



## Preliminary Scoping Statement

# North Ridge Wind Farm

St. Lawrence County, New York

**Prepared For:**

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May 2017

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**May 2017**

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## COMMONLY USED TERMS

<u>Facility:</u>	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.
<u>Facility Area:</u>	An area of land within which all Facility components will ultimately be located (depicted on various figures included in this Preliminary Scoping Statement).
<u>Facility Site:</u>	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	Avangrid Renewables LLC
BBA	Breeding Bird Atlas (New York State)
BBS	Breeding Bird Survey
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
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 (the “Facility”) under Article 10 of the Public Service Law (“PSL”), the North Ridge Wind Farm. Pursuant to the rules of the New York State Board on Electric Generation Siting and the Environment (“Siting Board”), applicants proposing to submit an Application to construct a major electric generating facility under Article 10 must submit a Preliminary Scoping Statement (PSS). Under 16 NYCRR § 1000.5(c), an applicant can file a PSS with the Siting Board no earlier than 150 days following the submission of a Public Involvement Program (PIP) Plan. A PIP for the North Ridge Wind Farm was filed on May 9, 2016. This PSS for the North Ridge Wind Farm is intended to satisfy the filing requirements set forth at 16 NYCRR § 1000.5(c). Pursuant to 16 NYCRR 1000.5(g), within 21 days after the filing of this PSS, any person, agency or municipality may submit comments on this PSS by serving such comments on the Applicant and filing a copy with the Secretary. Further details for filing comments on this PSS are provided in the Notice, which is included in Appendix A of this PSS.

### 1.1 FACILITY DESCRIPTION

The North Ridge Wind Farm (**Facility**) is a proposed 100 megawatt (MW) wind powered electric generating project located within the Towns of Hopkinton and Parishville, St. Lawrence County, New York. The regional Facility location and Facility Area are depicted on Figures 1 and 2, respectively. The Facility will be located on leased private land that is rural in nature. The actual footprint of the proposed Facility components will be located within the leased land, and will enable farmers and landowners to continue with farming operations or other current land uses such as forestry practices. The locations of Facility components and the parcels that host them (the “Facility Site”) 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 up to 40 wind turbines, together with a system of associated 34.5 kV collection lines (below grade and overhead), a network of access roads, up to 3 permanent meteorological towers, one operation and maintenance (O&M) building, and temporary construction staging/laydown areas. Please note that while the preliminary layout depicted on Figure 3 shows 41 potential turbine sites, no more than 40 of these sites will be selected for actual turbine installation. To deliver electricity to the New York State power grid, the Applicant proposes to construct a collection substation adjacent to a National Grid interconnection switching station which will

interconnect with National Grid's Colton to Malone #3 115 kV transmission line. A 34.5 kV collection system will extend from the collection substation to the wind turbines.

The Facility will have a nameplate capacity of up to 100 MW, and is expected to operate at an annual net capacity factor (NCF) of approximately 32%. over the course of a full calendar year the Project is expected to produce up to 280,000 megawatt hours (MWh) of energy (i.e., 100 MW x 24 hrs/day x 365 days x 32%). This will be enough electricity to meet the average annual consumption of approximately 25,000 households, based on an average annual electricity consumption for a U.S. residential utility customer of 10.932 megawatt hours (MWh), in 2014, and approximately 39,000 New York households, based on the average New Yorker's annual electricity consumption (EIA, 2015).

## **1.2 FACILITY BENEFITS**

Large scale renewable projects, such as the 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. 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 recent 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 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 at 5-24 to 5-25. Contributions from land-based wind will be particularly important in the short term, since the CES assumes no offshore wind development by 2023,<sup>1</sup> notes that development of new large-scale hydropower dams or nuclear facilities is unlikely,<sup>2</sup> 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 2,137 MW in renewables (NYSERDA, 2016). 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.

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<sup>1</sup> CES Order at 61.

<sup>2</sup> 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.

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-0268). The initial draft of the PIP was submitted to the Siting Board on May 9, 2016, comments on the PIP were received from the New York State Department of Public Service (DPS) on June 8, 2016, and the PIP was updated, finalized and filed by the Applicant on July 11, 2016. 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-0268>) and on the Facility-specific website maintained by the Applicant (<http://www.avangridrenewables.us/northridge/index.html>).

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

The Applicant has established the following public/stakeholder interaction elements that will carry on through the duration of the Article 10 Process

- Facility Representative (for the public and stakeholders to contact with questions, concerns, etc.):  
 Jenny Briot  
 Avangrid Renewables  
 7560 North State Street, Suite 1  
 Lowville, NY 13367  
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  - Hopkinton Reading Center  
 7 Church Street  
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 Phone: (315) 328-4113  
 Fax: (315) 328-4113
  - Potsdam Public Library  
 2 Park St.  
 Potsdam, NY 13676  
 Phone: (315) 265-7230
  - Hepburn Library  
 84 Main St.  
 Colton, NY 13625  
 Phone: (315) 262-2310

In support of this PSS, the Applicant has consulted with the public, affected agencies and other stakeholders, as required by 16 NYCRR § 1000.5(b). All such consultations have been documented in a Meeting Log maintained by the Applicant, which is updated and submitted to the Siting Board on a regular basis (also available on the case record website referenced above). The most recent Meeting Log was filed with the Siting Board in September 2016, and is also included with this PSS as Appendix B. The Applicant will continue to prepare and file a Facility-specific Meeting Log on a regular basis throughout the duration of the Article 10 review process. Additional details regarding PIP implementation and outreach to stakeholders is provided in Section 2.2 of this PSS.

## 1.4 POTENTIAL IMPACTS

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

Potentially positive impacts to the local community include significant long-term economic benefits to participating landowners, as well as to the Towns of Hopkinton and Parishville, the local school districts, and St. Lawrence County. When fully operational, the Facility will provide up to 100 MW of electric power generation with no emissions of pollutants or greenhouse gases to the atmosphere and without the need for the use of significant quantities of water. These potentially beneficial impacts will be assessed in the Application by, among other things, a socioeconomic study analyzing 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 in the Application based on a review of recent State policy determinations and assessments and a review of State energy planning objectives.

Despite the positive effects anticipated as a result of the Facility, its construction and operation will necessarily result in certain unavoidable impacts to the environment. 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 building, 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 will increase the potential for wind/water erosion and sedimentation into surface waters, particularly in areas with moderate erosion hazards.

During construction, potential direct or indirect impacts to wetlands and surface waters may also occur. These impacts will be assessed through delineation and field studies that are detailed in sections 2.22 and 2.23 of this PSS. Direct impacts, including clearing of vegetation, earthwork (excavating and grading activities), and the direct placement of fill in wetlands and surface waters, are typically associated with the development of access roads and workspaces around turbines. The construction of access roads, and possibly the upgrade of local public roads, is anticipated to result in both permanent (loss of wetland/surface water acreage) and temporary impacts to wetlands/streams. The development and use of temporary workspaces will result in only temporary impacts to wetlands/streams to maximum extent practicable. The installation of above-ground or buried electrical lines will temporarily disturb streams and wetlands during construction as a result of clearing (brushhogging, or similar clearing method). In addition, potential conversion of wetland communities as a result of construction activities (e.g. forested to scrub-shrub), and soil disturbance from burial of the electrical 34.5 kV collector lines or from pole installation along

the overhead collection lines may occur. Indirect impacts to wetlands and surface waters may result from sedimentation and erosion caused by adjacent construction activities (e.g., removal of vegetation and soil disturbance).

Facility construction will also result in temporary and permanent impacts to vegetation and wildlife habitat. However, the process for siting Facility components is designed to minimize impacts to undisturbed habitat. Construction-related impacts to vegetation include cutting/clearing, removal of stumps and root systems, and increased exposure/disturbance of soil. Along with direct loss of (and damage to) vegetation, these impacts can result in a loss of wildlife food and cover, increased soil erosion and sedimentation, a disruption of normal nutrient cycling, and the introduction or spread of invasive plant species. Habitat fragmentation is also a potential Facility-related impact, which divides 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).

In addition to construction impacts, impacts associated with operation and maintenance of the Facility include turbine visibility from various locations within the host and adjacent communities. Facility operation may also produce shadow flicker and sound at some receptor locations (residences), and result in a permanent loss of forest land, wildlife habitat alteration, and some level of avian and/or bat mortality associated with bird/bat collisions with the turbines. Additional information regarding potential Facility impacts is included in Section 2.0 below. Potential impacts 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 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 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 measures for wind-powered electric generation projects, the following information is provided in accordance with 16 NYCRR § 1000.5(l)(2)(v) and (vi):

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

- Siting turbines to minimize noise, shadow flicker, and public safety concerns.
- Using existing farm roads or logging roads for turbine access whenever possible, to minimize impacts to soils, ecological and agricultural resources.
- Minimizing the number of stream and wetland crossings.
- Designing all electrical lines in a manner that minimizes any possibility of stray voltage.
- Siting turbines (where feasible) in open field areas to minimize forest clearing and impacts to habitat.
- Minimizing the linear distance 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.
- Utilizing the New York State Department of Agriculture and Markets (NYSA&M) guidelines to minimize impacts on agricultural land and farming practices.

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

- Developing and implementing various plans to minimize adverse impacts to air, soil, and water resources, including a dust control plan, sediment and erosion control plan, and Spill Prevention, Control, and Countermeasure (SPCC) plan.
- Documenting existing road conditions, undertaking public road improvement/repair as required to mitigate impacts to local roadways, and 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 ensure compliance with all certificate and permit conditions, including 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 Plan to address local landowner concerns throughout Facility construction and operation.
- Preparing a historic resource mitigation program to be developed in consultation with the State Historic Preservation Office (SHPO).
- Preparing a compensatory wetland mitigation plan, if required, to mitigate impacts to streams and wetlands.
- Entering into a payment in lieu of taxes (PILOT) agreement with the local taxing jurisdictions to provide a significant and 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 USA. 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 16NYCRR § 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 sections of this PSS that provide the required information.

## 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., Ste 200, 100 Mastonford Road, Radnor, PA 19087.

#### (2) Facility Website

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

#### (3) Public Contact

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

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Avangrid Renewables  
7560 North State Street, Suite 1  
Lowville, NY 13367

Toll Free Number: 1-844-308-4616

Local Number: 315-399-0486

[NorthRidgeWind@avangrid.com](mailto:NorthRidgeWind@avangrid.com)

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 a Oregon limited liability company. Atlantic Wind was formed in August, 2008. Avangrid Renewables LLC is the sole member of Atlantic Wind, LLC, which has a business address of 2 Radnor Corporate Center, Suite 200, 100 Mastonford Road, Radnor, PA 19087.

