicable.
- *Communication Interference*. Turbines must be sited outside of known microwave pathways or Fresnel zones to minimize the effect that they may have on existing communications.
- *Wildlife Habitat and Sensitive Natural Communities.* Turbines and facility components will be sited so as to minimize impacts to sensitive or rare natural communities, wildlife, and wildlife habitat, particularly habitat known or suspected to be utilized by federally and state-listed species.
- *Recreational Resources*. Turbines will be sited so as to minimize interference with existing snowmobile trails and hunting clubs on site, if possible.
- *Cultural Resources*. The Facility will be designed so as to avoid 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 preliminary layout of the Facility includes 88 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 350 MW. 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.

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 any proposed 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 locations as the proposed layout and the associated increased setbacks from adjacent, property lines and public roads such that turbine fall-down distances are wholly within the participating land parcel.
2. Alternative layouts within the Facility Site.

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

Pending the results of the Feasibility Study, 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 environmental and aesthetic resources, as well as community safety and welfare. The Article 10 Application will include a description of 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 and increased revenues to local municipalities and school districts), 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 discuss 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 Site would continue to exist as is. This no action alternative would not beneficially or adversely affect current land use, existing natural resources, 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 is not a preferred alternative.

(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 result in 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 discussion of 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 State Energy Plan (See NY State Energy Law 6-104), the latest iteration of which 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 Public Service Commission (PSC) 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 Mad River Wind Farm 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 Article 10 Application will also provide a statement demonstrating the Facility's degree of consistency with the State Energy Plan. The Article 10 Application will highlight how the Facility supports the five "Guiding Principles", the seven goals listed in the "Initiatives and Goals" section of the plan, and the New York 2030 Targets identified in the plan.

(b) Impact on Reliability

A consultant hired by the NYISO will prepare a System Reliability Impact Study (SRIS) for the Facility on behalf of the New York Independent System Operator (NYISO), and the results will be presented in the Article 10 Application. The scope of the SRIS was provided by the NYISO. A number of power flow base cases will be evaluated both with and without the proposed Facility in service, including summer peak, winter peak, and light load. The Article 10 Application will describe the impact of the proposed Facility on electrical reliability in the State in greater detail using analyses conducted as part of the SRIS. The SRIS will be provided in the Article 10 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 to reducing the growth in demand for fuel, easing fuel delivery constraints and advancing the State Energy Plan's goal of 50% generation from renewables by 2030.

(g) Impact on Energy Policy

The immediate benefits of utility scale renewable energy projects, such as the proposed Facility, include economic development and jobs for the community, greater stability in customer bills, cleaner air, new energy infrastructure, and contributing to the goals 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: stable pricing due to avoidance of inflationary 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 state-wide renewable energy generation to 25% by the year 2013 (PSC, 2004). In an Order issued in January 2010, the 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 CEF to ensure continuity of the State's clean energy programs after 2015. The CEF is one part of New York State's 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. LSR, which are larger utility-scale renewable energy project developments, such as the Mad River Wind Project, are a key component of the REV Order, which outlines the issues and tasks necessary to begin to resolve the technical, marketplace, and regulatory challenges necessary to achieve the REV 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, the Department of Public Service (DPS) released the Final Supplemental Environmental Impact Statement (FSEIS) for the REV and CEF plans. In the FSEIS the DPS 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 Mad River Wind 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."

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 does not intend to present a full comparison of 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 discussed 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 reduce the growth of 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, who is licensed and registered in New York State. Four, full size copies of the drawing set, utilizing a common engineering scale, will be provided to DPS Staff. A single, full size drawing set will also be provided to the NYSDEC Central Office and Region 7 Staff (total of two full sized sets). All other printed copies (included with the Application) will be at a legible and reduced size (i.e., 11"x17"), also utilizing a common engineering scale (for example: 1"=60'; 1"=100; or 1"=200'). Additionally, a CD-ROM containing electronic PDF files will be submitted to DPS Staff.

(a) Site Plan

The Preliminary Design Drawings will constitute the site plan for the Facility and likely will be prepared at a common engineering scale (e.g. 1" = 100'). Adjoining property will be depicted using publicly available data.

The Preliminary Design Drawings for the Facility will include the following features:

- Access road travel lanes (temporary and permanent);
- Turbine foundations, tower outline, and crane pads;
- Turn-around areas to be used during turbine deliveries;
- Proposed grading (temporary grading for construction purposes and approximate final contours);
- Electric collection lines – the required number of circuits for each collection line route will be indicated on site plans; also, overhead and underground cable routes will be differentiated with specific line-types;
- Limits of disturbance for all project components (turbines, access roads, buildings, electric lines, substation, etc.);
- Clearing limits for all project components (turbines, access roads, buildings, electric lines, etc.);

- Indication of all permanent right-of-way (ROW) for all electric cable installations;
- Proposed locations that will utilize trenchless methods of electric cable installations (including laydown area and approximate trenchless installation distances);
- Project substation outline, including access driveway, fence-line, and indications of zoning designations, buildable area, lot coverage, setback distances, and other area and height requirements as necessary and appropriate;
- O&M Building and parking area, including indications of zoning designations, buildable area, lot coverage, setback distances, and other area and height requirements as necessary and appropriate;
- Winter Maintenance Building (if necessary)
- Permanent meteorological towers;
- Outline of temporary concrete batch plant, including fixed equipment locations and dimensions;
- Laydown, staging and equipment storage areas;
- Back-up generators and fuel storage;
- Other buildings, including existing buildings and features, and proposed buildings.

(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

An erosion control plan will be presented in the Article 10 Application consistent with the requirements of 16 NYCRR 1001.11(c). Flown topographic survey data for the Facility Site will be used to depict existing and proposed contours (2-foot intervals) 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 preliminary geotechnical investigation.

(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. Given the remote location of the proposed substations landscaping will not be necessary and therefore will not be addressed 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, due to the forested nature of the Facility Area, an on-site survey of all trees to be removed will not be included in the Article 10 Application.

(e) Lighting Plan

A Lighting Plan showing type, location, and height of installation of proposed exterior lighting fixtures, and an indication of the measures to be taken to prevent unnecessary light trespass beyond the Facility property line, will be included in the Article 10 Application. Manufacturers cut sheets will also be included to the extent they are available.

(f) Architectural Drawings or Typical Details

The Article 10 Application will contain a typical drawing of an O&M facility 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 facility drawings may be necessary based on final design. The substation, the O&M facility, and the possible Winter Maintenance Building are the only stand-alone facilities 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 Article 10 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, including the following to the extent that they are available:

    a. Plan and sections of underground facilities, including single and multiple-circuit layouts with dimensions of proposed depth and level of cover, separation requirements between circuits, clearing width limits for construction and operation of the Facility, limits of disturbance, and required permanent right-of-way (ROW);
    b. Elevations for overhead facilities (collection lines) including height above grade, structure layouts, clearing width limits for construction and operation of the Facility, permanent ROW widths, average span lengths for each proposed layout, and structure separation requirements (for installations requiring more than one pole, etc.) for all single and multiple-circuit layouts; and
    c. A circuit map indicating overhead and underground installations and the number of circuits per proposed run.
- Wind turbine foundations
- Wind turbine brochures
- Typical wind turbine technical and safety manuals (to be filed separately under confidential cover)

(h) Interconnection Facility Drawings

The proposed 345 kV transmission line and the POI substation will be addressed in the separate Article VII filing and will not be addressed in detail in the Article 10 Application. However, the general location of the transmission line and of the POI substation will be shown in the Article 10 Application, if available.

(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

The Balance of Plant (BOP) contractor, hired to construct the wind farm, is typically responsible for development and implementation of a Quality Assurance and Control (QA/QC) Plan. The Applicant will require the BOP contractor and electrical contractors to provide a final QA/QC Plan prior to starting construction, and all sub-contractors will be required

to follow that Plan. The QA/QC Plan is site specific and therefore not developed until the BOP Contractor and electrical contractors have been selected and the Facility is proceeding with construction. The Applicant will submit the final QA/QC Plan to the Siting Board prior to the start of construction.

Below is a general outline of the components of a QA/QC Plan. This outline was developed based on the Applicant's historical experience with plans that were developed for its operational wind farms. The Preliminary QA/QC Plan that will be provided in the Application will be based upon this outline. In addition, the Preliminary QA/QC Plan will be provided to all contractors who bid on the construction of the Facility as the basis for preparing the final QA plan. The Preliminary QA/QC 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

In addition, the Preliminary Quality Assurance and Control Plan will be provided to all contractors invited to bid on the construction of the Facility.

(b) Conformance with Public Service Commission Requirements

(1) Protection of Underground Facilities

The Applicant will require its contractors to comply with the requirements of the Public Service Commission's regulations regarding the protection of underground facilities (16 NYCRR Part 753) and 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 single forested property, there are few 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 (PIP). These utilities have received and will continue to receive updates and notifications on the Facility. The Applicant will also talk with landowner regarding utilities located on their property. This information on utilities will be taken into account during Facility component siting in order to avoid and minimize conflicts with any utilities.

Furthermore, the Applicant has begun to gather data on utilities. These data include natural gas pipelines, transmission lines, cable and fiber optic lines, and substations. This information will be obtained from coordination with local utilities, and private firms that maintain databases with this information. In addition, data on natural gas and oil wells within the Facility vicinity has also been obtained from the NYSDEC and NYDPS. The Applicant will provide the results of any PIP and landowner utility information to the contractors. Prior to construction, the contractors 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 contractors 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. A plan for continuing to identify existing utilities will also be provided. 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. The Article 10 Application will also 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 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 Article 10 Application. The Complaint Resolution Plan will discuss specifically how public complaints and disputes should be raised, documented and resolved during construction and operation of the Facility. The Complaint Resolution Plan will include steps on informing the public about the complaint process. In addition, the Plan will include a procedure for review and transmittal of complaints, updates and plans for resolution to DPS Staff. 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 Article 10 Application will provide a detailed description of each of these steps in the complaint resolution process.

2.13 REAL PROPERTY

(a) Real Property Map of Generating Site

The Article 10 Application will include a tax parcel map of the Facility Area which depicts the following: (i) the tax parcel IDs for land parcels that are part of the Facility (including properties proposed to be acquired by fee ownership by the Applicant); (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 O&M facility;(v) public roads planned for use as access to the Facility Area, and (vi) Facility Area in relation to nearby state lands. The data for this map will be obtained from the Jefferson County and Oswego 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 the owner of record of all parcels included within the Facility Area 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

Other than a general route map, maps showing all proposed interconnection facilities and associated access areas will be prepared and included in a separate Article VII 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 and easements for collection lines, as necessary. 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.

(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. However, details regarding land control along the proposed transmission line route will be included in a separate Article VII Application,

(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 a variety of factors, including, 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 estimates based on the Applicant's knowledge of market prices and historical experience. Total estimated capital and intangible costs will be provided in a range, which encompasses the estimated upper and lower bounds of turbine model costs for the range of turbines indicated as being under consideration in the Article 10 Application. The Facility 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 turbines installed, access road specifications, etc.

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

- Turbines
- Collection Substation
- 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 82018 dollars.

(c) Work Papers

The Applicant will provide an internal work paper that describes the assumptions made in estimating the total capital costs as described above in (a). However, this information is proprietary, confidential and will be treated as such. Therefore, the Applicant will submit this under separate and confidential cover, and will seek the requisite protection for this proprietary 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 impact 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 calls for reducing Greenhouse Gas (GHG) emissions from the energy sector, because this is critical to protecting the health and welfare of New Yorkers. 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 from combustion of fossil fuels. 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. The kinds of health risks associated with the combustion of carbon-based fuels are not associated with wind, solar energy and hydroelectric power. While these means of producing electric power are not risk-free, increasing the proportion of New York's electricity needs met by wind, solar, and water will, in general, decrease health risks associated with electricity production. 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 one reason New York established the 50% by 2030 goal set forth in the New York State Energy Plan.

A statement and evaluation that identifies, describes, and discusses all potential significant adverse impacts of the construction and operation of the Facility, the interconnections, and related facilities on the environment, public health, and safety, at a level of detail that reflects the severity of the impacts and the reasonable likelihood of their occurrence, and that identifies the current applicable statutory and regulatory framework will be included in the Article 10 Application.

The Article 10 regulations require the assessment of potential risks associated with the operation of the Facility, which, in the case of the Mad River Wind Project are generally limited 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, snowmobile trails, 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 advantages of producing electricity from wind is that it does not produce gaseous wastes, and only 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, consisting primarily of 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, as setbacks are generally 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). Tower failures are typically associated with defects in the tower, the anchor bolts, or the foundation.

The Article 10 Application will include a thorough literature review (limited to peer reviewed articles or papers prepared by government agencies) to identify potential public health and safety impacts including those associated with potential blade throw and tower collapse, along with a discussion of manufacturer recommendations.

(2) Audible Frequency and Low Frequency Noise

There has been a considerable amount of research that has been conducted around the world on the potential for audible frequency and low frequency noise associated with wind turbines to adversely impact health. Based on the findings of the over 80 available peer-reviewed scientific studies, the weight of evidence indicates that properly sited wind turbines do not cause adverse health effects.

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 indicating 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.

In 2012, the Massachusetts Departments of Environmental Protection and Public Health published a report (Ellenbogen et al. 2012) from a panel of independent experts with backgrounds in public health, epidemiology, toxicology, neurology and sleep medicine, neuroscience, and mechanical engineering commissioned to analyze "the biological plausibility or basis for health effects of turbines (noise, vibration, and flicker)." The review of existing studies included both peer-reviewed and non-peer reviewed literature.

Among the key findings of the panel were:

- There is no evidence for a set of health effects, from exposure to wind turbines that can be characterized as "Wind Turbine Syndrome."
- The strongest epidemiological study suggests that there is not an association between noise from wind turbines and measures of psychological distress or mental health.
- None of the limited epidemiological evidence reviewed suggests an association between noise from wind turbines and pain and stiffness, diabetes, high blood pressure, tinnitus, hearing impairment, cardiovascular disease, and headache/migraine.

Infrasound refers to sound pressure fluctuations at frequencies below about 20 Hz. Sound below this frequency is only audible at high magnitudes. Low frequency sound is within the audible range of human hearing, that is, above

20 Hz, but below 100 to 200 Hz (McCunney et al 2014; RSG et al 2016). The Facility is not expected to result in any public health and safety issues due to infrasound and audible low 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 showing 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 typical receptor distances, infrasound levels are well below established hearing thresholds (RSG et al 2016) and have no adverse health impacts on humans (McCunney et al 2014; 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; RSG et al 2016). At the sound pressure levels experienced at typical receiver distances, low frequency noise has not been shown to have adverse health effects (McCunney et al 2014). The level of infrasound from wind turbines is generally lower than from other environmental noise sources, such as vehicle traffic.

Human response to audible wind turbine noise has been assessed by several studies (Pedersen et al 2008, Michaud 2015, and Yano et al 2013). These studies compared noise annoyance to modeled or measured wind turbine sound pressure levels. In all cases, a correlation was found between the level of wind turbine sound and noise annoyance. Annoyance is generally not a major concern 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) (WHO, 1999), and the Facility's predicted nighttime noise will be compared to this level for both participating and non-participating receptors. Information on the methods and assumptions used to conduct this analysis will be provided in Exhibit 19 of the Article 10 Application.

A thorough literature review, including government, peer-reviewed scientific and professional studies, 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 will be included in the Article 10 Application. 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 evaluate potential impacts to both participating and non-

participating receptors. Information on the methods and assumptions used to conduct this analysis will be provided in Exhibit 19 of the Article 10 Application.

(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, given the location of the Facility Area, ice shedding and ice throw could occur, and could represent a potential safety concern. The Facility will be constructed in accordance with setbacks that will protect members of the public from ice throw and other safety concerns

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 used 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. Additional detail is provided in Section 2.24 of this PSS 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 (Baring-Gould et al, 2012). At distances beyond roughly 10 rotor diameters, shadow-flicker effects are generally considered negligible (Baring-Gould, 2012; DECC, 2011).

Exhibit 24 of the Article 10 Application will include a Facility-specific shadow flicker analysis. Specifically, a study of potential shadow flicker impacts on nearby residences (participating and non-participating) and seasonal hunting camps will be conducted, to determine 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 results of this analysis as they relate to potential health effects will be

addressed in Exhibit 15 of the Article 10 Application. The Application will evaluate the public health impacts of both short-term and long-term shadow flicker, and include a review of peer-reviewed scientific literature and siting requirements related to shadow flicker.

(f) Public Health and Safety Maps

The required maps will be prepared and included in the Article 10 Application. Data sources are anticipated to include the NYS GIS Clearinghouse, FEMA, NYSDOH, NYSDEC, 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/ ice throw and shadow flicker. The Article 10 Application will include a summary of potential impacts on the environment, public health, and safety associated with the information identified above in subsections (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 propose 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), Jefferson County, Oswego County, and the Towns of Worth, and Redfield 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 represent a commitment of land throughout its operational life, which is expected to be approximately 30-40 years, associated with its footprint (e.g., the land to be developed for wind turbines, access roads, the O&M facility, meteorological towers, and collection substation). 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 and 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 are associated primarily with applying all reasonable setbacks established in the local zoning ordinances when siting 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, along with the provisions of a proposal Compliant Resolution Plan.

(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 contractors, preconstruction coordination, and construction and restoration inspections. The Environmental Compliance Program will include compliance and monitoring provisions for agricultural restoration, wetland restoration, safety protocols, and routine maintenance during Facility operation. The Article 10 Application will include detailed descriptions of each of these program 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 83% of total GHG emissions in New York State (NYSERDA, 2016).

(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 (SO_2) emissions from existing sources and nitrogen oxides (NO_x) emission controls on new sources in New York State. SO_2 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 SO_2 and NO_x for the environmental and public health benefits. These regulations are also not applicable to the Facility because it will generate electricity without releasing SO_2 or NO_x.

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 2015 (NYSDEC, 2016a). 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 Regions 6 and 7. NYSDEC Region 6 encompasses Herkimer, Jefferson, Lewis, Oneida, and St. Lawrence counties. There are five monitoring stations in NYSDEC Region 6 including, Nicks Lake, Perch River, Utica, Camden, and Wanakena. Nicks Lake Station measures SO_2, and O_3, the Perch River Station measures O_3, the Utica Station measures $PM_{2.5}$, the Camden Station measures O_3, and the Wanakena station measures precipitation and acid rain. NYSDEC Region 7, encompasses Oswego, Onondaga, Cayuga, Cortland, Madison, Tompkins, Chenango, Broome, and Tioga Counties. There are four monitoring stations in Region 7 including, the Fulton Station, Syracuse Station, East Syracuse Station, Camp Georgetown Station. The Fulton Station measures O_3, the Syracuse Station measures CO, the East Syracuse Station measures O_3, $PM_{2.5}$, acid rain, and SO_2, and the Camp Georgetown Station measures O_3, SO_2, and acid rain. The Camden and Perch River stations are the closest to the Facility Area, both of which are located approximately 20 and 25 miles away, respectively.

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 2015, all Region 6 and 7 sampling points were within the acceptable levels established by the NAAQS for all tested parameters (NYSDEC, 2015a). 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 Section 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.

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).

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 periodically service 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: CO_2, NO_x, SO_2, mercury compounds, and lead compounds.

(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. Based on its experience with other wind projects, and reasonable expectations associated with the Facility, preliminary plans for site security, the Applicant has developed health and safety, and emergency action. The Applicant will coordinate with the respective Jefferson and Oswego County emergency departments, 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

Public access to the Facility Area shall be limited. The Balance of Plant (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 Article 10 Application will describe preliminary provisions for security during construction in the Site Security Plan, which may include the following:

(1) Access Controls

Public access to the Facility Area during construction could be restricted through the use of locked gates and signage. The general public will not be allowed on the construction site. After hours, vehicular access to work sites may be blocked by parked equipment or temporary fencing. Temporary construction fencing, or other visible barriers will 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 during 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 the use of task lighting and full cut-off fixtures.

(4) Setback Considerations

The Article 10 Application will provide a detailed outline of proposed setbacks and related safety concerns.

The Site Security Plan will also include information on how the Applicant will communicate with stakeholders regarding construction start dates, as well as applicable safety and security measures.

(b) Preliminary Plans for Site Security During Facility Operation

It is anticipated that the Applicant will own and operate the Facility, and therefore 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 prevent access to the general public. All wind turbines have access doors at their bases that are closed and locked, and the substation will be fenced, and locked at all times. In the Applicant's experience, door locks have proven to be sufficient to prevent access to the turbines by unauthorized individuals. However, if tower trespass and access becomes a problem, intrusion detection can be added as needed.

(2) Electronic Security and Surveillance Facilities

Substations and O&M facilities will have alarm systems and may have 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 and 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 the use of task lighting and full-cutoff fixtures.

(4) Aircraft Safety Lighting

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

(5) Setback Considerations

Exhibit 6 of the Article 10 Application will provide a detailed discussion of Facility setbacks.

(6) Cyber Security Program

The Article 10 Application will discuss how the Applicant will comply with the North American Electric Corporations (NERC's) Critical Infrastructure Protection (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 across the critical infrastructure of the United States. Subject to Federal Emergency Regulatory Commission (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 Preliminary EAP will be developed in conjunction with local emergency service providers, and will be made available to all employees of the contractors and all subcontractors or authorized visitors to the Facility Area 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 Preliminary EAP will also identify the following:

- Alarm and emergency evacuation procedures
- Procedures to be followed by site personnel who operate critical operations before they evacuate.
- Rescue and medical duties for all on-site personnel of Applicant, the contractor and subcontractors following emergency evacuation.
- Persons who can be contacted for further information or explanation of duties under this plan.
- 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 Preliminary 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 Area is necessary the EAP described above will provide detailed instructions to on-site personnel of the Applicant, the contractor and 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 Article 10 Application will include documentation of submittal of the Preliminary Site Security Plan and Preliminary 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 Jefferson and Oswego Counties' respective Emergency Services Departments and provide a copy of the Preliminary EAP 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, 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.

(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 on-site during the construction, operation or maintenance of the Facility. Typically, potential hazardous substances would consist of petroleum products such as diesel fuel, hydraulic oil, mineral oil, and lubricating oil.

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

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

2.19 NOISE AND VIBRATION

A Noise Impact Assessment ("NIA") to evaluate the sound impacts associated with the construction and operation of the Facility, and related ancillary equipment, will be prepared by Robert O'Neal of Epsilon Associates, Inc. (Epsilon). Mr. O'Neal has over thirty years of experience in the areas of community noise impacts, meteorological data collection, and analyses. His noise impact evaluation experience includes the design and implementation of sound level measurement programs, modeling of future impacts, conceptual mitigation analyses, and compliance testing. He is Board Certified by the Institute of Noise Control Engineering ("INCE") in Noise Control Engineering and is a Certified Consulting Meteorologist ("CCM") by the American Meteorological Society.

(a) Sensitive Receptor Map

A map showing the location of sensitive receptors in relation to the Facility will be provided in the Article 10 Application. Sensitive receptors include residences (year-round and seasonal), schools, hospitals, care centers, libraries, places of worship, and public parks. Residences on participating parcels will be differentiated from non-participating residences. Any hunting cabins, camps, lean-tos or other recreational structures in the study area that lack running water and septic system will be identified as such and not considered sensitive receptors. The Applicant will consult with the local municipalities regarding the inventory of sensitive receptors within the Facility Area.

A desktop analysis using aerial imagery and field verification will be used to develop and classify sensitive 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 receptor (i.e. residential).

(b) Ambient Pre-Construction Baseline Noise Conditions

Ambient Noise Monitoring Locations

On behalf of the Applicant, Epsilon has established sound level monitoring sites at three representative locations in and around the Facility Area. These locations are depicted on Figure 4 and listed below:

- MR1: Near the gate at the end of Salmon River Road at the Lewis County/Oswego County line. This location represents residences to the east of the site.
- MR2: Near the gate where logging road meets O'Connor Road. This location represents residences to the north of the site.

- MR3: Near the gate at the end of Little John Drive. This location represents residences to the west of the site.

Sound level meters (SLMs) were utilized during this monitoring to measure various broadband A-weighted (dBA) and one-third octave band sound levels including the Leq, Lmax, L10, and L90. The one-third octave band data will be used to determine whether a prominent discrete (pure) tone currently exists in the baseline. Temporal accuracy of the Leq and L90 will be calculated by following the procedures indicated in ANSI/ASA Standard S12.9/Part 2-1992 (R-2013) for a 95% confidence interval at each measurement location, and will be reported in the Application as mean values as well as upper and lower limits for the 95% confidence interval. A detailed discussion of methodologies, and conformance to the applicable portions of ANSI/ASA standards and Article 10 requirements, and ambient monitoring results will be included in the Application.

Intermittent noise will be "filtered" by reporting the L90 metric which eliminates intermittent sound sources. Seasonal noise will be excluded by using the method in ANSI Standard S12.100-2014 to report the A-weighted, noise-compensated (ANS-weighted metric) which excludes sounds above the 1000 Hz octave band. Periods of rain, excessive wind and snow as well as weather conditions out of the range of specifications for the equipment will be noted and excluded from calculation of ambient noise results. Monitoring sites have been chosen to capture a variety of existing sound level conditions. The various representative areas include rural residential, and remote areas.

(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 collection lines, and the erection of turbine components. The noise generated by these activities will be associated with gasoline and diesel-powered engines, back-up warning signals, operating dump trucks, and possibly impact noise from jackhammers and/or rock drills, or even localized blasting, if required due to geotechnical conditions. It is expected that Facility-related construction noise will be similar to that of typical road or utility construction projects. Construction of the turbines will take place primarily on remote wooded areas throughout the Facility Site, generally away from residences. Any work done on roads and utilities could be close to sensitive receptors, but this work will be conducted for only a short duration. Expected hours of construction for the Facility will be provided in the Article 10 Application.

Noise resulting from construction will be modeled based on predicted construction equipment, and construction activities sound emissions from the Federal Highway Administration (FHWA) Roadway Construction Noise Model

(RCNM). The modeling will be done at locations expected to be closest to sensitive receptors to construction using the RCNM software, or ISO 9613-2 propagation software such as Cadna/A. The results will be presented in the Article 10 Application. In addition, a table of sound levels from various construction activities as a function of distance will be included in the Application.

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

The Article 10 Application will provide an estimate of the sound levels at each noise-sensitive location identified in subsection (a) to be produced by operation of the proposed Facility assuming sound propagation under worst-case wind and atmospheric conditions using industry accepted computer noise modeling software, for example Cadna/A utilizing the ISO 9613-2 standard. Sound levels will be predicted at both specific sensitive receptors and for a grid which will generate sound level contours within the project area.

The Article 10 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 documented 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 receptors;

(2) Tonal Evaluation

A tonal evaluation based on the reported sound power of the wind turbines and substation transformers in accordance with ANSI S12.9 Part 3, Annex B, section B.1. (informative). Tonal information as reported in the IEC 61400-11 standard for the turbines under evaluation will be provided if available from the manufacturer. For substation transformers, the modeled results at the closest most impacted receptors will be evaluated to assess the prominence of transformer tones. For the purposes of this evaluation a prominent discrete tone is identified as present if the tone is audible and the time-average sound pressure level (Leq) in the one-third-octave band of interest exceeds the arithmetic average of the time-average sound pressure level (Leq) for the two adjacent one-

third-octave bands by any of the following constant level differences: 15 dB in low-frequency one-third-octave bands (from 25 up to 125 Hz);8 dB in middle-frequency one-third-octave bands (from 160 up to 400 Hz); or, 5 dB in high-frequency one-third-octave bands (from 500 up to 10,000 Hz). The same method will be used to assess whether a prominent discrete tone exists from the wind turbines. Calculations for both the transformers and wind turbines will use a spreadsheet approach since ISO 9613-2 does not accommodate one-third octave band data.

(3) Turbine Model Selection and Avoidance/Minimization Measures

Noise modeling is to be performed for the turbine model with the highest sound power levels presented in the Article 10 Application. The final turbine model selected may have a different (but lower) sound power level than the one presented in the Article 10 Application. There will be discussion on the Applicant's avoidance and minimization of sound impacts presented in the Article 10 Application.

(4) Potential for Low Frequency and Infrasound

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

(5) Basis of Sound Power Levels Used

The Article 10 Application will state the basis for the sound power levels used in the analysis.

(6) Amplitude Modulation Generation Estimates

The phenomena of amplitude modulation will be explained, including a literature review of potential community annoyance effects. 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 to substantiate these estimates.