(7) Documents of Formation

The Facility will be owned by Atlantic Wind, LCC, 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 a utility-scale wind project located in St. Lawrence County, New York. Project facilities will be located in two towns: Hopkinton and Parishville. The regional Facility location and general Facility Area is depicted on Figures 1 and 2, respectively. The Facility will be located on leased private land that is rural in nature. The actual footprint of the proposed Facility components will be located within the leased land, and will enable farmers and landowners to continue with farming operations or other current land uses such as forestry practices.

The Facility will consist of up to 40 utility-scale wind turbines. A preliminary turbine layout is depicted on Figure 3. The total size of the facility will be a maximum of 100 MW. Please note that while the preliminary layout depicted on Figure 3 shows 41 potential turbine sites, no more than 40 of these sites will be selected for actual turbine installation. Other proposed components will include: access roads, above and underground collection lines, a collection substation, a point of interconnect (POI) substation, up to three permanent meteorological (met) towers, staging/laydown yards, and an O&M building.

The Applicant is considering a range of turbine models and capacities that are suitable for the Facility. Those models will be identified in the Application. Ultimately, the turbine model selected may be one presented in the Application or may be another turbine model that will not have greater impacts than those analyzed in the Application. In no case will the Facility consist of more than 40 turbines or be greater than 100 MW or be taller than 150 meters. For example, if a 3.0 MW turbine is analyzed and ultimately selected, no more than 33 turbines will be built, whereas if a 2.5 MW turbine is selected, then 40 turbines will be built. The Application will clearly describe the range of project sizes based on the size of turbine models under consideration.

The Article 10 Application will clearly depict all 40 turbine locations, along with the footprint of all other Facility components including access roads, underground and overhead collection lines, temporary laydown yards, met towers, collection and POI substations, and the O&M building. The linear distances of all components will be provided in the Application based on the actual footprint that will be presented and analyzed.

(b) Brief Summary of the Application Contents

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

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

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

The initial draft of the PIP was submitted to the Siting Board on May 9, 2016, comments on the PIP were received from the New York State Department of Public Service (DPS) on June 8, 2016, and the PIP was updated, finalized and filed by the Applicant on July 11, 2016.

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

To date, the Applicant hosted a public open house in the Town of Parishville on June 15, 2016, a formal presentation and question and answer session in the town of Hopkinton on September 22, 2016, and Open Houses in Hopkinton on the afternoon and evening of March 7, 2017.

At the open house in June 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. At the open houses in March, additional information including a preliminary turbine location layout, visual simulations, and information specific to economic benefits, sound, and health effects also were provided. The open houses and formal presentation all 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.

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

- Hopkinton Reading Center  
7 Church Street  
Hopkinton, NY 12965  
Phone: (315) 328-4113  
Fax: (315) 328-4113
- Potsdam Public Library  
2 Park St.  
Potsdam, NY 13676  
Phone: (315) 265-7230
- Hepburn Library  
84 Main St.  
Colton, NY 13625  
Phone: (315) 262-2310

During the time before the submission of the Article 10 Application, the Applicant intends to continue stakeholder outreach. The Applicant will also do a mass mailing to all stakeholders at the time of the submission of the PSS to provide an update on the Facility and invite comments and remind the stakeholders of the comment period timeframe. The Applicant will continue to attend municipality meetings and will hold one additional open house (scheduled for late summer or early 2017) prior to submitting the Article 10 Application. Finally, the Applicant will

also attempt to identify additional community events in which it would participate. All outreach efforts will be tracked in the meeting logs.

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

The Applicant will continue to engage stakeholders following submission of the Application. The Applicant will continue to attend Town Board meetings, 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 any snowmobile or all-terrain vehicle (ATV), and other trail use groups active within the Facility area regarding their trail network and use. The Applicant plans to continue conversations with these organizations following submission of the Application to ensure that there are no conflicts between use of the trails and the Facility.

All of the above continued PIP activities will continue to be tracked and filed in the monthly tracking report. The Applicant will respond to suggestions and comments through a detailed response to the commenter and will summarize the response in the monthly tracking report.

(e) Brief Overall Analysis

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

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

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

## **2.3 LOCATION OF FACILITIES**

### **(a) Topographic Maps**

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

#### **(1) Proposed Major Electric Generating Facility Locations**

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

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



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

In addition, a preliminary wind turbine layout it is shown on Figure 3 of this PSS.

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

## (2) Interconnection Location

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

## (3) Location of Ancillary Features

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

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

The Facility does not include any components that are subject to Article VII of the Power Siting Law (PSL).

## (5) Study Area

The Facility has been and will be subject to a number of studies in support of the Article 10 Application. A single, universal study area will not be utilized for all studies/analyses. Rather, the various studies have applied

resource-specific study areas, which will be described briefly in this section of the Article 10 Application (and are described where appropriate below).

(b) Municipal Boundary Maps

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

(c) Description of Proposed Facility Locations

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

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

(d) Facility Shapefiles

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

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

(e) Turbine Coordinates and Surface Elevation

The Article 10 Application will provide the latitude and longitude coordinates for each proposed Facility wind turbine, along with the approximate ground surface elevation as derived from 2-foot survey data that has been collected for the Facility.

## 2.4 LAND USE

### (a) Map of Existing Land Uses

Existing land uses within a 5-mile radius of the Facility will be mapped in the Article 10 Application using publicly available data, including the classification codes of the New York Office of Real Property Services (NYSORPS). The following land uses occur within the Facility boundary: 100 – Agricultural; 200 – Residential; 300 – Vacant Land; 400 – Commercial; 500 – Recreation and Entertainment; 600 – Community Services; 700 – Industrial; 800 – Public Services; and 900 – Wild, Forested, Conservation Lands and Public Parks.

The Map of Existing Land Uses will include: (i) land subject to a forest management plan pursuant to Real Property Tax Law Section 480-a; (ii) agricultural district land at the Facility Site, which is established pursuant to the New York State Department of Agriculture and Markets (NYSA&M) Law; and (iii) any land subject to a conservation program. To determine the location of any conservation program lands in the vicinity of the Facility Site, publicly available resources will be consulted, 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). This information will be obtained from coordination with local utilities, and private firms that maintain databases with this information. Data on natural gas and oil wells within the Facility vicinity has also been obtained from the NYSDEC and NYDPS.

### (c) Tax Parcel Map

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

(d) Zoning District Map

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

(e) Comprehensive Plan

The proposed Facility is located in the Towns of Hopkinton and Parishville in St. Lawrence, New York. Both St. Lawrence County and the Town of Parishville have adopted comprehensive plans. The Town of Hopkinton has not adopted a comprehensive plan. St. Lawrence County adopted a compressive plan in 1978, and the Town of Parishville adopted a comprehensive plan in 1996. The Article 10 Application will include a review of the St. Lawrence County and Parishville Comprehensive Plans. The Article 10 Application will also discuss whether the proposed Facility land use is consistent with that plan.

(f) Map of Proposed Land Uses

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

(g) Map of Specially Designated Areas

There are no designated coastal areas, inland waterways, agricultural districts, special flood hazard areas or Local Waterfront Revitalization Program (LWRP) communities, and other specially designated areas occurring within a 5-mile radius of the Facility. There is one designated Critical Environmental Areas (CEAs) in St. Lawrence County - The Great South Woods of the Wilderness, which is located in the Town of Colton. 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**

<b>Mapping Requirement</b>	<b>Source</b>
Inland waterways	NYS GIS Clearinghouse
Groundwater management zones	NYS GIS Clearinghouse
Agricultural districts	NYS GIS Clearinghouse
Flood hazard areas	NYS GIS Clearinghouse, FEMA
Critical Environmental Areas	NYSDEC

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

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

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

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

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

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

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

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

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

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

- Town of Parishville Comprehensive Plan
- St. Lawrence County Agricultural Development Plan

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

The NYSDA&M has promulgated a guidance document that applies to Facility components sited within agricultural lands. The *Guidelines for Agricultural Mitigation for Wind Power Projects* include siting goals, construction requirements, restoration requirements, and post-construction monitoring and remediation requirements. To minimize and/or mitigate impacts to active agricultural land and farming operations, Facility siting and construction will comply with NYSDAM agricultural protection guidelines to the maximum extent practicable. Please note that based on recent consultation with NYSDAM personnel, complete adherence to the *Guidelines for Agricultural Mitigation for Windpower Projects* is not necessarily required. The Applicant will consult with NYSDAM personnel, and will provide additional information regarding this consultation in the Article 10 Application.

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

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

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

The Facility's proposed underground collection lines will not prohibit the continued use of the land in agricultural areas as the impact will only be a temporary disturbance, and the line will be buried deep enough so as not to interfere with agricultural forestry activities. Compatibility of proposed underground interconnections and temporary disturbances associated with construction will be addressed in the Article 10 Application.

(l) Conformance with the Coastal Zone Management Act

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

(m) Aerial Photographs

Aerial photographs within a 1-mile radius of the Facility will be included with the Article 10 Application. This imagery was collected in the Fall of 2016 during aerial surveys conducted by the Applicant.

#### (n) Aerial Photograph Overlays

The Article 10 Application will map Facility components overlaid on aerial photographs, along with the proposed limits of vegetation and soils disturbance. These maps will be created using ArcGIS software. Line symbols will be used to depict the centerlines of proposed access roads and electrical collection lines; point symbols to depict turbine and permanent meteorological tower locations; and polygon symbols to depict the substation, operation and maintenance buildings, and construction laydown areas. Buffers around each Facility component will show the limits of clearing and disturbance required (e.g., 20-foot permanent width and 75-foot temporary width for access roads). This mapping will likely be prepared using 0.5-meter resolution natural color orthoimagery from the USDA's NAIP captured during the 2015 growing season.

#### (o) Source of Aerial Photographs

Aerial photographs were collected in the Fall of 2016 during aerial surveys conducted by the Applicant.

#### (p) Community Character

The Facility is proposed to be located in a largely rural portion of St. Lawrence County, which is characterized by a mix of agricultural and forested land.

The Article 10 Application will provide a description of community character that includes defining features and interactions of the natural, built, and social environment, and takes into account local land use and zoning. The Facility will introduce additional visible elements (i.e., wind turbines) into the existing landscape, which could be considered a change in community character in some instances. However, the visibility and visual impact of the wind turbines will be highly variable based upon distance, number of turbines in the view, weather conditions, sun angle, extent of visual screening from topography and vegetation, scenic quality, viewer sensitivity and/or existing land uses. 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 Potsdam Municipal and Massena International Airports, along with local airstrips and heliports, will be addressed in Exhibit 25 (Effects on Transportation) as required by the Article 10 regulations.