(f) Predicted Sound Levels Table

The Article 10 Application will provide the A-weighted/dBA sound levels at the sensitive receptors identified in subsection (a) for the operating Facility in tabular form. Predicted sound levels at property lines will be shown through graphical isolines of A-weighted decibels. The table will include the following:

1) The daytime ambient noise level will be calculated from summer and winter background sound level monitoring data. This will be equal to the lower tenth percentile (L90) of sound levels measured during the daytime (7 AM to 10 PM) at each of the monitoring locations.
2) The summer nighttime ambient noise level will be calculated from summer background sound level monitoring data. This will be equal to the lower tenth percentile (L90) of sound levels measured at night (10 PM to 7 AM), during the summer at each of the monitoring locations.
3) The winter nighttime ambient noise level will be calculated from background sound level monitoring data. This will be equal to the lower tenth percentile (L90) of sound levels measured at night (10 PM to 7 AM), during the winter at each of the monitoring locations.
4) The worst case future noise level during the daytime period will be determined by logarithmically adding the daytime ambient sound level (L90), calculated from background sound level monitoring, to the modeled upper tenth percentile sound level (L10) of the Facility. The L10 statistical noise descriptor corresponds to estimates for one year of operation. Daytime will be 15 hours (7 AM – 10 PM).
5) The worst case future noise level during the summer nighttime period will be determined by logarithmically adding the most representative summer nighttime ambient sound level (L90), as related to the location being evaluated, calculated from background sound level monitoring, to the modeled upper tenth percentile sound level (L10) of the Facility at each evaluated receptor. The L10 statistical noise descriptor is proposed to be estimated for the summer nighttime period for one year of operation. Nighttime will be 9 hours (10 PM – 7 AM).
6) The worst case future noise level during the winter nighttime period will be determined by logarithmically adding the most representative winter nighttime ambient sound level (L90), as related to the location being evaluated, calculated from background sound level monitoring to the modeled upper tenth percentile sound level (L10) the Facility at each evaluated receptor. The L10 statistical noise descriptor is proposed to be estimated for the winter nighttime period for one year of operation. Nighttime will be 9 hours (10 PM – 7 AM).
7) The daytime ambient average noise level will be calculated by logarithmically averaging sound pressure levels (Leq) from the background sound level measurements over the daytime period at each monitoring location. These calculations will include both summer and winter data. Daytime will be 15 hours (7 AM – 10 PM).
8) Typical facility noise levels will be calculated as the median sound pressure level emitted by the Facility (L50). The median sound pressure level will be calculated by determining the frequency of site specific meteorological conditions and sound emissions of the Facility due to those conditions. The L50 statistical noise descriptor will correspond to the daytime in a year. Daytime will be 15 hours (7 AM – 10 PM).
9) Typical facility daytime noise levels will be calculated as the daytime equivalent average sound level (Leq) that was measured, as related to the location being evaluated, logarithmically added to the median Facility

sound pressure level (L50) at each evaluated receptor. The L50 statistical noise descriptor will correspond to the daytime in a year. Daytime will be 15 hours (7 AM – 10 PM).

(g) Applicable Noise Standards

Exhibit 19 will provide a complete description of the noise standards, guidelines, and goals that are applicable to the Facility and a discussion of the Facility's level of compliance with those standards, guidelines, and goals. These may include the World Health Organization (WHO) 1999 and 2009 Guidelines, as well as the National Association of Regulatory Utility Commissioners (NARUC) October 2011 and January 2012 reports.

The 1999 WHO report recommends an 8-hour outdoor nighttime sound level of 45 dBA or less to prevent sleep disturbance with the windows open. The 2009 WHO report recommends a long-term average night noise guideline of 40 dBA over 365 8-hour nights per year (2920 hours). This is equivalent to the lowest observed adverse effect level for night noise. The NARUC report recommends a long-term mean level of 45 dBA to minimize annoyance and complaints from wind turbines. Therefore, based on these references, this project will be designed to a goal of 45 dBA (8-hour) and 40 dBA (annual) at non-participating residences in order to prevent sleep disturbance, and minimize annoyance and complaints.

(h) Noise Standards Comparison

Noise standards applicable to the Facility as identified in Section 19(g) will be provided in the Article 10 Application in tabular form. In addition, the Applicant will include a summary of noise-modelling results from the Noise Impact Analysis for all evaluated sensitive receptors in relation to applicable noise ordinances, guidelines, goals and identified criteria by using the specific requirements as related to noise descriptors (e.g. Leq, L10, etc.), weighting scales (e.g. A) and time frame of determination (e.g. minutes/hour, 1-hour, 1-year, etc.).

(i) Noise Abatement Measures for Construction Activities

The Applicant takes seriously any complaints that it receives from members of the public. Therefore, a Construction Noise Complaint Resolution Plan for the Facility will be included in the Application. Complaints can be registered 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.
- Notifying potentially impacted landowners in advance of loud events, such as blasting or jackhammering.

(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, would be impractical or ineffective. 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 if necessary.

(k) Community Noise Impacts

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

(1) Potential for Hearing Damage

The potential for the Facility to result in hearing damage based on Occupational Safety and Health Administration (OSHA) standards, the recommendations of the US EPA "Levels" document, and the guidelines of the WHO.

(2) Potential for Speech Interference

A discussion of the potential for indoor and outdoor speech interference based on guidelines from the US EPA "Levels" document and the WHO.

(3) Potential for Annoyance/Complaints

A review of 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.

(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, section D.1 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

The Article 10 Application will discuss the potential for structural damage due to ground-borne vibration from the wind turbines.

(6) Potential for Interference with Technological, Industrial, or Medical Activities

The Article 10 Application will discuss the potential for interference with technological, industrial or medical activities that are sensitive to vibration or infrasound within 50 miles of a wind turbine.

(l) Post-construction Noise Evaluation Studies

A post-construction noise monitoring protocol to determine compliance with the operational noise and vibration regulatory limits will be included in the Article 10 Application.

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

The Article 10 Application will include an identification of practicable post-construction operational controls and other mitigation measures that will be available to address reasonable complaints including a description of a noise complaint-resolution procedure that shall be applied during periods of Facility construction and operation. The procedure will include an assessment of reasonable noise abatement measures during construction (i.e., implementing BMPs, complaint resolution plan, etc.) as well as potential abatement measures for Facility design and operations. The Article 10 Application will include a list of potential abatement measures.

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

Specific modeling input parameters will be included with the Article 10 Application. GIS files containing data used for modeling, including topography, turbine and substation locations, sensitive 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 initiated consultation with the NYSOPRHP in December 2017 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)[3] website[4]. The Project Sponsor will continue to track its outreach and stakeholder engagement efforts, and will include a summary of those efforts in the Article 10 Application.

Based on a recent review of SHPO's CRIS database, there are no sites or districts listed on the State and/or National Registers of Historic Places (S/NRHP) within the Facility Area (see Figure 5). Ongoing consultations and outreach with visual stakeholders (i.e., host communities, local municipal officials, DPS, NYOPRHP, etc.) (see section 2.24 of this PSS) will aid in identifying potential historic properties and/or other potential visually sensitive sites within the Facility Study Area, to the extent they exist. Exhibit 20 and other relevant portions of the Application, such as the Visual Impact Assessment in Exhibit 24, will identify and address potential impacts to those resources, if any.

The Project Sponsor intends to avoid archeological impacts, to the extent practicable, by shifting project components away from archaeological sites if any archaeological sites are identified within the Facility Site. Given the topography of this area, and the Project Sponsor's anticipated ability to avoid impacts, it is not anticipated that it will be necessary to mitigate impacts to archaeological resources. However, if avoidance is impracticable, and mitigation is necessary, the Article 10 Application will address proposed mitigation measures.

(a) Archaeological Resources

The Article 10 Application will contain a full analysis of the potential impacts of the construction and operation of the Facility on archeological resources.

(1) Summary of Impacts and Avoidance Measures

The Article 10 Application will include summary of potential impacts as well as potential impact avoidance and minimization measures. As noted above, the Project Sponsor believes that many cultural impacts can be avoided

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

[4] SHPO has requested that its CRIS website be utilized for project submittals. Efforts will be made by the Project Sponsor to utilize CRIS to the maximum extent practicable while maintaining compliance with Article 10 filing requirements.

or minimized, such as by relocating project components or adjusting Facility design, such that mitigation will not be necessary. However, to the extent that impacts cannot be avoided or minimized, the Application will so indicate, and will include a discussion of proposed mitigation strategies.

(2) Phase 1A Cultural Resources Study

The Project Sponsor will prepare a Phase 1A Archaeological Resources Survey and, Phase 1B Archaeological Survey Fieldwork Plan (in the event a Phase 1B study is required) for the Facility Site. The purpose of the Phase 1A archaeological study is to determine whether previously identified archeological sites are located in the areas that may be affected by the proposed project, and to evaluate the potential for previously unidentified cultural resources to be located in the project's area of potential effect (APE). This will include:

- review of NYSOPRHP's Cultural Resources Information System (CRIS) database to identify previously recorded archaeological sites located within or immediately adjacent to the proposed Facility Site;
- identification and review of previous archaeological survey reports conducted in the project vicinity;
- review of historical research materials, with particular emphasis on historic cartographic sources;
- preparation of a GIS-based landscape classification analysis and Phase 1B archaeological survey research design, in accordance with the *SHPO Wind Guidelines*; and,
- performance of a site reconnaissance to document (photograph) representative existing conditions in the study area.

The Phase 1A report/work plan will provide a detailed methodology and scope for the Phase 1B archaeological survey and report (in the event a Phase 1B is required), which will be based on site-specific landscape model and the preliminary design of the Facility. This will include summary of the results of previous archaeological studies in areas near the proposed Facility Site. The report will be prepared in accordance with NYSOPRHP's *Phase 1 Archaeological Report Format Requirements* (NYSOPRHP, 2005) as well as the SHPO *Wind Guidelines* and will be submitted to NYSOPRHP/SHPO via their CRIS website.

(3) Phase 1B Cultural Resources Study

A Phase 1B Archaeological Survey will be conducted, if required, 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 Registered Professional Archeologist (RPA) in a manner consistent with the *SHPO Wind Guidelines,* and in accordance with NYSOPRHP's *Phase 1 Archeological Report Format Requirements* (NYSOPRHP, 2005). This report will be summarized in the Article 10 Application and appended to Exhibit 20.

As indicated above, the scope and methodology for the Phase 1B Archaeological Survey will be outlined in the *Phase 1A Archaeological Resources Survey & Phase 1B Fieldwork Plan*, to be submitted to NYSOPRHP prior to commencement of field work in fall of 2017 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 which are more likely to contain sensitive resources, rather than undertaking an even distribution of sampling throughout the APE. Following this approach, the Project will 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 Phase 1B archeological surveys in New York State include 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 an 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.

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.

(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 Project Sponsor understands that all artifacts recovered during this contract will be the property of the land owner from which the artifacts were recovered. The Project Sponsor 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

The Project Sponsor has prepared a *Phase 1A Historic Architectural Resources Survey & Work Plan* (see Appendix F) that will be provided to NYSOPRHP staff prior to completing this activity. 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 within the study area would be a change (resulting from the introduction of wind turbines) in the property's visual setting and potential noise/vibration impacts (see below). 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 Lorraine, Worth, and Rodman in Jefferson County, the Towns of Pinckney, Harrisburg,

Montague, and Osceola in Lewis County, and the Towns of Boylston, Redfield, and Orwell in Oswego County (see Figure 9).

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

NYSOPRHP's CRIS website includes 23 potential historic properties in the Facility's 5-mile-radius study area. These include 15 bridges and eight cemeteries. Of these, one bridge (BIN 338570 - the Lorraine Gulf Bridge on County Route 95) has been determined eligible for listing on the S/NRHP. The remaining 14 bridges and the eight cemeteries have not been formally evaluated by NYSOPRHP in terms of their S/NRHP eligibility.

In addition, a review of the CRIS database indicated that two historic-architectural surveys have been conducted within the 5-mile study area for the Facility:

- *Copenhagen Wind Farm Historic Resources Survey* was completed in 2014 to survey the historic architectural resources within a 5-mile study area that included parts of the Towns of Croghan, Harrisburg, Pinckney and Lowville in Lewis County, and Wilna in Jefferson County, New York. The survey identified 58 historic resources that were NRHP-listed or recommended NRHP-eligible (EDR, 2014).
- *Roaring Brook Wind Farm Historic Architectural Resources Survey* was completed in 2007 to survey the historic-architectural resources within a 5-mile study area that included parts of Harrisburg, Lowville, Martinsburg, Montague, Osceola, and West Turin, in Lewis County, New York. The survey identified eight historic resources that were NRHP-eligible (JMA, 2007).

Limited portions of the study area for the Mad River Wind Farm overlap with the previously surveyed areas for the Copenhagen Wind Farm Historic Resources Survey and the Roaring Brook Wind Farm Historic Architectural Resources Survey (see Figure 5). No historic properties were identified within these previously surveyed portions of the study area for the Mad River Wind Farm.

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, 2004; 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.

A majority of the residences in the study area are late-twentieth century pre-fabricated double-wide trailers and one-and-one-half story cottages. Some nineteenth- and early-twentieth-century structures (primarily residences, cabins, 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 sometimes 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. 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.

The Project Sponsor will prepare a conduct a Historic Resources Survey of the Facility's APE for visual effects in accordance with the *SHPO Wind Guidelines*. The Facility's APE includes those areas within 5 miles of the Facility with potential visibility of the Facility (as determined by viewshed analysis). 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 APE that, in the opinion of the Project Sponsor's architectural historian, appear to satisfy S/NRHP eligibility criteria.

Historic resources survey fieldwork will include systematically driving all public roads within the study area to evaluate the S/NRHP-eligibility of structures and properties within the Facility's APE for visual effects. When sites that appeared to satisfy S/NRHP-eligibility criteria are identified, the existing conditions of the property will be documented by the Project Sponsor'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. The evaluation of historic resources within the APE 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. The completed Historic Resources Survey will be submitted as part of the Article 10 Application

(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. The Project Sponsor anticipates that 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 and potential impacts from noise/vibration (see Section 2.19 of this PSS). 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 the historic resources in the study area. These impacts will be described in the Article 10 Application.

In addition to potential visual effects on historic resources, impacts from construction such as blasting are possible and will be described in the Article 10 Application. In addition, the Article 10 Application will include a discussion of potential operational noise and vibration impacts to NRHP-eligible historic properties resulting from Facility operation. A noise impact assessment for the Facility will be provided in Exhibit 19 of the Article 10 Application.

The results of this assessment will be used to evaluate potential noise-related impacts to NRHP-eligible and listed properties within the Facility's APE

The Project Sponsor will prepare a Historic Architectural Resources Effects Analysis that will evaluate the potential visual effect of the Facility on properties determined by NYSOPRHP to be NHRP-listed. This will include consideration of distance and the effect of vegetation and other landscape features that may screen or minimize views of the Facility from historic resources, and will include visual simulations where appropriate. The visual effects analysis will specifically address the visual effect of the Facility on the setting associated with NRHP-eligible and listed sites and/or districts within the APE. The visual effects analysis will also include recommendations regarding potential cultural resources mitigation projects, as appropriate. The completed Historic Architectural Resources Effects Analysis will be submitted as part of the Article 10 Application.