## **2.5 ELECTRIC SYSTEM EFFECTS**

### **(a) System Reliability Impact Study**

A System Reliability Impact Study (SRIS) was initiated for the Facility on behalf of the New York Independent System Operator (NYISO) in early 2017. The SRIS will be included with the Article 10 Application, but will be filed separately under confidential cover, as NYISO requires the SRIS to remain confidential due to Critical Energy Infrastructure Information (CEII) Regulations.

### **(b) Potential Reliability Impacts**

Based on NYISO scope, the SRIS was performed for Summer Peak, Winter Peak and Light Load system conditions. The study system includes the North (Zone D) and Mohawk Valley (Zone E) in the New York ISO system. The Article 10 Application will describe the impact of the proposed Facility and interconnection on transmission system reliability in the State in detail.

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

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

### **(d) Reasonable Alternatives to Mitigate Adverse Reliability Impacts**

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

### **(e) Estimated Change in Total Transfer Capacity**

The Article 10 Application will provide an estimate of the increase or decrease in the total transfer capacity across each affected interface. If a forecasted reduction in transfer capability across affected interfaces violates reliability requirements, the discussion will include an evaluation of reasonable corrective measures that could be employed to mitigation or eliminate said reduction.

(f) Criteria, Plans, and Protocols

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

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

34.5 kV Overhead Collection System

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

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

34.5 kV Underground Collection System

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

- ANSI - American National Standards Institute
- ASTM - American Society for Testing and Materials
- IEEE 48 - Standard Test Procedures and Requirements for Alternating-Current Cable Terminations 2.5 kV through 765 kV
- IEEE 80 - Guide for safety in AC substation grounding
- IEEE 400 - Guide for Field Testing and Evaluation of the Insulation of Shielded Power Cable Systems
- IEEE 400.1 - Guide for Field Testing of Laminated Dielectric, Shielded Power Cable Systems Rated 5kV and Above with High Direct Current Voltage
- IEEE 400.3 - Guide for Partial Discharge Testing of Shielded Power Cable Systems in a Field Environment

- IEEE C2 - National Electric Safety Code (NESC)
- IEEE C57.12.10 - American National Standards for Transformers
- NFPA 70 - National Electric Code (NEC)
- TIA/EIA - Telecommunications Industry Association/Electric Industry Alliance
- NEMA - National Electrical Manufacturer's Association

#### Collection substation

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

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

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

## (2) Generation Facility Type Certification

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

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

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

### 34.5 kV Overhead Collection System

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

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

### 34.5 kV Underground Collection System

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

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

### Collection Substation

The substation 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 substation will be visually inspected for defects and compatibility with the design/specifications. Various industry standard electrical and mechanical tests are performed on equipment before leaving the manufacturers' facilities. Some tests are performed on a "class" of equipment, such that the passing tests results apply to all specific equipment produced. Other tests are required to be performed on each individual piece of equipment. Additional tests will be performed on specific equipment after installation at the Facility site to ensure that there was no damage during handling including, but not limited to:

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

### Wind Turbines

Turbine commissioning will occur once the wind turbines and substation are fully installed and the NYISO is ready to accept transport of power to the New York grid. The commissioning activities will consist of testing and inspection of electrical, mechanical, and communications systems, as well as turbine foundations. Turbine foundation testing and inspection will be in accordance with guidance from AWEA/ASCE in the 2011 document entitled *Recommended Practice for Compliance of Large Land-based Wind Turbine Support Structures*. These procedures will be detailed in the Article 10 Application.

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

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

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

#### (g) Heat Balance Diagrams

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

#### (h) Interconnection Substation Transfer Information

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

National Grid is the interconnecting transmission owner for this Facility. The interconnection of the Facility will be accomplished via a new three breaker ring bus POI substation on the National Grid Colton-Malone Line #3 115kV transmission line. The Article 10 Application will include a General Arrangement Plan View drawing of the POI substation. The exact future transaction and timetable to construct and transfer the POI substation to National Grid will not be known until the Facilities Study is complete.

##### (2) Transmission Owner's Requirements

The POI substation will be owned by National Grid (i.e., the transmission owner), and therefore the POI substation will be in accordance with their requirements. Design and construction of the POI substation may be done by National Grid or by the Applicant. If by the Applicant, National Grid will be responsible for design reviews, construction oversight, and commissioning. The description of the design will not be known until the Facilities Study is complete.

### (3) Operational and Maintenance Responsibilities

National Grid, as the transmission owner, will define and perform the operational and maintenance responsibilities for the POI substation.

#### (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 is briefly described below.

##### (1) Turbine Maintenance and Safety Inspections

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

##### Scheduled Inspection and Maintenance

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

### Unscheduled Maintenance/Repairs

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

### (2) Electric Transmission and Collection Line Inspections

#### ○ 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.

#### ○ 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.

- 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.

- 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.

- Minimization of Interference with Distribution Systems

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

- (j) Vegetation Management Practices for Collection Substation Yard

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

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

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

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

(l) Availability and Expected Delivery Dates for Major Components

The Applicant is not aware of any equipment availability restrictions. The Applicant currently plans to place the Facility in-service in late 2019 or early 2020. Based on this in-service time-frame, major Facility components would be expected to arrive onsite starting in Spring 2019 through Fall 2019

(m) Blackstart Capabilities

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

### (3) Setbacks Required by Local Law or Ordinance

Zoning jurisdiction within St. Lawrence County is at the town level. The proposed turbines are sited in the Towns of Hopkinton and Parishville. As of the date this PSS is filed, both the Towns of Parishville and Hopkinton have adopted laws specific to wind energy development. The Town of Hopkinton Wind Energy Facilities Law (Local Law 1 of 2011) includes multiple setbacks for wind turbines, as does the Town of Parishville Wind Energy Law (Local Law 2 of 2012) which are provided in Table 3 below.

**Table 3. Turbine Setback Requirements for the Towns of Hopkinton and Parishville**

Setback Requirement	Town of Hopkinton	Town of Parishville
Site Boundaries	600 feet from the nearest site boundary property line	500 feet or 1.5x total turbine height, whichever is greater, from the nearest non-participating property line
Public Roads	600 feet from the nearest public road	500 feet or 1.5x total turbine height, whichever is greater, from the nearest public road
Residences	1,800 feet from off-site residences, measured from the exterior of the residence	2,000 feet <sup>1</sup> from the nearest off-site residence
Above-ground Utility	1.5x the total turbine height or any non-turbine structure from above-ground utilities	1.5x total turbine height from any above-ground utility
Structures	1.5x total turbine height from off-site permanent structures	1.5x total turbine height from any non-turbine structure
Wetlands	100 feet from state-identified wetlands or bodies of water. This distance may be adjusted by the reviewing body, based on topography, land cover, land uses, and other factors that influence the flight patterns of resident birds, bats, or other creatures.	500 feet from state-identified wetlands or bodies of water
Wind Overlay District	600 feet from nearest edge of wind overlay district	500 feet or 1.5x total turbine height, whichever is greater, from the nearest edge of the wind overlay district

<sup>1</sup>This setback requirement has been superseded by Town of Parishville Local Law 1 of 2013, which revised the distance to 1,200 feet from the nearest off-site residence.

In addition, subsequent to adopting Local Law 2 of 2012, the Town of Parishville adopted Local Law 1 of 2013, which revised the wind turbine setback requirement of 2,000 feet from the nearest off-site residence to 1,200 feet from the nearest off-site residence.

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

The Applicant has taken into consideration the above referenced setbacks in the preliminary siting of the Facility turbines shown on Figure 3. It is anticipated that the Facility will be generally consistent with setback requirements set forth in local zoning regulations. The Article 10 Application will provide an analysis of the Facility's 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 those presented in the Application, albeit within the range of potential impacts evaluated and assessed

therein, after submission of the Application. However, the inability to identify the final turbine manufacturer and model in the Application will not delay the review of the Application since all turbine models are required to obtain independent certification. Turbine models are independently certified as meeting international design standards by independent product safety certification organizations such as Germanischer Lloyd and Underwriters Laboratories. These certifications require that the wind turbines have a design life of at least 20 years for the specified wind regime. The wind regime considers factors such as weather extremes, average wind speed, wind gusts, and turbulence intensity. An example of a type certification for one of the turbines under consideration at the time the Application is submitted will be provided to the Siting Board to the extent possible.

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

#### (d) Wind Meteorological Analyses

The Article 10 Application will include wind resource analyses that will confirm optimal turbine layout for maximum energy production within the context of existing, site-specific constraints. Wind resource analysis will be completed using a proprietary coupled mesoscale (MASS) and microscale (SiteWind) model and the Openwind Enterprise software package in order to develop the energy yield analysis for the Facility layout. To collect the site-specific data necessary for modeling purposes, one permanent and five temporary meteorological towers (masts) were erected in the Towns of Parishville and Hopkinton, respectively. Four masts are located within and one outside the Facility Area, due to a reduction of the area late in 2016. One of the Hopkinton meteorological towers was decommissioned in 2014. LiDAR (Light Detection and Ranging) remote sensing units were also installed within the Facility Area of each town. Four of the five masts and both LiDARs are currently operating. Two to three additional temporary met towers are anticipated to be constructed in the spring or early summer 2017 in locations to be determined. The turbine layout to be presented in the Article 10 Application will be determined by correlating the most energetic layouts with the most constructible and logistically economical designs, while also factoring in siting constraints and impact avoidance measures. The Application will include a discussion of the suitability of the wind resource at the Facility Site based on publicly available wind resource maps.

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

## **2.7 NATURAL GAS POWER FACILITIES**

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

## **2.8 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 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 (CEII) and will be filed under a protective agreement. The Applicant will seek the requisite trade secret protection for this information pursuant to NY Public Officer's Law Section 87(2)(d) and 16 NYCRR 6-1.4.

#### **(1) Estimated Statewide Levels of Greenhouse Gas Emissions**

The Article 10 Application will list the estimated statewide levels of SO<sub>2</sub>, NO<sub>x</sub>, and CO<sub>2</sub> emissions, in short tons, with and without the Facility for the 2020 year.

#### **(2) Estimated Prices Representative of all NYISO Zones**

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

#### **(3) Estimated Capacity Factor**

A 8760 hourly generation profile will be developed using the measurements from the multi-year and in-progress wind resource assessment campaign currently comprised of five meteorological towers and two 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 m above ground level. The LiDAR

measurement parameters include multi-level 10 minute averages of wind speed and wind direction data from approximately 30 m through the proposed 150 m turbine blade tip height. 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 2020 annual on-peak and off-peak MWh 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 monthly net production output of the proposed Facility in MWhr as well as the total annual MWhr production (based on one turbine model) to be presented in the Article 10 application.

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.

(6) Estimated Production Curve Over an Average Year

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

(7) Estimated Production Duration Curve Over an Average Year

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

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

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

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

analysis will simulate the effect of energy schedules from energy resources on must run resources redispatching to reliably serve the grid and avoid curtailment.