2.21 GEOLOGY, SEISMOLOGY, AND SOILS

This exhibit will present a discussion of the geology, seismology, and soils of the Facility Area, including the identification and mapping of existing conditions, an impact analysis, and proposed impact avoidance and mitigation measure, as appropriate.

(a) Existing Slopes Map

A map delineating existing slopes (0-3%, 3-8%, 8-15%, 15-25%, 25-35%, and over 35%) on and within the drainage area potentially influenced by the Facility 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 flown topographic data for the Facility Site to generate the 2-foot contours necessary to fulfill the Article 10 Application requirements for these drawings.

(c) Cut and Fill

The Article 10 Application will include preliminary and approximate cut and fill calculations based on 2-foot contours, 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 Facility components 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 from the Facility Area. 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

Activities associated with the construction of 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 collection lines will be installed through use of a cable plow or blade; however, in select locations a backhoe may be required to excavate a trench for cable installation due to the subsurface characteristics.

The Applicant does not expect Facility-related excavation to 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 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 identified in the Article 10 Application. Final cut and fill storage areas will be determined 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 collection substation location
- 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 Jefferson and Oswego Counties*, *Deep Wells in New York State*, *Geology of Jefferson and Oswego Counties*, *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 (see Isachsen et al., 2000; NYSDEC, 2015a; NYSDEC, 2008; NYSDEC, 2011; NYSDOT, 2013; USDA, 1981; USDA, 1981; USGS, 2005 in References).

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 study will be performed to verify

subsurface conditions. Geotechnical borings will be conducted, as determined necessary by a professional engineer, to support development of final design for substation and wind turbine foundations, the electrical design, and other Facility components, as necessary. The geotechnical study will involve a drill rig obtaining borings to identify the subsurface soil and rock types, strength and chemical properties, and will also document the presence and depth of any groundwater encountered. Testing will also be done to measure the soil's electrical properties to ensure proper grounding system design.

(i) Preliminary Blasting Plan

The Preliminary Geotechnical Investigation described above will provide the information necessary to confirm whether or not blasting may be required, which will be discussed in further detail in the Article 10 Application.

(j) Potential Blasting Impacts

The Article 10 Application will provide additional detail, regarding the potential for blasting including the results of the Preliminary Geotechnical Investigation. With respect to potential impacts on water wells, please see Section 2.23 of this PSS for additional information. With respect to potential impacts on natural gas production, according to the NYSDEC (2015a), the Facility Area contains no natural gas wells of any kind (producing wells, non-commercial wells, and plugged and abandoned wells).

(k) Mitigation Measures for Blasting Impacts

As stated above, blasting is not anticipated. However, should any blasting be required, it will be conducted in accordance a Facility-specific blasting plan, and any necessary blasting will receive oversight by an Environmental Monitor. In addition, pre- and post-blasting well surveys will be coordinated with applicable landowners. The Applicant will conduct structural, water quality, and water quantity inspections of any wells located within 500 feet of blasting activities before (to establish baseline characteristics) 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 Site is located within the Tug Hill Plateau physiographic province of New York State. The area gently rises in elevation from the southwest to the east from approximately 350 feet to 2,000 feet above mean sea-level (AMSL). The Tug Hill Plateau is characterized by rolling hills covered by hardwood forest, small streams, and surficial features left behind by various erosive processes of the last ice-age. Surficial geology consists of glacial till deposits of various

coarseness and size (NYSM, 1986). The bedrock of the study area is a mixture of sedimentary rock including shale and sandstone of Upper Ordovician age (NYSM, 1970).

Based on the 2014 Seismic Hazard Map (USGS, 2014), the Facility is located in an area with a 4-8% probability that peak ground acceleration in a 50 year period is exceeded, indicating relatively low seismic hazard[5]. Since 1973, one earthquake was recorded in Jefferson County and none have been recorded for Oswego County (NYSDHSES, 2014). According to the Intensity Scale, earthquakes with magnitudes ranging from 1.0-3.0 are generally not felt, and are usually only detected by seismographs. Earthquakes with magnitudes ranging from 3.0-3.9 are generally felt by only a few persons at rest, especially on the upper floors of buildings. Furthermore, the USGS Earthquake Hazards Program does not list any young faults, or faults that have had displacement in the Holocene epoch in the vicinity of the Facility Area. Exhibit 21 of the Article 10 Application will provide a more detailed description of the Facility's potential vulnerability to seismic disturbances.

(m) Facility Impacts on Regional Geology

To the extent practicable, Facility components will be sited to avoid or minimize either temporary or permanent impacts to physiography, geology, and soils. The Facility is not anticipated to result in any significant impacts to geology. However, depth into the 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 results of 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 turbines and access roads are not located on completely level terrain, some cut, and fill or addition of fill will be required; however, the impact to overall topography is anticipated to 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 investigations including soil borings and rock coring, as determined necessary by a professional engineer, along with test pits, seismic testing, and additional laboratory testing to further evaluate the subsurface soil, bedrock, and groundwater conditions. The results of the site

[5] During an earthquake when the ground is shaking, it also experiences acceleration. The peak acceleration is the largest increase in velocity recorded by a particular station during an earthquake.

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 located on or adjacent to steep slopes, a slope stability analysis will be performed for any proposed structures (i.e., turbine foundations, substations, and buildings). At proposed construction sites with soils 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, earthquakes have not been recorded in the vicinity of the Facility. 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 Area will be prepared using data from the United States Department of Agriculture (USDA) National Resource Conservation Service (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 Jefferson County, New York (USDA, 1989) and Oswego County, New York (USDA, 1981) indicate that the Facility Area is dominated by four soil series including the Worth Series, Bice Series, Carbondale Muck Series, and Pickney-Ensley Series. The Town of Redfield and Worth have different soil compositions, but overall, the Worth Series is most dominant in the Facility Area, existing primarily in the Town of Worth, while the Carbondale Muck Series is the least prevalent (WebSoil Survey). Table 3 shows the primary characteristics of each soil series.

Table 3. Soil series and their characteristics within the Facility Area.

Soil Series	Main Characteristics
Worth Series	• Deep well drained, moderately coarse textured • Surface layer is brown gravelly fine sandy loam 7 inches thick • Lower layer is brown, very firm, brittle, fragipan 21 inches thick • Rate of water movement is moderate above the fragipan and slow in and below the fragipan • Moderate to severe erosional hazard
Bice Series	• Very deep, well drained loamy soils formed in till • Gently sloping to very steep soils to very steep soils on uplands • No fragipan, deeper to bedrock than Stowe soils • 15-25% rock fragments • Moderate to severe risk of erosion hazard
Carbondale Muck	• Very deep, very poorly drained organic soil mainly found in upland depressions and bogs • Slope is 0-3% • Generally covered in woodland and wetland • Slight risk of erosion hazard
Pinckney-Ensley	• Mixture of Pinckney & Ensley soil series • Very deep, very poorly drained-well drained soils • Found in undulating areas and depressions on uplands • 0-6% Slope • Moderate risk or erosion hazard

Source: Soil Survey of Oswego County (USDA, 1981) & Soil Survey of Jefferson County (USDA, 1989)

The Article 10 Application will include the results of the Preliminary Geotechnical Investigation that will be conducted for the proposed Facility. The geotechnical study will 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 USGS Online Spatial Geology Data, the USDA NRCS Web Soil Survey, and results of the Preliminary Geotechnical Investigation. These data will identify depth to bedrock and underlying bedrock types. Vertical profiles will be included in the Article 10 Application showing soils, bedrock, water table, and seasonal high groundwater, and how these features could be impacted by foundations, access roads, and collection lines on the Facility Area.

(r) Foundation Evaluation

Foundation construction occurs in several stages, which typically include excavation, pouring of a concrete mud mat, rebar and anchor 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. In addition, foundations will be constructed and inspected in accordance with relevant portions of the NYS Building Code and in conformance with the detailed geotechnical study.

(1) Preliminary Engineering Assessment

The Preliminary Geotechnical Investigation will include a 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 based on a subset of test borings, will be included in the Article 10 Application. This information will be used to specifically address the suitability of the on-site surface/subsurface conditions to support turbine foundations, and provide siting and/or design recommendations based on the site-specific conditions. The suitability analysis will be included in the Preliminary Geotechnical Investigation report, which will be summarized in Exhibit 21 of (and appended to) the Article 10 Application.

Following Facility certification, additional geotechnical investigations will be performed as determined necessary by a professional engineer to support final turbine and substation foundation design.

(2) Pile Driving Assessment

The use of driven piles will be determined after the final geotechnical investigation is complete and during foundation design.

(3) Mitigation Measures for Pile Driving Impacts

As pile driving will not be required for this Facility, no mitigation will be proposed.

(s) Vulnerability to Earthquake and Tsunami Events

As previously indicated, the Facility Site appears to have minimal vulnerability to seismic events based on review of publicly available data. In addition, because the Facility is located approximately 18 miles from the nearest large water body (Lake Ontario), the Facility area has no vulnerability to 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 18,777 acres and is primarily forested (approximately 80%, including deciduous forests, mixed forests, and evergreen forests), as shown in Table 4. According to the NLCD, 19% of the Facility Area is made up of wetlands, and 1% is classified as open water.

Table 4. Land Cover Classes Found within the Facility Area

Land Cover Class	Area (acres)	Percent Cover (%)
Deciduous Forest	14805	78.8
Woody Wetlands	3073	16.4
Open Water	236	1.3
Shrub/Scrub	228	1.2
Emergent Herbaceous Wetlands	206	1.1
Mixed Forest	171	0.9
Evergreen Forest	58	0.3
Total	18777	100.0

Source: NLCD 2011

Field Review

Plant communities found within the Facility Area were identified and characterized during reconnaissance-level field surveys and aerial photo interpretation conducted by EDR. The major plant communities found within the Facility Area are common to New York State. Deciduous forest and wetlands are the dominant community types in the Facility Area. Brief descriptions of the major terrestrial ecological communities on site are provided below.

Deciduous Forest

Deciduous forest 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). Tree species vary based on the orientation of the slope, but dominant or co-dominant species typically include sugar maple (*Acer saccharum*), red maple (*Acer rubrum*), American beech (*Fagus grandifolia*), eastern hemlock (*Tsuga canadensis*), red spruce (*Picea rubens*), black cherry (*Prunus serotine*), yellow birch (*Betula alleghaniensis*). Many of the forested areas on site have experienced some level of logging in the past and are characterized by mixed age classes. Some areas are comprised of relatively young vegetation and resemble the successional northern hardwood community described by Edinger et al. (2014).

Woody Wetlands

This is a broadly defined community that incudes shrub swamps, red maple-hardwood swamps, hemlock-hardwood swamps, and spruce-fir swamps as defined by Edinger et. al. (2014). This community occurs in poorly drained depressions or basins, usually on inorganic soil, but occasionally on muck or shallow peat. The hydrology varies from permanently saturated to seasonally flooded or wet, with hummocks and hollows. Vegetation is dominated by trees and shrubs, including red maple (*Acer rubrum*), eastern hemlock, red spruce, balsam fir (*Abies, balsamea*) green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), yellow birch (*Betula alleghaniensis*), dogwoods (, viburnums (*Virbunum* spp.), willows (*Salix* spp.), and alders (*Alnus* spp.). The herbaceous layer includes sensitive fern (*Onoclea sensibilis*), sedges (*Carex* spp.), and cinnamon fern (*Osmunda cinnamomeum*).

Shrub/Scrub

Area categorized by the NLCD as shrub/scrub are dominated by upland shrubs and/or tree saplings, and are similar to the successional shrubland or brushy cleared land communities defined by Edinger, et al. Within the Facility Area, this community is located primarily in areas that have been recently logged, and along the edges of roads and at former log landings and clearings within the forest. Species found in shrub/scrub areas include tree saplings and shrubs such as dogwoods (*Cornus spp.*) and arrowwood (*Viburnum dentatum*), mixed with herbaceous plants such as goldenrods (*Solidago* spp.), clovers (*Trifolium* spp.), milkweed (*Asclepias* spp.), asters (*Symphyotrichum* spp.), Queen Anne's lace (*Daucus carota*), and burdock (*Arctium* spp.).

Emergent Wetlands

Emergent wetlands within the Facility Area include shallow emergent marsh, deep emergent marsh, sedge meadow and eutrophic pond communities as defined by the Edinger et. al. (2014). These communities occur on mineral soil or deep muck soils (rather than true peat), that are permanently saturated and often associated with active or inactive beaver impoundments. Hydrologic conditions range from saturated soils to inundation over 4 feet deep. Vegetation is dominated by sedges, rushes (*Typha* spp.), cattails (*Typha* spp.), and other robust emergent species. Alders and eastern hemlock often line the periphery of these communities where the wetlands and uplands meet. Areas of open water and standing dead trees often occur within this community.

Although identified by NLCD mapping, existing logging roads, borrow areas, and parking areas within the Facility Area are characterized as a disturbed/developed community. Large portions of this community are characterized by bare soil and gravel, and reflect a combination of several "cultural communities" described by Edinger et al. (2014), including unpaved road/path, construction/road maintenance spoils, successional old field and brushy cleared land.

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 Area
- 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 by overlaying the limits of disturbance (LOD) from the preliminary design drawings (Exhibit 11) on the plant community mapping for the Facility Area. Specifically, Facility-related impacts will be calculated in ArcGIS for all plant communities depicted in the mapping described above in support of 1001.22(a).

Impacts will be calculated by Facility component, without consideration for spatial overlap; i.e., if facility components are co-located the impact would be counted twice to account for potential differences in timing of vegetation disturbance. In communities that recover slowly from disturbance – such as deciduous forests – this method results in a conservative impact estimate, as no meaningful recovery is possible between disturbance events in areas where Facility Components are co-located.

The Article 10 Application will include a pre-construction invasive plant species inventory and an Invasive Species Control Plan (ISCP). The pre-construction invasive plant survey will focus on the final area impacted by the Facility and accurately identify conditions existing at the commencement of construction. Species considered invasive for the purposes of this survey consist of those listed as prohibited or regulated by the NYSDEC (2014). Each invasive plant occurrence will be documented with field notes, photographs, and global positioning system (GPS) data. GPS points for populations will be labeled with a four-letter code corresponding to the first two letters of the genus and the first two letters of the specific epithet, followed by sequential numbers tied to the population (e.g., the scientific name of spotted knapweed is *Centaurea stoebe*, so the first population encountered would be CEST1, the second CEST2, etc.). Where plants are found in a very limited area, a single GPS point will be recorded; a polygon representing the infested area

will be recorded for larger populations, and a density code for absolute cover will be assigned (Table 6). Density will be assessed based on established invasive plant survey protocols (e.g., Higman et al., 2012, Montana State University Extension, 2006).

Table 5. Density Codes and Descriptions

Density Code	Density Description/Absolute Cover
1	Sparse: 5% or less absolute cover
2	Patchy: 6-25% absolute cover
3	Dense: 26-55% absolute cover
4	Monoculture: 56-100% absolute cover

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 Area. Such measures may include reduced clearing requirements, demonstrated avoidance of sensitive vegetative communities, locating Facility components within existing disturbed areas (e.g., logging roads and log landings), 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) for a preliminary description of the dominant plant communities found within the Facility Area. In addition to the plant communities previously referenced, the New York Natural Heritage Program (NYNHP) stores data on rare, threatened, and endangered plant species as well as communities with ecological significance. A site-specific request for data on rare wildlife species was submitted to the NYNHP on October 31, 2016. The NYNHP responded by December 12, 2016 with the following five identified ecologically important communities, four of which are wetland/aquatic and one that is upland/terrestrial.

- Confined River- High Quality Occurrence of Uncommon Community Type- Mad River, including entire stretch through Mad River Wind Project area: The midreach stream is moderately large with only few and minor disturbances, good habitat and species diversity, and intact hydrology in a large natural landscape with 100% forest cover and only a few minor road crossings.
- Rocky Headwater Stream- High Quality Occurrence- Mill Stream System, including tributaries in southeastern portion of Mad River Wind Project area: The rocky headwater stream is very large with only few and minor disturbances, good habitat and species diversity, and intact hydrology located in a large natural landscape with nearly 100% forest cover and only a few minor road crossings.
- Floodplain forest- High quality occurrence of rare community type- Cottrell Creek, Town of Redfield, including stretch in westernmost portion of Mad River Wind Project area: This is a moderate-sized floodplain forest in excellent condition with a high diversity of plants within a very large landscape.
- Sedge meadow- High Quality Occurrence- Pigeon Creek, just east of Mad River Wind Project area, in Town of Montague: This is a large, pristine wetland in a very large undisturbed landscape.
- Beech-maple mesic forest- High quality occurrence- Central Tug Hill Forest; including that portion of Mad River Wind Project area in Town of Redfield and east of Mad River, and that portion west of Mad River and south of Little John Drive: This is a very large example of primarily second and third growth with a few scattered small patches of relatively mature forest and fairly good regeneration of canopy species. It features characteristic species diversity for its forest type, lacks both invasive exotic plants and notable impacts from deer browse. It forms a substantial part of a very large forest matrix landscape with little or no paved or publicly accessible roads, but continues to undergo intensive logging.

A detailed assessment of the quality and characteristics of the above-listed ecology important communities will be provided in the Article 10 Application. This will include a map of these communities, a discussion of measures to avoid impacts to these locations, and a discussion of any potential impacts. In addition, since the submittal of the NYNHP inquiry in October 2016, the boundaries of the Facility Area have been revised slightly, adding an additional 258 acres to the Facility Area. Consequently, a revised inquiry that reflects these changes was recently submitted to the NYNHP. The NYNHP's response to the revised inquiry will be discussed in the Article 10 Application.

In addition, the Applicant will perform Tier 1 and Tier 2 analyses of the Facility Area. Tier 1 of the study will involve a Preliminary Site Evaluation, using a landscape -scale screening process and existing information, to identify blocks of native habitat, ecological communities, and other areas of wildlife value. Tier 2 of the study will involve Site Characterization, focusing on more site-specific data to evaluate potential risks to sensitive or protected resources. Results of the study will be included in of the Article 10 Application.

Wildlife

Mammals

Detailed information regarding the occurrence of mammalian species in the Facility Area is not available in existing databases. Therefore, the occurrence of mammals will be documented primarily through observations made during on-site field surveys. These surveys will be conducted at various times of the year and will be aimed at verifying species occurrence through visual observation, including observation of signs of occurrence, such as tracks or scat. Evaluation of available habitat will also be conducted to identify species that could be present on site, even if evidence of their occurrence is not actually found. Mammals species typically found in the region of the Facility include raccoon (*Procyon lotor*), porcupine (*Erethizon dorsatum*), red squirrel (*Sciurus vulgaris*), eastern chipmunk (*Tamias striatus*), whitetail deer (*Odocoileus virginianus*), snowshoe hare (*Lepus americanus*), river otter (*Lontra canadensis*), black bear (Ursus americanus), beaver (*Castor canadensis*), skunk (*Mephitis mephitis*), muskrat (*Ondatra zibethicus*), mink (*Mustela vison*), eastern coyote (*Canis latrans*), fisher (*Martes pennati*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), and a variety of small mammals (mice, voles, moles, and shrews).

In addition to on-site observations, the NYNHP request previously mentioned provided data on rare, threatened, and endangered animals, including mammals, within and adjacent to the Facility Area. Three bat species were identified within 40 miles of the Facility Area including the Indiana Bat (*Myotis sodalis*) state- and federally-listed as endangered, eastern small-footed myotis (*Myotis leibii*) listed as special concern, and northern long-eared bat (*Myotis septentrionalis*) state- and federally-listed as threatened.

To characterize and document bat activity, the Applicant began preliminary surveys in the Fall of 2016. Surveying efforts were in accordance with NYSDEC *Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects* (NYSDEC, 2016b), the USFWS *Land-Based Wind Energy Guidelines* (USFWS, 2012) and phone conversations between Stantec and the NYSDEC on August 2, 2016, and March 3, 2017. A work plan for these surveys can be found in Appendix G of this PSS.

Stantec conducted monitoring efforts using a full spectrum acoustic bat detector in the spring, summer, and fall of 2017. Monitoring efforts spanned from April 15, 2017 to October 31, 2017 with the purpose of providing an index of activity of all bats across the annual time period that bats are active. The study also analyzed if and how weather variables relate to activity levels. Final results of the bat surveys will be provided in the Article 10 Application.

Birds

The NYNHP identified five listed bird species that have been documented within 10 miles of the Facility Area, including the pied-billed grebe (*Podilymbus podiceps*), bald eagle (*Haliaeetus leucocephalus*), northern harrier (*Circus cyaneus*),

American three-toed woodpecker (*Picoides dorsalis*), and great blue heron (*Ardea herodias*). The pied-billed grebe, bald eagle, and northern harrier are state-listed as threatened while the American three-toed woodpecker and the great blue heron are state-listed as protected birds. The American three-toed woodpecker has state protection due to natural ecological disturbances and human activity such as logging operations. The great blue heron is also a protected bird of New York and while population values are relatively stable, the species has experienced habitat loss, resulting in the state protection status

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

- Raptor Migration Surveys (Fall 2016 and Spring 2017);
- Breeding Bird Surveys (May and June 2017);
- Spring Migration Bird Stopover Surveys (April and May 2017);
- Fall Migration Bird Stopover Surveys (August, September, and October 2016); and
- Acoustic Bat Detector Surveys (Spring, Summer, and Fall 2017)

The protocols for the on-site avian studies were developed in consultation with the NYSDEC and USFWS, and are included in Appendix H. Copies of all associated reports have been provided to USFWS and NYSDEC, and 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 eight survey blocks, including 4284D, 4384C, 4283B, 4383A, 4283D, 4383C, 4282B, and 4382A. 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. No BBS routes cross into the 5-mile or 10-mile Study Area. Therefore, this data source will not be utilized as a source of information for 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 Area (the Oswego-Fulton circle) is approximately 25 miles southwest of the 10-mile Study Area, data from the CBC is not applicable to the Facility Area and will not be included in the Article 10 Application.

The NYSDEC and the Nature Conservancy (TNC) manage lands within 10 miles of the Facility Area. Any bird surveys conducted by the NYSDEC and TNC will also be obtained, if available, as additional sources of information on the bird community that occurs in the Tug Hill region.

Amphibians and Reptiles

The New York State Amphibians & Reptile Atlas Facility (Herp Atlas) was a survey conducted over 10 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 Worth Center, Redfield, and Barnes Corners USGS 7.5-minute quadrangles, which include the Facility Area. Information from the Herp Atlas, as well as on site surveys and assessments of suitable habitat (including the presence of vernal pools) will be used to identify reptile and amphibian species likely to occur in the area. Results of this data collection effort 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 NYNHP does track several invertebrate groups, however, not all invertebrate groups are monitored (NYNHP, undated). The December 12, 2016 response from the NYNHP did not identify any rare, threatened, and endangered invertebrates within the Study Area (see Appendix H of this PSS). The Article 10 Application will provide information on major taxonomic groups of invertebrates likely to be found in the Facility Area, based on available habitat, but will not identify these invertebrates to the species or genus level unless actually observed on site during other species surveys.

Fish and Other Aquatic Species

The NYNHP identified one fish species as a conservation concern in the vicinity of the Facility Area. The blacknose shiner, while not listed by the NYSDEC, is as an imperiled species by the NYNHP. The NYNHP did not identify any other fish or aquatic species as being listed or of conservation concern. The Article 10 Application will also provide information on fish species likely to be found in the Facility Area, based on on-site surveys and available habitat.

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, the NYNHP identified the following five significant natural communities within the Study Area.

- Confined river
- Rocky headwater stream
- Floodplain forest
- Sedge meadow
- Beech-maple mesic forest

The fish and wildlife habitat provided by these communities, and other more common ecological communities on site, will be discussed in the Article 10 Application. The value of forested habitat (including "core forest" habitat) that may exist in the Facility Area will be specifically discussed. 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. A table containing information on all listed threatened and endangered species, species of conservation concern, rare species, and species of greatest conservation need will be compiled and included in the Article 10 Application. Species included in this table will come from a number of sources, including correspondence with the NYNYP, as 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 facility area. IPaC was queried for such records on October 27, 2016 (see Appendix H). The only federally-listed threatened species identified for the Facility Area is the threatened northern long-eared bat and will be include in the table. Numerous bird species were identified as a conservation concern including: blue-winged warbler (*Vermivora pinus*), Canada warbler (*Wilsonia canadensis*), common tern (*Sterna hirundo*), golden-winged warbler (*Vermivora chrysoptera*), least bittern (*Ixobrychus exilis*), olive-sided flycatcher (*Contopus cooperi*), peregrine falcon (*Falco peregrinus*), pied-billed grebe (*Podilymbus podiceps*), prairie warbler (*Dendroica discolor*), red-headed woodpecker (*Melanerpes erythrocephalus*), short-eared owl (*Asio flammeus*), upland sandpiper (*Bartramia longicauda*), willow flycatcher (*Empidonax traillii*), and wood thrush (*Hylocichla*

mustelina). Finally, any listed species documented on-site through wildlife surveys, vegetation/plant community surveys, or wetland/stream delineations will be included in this table.

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

Any impacts to vegetation associated with construction and operation of the proposed Facility, including impacts to various plant communities and identified rare plants, and the potential spread of invasive species, 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, may include some loss of habitat, forest fragmentation, wildlife displacement due to the presence of the wind turbines, and avian and bat collisions with the wind turbines. The effects of forest fragmentation on forest interior wildlife species that inhabit the Facility Area will be evaluated by quantifying the Facility's "edge effect" using GIS analysis of proposed forest clearing. To the extent any documented wildlife travel corridors or concentration areas (e.g., deer yards) are identified within or adjacent to the Facility Area, impacts to such areas will also be addressed.

The Article 10 Application will also present information on the Facility's potential impact on threatened and endangered species, species of conservation concern, rare species, and Species of Greatest Conservation Need.

(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, including forest fragmentation, within the Facility Area. It is anticipated such measures will include careful site design (e.g., utilizing existing roads and disturbed sites, avoiding sensitive habitats, and minimizing disturbance to the extent practicable), confining work within designated construction limits, adhering to seasonal restrictions (e.g., tree clearing and in-stream work restrictions), and utilizing best management practices during construction.

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

(1) Avian and Bat Impacts

As previously mentioned, numerous pre-construction avian and bat studies will be conducted. Copies of all reports will be provided to NYSDEC and USFWS personnel, 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 avian and bat species.

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, along with other projects in the Tug Hill region that are either operating, under construction or in development. 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.

(2) Avian and Bat Post-Construction Monitoring

The Article 10 Application will describe 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 Area will be conducted within a 200-foot wide corridor centered on linear Facility components (e.g., access roads and collection lines), and within a 200-foot radius of turbines and other components, such as permanent meteorological towers, the O&M facility, Winter Maintenance Building (if necessary), staging areas, the temporary concrete batch plant, and the collection substation. The 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 (USACE) *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 hanging 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 databases of wetland mapping maintained by the USFWS (NWI maps) and NYSDEC (Freshwater Wetland Maps). Wetlands identified in this way will be referred to as approximate wetlands.

On-site wetland delineations and desktop approximations will be supported by reviewing existing state- and federally-mapped wetlands. Review of NYSDEC mapping indicates that 57 freshwater wetlands occur within the Facility Area (see Figure 6). These wetlands are interspersed throughout the Facility Area and many are associated with mapped streams and/or are found within the valleys of the Mad River, Big Brook, Pigeon Creek, Abijah Creek, Gillman Creek, Willow Creek, and Slide Creek, to name a few. Table 6 provides a listing of the State-regulated wetlands that occur within the Facility Area.