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

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

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

## **2.9 ALTERNATIVES**

(a) Description of Reasonable Alternative Location Sites

In order to create an economically viable wind-powered electrical-generating facility, which will provide a significant source of renewable energy to the New York power grid, the Applicant proposes to take advantage of the available wind resource and bulk power transmission system in St. Lawrence County, New York. Based on the Feasibility Study prepared on behalf of the New York Independent System Operators (NYISO), the existing transmission system near the Facility is anticipated to be able to accommodate the Applicant's proposed 100 MW of electric power generation and no other interconnections are proposed at the POI substation. Therefore, the preferred alternative is to construct a facility that can produce up to 100 MW of renewable energy.

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

- Adequate wind resource
- Adequate access to the bulk power transmission system, from the standpoints of proximity and ability of the system to accommodate the interconnection and accept and transmit the power from the Facility
- Contiguous areas of available land

- Compatible land use
- Willing landowner participants and host communities
- Limited population/residential development
- Avoiding areas of statewide significant or high environmental sensitivity (e.g., Adirondack Park, Great Lakes shoreline)

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

The Applicant selected the proposed site for the Facility because of the presence of the wind resource, the presence of available land and willing landowners, the relative ease of access to the site, and the proximity and relative ease of connecting to the existing electric transmission grid. These factors combine to make the proposed site desirable from the standpoint of large scale wind power development.

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

Given the unique nature and constraints associated with the siting of wind-powered electric generation facilities (i.e. adequate wind resource, willing landowner participants and host communities, and adequate access to the bulk power transmission system), the Article 10 Application will not include a fully developed evaluation of comparative advantages and disadvantages of locations that could be considered as alternatives to the Facility. 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 such alternative locations. The Article 10 Application will provide information regarding the general site selection process for the Facility, some of which is summarized below.

### (1) Environmental Setting

The Facility is located on the boundary between the Adirondack and St. Lawrence Valley Lowlands physiographic provinces of New York State. The location of the Facility takes advantage of the wind resource associated with the gain in elevation that occurs along this boundary. Elevations in the Facility Area range from between 600 feet to 1,150 feet above mean sea level. The St. Lawrence River Valley in St. Lawrence County is characterized by a landscape of little relief that consists of glacial till and glacial marine or lacustrine soils (USDA, 2005). The Adirondack physiographic province in St. Lawrence County has comparatively high relief and is underlain by complex metamorphic rocks formed during the Precambrian era (USDA, 2005). The bedrock underlying the Facility Area consists of Potsdam Sandstone of the Cambrian Era and biotite/hornblende granitic gneiss of the Mesoproterozoic Era (Rickard & Fisher, 1970). Exhibit 21 of the Article 10 Application will provide additional information on geology and soils at the Facility Site.

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

The Applicant has identified several recreational facilities in the area including, but not limited to, trails (i.e., hiking, snowmobile, biking, etc.), state and local parks, and state forests. A Phase 1A Historic Architectural Resources Survey and Work Plan is currently being developed for the Facility. The information and recommendations included in this report will assist the 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 has been developed and submitted to the NYSOPRHP to determine if there are any potentially unidentified and/or previously identified cultural resources in the Facility Site (See Appendix E). Exhibit 20 of the Article 10 Application will provide more detailed information on recreational, cultural, and other concurrent uses of the site.

### (3) Engineering Feasibility

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

As discussed in Section 2.6(d) of this PSS, the Applicant is conducting a rigorous wind resource analysis for this Facility, the intent of which is to optimize the turbine layout to maximize energy production within the context of

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

#### (4) Reliability and Electric System Effects

As mentioned previously, a feasibility study was completed in 2016 for the Facility. A System Reliability Impact Study (SRIS) was initiated in early 2017 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 results of the SRIS will be provided in the Article 10 Application. Based on the results of the Feasibility Study that was conducted for the Facility, the Facility is not expected to result in adverse impacts to the 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 the environment. The majority of these environmental impacts will result from construction activities, and will be temporary. Long-term unavoidable impacts associated with operation and maintenance of the Facility may include turbine visibility, and minor impacts to agricultural land, wildlife habitat, and wetlands/streams.

The presence of the turbines will likely result in a change in perceived land use from some viewpoints. Overall contrast with the landscape, as determined through evaluation by an expert panel of landscape architects, will be detailed in Exhibit 24 of the Article 10 Application. The Facility layout will be designed, in part, through an iterative process of identifying sensitive environmental resources (e.g., agricultural land, wildlife habitat, wetlands/streams) and siting Facility components to avoid and minimize impacts to these resources wherever possible. Exhibit 22 of the Article 10 Application will provide detailed information on environmental resource impacts at the Facility Site.

It should also be noted that electricity generated from zero-emission wind energy can displace the electricity generated from conventional power plants, thereby reducing the emissions of conventional air pollutants, such as sulfur and nitrogen oxides (acid rain precursors), mercury, and carbon dioxide (linked to global climate

change). Displaced emissions occur because renewable electric generation sources have low marginal operating costs (i.e., no fuel cost). Therefore, renewable energy sources become first option sources, displacing generation at fossil fuel plants that have higher marginal operating costs. The proposed Facility is anticipated to have significant, long-term beneficial effects on the use and conservation of energy resources. The operating Facility will generate up to 100 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 is located in close proximity to the existing bulk power transmission system. Exhibit 6 of the Article 10 Application will provide information about the wind resource at the Facility Site, and Exhibit 34 will provide information about the electric interconnection.

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

The proposed Facility will have a positive impact on the local economy. Construction and operation will generate jobs, and the Facility will have a direct economic benefit from the purchase of goods from local sources (such as fuel), the spending of income earned by workers, annual labor revenues, and the income effect of taxes (including income taxes, sales tax and real property taxes). These direct effects will result in additional induced economic benefits in other sectors. The Facility will result in payment to local landowners in association with the landowner agreements, which will be in addition to any income generated from the existing land use (e.g. agricultural production). These payments will have a positive impact on the region, to the extent that landowners will spend their revenue locally. The proposed Facility will also have a significant positive impact on the local tax base, including local school districts and other taxing districts that service the area where the proposed Facility is to be located. Exhibit 27 of the Article 10 Application will provide detailed information on the socioeconomic effects of the proposed Facility.

## (7) Environmental Justice

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

## (8) Security, Public Safety, and Emergency Planning

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

## (9) Public Health

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

## (10) Vulnerability to Seismic Disturbances and Climate Change Impacts

Based on the 2014 New York State Hazard Map (USGS, 2014), the Facility is located in an area of low to moderate seismic hazard, with a 2% or less chance that peak ground acceleration in a 50-year window is between 20% and 30% of standard gravity. There have been multiple recorded earthquakes in St. Lawrence County since 1950 with magnitudes ranging from 2.0-3.2 on the Richter scale (USGS, 2016a). While the magnitude of an earthquake does not precisely predict the degree to which damage may occur, the Modified Mercalli Intensity Scale (Intensity Scale) describes the effects from earthquakes of various magnitudes (USGS, 2016b). 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. Considering that no earthquake in St. Lawrence County since 1950 has exceeded a magnitude of 3.2, the potential for damage to the Facility resulting from an earthquake is low.

Furthermore, the USGS Earthquake Hazards Program does not list any young faults, or faults that have had displacement in the Holocene epoch within the vicinity of the Facility Site. Exhibit 21 of the Article 10 Application will provide a more detailed description of the Facility's potential vulnerability to seismic disturbances.

With respect to climate change, as stated above, electricity generated from zero-emission wind energy can displace the electricity generated from conventional power plants, thereby reducing the emissions of conventional air pollutants, such as sulfur and nitrogen oxides (acid rain precursors), mercury, and carbon dioxide (linked to global climate change). Displaced emissions occur because renewable electric generation sources have low marginal operating costs (i.e., fuel). Therefore, renewable energy sources become first option sources, displacing generation at fossil fuel plants that have higher marginal operating costs. The proposed Facility is anticipated to have significant, long-term beneficial effects on the use and conservation of energy resources. The operating Facility will generate up to 100 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 subsidiary of Avangrid Renewables LLC (AR). Headquartered in Portland, Oregon with offices in New York, Pennsylvania, and Minnesota, AR is a developer of utility scale wind projects. AR has more than \$10 billion of operating assets totaling more than 6,000 megawatts ("MW") of owned and controlled wind and solar generation in the United States. AR has developed over 50 wind farms in the United States including the Maple Ridge and Hardscrabble Facilities in New York. Maple Ridge produces enough electricity to power up to 160,000 average New York homes. Hardscrabble features 37 American-made Gamesa wind turbines which produce enough electricity to power over 25,000 typical New York homes each year.

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

- Satisfy regional energy needs in an efficient and environmentally sound manner;
- Supplement and offset fossil-fuel electricity generation in the region, with emission-free, wind-generated energy;
- Reduce the amount of electricity imported to New York State;
- Take advantage of the wind resource within St. Lawrence County;
- Provide energy that is not susceptible to fluctuations in commodity prices;



- Produce electricity without the generation of carbon dioxide or other greenhouse gases that contribute to climate change;
- Promote the long-term economic viability of rural areas in New York; and
- Assist New York State in meeting its proposed Renewable Portfolio Standard and State Energy Plan goals for the consumption of renewable energy in the State.

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

Unlike state or municipal entities, private developers do not have the power of condemnation or eminent domain. Consequently, the Applicant does not have the unfettered ability to locate projects in any area or on any parcel of land. Facilities can only be sited on private property where the landowner has agreed to allow such construction. 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. The consideration and continual refinement of the potential layout and size for the Facility has occurred since late 2015, when 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. The Facility design that will be presented in the Article 10 Application will represent the culmination of multiple iterations of refinement to this initial layout in response to the results of regulatory considerations, on-site engineering, and environmental studies.

##### (1) General Arrangement and Design

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

##### (2) Technology

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

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

### (3) Scale or Magnitude

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. However, as mentioned previously, various siting constraints dictate the size and layout of a wind power project. These constraints make a significantly larger number of turbines than what is proposed within the Facility Area highly unlikely. The Article 10 Application will address alternate scale and magnitude of the Facility in the context of the interconnection agreement (i.e., a 100 MW Facility) and the financial viability of a project that is substantially smaller. This will include a discussion of the economics of scale, and the ramifications of utilizing differently sized turbines. Information regarding economic benefit to local communities such as PILOT payments, landowner payments, and construction expenditures related to a project of this size will also be addressed.