Table 6. NYSDEC-Mapped Wetlands

Wetland ID	County	Class	Total Size (acres)	Size Within Facility Area (acres)
RF-3	Oswego	II	41.316568	31.0269
RF-43	Oswego	II	9.884188	7.211352
RF-5	Oswego	II	15.087281	5.67493
RF-8	Oswego	II	13.84059	13.8406
RF-9	Oswego	III	47.201755	6.620702
WC-1	Oswego	II	47.343874	45.4159
WC-10	Jefferson	I	4.557705	4.44843
WC-10	Oswego	I	645.274911	515.507561
WC-12	Oswego	II	18.747227	18.74718
WC-13	Oswego	III	10.750123	10.75012
WC-14	Oswego	II	7.897417	7.89742
WC-15	Jefferson	II	14.668007	14.668
WC-15	Oswego	II	59.30898	59.308945
WC-17	Oswego	II	90.504037	90.504047
WC-2	Jefferson	II	133.045451	11.4168
WC-2	Oswego	II	21.781631	1.34597
WC-20	Oswego	III	17.080425	17.0804
WC-21	Oswego	II	46.857715	46.857666
WC-22	Oswego	III	31.554197	31.554191
WC-23	Oswego	II	15.413215	15.4132

Wetland ID	County	Class	Total Size (acres)	Size Within Facility Area (acres)
WC-24	Oswego	II	32.648574	32.6486
WC-25	Oswego	III	12.68783	12.6878
WC-26	Oswego	II	19.972598	19.9726
WC-28	Oswego	II	35.226669	35.2267
WC-3	Oswego	II	5.479186	5.47919
WC-30	Oswego	II	33.908012	33.908044
WC-31	Oswego	III	11.550566	11.5506
WC-37	Oswego	II	18.211397	18.2114
WC-4	Oswego	II	17.822792	17.8228
WC-6	Oswego	III	31.532896	22.280541
WC-9	Oswego	II	24.709204	23.42949
J-1	Jefferson	II	24.189245	0.190846
J-10	Jefferson	II	32.150855	32.1509
J-11	Jefferson	III	33.51696	33.517
J-12	Jefferson	II	28.425819	28.4258
J-13	Jefferson	II	14.81444	14.8144
J-14	Jefferson	II	31.059567	31.05955
J-15	Jefferson	II	58.966605	58.96661
J-17	Jefferson	IV	44.842259	44.8423
J-18	Jefferson	III	40.601414	40.6014
J-19	Jefferson	IV	15.372605	15.3726
J-20	Jefferson	II	108.180913	107.609
J-21	Jefferson	IV	22.016067	22.0161
J-22	Jefferson	II	24.008952	24.00893
J-23	Jefferson	II	32.557102	32.5571
J-25	Jefferson	III	27.32705	23.605209
J-3	Jefferson	III	47.502807	47.5028
J-4	Jefferson	II	22.048965	21.588
J-5	Jefferson	II	34.610129	25.1441
J-6	Jefferson	II	92.700582	78.4806
J-7	Jefferson	II	47.64201	47.37738
J-8	Jefferson	II	19.107691	19.1077
J-9	Jefferson	III	26.756392	26.7564
WC-10	Jefferson	I	4.557705	4.44843
WC-15	Jefferson	II	14.668007	14.668
WC-2	Jefferson	II	133.045451	11.4168

[1]NYS classification system. Four classes based on functions and values (Class I having the highest rank, descending through Class IV).

National Wetland Inventory (NWI) mapping indicates approximately 1,003 wetland communities exist within the Facility Area, totaling approximately 2,600 acres. The NWI data indicate that forested/shrub wetlands comprise most of the

wetland communities on-site, totaling approximately 1,900 acres. Other NWI-mapped wetland communities on-site include freshwater emergent wetlands (390 acres), freshwater ponds (257 acres), and riverine wetlands (81 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 regarding vegetation, soils, and hydrology. In addition, it is anticipated that copies of the Corps *Wetland Determination Data Forms* completed for each field delineated wetland will be included with the Wetland Delineation Report attached to the Article 10 Application.

(k) Wetland Functional Assessment

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. 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).

(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 wetland mapping maintained by the USFWS 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 the NYSDEC.

(m) Wetland Impacts

During construction, potential direct or indirect impacts to wetlands 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 collection lines, 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 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 acreage) and temporary impacts to wetlands. The development and use of temporary workspaces will generally result in only temporary impacts to wetlands/streams. The installation of above-ground or buried collection lines will temporarily disturb wetlands during construction as a result of clearing and soil disturbance from burial of the electrical collection lines or installation of overhead poles and conductors. 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 line routes, turbine sites, staging area(s), wind measurement towers, or the substation.

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 will be minimized by utilizing existing access roads as much as possible,

special crossing techniques, equipment restrictions, herbicide use restrictions, and erosion and sedimentation control measures. If necessary, conceptual compensatory wetland mitigation plans will be prepared.

(o) State and Federal Endangered or Threatened Species

State and federal T&E species documented within or adjacent to the Facility Area, along with potential impacts, if any, to such species, will be identified in the Article 10 Application.

(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 Facility Area does not include any active agricultural land or designated agricultural districts. However, some agricultural fields and districts occur within the 5- and 10-mile study area, and road improvements to facilitate delivery of Facility components could have a minimal impact on agricultural resources. 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). The Article 10 Application will provide additional details on measures the Applicant has undertaken to avoid and mitigate for impacts to agricultural land if impacts are anticipated.

2.23 WATER RESOURCES AND AQUATIC ECOLOGY

(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 6.5 feet throughout the Facility Area, with high water tables most common in low-lying areas in and adjacent to wetlands. Depth to bedrock also ranges from the ground surface to greater than 6.5 feet, with the large majority of the Facility Area having soils greater than 6.5 feet along ridges and convex features (Soil Survey Staff, 2016). The Article 10 Application will include maps showing depth to bedrock and depth to water table throughout the Facility Area, based on the Soil Survey of Jefferson and Oswego County, New York and the results of the Preliminary Geotechnical Investigation.

(2) Groundwater Aquifers and Recharge Areas

Based on preliminary evaluations conducted in support of this PSS, the Facility Area overlays two, possibly three, aquifers according to U.S. Environmental Protection Agency (EPA) and USGS data. Two bedrock aquifers are located within the Facility Area, with one labeled as a "New York sandstone aquifer" and the other as "unclassified" (USGS, 1998). In the northern portion of the Facility Area, one sole source aquifer (the Tug Hill Aquifer) was identified (USEPA, 2011). This sole source aquifer covers approximately 4,350 acres of the Facility Area. Sole source aquifers supply at least 50% of the drinking water to a given area. The location of mapped aquifers is presented in Figure 7. In addition to aquifers present within the Facility Area, there are three unconfined aquifers located near the Facility Area boundary; the closest of which lies approximately 0.5 mile outside the area, and the furthest being approximately 6 miles away. In contrast to confined aquifers previously mentioned, unconfined aquifers lack an overlying, impervious rock layer, separating it from the atmosphere. Instead, the water table of the unconfined aquifer is open to atmosphere via permeable material overlay. Article 10 will outline the impacts, if any, to aquifers in the Facility Area.

Based on a desktop review of the New York State Water Well Program, no wells exist in the Facility Area, however three wells do exist within a three-mile radius. To identify all existing water wells in the area, a Freedom of Information Law request letter will be sent to the NYSDEC and to Jefferson and Oswego County. These letters will request any information pertaining to groundwater wells (including location, construction logs, depths, and descriptions of encountered bedrock) within and adjacent to the Facility Area. The Article 10 Application will include information received from the NYSDEC, NYSDOH, and the counties 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 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. However, approximately 22 of the 88 proposed turbines are proposed above the Tug Hill Aquifer. As a sole source aquifer, jurisdiction over the Tug Hill Aquifer falls under Section

1424(e) of the Safe Water Drinking Act headed by the EPA. Consequently, further investigation and consultation may be required between the Applicant, NYSDEC, and EPA.

Despite the occurrence of a mapped aquifer within the Facility Area, construction and operation of 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, access roads, 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 Area, and will have a negligible effect on groundwater recharge. Additional detail regarding groundwater impacts will be provided in the Article 10 Application, including results of the Preliminary Geotechnical Investigation (as described in Section 2.21 of this PSS), 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 Area, including intermittent streams (to the extent such streams are identified in publicly available data and through on-site investigations). 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

As described in Section 2.21 of this PSS, the Facility Area is located in the Tug Hill Plateau physiographic province of New York State Surface water general flows south to north within the Facility Area. Two drainage basins occur within the Facility Area. Approximately 19,000 acres of the area lies within the Salmon-Sandy drainage basin, a tributary of the Salmon River (USGS Hydrological Unit 04140102). Approximately 26 acres in the northeastern portion of the area drain to the Black River drainage basin (USGS Hydrological Unit 04150101).

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. Based on NYSDEC mapping, four classified streams and their tributaries occur within the Facility Area. These streams are listed in Table 7. The Article 10 Application will indicate the location classification for all NYSDEC mapped streams within the Facility Area (see Figure 8). Characteristics of the streams on the Facility Area will be described in the Article 10 Application, based on publicly available data and supplemented by field data collected during any on-site wetland and stream delineations.

Table 7. Stream Classification in the Facility Area

Waterbody Name	Waterbody Classification
Mad River and tributaries	C, C(T)
Mill Creek and tributaries	C, C(T)
North Branch Salmon River and minor tributaries	C(T)
South Sandy Creek, upper and minor tributaries	C, C(T), C(TS)

With respect to fish species, a data request will be submitted to the NYSDEC for data on fish communities in streams occurring within the Facility Area. These data will be supplemented by information on fish species that have been caught or identified in the on-site streams during field surveys.

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 will be submitted to Jefferson and Oswego County Department of Public Health. The inquiry will request data on the nearest public surface drinking water intake sites downstream of the Facility Area. Because the proposed Facility would be located within two watersheds, the data for both the Salmon- Sandy and Black River watersheds will be requested. The Article

10 Application will identify any 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 direct impacts to surface waters. In addition, large temporary construction areas (e.g., staging areas) will avoid surface water impacts to the maximum extent practicable. Number and overall impacts resulting from installation of access road and collection line crossings will be minimized by utilizing existing road crossings, ATV routes, and other previously disturbed sites whenever possible. Stream crossings will be assessed and designed appropriately.

During construction, potential direct or indirect impacts to surface waters may occur as a result of vegetation removal and soil disturbance associated with the installation of access roads and wind turbine foundations, the upgrade of local public roads, the installation of above ground or buried electrical collection lines, the development and use of temporary workspaces around the turbine sites and temporary workspaces around the substation. Direct impacts could include 1) an increase in water temperature and conversion of cover type due to clearing of streamside 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 and spills/leaks of petroleum products and other hazardous substances.

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 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 Facility construction. 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 ford crossings and culverts that are poorly installed, poorly maintained or under-sized will have a long-term beneficial effect on water quality. 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 fence, and other temporary erosion and siltation control measures 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. Specific control

measures will be identified in the Facility Stormwater Pollution Prevention Plan (SWPPP). The location of these features will be indicated on construction drawings, and will be 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. Compliance with the SWPPP will be monitored by a full-time Environmental Monitor on site.

(c) Stormwater

(1) Stormwater Pollution Prevention Plan

Prior to construction, the Applicant will seek coverage under the NYSDEC 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 and updated November 23, 2016) (http://www.dec.ny.gov/docs/water_pdf/gp015002.pdf) (NYSDEC, 2015b). 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 any 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 Area, 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. 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 Preliminary Spill Prevention, Containment and Counter Measures (SPCC) Plans that will be implemented during Facility construction and operation to minimize the potential for unintended releases of petroleum and other hazardous chemicals. These plans are anticipated to contain information about water bodies on the Facility Area, procedures for loading and unloading petroleum products, 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 requirements.

(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. Based on the Facility layout and the delineated stream 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 unique ecological communities or 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 species. Proper design and installation of proposed stream crossings, as well as compliance with seasonal work restrictions and the requirements of the SWPPP will be critical components of impact avoidance and mitigation. 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, water intake, and discharge will not be included in the Article 10 Application.

2.24 VISUAL IMPACTS

(a) Visual Impact Assessment

In support of the Article 10 Application, 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 (n.d.; 2000). The components of the VIA will include identification of visually sensitive resources, viewshed mapping, confirmatory visual assessment fieldwork, visual simulations (photographic overlays), 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 in the vicinity of the proposed Facility. Although a 5-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 5 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 5 miles of the proposed Facility.

The Article 10 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 (LSZs) will be defined within the visual study area. 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 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, 1988; USDI Bureau of Land Management, 1980). Distinct LSZs within the visual study area will be identified, described, and their approximate locations will be illustrated in a map to be included in the Article 10 Application.

(2) Visibility of the Facility

The VIA will include an analysis of potential Facility visibility, and identify locations within the visual study area where it may be possible to view the proposed turbines. 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)(2) below.

Topographic and vegetation viewshed maps will be created to identify areas with potential visibility of wind turbines. The methodology for these analyses is described in detail below in Section 24 (b)(2). Given the limited height of other above ground components of the Facility, the dominance of forest vegetation on and adjacent to the Facility Area, and the lack of public roads or other vantage points adjacent to the Facility, viewshed analysis of other Facility components (overhead collection lines, access roads, and O&M facility) is not anticipated to be necessary.

Visual field review will involve visiting public roads and public vantage points within the 10-mile radius visual study area to document locations from which the turbines would likely be visible, partially screened, or fully screened. This determination will be made based on the availability of open views in the direction of the Facility Area, as well as views of the existing temporary meteorological towers on the Facility Area, which will serve as locational and scale references. These site visits will result in photographs from many (typically 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 a high resolution digital SLR camera with 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 the VIA.

(3) Visibility of Above-ground Collection Line and Roadways

Given the forested condition of the Facility Area and adjacent land, and the lack of public roads traversing the site, the Facility access roads are not anticipated to be visible from public vantage points. With respect to any proposed overhead collection lines, the engineering design (e.g., pole locations and height) may not be completed prior to the submission of the Article 10 Application. However, given the limited height anticipated for any above-ground poles, and the abundant forest cover on and adjacent to the Facility Area, overhead collection lines are not anticipated to be visible to the public. As mentioned above, viewshed analysis of these components of the Facility is not anticipated to be necessary. However, potential visibility of the Facility features will be discussed in the Article 10 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 selected existing conditions photograph. Existing elements in the view (e.g., topography, buildings, roads) will be modeled based on aerial photographs, DEM data, and a three dimensional (3-D) topographic mesh of the landform (based on DEM data). 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 3-D computer model of the proposed turbine layout and permanent meteorological (met) towers 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 and met towers 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 the 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. As indicated above, lower Facility components, such as access roads, overhead collection lines, and the O&M facility will be screened from public vantage points by the abundant forest vegetation on and adjacent to the Facility Area, and therefore, will not be included in the simulations.

For some views, “wireframe renderings” or line-of-sight cross sections 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 the wireframe renderings, 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 will be evaluated, as described in Section (b)(1) below. The Article 10 Application will include discussion of potential visibility from exterior lighting at the O&M facility, the collection substation, and the POI substation.

(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, including vegetation removal, soil disturbance and the presence of construction equipment, will be described in the Article 10 Application, but as mentioned previously, the abundance of forest vegetation and lack of public roads traversing the Facility Area are anticipated to minimize any construction-related visual impacts.

(8) Nature and Degree of Visual Change from Operation

To evaluate anticipated long-term 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 a panel of 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 I 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

Along with the evaluation of the Facility's visual impact, as described above, a shadow flicker analysis will be conducted to fully evaluate the visual effects of the operating Facility. As indicated in Section (15)(e)(4) of this

PSS, this analysis will model the potential shadow flicker occurrence on nearby receptor locations, 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 discussed in detail below.