### (4) Alternative Turbine Layouts

As mentioned above, the Facility has been designed through an iterative process beginning in late 2015. Since then, multiple refinements to the layout have been made based on a number of factors, including landowner participation, a wind resource assessment, environmental resource factors, and the consideration of any potential land use or zoning constraints. More details on the factors considered during the layout design process are provided below:

- *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.
- *Topography.* Elevation is a key component of maximizing the capture of wind energy, and higher elevations typically correspond to higher wind resource. In addition, turbine manufacturers require certain elevation and topography criteria be met (i.e., not locating a turbine on too steep of a slope or on too narrow a ridge), or else they will not certify the turbine location as suitable and the turbine

cannot be constructed. To ensure turbines were placed in suitable locations, all potential turbine sites were evaluated to meet elevation and topography criteria.

- *Sufficient Turbine Spacing.* Siting turbines too close to one another can result in decreased electricity production and excessive turbine wear, due to the creation of wind turbulence between and among the turbines. Each operating wind turbine creates downwind turbulence in its wake. As the flow proceeds downwind, there is a spreading of the wake and recovery to free-stream wind conditions. The Facility turbines will be located with enough space between them to minimize wake losses and maximize the capture of wind energy.
- *Local Zoning.* Both of the host towns have adopted Wind Energy Regulations. These regulations specify criteria under which applications for commercial wind energy conversion systems will be evaluated. To the maximum extent practicable, the preliminary design of the Facility has attempted to meet all reasonable requirements contained Wind Energy Regulations, and any exceptions will be discussed in Exhibit 31 of the Article 10 Application. In addition, the Facility will be sited entirely outside of the Adirondack Park boundary.
- *Wetlands and Waterbodies.* Facility components will avoid and/or minimize impacts to wetlands and streams to the greatest extent practicable.
- *Communication Interference.* Turbines will be sited outside of known microwave pathways or Fresnel zones to minimize the effect that they may have on existing communications.
- *Recreational Resources.* Turbines will be sited in such a way that does not cause any material adverse effect to the Town's or County's existing or proposed trails, trail facilities, and recreation areas.
- *Cultural Resources.* Facility design and construction will be conducted in a manner that does not cause any significant impact to prehistoric or historic archeological resources.

The Facility's turbine layout is also a function of the turbine model that will ultimately be used. As previously mentioned, the Facility to be evaluated in the Article 10 Application consists of up to 40 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 100 MW. For example, if a 3.0 MW turbine is analyzed and ultimately selected, no more than 33 turbines will be built, whereas if a 2.5 MW turbine is selected, then 40 turbines will be built. The turbine model ultimately selected for this Facility will be based upon numerous factors, such as site suitability, availability and price. Turbine locations will ultimately be chosen from among the specific locations identified in the Article 10 Application, and will be based on the wind resource and other siting factors that include, but are not limited to, distance to the substation and environmental impacts. However, to assure a

worst-case evaluation, the Article 10 Application will assess the impacts associated with up to 40 turbine locations, even though fewer turbines may be built.

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

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

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

Based upon the findings in the Feasibility Study, this Facility is not anticipated to have any adverse effects on the New York State Power Grid. The results of the SRIS will be included in the Article 10 Application. See Section 2.5 for a more detailed discussion of electrical system effects.

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

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

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

The benefits of the Facility are anticipated to include positive impacts on 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 benefit ecological and water resources as well as human health. Appropriate setbacks and other protective measures will be employed to assure public health and safety during construction and operation of the Facility. The Article 10 Application will include a statement of the

reasons why the proposed technology, scale, and timing of the Facility are best suited to promote public health and welfare.

(f) No Action Alternative

The no action alternative assumes that the Facility Area would continue to exist as is. This no action alternative would not beneficially or adversely affect current land use, ecological resources, cultural resources, ambient noise conditions, traffic or public road conditions, or television/communication systems. It would also maintain the area's current community character, socioeconomic, and energy-generating conditions as they currently exist. The Article 10 Application will discuss why the no action alternative to the Facility is not the 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, and would pose more significant adverse environmental impacts, particularly on air quality but also on land use, water resources and public health and welfare. Therefore, the Article 10 Application will not evaluate alternative energy sources.

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

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

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

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

## **2.10 CONSISTENCY WITH ENERGY PLANNING OBJECTIVES**

(a) Consistency with State Energy Plan

The Facility will help the State achieve the goals of the 2015 State Energy Plan (See NY State Energy Law 6-104). The latest iteration of the New York State Energy Plan was announced on June 25, 2015. The State Energy Plan

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

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

(b) Impact on Reliability

A System Reliability Impact Study (SRIS) was initiated for the Facility in the spring of 2017 on behalf of the New York Independent System Operator (NYISO). 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 system reliability in greater detail using analyses conducted as part of the SRIS. The SRIS will be provided in the Application; however, certain sections of the SRIS will be submitted separately to the Hearing Examiner as they contain confidential information.

(c) Impact on Fuel Diversity

The proposed Facility will improve fuel diversity within the State by increasing the amount of electricity produced by wind power. The New York electric utility system relies on supply from numerous fuel sources, including natural gas,

hydroelectric, nuclear, wind, solar, oil, and coal, as well as interconnections with its neighbors and demand-response resources. Maintaining and improving fuel diversity in New York will lead to less volatile electric prices, improved reliability, and positive environmental impacts (NYISO, 2008). The Article 10 Application will include discussion of the current electric generation capacity by fuel type to demonstrate that the addition of the Facility will increase fuel diversity. Current fuel mix data will be obtained from NYISO.

(d) Impact on Regional Requirements for Capacity

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

(e) Impact on Electric Transmission Constraints

New York State has a diverse mix of generation resources compared to many other states. However, much of the renewable power is provided by hydroelectric projects and wind farms located in the western and northern portion of the State, while the southeastern region hosts power plants fueled primarily by natural gas. Taking full advantage of statewide fuel diversity will require upgrades and enhancements of the transmission system (NYISO, 2014). These transmission enhancements will help move energy from upstate regions with a surplus of generating capacity to more populous areas with higher power demands, such as the Hudson Valley, New York City, and Long Island (NYISO, 2014). The Article 10 Application will discuss Facility impacts on electric transmission constraints, based on the *New York State Transmission Assessment and Reliability Study* and other NYISO reports/data.

(f) Impact on Fuel Delivery Constraints

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

(g) Impact on Energy Policy

The immediate benefits of utility scale renewable energy projects, such as the Facility, include economic development and jobs for the host community, greater stability in customer bills, cleaner air, new energy infrastructure, and contributing to the goals of 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 influence on fuel costs, and a healthier environment. Through the State Energy Plan, New York has committed to achieving a 40% reduction in greenhouse gases (GHG) emissions from 1990 levels by 2030 and reducing total carbon emissions 80% by 2050. In addition, the State Energy Plan calls for 50% of generation of electricity from renewable energy sources by 2030 (NYSEPB, 2015).

In an effort to encourage and incentivize the shift of New York State's energy sector from reliance on GHG emitting fuel sources to renewable energy sources, the State has established a Renewable Portfolio Standard (RPS) which initially called for an increase in renewable energy used in the State to 25% by the year 2013 (PSC, 2004). In an Order issued in January 2010, the PSC expanded the RPS target from 25% to 30% and extended the target date from 2013 to 2015. The RPS is expected to reduce CO<sub>2</sub> emissions by 50 million tons over the life of the projects (NYSERDA, 2015). NYSERDA has proposed a comprehensive Clean Energy Fund (CEF) to ensure continuity of the State's clean energy programs after 2015. The CEF is one part of New York State's Reforming the Energy Vision (REV) initiative, a 10-year \$5 billion funding program to support clean energy market development and innovation and to secure renewable energy resources as part of New York's clean energy future. Large-scale renewables (LSR), which are larger utility-scale renewable energy project developments, such as the Facility, are a key component of the REV Order, which outlines the issues and tasks to begin to resolve the technical, marketplace, and regulatory challenges necessary to achieve the REV plan and goals. REV recognizes that large-scale renewables, which require more capital and take more planning than other facilities, will be critically important to meeting greenhouse gas emissions reduction goals. As stated by the PSC in the REV Order, "A significant increase in the penetration of renewable resources is essential to meeting our objectives, state goals and proposed federal requirements" (PSC, 2015).

In May 2016 DPS released the Final Supplemental Environmental Impact Statement (FSEIS) for the REV and CEF plans. In the FSEIS the Department recognizes the vital role that renewable resources such as wind play in helping



the state met its goals under the State Energy Plan. Projects such as the Facility are pivotal in helping the State reach its energy goals.

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

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

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

The Facility will have a positive impact on public health and welfare by producing electricity with zero emissions. Electricity delivered to the grid from wind energy projects can 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, landscape architect or architect who is licensed and registered in New York State.

(a) Site Plan

The Preliminary Design Drawings will constitute the site plan for the Facility and likely will be prepared at a scale of 1" = 100'. This set of drawings will depict all Facility components (turbines, access roads, buried and above-ground collection lines, permanent meteorological towers, Operations and Maintenance (O&M) building, collection substation and point of interconnection substation). Typical details and/or general information for the O&M building and an on-site concrete batch plan (if proposed) will be included in the Article 10 Application.

(b) Construction Operations Plan

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

(c) Grading and Erosion Control Plans

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

(d) Landscaping Plan

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

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

(e) Lighting Plan

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

(f) Architectural Drawings or Typical Details

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

(g) Typical Design Detail Drawings

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

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

(h) Interconnection Facility Drawings

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

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

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

## **2.12 CONSTRUCTION**

(a) Preliminary Quality Assurance and Control Plan

It is typically the responsibility of the Balance of Plant (BOP) contractor, who is responsible for the construction of the wind farm, to develop and implement the Quality Assurance and Control (QA/QC) Plan. Typically a separate Electrical Contractor is responsible for the construction and installation of the electrical components of the Facility and would develop and implement their own QA/QC Plan. The Applicant will require the BOP and Electrical Contractors to provide a final QA/QC Plans prior to starting construction. All sub-contractors will be required to follow the QA/QC Plans. The QA/QC Plans are site specific and therefore not developed until the BOP and Electrical Contractor have been selected and the Facility is proceeding with construction. The Applicant will submit the final QA/QC Plans 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 and QA/QC plans 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

(b) Conformance with Public Service Commission Requirements

(1) Protection of Underground Facilities

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

(2) Pole Numbering and Marking Requirements

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

(c) Plans to Avoid Interference with Existing Utility Systems

Because the Facility area is rural in nature, rather than a more suburban or urban setting, there are fewer existing utility systems with which the Facility may interfere. The first step in avoidance of interference with existing utility systems is to identify those entities that have utilities within the Facility area. Certain known utilities have been

included in the stakeholder list for the Public Involvement Program. These utilities have received and will continue to receive updates and notifications on the Facility. Prior to construction, American Land Title Association (ALTA) surveys will be conducted in the Facility Site to identify all existing utility easements, their usage, and owner. The Applicant also talks to landowners regarding utilities located on their properties. All information gathered on utilities will be taken into account during Facility component siting in order to avoid and minimize conflicts with utilities.

Furthermore, the Applicant has begun to gather data on utilities. 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 contacts and information to all contractors associated with the construction of the Facility. Prior to construction, 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. 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 and the plan for continuing to identify existing utilities. It is not appropriate to do a comprehensive utility-locating effort prior to construction, i.e. one-call, because utilities typically prefer to mark out their facilities once and there may be changes to utilities between the time the Facility is certificated and the initiation of construction. In addition, the Article 10 Application will provide a discussion of setback distances from existing utilities that the Facility will adhere to.

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

#### (d) Procedures for Addressing Public Complaints and Disputes

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

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

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

## **2.13 REAL PROPERTY**

### **(a) Real Property Map of Generating Site**

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

### **(b) Real Property Map of Interconnection Facilities**

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

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

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

Applicant has been working with all local landowners to obtain leasing or easement rights for the Facility since 2010, and will continue to work towards securing all land necessary to construct and operate the Facility.

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

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

(e) Improvement District Extensions

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

## **2.14 COST OF FACILITIES**

(a) Total Capital Costs

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

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



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

(b) Source of Cost Estimates

The cost estimate is based on the following sources:

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

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

(c) Work Papers

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

## 2.15 PUBLIC HEALTH AND SAFETY

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

New York State's 2015 State Energy Plan involves reducing Greenhouse Gas (GHG) emissions from the energy sector, because this is critical to protecting the health and welfare of New Yorkers. Clean air is essential to New Yorkers' health and quality of life. New York's energy system is the source of many benefits for New Yorkers; however, it is also the cause of significant impacts on the State's natural resources and public health, principally

because of emissions of a variety of substances, some of which find their way into the air, water, and other resources. Air pollutants emitted when carbon-based fuels are burned are associated with serious health conditions and contribute to the climate change that threatens New York's residents and natural resources. Combustion of fossil fuels is the dominant source of energy-related emissions. The kinds of health risks associated with the combustion of carbon-based fuels are not associated with wind, solar energy and hydroelectric power. While the use of these means of producing electric power is not risk-free, increasing the fraction of New York's electricity needs met by wind, solar, and water will, in general, decrease health risks associated with electricity production. The recognition of the benefits of renewable energy has significantly contributed to New York's nation-leading commitment to renewable energy development through the Clean Energy Standard and is in part a leading reason for New York establishing the 50% by 2030 goal set forth in the New York State Energy Plan.

The Article 10 regulations require the assessment of potential risks associated with the operation of a generating facility, which, in the case of the Facility are generally limited in nature to effects associated with movement of the blades and electrical components within the nacelle. Some of the unlikely risks associated with a wind power include ice shedding, tower collapse, blade failure, and fire in the turbines. To the best of the Applicant's knowledge, there are no known instances where a member of the general public was injured at an operating wind farm in the United States. The Application will demonstrate that the Facility will be sited in such a manner that setbacks from dwellings, roads, and other existing facilities minimize the potential risks from these types of incidents.

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

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

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

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

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

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

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

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

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

(e) Wind Power Facility Impacts

(1) Blade Throw and Tower Collapse

A potential public safety concern with wind power projects is the possibility of a wind turbine tower collapsing or a rotor blade dropping or being thrown from the nacelle. While extremely rare, such incidents have occurred; however, to the best of the Applicant's knowledge, no member of the public has ever been injured as a result of these incidents, and setbacks for the Facility will be 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 (Garra Hassan America, Inc., 2007). Technological improvements and mandatory safety standards during turbine design, manufacturing, and installation have significantly reduced the instances of blade throw (Garra Hassan America, Inc., 2007).

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

## (2) Audible Frequency and Low Frequency Noise

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 which indicate that the sound levels created by wind turbines are not sufficient to damage hearing or cause other adverse health effects. The 2016 Supplemental Final Generic Environmental Statement for REV/CEF further recognized that the degree of annoyance with wind turbine noise was often correlated with a receptors' support or opposition to wind power projects.

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 is sound pressure fluctuations at frequencies below about 20 Hz. Sound below this frequency is only audible at high magnitudes. Low frequency sound is in the audible range of human hearing, that is, above 20 Hz, but below 100 to 200 Hz (depending on the definition) (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 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 excessively high levels of low frequency sound and infrasound was performed on older wind turbine designs, such as NASA's MOD-0 and MOD-1, which placed the rotor behind the tower. When the rotor passed through the wake of the tower, it would result in an infrasonic and low frequency impulse. Modern pitch-regulated upwind-tower wind turbines of the type proposed for this Facility produce lower levels of infrasound and low frequency sound than these early turbines. Research on modern turbines have shown that at typical receiver distances, infrasound levels are lower than some other environmental noise sources, such as vehicle traffic, and generally well below established hearing thresholds (RSG et al. 2016) and does not have negative health impacts on humans (McCunney et al. 2014, Leventhall 2013).

Human response to audio frequency wind turbine noise has been assessed by several studies (Pedersen et al. 2008, Michaud 2015, 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 wind turbine sound and noise annoyance, with the percentage of residents highly annoyed less than 15 percent at equivalent sound pressure levels of 45 dBA or less. The World Health Organization's guidelines to prevent nighttime sleep disturbance are 45 dBA.  $L_{Night}$  (the sound pressure level averaged over the night) (WHO, 1999), and the Facility's predicted nighttime noise will be compared to this level).

A thorough literature review including government, scientific and professional studies and peer reviewed publications, including the guidelines and recommendations of the World Health Organization (WHO), regarding the effects on human health from to audio frequency sound, low frequency sound, and infrasound 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 discuss potential impacts.

### (3) Ice Throw

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

represent a potential safety concern. The 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 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 or residence at times of the day when the turbine rotor is between the sun and a receptor's position. Shadow flicker is most pronounced in northern latitudes during winter months because of the lower angle of the sun in the winter sky. However, it is possible to encounter shadow flicker anywhere for brief periods before sunset and after sunrise (U.S. Department of the Interior, 2005).

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

The Article 10 Application will include a Facility-specific shadow flicker analysis. Specifically, a study of potential shadow flicker impacts on nearby residences will be conducted 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 shadow flicker analysis for the proposed Facility will use *WindPRO 2.8.579* software (or similar version) and the associated Shadow module, which is a widely accepted modeling software package developed specifically for the design and evaluation of wind power projects. Input variables and assumptions used for shadow flicker modeling calculations will include:

- Latitude and longitude coordinates of all proposed wind turbine sites under consideration in the Application.
- Latitude and longitude coordinates for non-participating residential structures located within a 10 rotor diameter radius of all proposed turbine locations.

- USGS 1:24,000 topographic mapping and USGS digital elevation model (DEM) data (10-meter resolution).
- The rotor diameter and hub height of the largest proposed turbine model under consideration at the time of Application.
- Annual wind rose data.
- The average monthly percent of available sunshine for the nearest National Oceanic and Atmospheric Administration weather station.

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

Shadow 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 turbine sites. The model calculations will include the cumulative sum of shadow hours generated by the maximum number of turbines proposed for the Facility. This omni-directional approach reports total shadow flicker results at a receptor regardless of the presence or orientation of windows at that particular receptor (i.e., it assumes shadows from all directions can be perceived at a receptor, which may or may not be true). A receptor in the model will be defined as a one square meter area located one meter above ground; consistent with industry standards, actual house dimensions are not taken into consideration. In addition, shadow flicker contours that are generated by the WindPRO software will be overlain on mapping of known public recreational areas (e.g., trails, state forest land).

No consistent national, state, county, or local standards exist for allowable frequency or duration of shadow flicker from wind turbines at the proposed Facility Site. In general, quantified limits on shadow flicker are uncommon in the United States because studies have not shown it to be a significant issue (USDOE, 2008, 2012; NRC, 2007). However, standards developed by some states and countries provide guidance in this regard. A threshold of 30 shadow flicker hours per year will be applied to the analysis of the proposed Facility to identify any potentially significant impacts based upon the guidance obtained from the other states and countries. This threshold is consistent with thresholds established by several other states. 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 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 also suggested 30 hours of shadow flicker per year as the threshold of significant impact, which was determined to be the point at which shadow flicker is commonly perceived as an annoyance (NRC, 2007; DECC, 2011; DPCD, 2012).

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

(f) Public Health and Safety Maps

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

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

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

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

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



(i) Irreversible and Irretrievable Commitment of Resources

The proposed Facility will require the irreversible and irretrievable commitment of certain human, material, environmental and financial resources. Human and financial resources will be expended by numerous entities including the Applicant, the State of New York (i.e., various state agencies), St. Lawrence County, and the Towns of Hopkinton and Parishville 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 to 40 years, associated with its footprint (e.g., the land to be developed for wind turbines, access roads, the O&M building, meteorological towers, the overhead transmission line, collection substation and the point of interconnect facility). However, because the turbines/met towers will 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 materials such as gravel, concrete, reinforcement steel, cables etc., will represent a long-term commitment of these resources, which will not be available for other projects. However, some of these materials (e.g., steel, gravel) may be retrievable following the operational life of the Facility.

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

(j) Impact Minimization Measures

Impact minimization efforts begin early in the development of a wind power project, and initially are associated primarily with appropriate siting of the individual wind turbines. The Applicant has taken into consideration all reasonable setbacks established in the local zoning ordinances for the Facility's host towns when determining the locations of Facility turbines. Based on the Applicant's experience developing and operating other wind power projects, any setbacks proposed for the Facility will 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 proposed Facility, is properly sited and designed, mitigation measures are generally not necessary because significant impacts to public health and safety typically do not occur. To the extent necessary, any mitigation measures that are warranted based on the Facility-specific studies associated with noise and shadow flicker will be identified in the Article 10 Application. For example, if a non-participating residence is modeled to experience in excess of 30 hours of shadow flicker per year, mitigation measures may include implementation of screening(s) at the residence. In addition, as previously mentioned the Applicant will implement a Complaint Resolution Plan, which include the following:

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

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

#### (l) Proposed Monitoring

The Applicant is committed to develop and operate its projects in a safe and environmentally responsible manner. In addition to the mitigation measures described/referenced above, an environmental compliance program will be implemented and the Applicant will provide funding for an independent, third party environmental monitor to oversee compliance with environmental commitments and permit requirements during Facility construction and operation. The environmental compliance program will focus on planning, effective training of monitors, 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 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, 2009a). Historically, New York State has been proactive in establishing goals to reduce GHG emissions, including Executive Order 24, which seeks to reduce GHG emissions by 80% by the year 2050 and also includes a goal to meet 45% of New York's electricity needs through improved energy efficiency and clean renewable energy by 2015 (Paterson, 2009). Fuel combustion accounts for approximately 89% of total GHG emissions in New York State (NYSDEC, 2009a).