Shadow flicker refers to the moving shadows that an operating wind turbine casts over an identified receptor 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).

Sensitive receptors include any known residential structures with a certificate of occupancy (both participating and non-participating), schools, public buildings, or public recreation areas (e.g., trailheads, state forest parking areas, fishing access sites) that are located within the shadow flicker study area. A maximum distance of potential effect of 10 rotor diameters will be used for this analysis to ensure that all potentially impacted receptors will be assessed.

The shadow flicker analysis for the proposed Facility will use *WindPRO version 2.9* (or similar version) software and the associated Shadow module. This is a widely-accepted modeling software package developed specifically for the design and evaluation of wind power projects. The stand-alone shadow flicker analysis will include the results from the WindPRO software, in tabular format, as both "worst-case" and "real/expected-case". 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 Article 10 Application.
- Latitude and longitude coordinates for sensitive receptors located within a 10-rotor diameter radius of all proposed turbine locations.
- USGS 1:24,000 topographic mapping, USGS digital elevation model (DEM) data (10-meter resolution) for Oswego County, and FEMA DEM data (1-meter) for Jefferson County.

- The rotor diameter and hub height of the largest proposed turbine model at the time of Application submittal.
- Annual wind rose data.
- The average monthly percent of available sunshine for the nearest National Oceanic and Atmospheric Administration (NOAA) weather station.

The Applicant will work with the Towns to identify, within the 10 rotor diameter radius study area, all non-participating residential structures and any officially-announced, planned, or approved land use developments, such as residential subdivisions or building permits issued 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 dimensions of any receptor structure/site 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. snowmobile 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 Area. 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). Consequently, 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.

Shadow flicker impacts on residential receptors will be summarized in a stand-alone study, which will be included with the Article 10 Application. Potential shadow flicker impacts on biological resources and recreational use of the Facility Area will also be addressed in the Article 10 Application.

(10) Measures to Mitigate for Visual Impacts

Mitigation options are anticipated to be limited, given the nature of the proposed Facility. However, in accordance with *NYSDEC Program Policy DEP-00-2 Assessing and Mitigating Visual Impacts* (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 or appropriate for the Facility. The Article 10 Application will discuss the feasibility and potential benefits 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, resources of state-wide significance 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 (now New York State designated Heritage Areas).
- The State Forest Preserve (i.e., State Forest land within 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 radius study area will also be identified. These areas include places of concentrated activity such as village centers and heavily used roadways, local park and recreation facilities, and other landscapes of high aesthetic merit that may be considered important by local residents. See Section (b)(3) below for additional detail on visually sensitive resources.

(b) Viewshed Analysis

As mentioned above in Section (a)(2), Visual Impact Assessment will include identification of locations within the visual study area where it may be possible to view the proposed wind turbines 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 10-mile visual 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 within the study area.

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 visible or not visible 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 generally also serve to document the line of sight profiles for resources of statewide concern. As mentioned in Section (a)(4), line-of-sight cross sections may be used to evaluate the type and extent of screening from selected resources.

(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 10-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 FAA obstruction warning lights (based on an assumed height for the lights on top of the nacelle).

As mentioned above, 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 turbine location/elevation coordinates from observation points throughout the 10-mile study area. The resulting topographic 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

Facility viewshed. The results of this analysis will then be grouped by number of turbines potentially visible and presented on the viewshed maps.

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 FAA warning lights on the turbines. 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.

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 Article 10 Application will address the potential cumulative visual impacts that may arise from interactions between the proposed Facility and the nearest operating and proposed

wind projects including the Maple Ridge Wind Farm, approximately 12 miles to the east, and the Deer River Wind Farm, approximately three miles to the north, respectively.

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 Maple Ridge Wind Farm. The viewsheds for these two Facilities 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 *NYSDEC Program Policy DEP-00-2 Assessing and Mitigating Visual Impacts* (NYSDEC, 2000), and NYCRR § 1000.24(b)(4), including landmark landscapes; wild, scenic or recreational rivers administered respectively by either the NYSDEC 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 5 miles of the proposed Facility.

Resources located within the 5-mile radius visual study area that may be regionally or locally significant/sensitive were identified in the preliminary visual sensitivity analysis. These resources include one NRHP-eligible site, two NYSDEC Wildlife Management Areas, three hamlets, 63 lakes and rivers, 37 foot trails, nine snowmobile and ATV

trails, 11 NYSDEC State Forests and Preserves, 16 locations with NYSDEC public fishing rights, one public boat launch, six cemeteries, one easement, and one conservation area (Figure 9). Resources of statewide and federal significance were also evaluated using a 10-mile study area. Identified resources within 10 miles of the Facility Site include two NRHP-listed sites, one heritage area, four designated wild, scenic, or recreational rivers, 52 NYSDEC trails, and one location with NYSDEC public fishing right (Figure 9). Appendix J of this PSS includes a table of the visually sensitive resources identified to date, including the resource name and its distance to the proposed Facility. Please also see Figure 9, which depicts all visually sensitive resources identified by the Applicant to date.

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 summary of this outreach process is presented below. Additional detail will be included in the VIA, and the Article 10 Application.

(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*". This outreach is anticipated to include the following:

- 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 Visual Policy; 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. The additional sensitive resources identified by stakeholders in response to the Visual Outreach Letter, will be provided in the Article 10 Application, and evaluated with respect to viewpoint selection.
- Following the visual fieldwork and associated data processing, the Applicant will distribute a memorandum soliciting input on locations to be selected for the development of visual simulations. This memo is anticipated to include a summary of research and consultation undertaken to date; a description of the field

review/photography undertaken for the Facility; a rationale for viewpoint selection; and, identification of candidate viewpoints to be considered by agencies and stakeholders from which a subset will be selected for the preparation of visual simulations. Viewpoint selection will consider 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 sensitive sites identified by 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 two 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 development of 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 within the visual study area that were identified by local stakeholders and state agencies.
3. They illustrate typical views from LSZs within the study areas 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 Section (b)(4) above, viewpoints will be selected, in part, for their open views toward

the Facility Area. Consequently, there will be no significant foreground screening of the proposed Facility in the photographic simulations. Therefore, it is not anticipated that both leaf-on and leaf-off simulations will be required. For public outreach purposes, the Applicant has prepared preliminary simulations of the proposed Facility from six representative viewpoints in the surrounding area, which are included in Appendix K of this PSS. Viewpoints selected for the preliminary simulations were selected based on a combination or the following criteria:

- Provide open views of the proposed Facility
- Areas of high human concentration/activity
- Representation of different landscape characteristics
- Suggestions from municipal stakeholders
- Frequently traveled roadways

(6) Additional Simulations Illustrating Mitigation

Due do the height of the proposed wind turbines, the geographic area covered by the proposed Facility, the abundance of forest vegetation, and the lack of nearby roads and homes, mitigation measures such as screening of individual turbines with earthen berms, fences, or planted vegetation will generally not be effective in reducing turbine visibility. Therefore, additional simulations illustrating mitigation will not be prepared.

(7) Simulation Rating and Assessment of Visual Impact

A panel of 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. The methodology for the rating panel exercise is described in detail above in Section (a)(8).

Results of the rating process for the proposed Facility will be presented in the Article 10 Application, along with an explanation of the factors contributing to visual impact and the significance of that impact. 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 can be highly variable. In general, 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.

(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. These 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, and identify public road constraints (e.g., inadequate turning radii and road widths) and anticipated haul routes within that area. This study will also be included in the Article 10 Application, 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 other Facility components will be finalized after submittal of the Article 10 Application, in coordination with the selected turbine manufacturer, and will be used to prepare the final construction drawings.

(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 within the Transportation Study Area. 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. However, as noted above, the final haul routes will ultimately be defined in coordination with the turbine manufacturer.

(2) School District Bus and Routes

The Article 10 Application will include a review of bus routes for the Sandy Creek Central School District, and the South Jefferson School District within the Transportation Study Area. Data to be collected will include the location of school bus routes, the number of buses, and the timing of student pick-up and drop-off.

(3) Emergency Service Providers

This section of the Article 10 Application will identify the locations of emergency service provider stations (police, fire, ambulance, and hospitals) that serve the Facility Area, including approximate distances to nearest 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 inform the local fire departments about the Facility, the Article 10 process, and how the Applicant typically interacts with fire and emergency service providers during Facility construction and operation. The Applicant will notify all fire departments in the area that there will be an Emergency Action Plan (EAP) developed as part of the Article 10 Application process.

Consultation with each of these service providers will also determine specific routes that are currently used by the providers within the vicinity of the Facility Area. A map of all emergency service provider locations and routes will be provided in the Article 10 Application, and following construction will be posted in the Facility's O&M building (and provided to the emergency service providers). All turbines will have a unique 911 address.

(4) Available Load Bearing and Structural Rating Information

The Applicant's transportation consultant will drive all potential haul routes to identify load restricted bridges and/or roadway weight limits 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 will correspond with local highway supervisors. Such consultations will continue throughout the Article 10 process and through Facility construction. This information will be summarized in the Article 10 Application.

(5) Traffic Volume Counts

The Facility, and the anticipated haul routes, are 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 Trips

An estimate of the number, frequency and timing of construction vehicle trips will be provided based on the above-referenced haul routes, turbine locations, the number of phases, and estimated quantities of materials required to construct the Facility. Exact scheduling of construction work and required vehicles will ultimately 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 estimated 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. These routes will be shown in the Article 10 Application, as described above.

(3) Cut and Fill Activity

The Article 10 Application will provide an estimate of the major cut and fill activity, trip frequency, time of day distribution, and vehicle characteristics based on the preliminary design drawing prepared in support of Exhibit 11. In addition, an estimate of the number of construction vehicles at each turbine site will be included in the Application.

(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.

The Article 10 Application will include a range of the number of trucks to deliver gravel for access roads, that includes estimations of length, width, depth of the road fill, the size, and number of trucks trips needed to deliver materials for access road construction. If the Applicant proposes the use of a portable, temporary concrete batch plant, the traffic evaluation will identify the number of trucks that will deliver raw materials (gravel, sand, cement, water, and fuel) as well as concrete trucks departing the site to deliver concrete to the turbine sites.

As noted previously, final haul routes cannot be determined until the turbine manufacture is selected and has reviewed and approved (or amended) the haul routes. Therefore, the final haul routes will not be included in the Article 10 Application, but will be provided to the Siting Board prior to Facility construction. Conceptual/preliminary haul routes will be identified by an experience transportation engineer, and 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 operation of the Facility will result in a negligible increase in existing traffic volumes during operation. Synchro and HCS software, or a similar software generally accepted by the industry, will be utilized to determine levels of service for linear segments of highways that will be used by construction and delivery vehicles. As indicated above, the Facility is not in a congested urbanized area. Therefore, detailed intersection analysis is not anticipated to be required in the Article 10 Application.

(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 vehicles required for construction and operation of the Facility. A detailed description of potential haul routes will be provided, and will include information regarding roadway condition, width, bridges, culverts, and any observed potential obstacles such as low hanging branches or overhead lines. In addition, an evaluation of the potential for increased traffic incidents/accidents during the transportation of Facility components and general construction activities will be provided in the Article 10 Application.

Once the Facility is commissioned and construction activities are officially concluded, Facility-related traffic will be negligible and likely concentrated around the O&M facility as a result of Facility employees traveling to and from

the Facility. Some of these personnel will also need to visit various turbine locations. Each turbine typically requires routine maintenance visits once every three months, but certain turbines or other Facility components 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 roads are located on (and accessed from) private land owned by a single landowner, public road use for routine maintenance activities will be very limited. If major repairs or maintenance is needed, such as maintenance involving a crane, a Road Use Agreement between the Applicant and the host communities will dictate the procedures to be followed by the Applicant to ensure that any impacts to public roads are avoided or mitigated. Anticipated terms of this agreement will be presented in the Article 10 Application.

(3) Over-sized Deliveries

The Transportation Study will describe the turning radii requirements of anticipated delivery vehicles. A review of aerial photography and online street view maps, in conjunction with driving all potential delivery routes will be conducted to identify physical conditions that could restrict the delivery of Facility components. Required temporary improvements will be identified and shown on a location map that 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 culverts.
- Re-direction of ditch lines.
- Construction of a suitable roadway surface to carry 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 anticipates entering into 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. These and other commitments anticipated to be included in the Road Use Agreement as a means of mitigating traffic and transportation impacts will be included in the Article 10 Application.

Additional detail regarding measures to mitigate traffic and transportation impacts may be included in the Article 10 Application and the Transportation Study.

(5) Road Use and Restoration Agreements

This section of the Article 10 Application will describe 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 New York State Department of Transportation (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 highway departments of the municipalities within and adjacent to the Facility Area. During these meetings, the Applicant will discuss the proposed Facility, the Article 10 process, road use agreements, and the 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 will be impacted by the proposed Facility.

(f) Federal Aviation Administration Review

The Applicant will submit applications for FAA determinations. This submission will initiate formal consultation and review of the proposed turbine locations by the Department of Defense (DoD), and is coordinated by the FAA. The results of the FAA review and formal consultation will be discussed in the Article 10 Application, or submitted at a later date when they become available.

(1) Department of Defense Review

The Applicant will submit applications for FAA determinations. This submission initiates formal consultation and review of the applications by the DoD which is coordinated by the FAA. The results of the FAA review and formal determinations will be discussed in the Article 10 Application.

(2) Consultation with Nearby Airports/Heliports

Letters regarding the Facility's development and status will be sent to the Tug Hill Farm 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. 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 Jefferson and Oswego 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 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. Under some circumstances, wind turbines can cause interference with Doppler radar.

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, including a discussion of potential impacts to the New York State Mesonet system resulting from operation of the Facility.

(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. Given the Project's proximity to Fort Drum, consultations between the Applicant and the base may be necessary. 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.

(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 Jefferson and Oswego Counties. Information regarding population, educational attainment and race within the Town of Worth, Jefferson County and Town of Redfield, Oswego County is presented in Table 8, below:

Table 8. Demographic Information

Population	*Worth*	*Redfield*
2010 Total Population [1]	231	550
2015 ACS 5-Year Population Estimate	202	555
Median Age	40 yrs	45.4 yrs
Educational attainment		
% high school graduate or higher	85.0%	87.8%
Total housing units	217	641
Median household income	$60,625	$49,625
Foreign born population	1	4
Individuals below poverty level	23.3%	19.1%
Veterans	23	44
Race and Hispanic Origin		
White alone	199	555
Black or African American alone	0	0
American Indian and Alaska Native alone	0	0
Asian alone	0	0
Native Hawaiian & Other Pacific Islander	0	0
Some Other Race alone	0	0
Two or More Races	3	0
Hispanic or Latino (of any race)	0	7
White alone, Not Hispanic or Latino	199	548

[1] Demographic profile of 2010 US Census. All other data from the 2011-2015 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 will estimate the dollars spent on labor and professional services by the Applicant, consultants, and construction contractors, as well as operations and maintenance (O&M) personnel. On-site labor impacts do not reflect material expenditures.
- Local revenue and supply chain impacts: These impacts will 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 will 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 Facility. 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 proposed 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 will allow impacts to be estimated for both the construction and operation phases of the proposed Facility. The Article 10 Application will present the results of the JEDI model.