### **(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 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<sub>2</sub>) emissions from existing sources and nitrogen oxides (NO<sub>x</sub>) emission controls on new sources in New York State. SO<sub>2</sub> and NO<sub>x</sub> in the atmosphere 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<sub>2</sub> and NO<sub>x</sub> for environmental and public health benefits. These regulations are also not applicable to the Facility because it will generate electricity without releasing SO<sub>2</sub> or NO<sub>x</sub>.

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 Region 6, which encompasses Oneida, Herkimer, Jefferson, Lewis, and St. Lawrence Counties. There are three monitoring stations in Region 6, one in Herkimer County (Nicks Lake, Old Forge), one in Oneida County (Utica), and one in St. Lawrence County (Perch River, LaFargeville). The Nicks Lake Station measures ozone (O<sub>3</sub>) and SO<sub>2</sub>, the Utica Station measures particulate matter (PM<sub>2.5</sub>), and the Perch River Station measures O<sub>3</sub>.

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 sampling points were within the acceptable levels established by the NAAQS for all tested parameters (NYSDEC, 2016a). No local air monitoring data is available to further characterize air quality in the immediate vicinity of the proposed Facility.

#### (c) Emissions by Combustion Sources Table

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

#### (d) Potential Impacts to Ambient Air Quality

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

The operation of this Facility is anticipated to have a positive impact on air quality by producing electricity with zero emissions (except for negligible emissions from vehicles that may periodically servicing the Facility). The operation of the Facility will offset air emissions from other sources of electrical generation such as fossil fuel powered generation plants. The Article 10 Application will evaluate the estimated annual displacements resulting from Facility operation for the following pollutants: CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>2</sub>, mercury compounds, and lead compounds.

Potential impacts to ambient air quality resulting from the construction of the Facility will be discussed in the Article 10 Application. Such impacts could occur as a result of emissions from engine exhaust and from the generation of fugitive dust during earth moving activities and travel on unpaved roads. The increased dust and emissions will not be of a magnitude or duration that will significantly impact local air quality. Dust control procedures will be implemented to minimize the amount of dust generated by construction activities in a manner consistent with the Standards and Specifications for Dust Control, as outlined in the *New York State Standards and Specifications for Erosion and Sediment Controls* (NYSDEC, 2016b).

#### (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, The Applicant has developed preliminary plans for site security, health and safety, and emergency action. The Applicant will coordinate with the County emergency department, local first responders, and the New York State Division of Homeland Security and Emergency Services to ensure appropriate actions are taken in the event of an emergency.

(a) Preliminary Plans for Site Security During Facility Construction

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

(1) Access Controls

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

(2) Electronic Security and Surveillance Facilities

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

(3) Security Lighting

Security lighting activities associated with Facility construction could include lighting of the staging area(s) and areas immediately around the office trailers. Lighting will be directed downward where possible to minimize off-site light trespass, 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 lighting considerations, such as task lighting and full cut-off fixtures.

(4) Setback Considerations

The Application will provide a detailed outline describing proposed setbacks and related safety concerns.

(b) Preliminary Plans for Site Security During Facility Operation

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

(1) Access Controls

Access roads will have gates that are kept locked to keep the general public out. All wind turbines have access doors at their bases which will be closed and locked, and substations will be fenced, gated, 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 personnel. However, if tower trespass and unauthorized access becomes a problem, intrusion detection can be added as needed.

(2) Electronic Security and Surveillance Facilities

Substations and Operations & Maintenance Facilities will have alarms 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 associated with the Facility, including additional considerations such as task lighting and full-cutoff fixtures.

(4) Aircraft Safety Lighting

Lighting of the turbines (and other infrastructure as needed) will be in accordance with FAA regulations, and will follow specific design guidelines to reduce the risk of collision by birds and bats. The Article 10 Application will

provide details associated with preliminary consultation with the FAA, including correspondence received specific to the Facility.

#### (5) Setback Considerations

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

#### (6) Cyber Security Program

The Article 10 Application will provide a discussion on how the Applicant will comply with the North American Electric Corporations (NERC's) 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 in place across the critical infrastructures of the United States. Subject to Federal Energy 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 will be monitored 24 hours/day, seven days/week by a Security Operations Center.

#### (c) Preliminary Safety Response Plan

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

- Identify alarm and emergency evacuation procedures.



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

#### (1) Identification of Contingencies that Would Constitute an Emergency

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

#### (2) Emergency Response Measures by Contingency

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

#### (3) Evacuation Control Measures by Contingency

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

#### (4) Community Notification Procedures by Contingency

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

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

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

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

The Facility Area is not located within any part of a city that has a population over one million and therefore a review by the local office of emergency management is not required. However, the Applicant will coordinate with the St. Lawrence County Emergency Services Department and provide a copy of the 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 on site 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, Spill Prevention, Control and Countermeasure (SPCC) plans will be prepared, and implemented, for both the construction and operation phases of the Facility. The SPCC plans will provide a detailed assessment of potential hazardous substances that could be utilized during the construction, operation or maintenance of the Facility. Typically, potential hazardous substances at a wind project typically consist of oils such as fuel oil, hydraulic oil, mineral oil, and lubricating oil.

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

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

## 2.19 NOISE AND VIBRATION

A 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 twenty-five 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 Sound Receptor Map

A map showing the location of sensitive sound receptors in relation to the Facility will be provided in the Application. Sensitive sound receptors include residences (year-round and seasonal), schools, hospitals, care centers, libraries, places of worship, and public parks. Any hunting cabins in the study area will be identified as such and not considered sensitive noise 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 sound receptors within the Facility Site boundary. For sensitive receptors outside the Facility Site boundary, only aerial imagery and limited field verification will be used to identify those receptors within 1 mile of the nearest turbine. If access for field verification is not possible and aerial imagery cannot provide an obvious classification of a structure (i.e. residential vs. non-residential) then the structure will be classified as a sensitive sound receptor (i.e. residential).

### (b) Ambient Pre-Construction Baseline Noise Conditions

#### *Ambient Noise Monitoring Locations*

On behalf of the Applicant, Epsilon has completed winter (leaf off) and summer (leaf on) background sound level monitoring at 6 representative locations in and around the Facility Area. These locations are depicted on Figure 4 and listed below:

- 1650 State Highway 11B, Stockholm, NY
- 246 County Route 56, Parishville, NY
- State Highway 11B, Hopkinton, NY (Between #2596 and #2628)

- 465 Fletcher Rd., Hopkinton, NY
- Santamont Rd, Hopkinton, NY (Between 1185 Santamont Rd. and 1200 Santamont Rd)
- 2985 State Highway 11B, Hopkinton, NY (summer only)
- 151 Green Rd, Hopkinton, NY (winter only)

Sound level meters (SLMs) will be 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, low and high traffic roads, 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 and/or in the middle of farm fields throughout the Facility Site, generally away from residences. Any work done on roads and utilities could be close to sound receptors, but this work will be conducted for only a short duration. 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 noise-sensitive receptors to construction using the RCNM software, or equivalent. 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, under the ISO 9613-2 standard and Conservation of Clean Air and Water Europe (CONCAWE) meteorological adjustments. Sound levels will be predicted at both specific noise-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 predicted A-weighted sound levels and un-weighted full octave band sound levels at all sensitive sound receptors;

(2) Tonal Evaluation

A tonal evaluation based on the reported sound power of the wind turbines and substation transformers 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 Application. The final turbine model selected may have a different (but lower) sound power level than the one presented in the Application. There will be discussion on the Applicant's avoidance and minimization of sound impacts presented in the Application.

### (4) Potential for Low Frequency and Infrasound

A discussion of the potential for low frequency and infrasound emissions using literature and manufacturer'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 Application will state the basis for the sound power levels used in the analysis.

### (6) Amplitude Modulation Generation Estimates

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

(f) Predicted Sound Levels Table

The Article 10 Application will provide the A-weighted/dBA sound levels at the noise-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) in order to prevent sleep disturbance, and minimize annoyance and complaints.

(h) Noise Standards Comparison

Noise standards applicable to the Facility will be provided in the Article 10 Application in tabular form including municipality standards, World Health Organization (WHO), and NARUC. In addition, the Applicant will include a summary of noise-modelling results from the Noise Impact Analysis for all evaluated sensitive noise 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 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 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 EPA 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 EPA 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 and Interference Technological, Industrial, or Medical Activities that are Sensitive to Sound

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

(l) Post-construction Noise Evaluation Studies

A post-construction noise monitoring and compliance protocol to determine compliance with the operational noise design goals 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 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 Application. GIS files containing data used for modeling, including topography, turbine and substation locations, sensitive sound receptors, and all representative external boundary lines identified by Parcel ID number, will be provided under separate cover in digital format.

## 2.20 CULTURAL RESOURCES

Consistent with 16 NYCRR § 1001.20 and the New York State Office of Parks, Recreation, and Historic Preservation's (NYSOPRHP's) *Guidelines for Wind Farm Development Cultural Resources Survey Work* (the SHPO Wind Guidelines; NYSOPRHP, 2006), the Applicant has initiated consultation with the NYSOPRHP to develop the scope and methodology for cultural resources studies for the Facility. To date, formal consultation with NYSOPRHP has included initiating Facility review and consultation through NYSOPRHP's Cultural Resources Information System (CRIS) website<sup>3</sup> and submission of technical reports/work plans. These submissions are described in greater detail below.

(a) Archaeological Resources

(1) Summary of Impacts and Avoidance Measures

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

(2) Phase 1A Cultural Resources Study

EDR prepared a *Phase 1A Archaeological Resources Survey & Phase 1B Fieldwork Plan* (see Appendix E of this PSS), which was submitted through the CRIS website on April 14, 2017 and is summarized below. The purpose of the Phase 1A archaeological resources survey and work plan was to: 1) define the Facility's area of

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<sup>3</sup> NYSOPRHP's Cultural Resources Information System is accessible at: <http://www.nysparks.com/shpo/online-tools/>.