(a) Construction Workforce

The Article 10 Application will identify the estimated workforce required for construction of 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. An estimate of the peak construction employment levels will also be provided.

(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, along with a description of the economic multiplier factors or other assumption(s) used will be described in the analysis.

(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. This will include an estimate of the number of jobs and the on-site payroll, by discipline, during a typical year, once the plant is in operation. The Article 10 Application will also provide an estimate of other expenditures likely to be made in the vicinity of the Facility during its 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 taxing jurisdictions:

- Jefferson County
- Oswego County
- Town of Worth
- Town of Redfield
- South Jefferson Central School District
- Sandy Creek Central 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, including estimated annual payments to each of these 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. Additional detail will be provided in the Article 10 Application.

(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 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 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 will initiate 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. Results of this consultation will be presented in the Article 10 Application.

(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 project, unless, to the extent practicable, the project is consistent with the smart growth criteria set forth in ECL § 6-0107.

Although there are no state infrastructure agencies approving, undertaking, or financing as defined in the ECL, 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 no potential Environmental Justice Areas in the Study Area. The nearest Potential Environmental Justice Area to the Facility is in Watertown, approximately 6 miles from the Facility Area boundary (see Figure 10). 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 Area described above, the Facility is not expected to have an impact on this or any other Environmental Justice Areas. Therefore, 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 30-40 years) including site restoration.

(b) Decommissioning and Restoration Plan

Megawatt-scale wind turbine generators typically have a life expectancy of 30 to 40 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, resulting in the useful life of a Facility in the range of 30 to 40 years. 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, collection substation, and permanent meteorological towers will be removed.
- Foundations and collection lines buried above a depth of 36 inches 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 Town of Worth in Jefferson County and the Town of Redfield in Oswego County, New York.

During preparation of the Article 10 Application, the Applicant will consult with the Town of Worth, the Town of Redfield, Oswego County and Jefferson County to correctly identify all local ordinances, laws, resolutions, regulations, standards or other requirements applicable to the construction or operation of the proposed Facility 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 complete copy of all local ordinances, laws, resolutions, regulations, standards or other requirements applicable to the construction or operation of the proposed Facility will be provided in an appendix to the Article 10 Application.

The Town of Worth has a zoning ordinance that was adopted in 1977 (see Appendix E). The Town of Redfield does not currently have zoning regulations; however, the Town of Redfield is in the process of adopting zoning regulations and it is expected that the Town of Redfield will enact zoning regulations prior to the filing of the Article 10 Application. The Article 10 Application will be limited to the identification of local ordinances, laws, resolutions, regulations, standards or other requirements applicable to the construction or operation of the proposed Facility in effect at the time of the filing of the Application.

(a) List of Applicable Local Ordinances and Laws of a Procedural Nature

The Article 10 Application will identify the local ordinances, laws, resolutions, regulations, standards, and other requirements of a procedural nature required for the construction or operation of the proposed Facility.

These local procedural requirements identified under this section 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 or Counties require permits or other approvals for work performed on Town or County roads or within the municipalities' right-of-way including the need for any oversized or overweight vehicle permits, it is the Applicant's intent to request that the Board expressly authorize the Towns or Counties to issue such permits or alternatively enter into road use agreements with the Applicant.

The Applicant will work with the Towns and Counties 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.

To the extent the Towns or Counties require permits or other approvals for the Operations and Maintenance (O&M) building (i.e. local review of building permits, water and wastewater treatment permits, and/or occupancy permits); it is the Applicant's intent to request that the Board expressly authorize the municipalities to issue such permits.

(c) Identification of Municipal Agency Qualified to Review and Approve Building Permits

The Applicant will consult with the Town Redfield and the County of Jefferson[6] to identify who is 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 nature of the Facility, there is the potential that the Applicant will arrange with the municipalities 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 municipalities 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 municipalities and the process for review.

As stated above, to the extent the Towns or Counties require permits or other approvals for the Operations and Maintenance (O&M) building (i.e. local review of building permits, water and wastewater treatment permits, and/or occupancy permits); it is the Applicant's intent to request that the Board expressly authorize the municipalities to issue such permits.

(d) List of Applicable Local Ordinances and Laws of Substantive Nature

The Article 10 Application will identify the local ordinances, laws, resolutions, regulations, standards, and other requirements of a substantive nature required for the construction or operation of the proposed Facility.
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.

[6] The County of Jefferson is 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 in the Town of Worth.

[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.

(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. 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 following table:

Table 9. 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
Board on Electric Generation Siting and the Environment	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 will consult 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.

State Agency	Requirement	Discussion
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.
New York State Department of Environmental Conservation	Permit for Freshwater Wetlands 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 Department of Environmental Conservation	Air Registration, ECL Article 19, 6 NYCRR Subpart 201-4	An air registration is required for non-exempt/non-trivial air emission sources that are minor sources (i.e., have potential emissions below the major source thresholds) or that have actual air emissions that are less than 50% of the major source threshold. Construction of the Facility will require the use of a large (approximately 1,000 brake horsepower) generator to power the construction equipment. Because the generator will be on site for longer than 90 consecutive days, the generator is not exempt as a temporary emission source and so will require an air registration. However, the procedural requirements are supplanted by Article 10.
New York State Public Service Commission	Certificate of Public Convenience and Necessity NY PSL §68	No electric corporation shall begin construction of an electric plant with a generating capacity of at least 80 MW without first having obtained the permission and approval of the commission. While the approval of incorporations, franchises, financings and transfers under PSL 68, 69 and 70 are not for the construction or operation of a facility (see 16 NYCRR 1000.2(ao)), the requirement for a Certificate under Section 68 for "construction" is a State law for the "construction and operation" of the Facility. However, the procedures for Commission approval are supplanted by Article 10.
Department of Transportation	Special Use Permit for Oversize/Overweight Vehicles	Special hauling permits from the New York State Department of Transportation (NYSDOT) are required for loads that exceed legal dimensions or weights. Thus, transport of the blades, nacelles, tower sections, and cranes will require a variety of special hauling permits. Actual loads and permits will depend on the specific turbine supplier, crane equipment chosen, and degree of disassembly of the crane. These permits are typically obtained by the contractor immediately prior to construction. Although these ministerial permits are supplanted by Article 10, it is anticipated that the Applicant will request that the Siting Board authorize the DOT to issue these permits because of the timing of these submissions and the likelihood that the information will not be available from the contractor until post-Certification.

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. As part of the Article 10 Application, substantive requirements associated with necessary state approvals, consents, permits, certificates, or other conditions will be provided in a summary table demonstrating the degree of compliance with the substantive provision. The Article 10 Application will clarify which of the identified requirements apply to the proposed Facility based on the final layout and consultation with the appropriate state agencies and authorities.

- 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 Section 14.09 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)
- Air Registration, ECL Article 19, 6 NYCRR subpart 201-4 (Minor Facility Registration)
- Endangered and Threatened Incidental Take Permit Standards, Article 11, 6 NYCRR 182.12 (Incidental Take Permit Standards)

(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

In order to deliver the electricity from the Facility to the New York State power grid, the Applicant proposes to construct an approximately 16-mile 345 kV transmission line, and an associated POI substation, on a yet determined site in either the Town of Amboy, Oswego County, or the Town of Camden, Oneida County, New York. Since the design of the transmission line is greater than 100 kV and the length exceeds 10 miles, this component of the Facility is considered a "Major Utility Transmission Facility" and will be regulated under, and subject to, Article VII of the PSL. The need for, and environmental impact, of the Transmission Facility will be evaluated in a separate Article VII Application.

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 Exhibit 32 of the Article 10 Application.

2.33 OTHER APPLICATIONS AND FILINGS

(a) Other Applications or Filings Concerning the Subject Matter of the Proceeding

Besides the RTF Article VII Application and subject to 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., Mad River Wind).

(b) Federal Permits, Consents, Approvals, or Licenses Required for Construction or Operation

Table 10 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 10. 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 404 or Nationwide Permit for Placement of Fill in Federal Jurisdictional Wetlands/Waters of the U.S.; • Compliance with National Environmental Protection Act ("NEPA"); • Compliance with Section 106 of the National Historic Preservation Act ("NHPA"); • Compliance with Section 7 of the Endangered Species Act.
Federal Aviation Administration (FAA)	TBD	Lighting Plan and Clearances for Potential Aviation Hazard. As part of the FAA process.
Department of Defense (DoD)	Concurrent with FAA submission	The DoD Siting Clearinghouse will perform a review of the project to determine if the proposed project will have an adverse impact on military operations and readiness pursuant to Part 211 of Title 32 of the Federal Code of Regulations.
National Telecommunications and Information Administration (NTIA)	TBD	NTIA oversees consultation with the Interdependent Radio Advisory Committee (IRAC) to identify any concerns regarding radio frequency blockage. This includes consultation with the NEXRAD Program, via the Radar Operations Center (ROC).
U.S. Fish and Wildlife Service (USFW)	TBD	Effect determination pursuant to Section 7 of the Endangered Species Act (associated with Section 404 Permit).

[1] The anticipated application submittal date will be identified in the Article 10 Application.

2.34 ELECTRIC INTERCONNECTION

Interconnection of the Facility to the existing electric transmission system will involve the collection of the electricity generated at the individual turbines utilizing an on-site system of underground and overhead collection lines stepping up the power at an onsite collection substation, and then transmitting the power along a proposed high voltage transmission line to an interconnection point, still to be determined, on National Grid's existing Marcy-Volney 345 kV transmission line. Exhibit 34 of the Article 10 Application will describe the proposed on-site collection system in detail, as described below. It will also include an overview of the proposed 345 kV transmission line that will connect the Mad River Facility to the existing power grid. A separate Article VII filing will contain a detailed description of the proposed transmission line and its means of interconnection with the existing Marcy-Volney 345 kV transmission line.

(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 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 three 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 three ACSR (aluminum conductor, steel reinforced) conductors. The size will range from 795 to 1272 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 proposed transmission line transmission line will be addressed in detail in a separate Article VII filing.

(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 equipment to be installed in the collection substation will be described in the Article 10 Application. The Application will also include a plan/overview of collection substation. The location of the POI substation will be shown in the Article 10 Application, but details regarding its design and equipment will be addressed in a separate Article VII filing.

(j) Any Terminal Facility

The only terminal facilities expected are the POI and collection substation and will be described/shown as described 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 Mad River Wind Farm.

(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 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 future EMFs that would result from construction and operation of the Facility. For the purposes of calculations, the ROW is assumed to be 75 feet (37.5 feet from centerline) for all the segments. The Article 10 Application will identify the name and calculation number of each segment.

(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 separately.

(4) Magnetic Field Calculation Tables and Field Strength Graphs

The EMF study will model 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 separately.

(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

An emergency back-up generator will be installed at the O&M facility to provide emergency power and lighting for the O&M building and to support Control/SCADA operations. A second emergency back-up generator will be installed at the collection substation to provide emergency power and lighting. Both generators are anticipated to use propane as a fuel source, which would be contained in 500-gallon tanks onsite. Tanks will be registered/permitted as required by applicable local, state, and federal regulations.

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 Jefferson County Department of Health and the Oswego 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 Jefferson County Department of Health and the Oswego 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 National Grid 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 facility improvements.

(a) Operational Data Transmitted to NYISO

The Facility's generating operational data will be transmitted to NYISO/National Grid through a fiber-optic shield wire from the collection substation to 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 National Grid, 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 facility, 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 Article 10 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

The Mad River Windfarm (the Facility) is a utility scale wind project located in Jefferson and Oswego Counties, New York, in the Towns of Worth and Redfield. The proposed Facility Area (see Figure 2) includes approximately 19,020 acres of private land currently used for timber production.

This Preliminary Scoping Statement has been prepared for the Facility, which is initially designed to include 88 turbines with a nameplate capacity of up to 350 MW. Additional Facility components will include: collection lines (underground and overhead), a collection substation, access roads, meteorological towers, construction staging areas, a temporary concrete batch plant, an O&M facility, and if necessary, the Winter Maintenance 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 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 December 16, 2016, comments on the PIP were received from the New York State Department of Public Service (DPS) on January 17, 2017, and the PIP was updated, finalized and filed by the Applicant on February 17, 2017. 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=16-F-0713&submit=Search
- http://www.avangridrenewables.us/madriver/

In addition to the websites identified above, the Applicant has established a toll-free number (1-844-308-4616) to call with any questions and comments on the Facility, set up a Facility Facebook page through which stakeholders and the public can submit comments and questions on the Facility, and opened a local office in the Town of Lowville. The address of the local office is 7560 North State Street, Suite 1, Lowville, New York 13367. It is currently open Tuesdays and Thursdays from 10 a.m. to 2 p.m., or by appointment. An additional local office has been established in the Town of Redfield, New York. The address for that office is 5010 County Route 17 Redfield, New York 13437, and it will be open Tuesdays and Wednesday 9 a.m. to 2 p.m., and by appointment. The local Redfield office is expected to be open at the start of 2018. The Applicant has also held several public meetings/open houses, which provided answers to questions from area residents, as well as the following information:

- Facility and company fact sheet
- Article 10 Consumer Presentation
- Preliminary Turbine Layout Maps
- An overview of anticipated Economic Benefits
- Information specific to sound and health effects

The Applicant has provided paper copies of all documents presented at the open houses at the following repositories:

- Worth Town Hall
  24609 County Route 189
  Rodman, New York 13682
- Redfield Town Hall
  4830 County Route 17
  Redfield, New York 13437

Prior to 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 stakeholders of the comment period timeframe. The Applicant will also continue to attend municipality meetings and will hold at least one additional open house prior to submitting the Application. In addition, the Applicant will 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

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 11.

Table 11. PSS Content Matrix

PSL 1000.5(l) Section	Requirement	Corresponding Section of the Mad River 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 Mad River 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 Mad River 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 Mad River 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(I) Section	Requirement	Corresponding Section of the Mad River 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 B	As of the date of filing this PSS, no material issues have been raised by the public or affected agencies. However, Appendix B of the PSS includes the most recently filed PIP Tracking 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 Mad River 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.

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