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

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

- No previously recorded archaeological sites occur within the Archaeological Study Area, but two previously reported archaeological sites occur within 1 mile of the Archaeological Study Area:
  - Unique Site Number (USN) 08914.000002 is the Site of a War of 1812 British Raid in Hopkinton located approximately 0.2 miles (0.3 kilometers) east of the Archaeological Study Area. The site is located in the center of the Town of Hopkinton, and is described on the NYSOPRHP site form as "in Feb. 1814, British troops raided this village. They seized 300 barrels of flour of the U.S. government and stored in barns of Colonel Hopkins." In addition to seizing the flour, the British captured the village and briefly occupied it before continuing east to Malone (Sanford, 1903:270-271). Based on the available documentation, it appears this site number corresponds to the approximate location of these events in the modern-day Hopkinton Town Center. It specifically corresponds to a historic marker commemorating the event located on the Hopkinton Town Green, but does not appear to correspond any identified archaeological materials associated with the events. The S/NRHP eligibility of the site is currently undetermined.
  - New York State Museum (NYSM) Area 5986 is located approximately 0.5 miles (0.8 kilometers) west of the Archaeological Study Area. According to the NSYOPRHP/NYSM records spreadsheet, NYS Area 5986 corresponds to an isolated find of one fluted projectile point (Paleo-Indian Period) near the location of Allen Falls on the West Branch of the St. Regis River. The S/NRHP eligibility of this area is undetermined.

- Overall sensitivity for Pre-Contact Native American archaeological resources within the Facility Site is considered to be low; however, areas near perennial streams and wetlands are considered to have an elevated sensitivity for pre-contact archaeological resources.
- Sensitivity for historic-period (i.e., nineteenth and/or twentieth-century) archaeological resources is generally considered to be low throughout the Facility Area, except in those areas located in close proximity to the former locations of structures identified on historic maps (Figures 5-6 of the appended Phase 1A Archaeological Report). Archaeological resources associated with these sites could include foundations, structural remains, artifact scatters, and/or other features. The remainder of the Facility away from historic map-documented structures is considered to be of low sensitivity for historic archaeology.

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

### (3) Phase 1B Cultural Resources Study

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

As indicated above, the scope and methodology for the Phase 1B Archaeological Survey is proposed in the *Phase 1A Archaeological Resources Survey & Phase 1B Fieldwork Plan*, which was submitted to NYSOPRHP on April 14, 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, rather than undertaking an even distribution of sampling throughout the APE. Following this approach, EDR used Geographic Information System

(GIS) software to identify landscape classes within the Facility Area and proposed an archaeological sampling strategy. The *Phase 1A Archaeological Resources Survey & Phase 1B Fieldwork Plan* summarizes the methodology used for the GIS analysis and presents the landscape classification analysis in tabular and graphical formats.

The primary methods used during the archeological survey included pedestrian surface surveys (in active agricultural settings where ground-surface visibility was greater than 80%); the excavation of shovel tests (in hayfields, forest, and shrubland areas); and pedestrian reconnaissance (in steeply sloped areas). The locations of areas selected for intensive archaeological sampling within the archaeological APE will be determined in the field using professional judgment under the direction of a RPA. Areas where proposed Facility components are located in proximity to structures that are depicted on historic maps of the area will be prioritized during the selection of areas for shovel testing, as will be areas deemed to have high sensitivity for prehistoric archaeological materials. These latter included flat areas of well-drained soils in close proximity to perennial streams or large wetlands.

The Facility's APE for Direct Effects is currently 342.3 acres in size. Please note that the Facility layout will be reviewed prior to conducting the Phase 1B survey. It is also worth noting that prior to conducting the Phase 1B survey, the Facility APE for Direct Effects and survey effort will be adjusted in accordance with Facility layout modifications consistent with the assumptions and methodology for determining the APE for Direct Effects as presented herein.

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

- The excavation of approximately 2,654 shovel tests and the pedestrian surface survey of approximately 56.8 acres of the APE for Direct Effects located within agricultural fields.
- Preparation of a Phase 1B archaeological survey report, to be submitted to NYSOPRHP via the CRIS website. The report will be prepared in accordance with NYSOPRHP's *Phase 1 Archaeological Report Format Requirements* (NYSOPRHP, 2005).
- Submission of site information for any archaeological sites identified during the Phase 1B survey via the CRIS website.

EDR provided the *Phase 1A Archaeological Resources Survey & Phase 1B Fieldwork Plan* to NYSOPRHP on April 14, 2017 to confirm the landscape classification model, proposed sampling strategy, and anticipated field methodology for the Facility and to ensure that the proposed scope of the survey is consistent with NYSOPRHP's expectations.

#### (4) Phase 2 Study

If recommended avoidance measures (e.g., such as removing or re-locating Facility components away from identified archaeological sites) are insufficient to avoid impacts, a Phase 2 study may be conducted to assess the boundaries, integrity and significance of cultural resources identified during the Phase 1B archaeological survey. If warranted based on Phase 1B study results, as determined in consultation with NYSOPRHP, any necessary Phase 2 studies would be designed to obtain detailed information on the integrity, limits, structure, function, and cultural/historic context of an archaeological site, as feasible, sufficient to evaluate its potential eligibility for listing on the State or National Register of Historic Places (S/NRHP). The need for and scope of work for such investigations would be determined in consultation with NYSOPRHP and DPS upon completion and review of the Phase 1B survey report.

#### (5) Archaeological Material Recovered During Cultural Resources Studies

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

(NYAC, 1994; the NYAC *Standards*), and suitable for accessioning to the New York State Museum (Albany), in the event that appropriate local repositories cannot be identified.

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

#### (6) Unanticipated Discovery Plan

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

#### (b) Historic Resources

##### (1) A complete Historic Architectural Survey

EDR prepared a *Phase 1A Historic Architectural Resources Survey & Work Plan*, which was submitted through the CRIS website on April 14, 2017 (see Appendix F). The purpose of the Phase 1A Historic Architectural Resources Survey Report and Work Plan is to define the Facility's APE relative to historic architectural resources; determine whether previously identified historic architectural resources are located in the APE; and propose a methodology to identify historic architectural resources within the APE, evaluate their eligibility for the National Register of Historic Places (NRHP), and assess the potential effect of the Facility on those resources.

#### Area of Potential Effect Relative to Historic Architectural Resources

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



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

Per the *SHPO Wind Guidelines*, the APE for visual impacts on historic properties for wind projects is defined as those areas within five 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 Potsdam, Parishville, Stockholm, Hopkinton, and Lawrence in St. Lawrence County, New York (see Figure 2 in the appended Phase 1A Historic Architectural Report).

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

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

EDR reviewed the Cultural Resources Information System (CRIS) website maintained by NYSOPRHP to identify significant historic buildings and/or districts located within five miles of the Facility. As shown on the "Previously Identified Historic Architectural Resources" map (see Figure 5 of this PSS and 3 in the appended Phase 1A Historic Architectural Report), there is one individually-listed property (the Luke Brown House) and two historic districts (the Hopkinton Green and West Stockholm Historic Districts) listed on the NRHP with the five-mile-radius APE. In addition, the CRIS inventory lists 11 properties determined eligible for listing on the NRHP and eight properties whose NRHP eligibility is currently undetermined located within five miles of the Facility. There are eight resources (all cemeteries) whose presence is noted in CRIS, but have not been formally evaluated by the NYSOPRHP/SHPO for NRHP eligibility, including being designated as "undetermined". (see Table 1 and Figure 3 in the appended Phase 1A Historic Architectural Report). No properties listed on or determined eligible for the NRHP are located within the Facility area.

#### 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 a historic building, district, object, structure, or site is significant (i.e., eligible for listing on the NRHP) if the property conveys (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.

The NRHP-listed and NRHP-eligible properties within the study area include residences, bridges, cemeteries, and commercial structures. Numerous nineteenth- and early-twentieth-century structures (primarily residences and farmsteads) are located within the study area that have not been previously evaluated by NYSOPRHP to determine if they are NRHP-eligible. These types of resources are typically determined NRHP-eligible under NRHP Criterion C (i.e., they “embody the distinctive characteristics of a type, period, or method of construction” [CFR, 2004]), 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.

EDR will conduct a historic resources survey of the Facility’s five-mile-radius APE (as described above and in Section 1.4 of the appended Phase 1A Historic Architecture Report). The historic resources survey will be conducted by a qualified architectural historian who meets the Secretary of Interior’s Standards for Historic Preservation Projects (36 CFR Part 61). The historic resources survey will identify and document those buildings within the study area that, in the opinion of EDR’s architectural historian, appear to satisfy NRHP eligibility criteria. In addition, the survey will also be conducted for the purpose of providing updated photographs and recommendations of eligibility for NRHP-eligible resources, as well as previously surveyed resources within the APE whose NRHP eligibility has not formally been determined (see Section 2.2 and Table 1 of the Appended Phase 1A Historic Architecture Report).

Historic resources survey fieldwork will include systematically driving all public roads within the study area to evaluate the NRHP-eligibility of structures and properties within the study area. When sites that appeared to satisfy NRHP-eligibility criteria are identified, the existing conditions of the property will be documented by an 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 study area will focus on the physical condition and integrity (with respect to design, materials, feeling, and association) to assess the potential architectural significance of each resource. If deemed appropriate, individual buildings located within villages and hamlets will not be documented as individual properties, but instead will be described collectively as clusters or districts. For previously surveyed historic properties, the architectural historian will provide a recommendation of NRHP-eligibility for structures and properties within the study area previously determined NRHP-eligible or whose NRHP eligibility has not formally been determined. An updated photograph (or photographs) of previously surveyed properties will be taken, and an updated recommendation of NRHP-eligibility will occur where applicable.

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

Note that all properties included in the historic resources survey will be photographed and assessed from public rights of way. The condition and integrity of all resources will be evaluated based solely on the visible exterior of the structures. No inspections or evaluations requiring access to the interior of buildings, or any portion of private property, will be conducted as part of this assessment. In accordance with the *SHPO Wind Guidelines*, and based on previous consultation with NYSOPRHP for previous wind projects,<sup>4</sup> buildings that are not sufficiently old (i.e., are less than 50 years in age), that lack architectural integrity, or otherwise were evaluated by the architectural historian as lacking historical or architectural significance will *not* be included in or documented during the survey.

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

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<sup>4</sup> See Historic Resources Survey for the Cassadaga Wind Project (15PR02730) (EDR, 2016).

The initial survey results and recommendations of NRHP eligibility will be provided to NYSOPRHP via the CRIS website. The Applicant will request that NYSOPRHP review these results and provide determinations of eligibility prior to completing a historic resources visual effects analysis for the Facility, so that only the potential effects of the Facility on historic properties determined eligible by NYSOPRHP are considered.

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

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

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

Following NYSOPRHP's review of the Historic Resources Survey results (described above) for the Facility, the Applicant 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 NRHP-eligible. 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 Historic Resources Effects Analysis will be provided to NYSOPRHP via the CRIS website and provide the basis for the evaluation of potential visual effects on historic resources included in Exhibit 24 of the Article 10 Application. The completed Historic Architectural Resources Effects Analysis will be submitted as part of the Article 10 Application.

In addition, 16 NYCRR § 1001.24 (Exhibit 24: Visual Impacts) describes the necessary components of a Visual Impact Assessment (VIA) that must be conducted as part of the Article 10 application. The VIA must include

“identification of visually sensitive resources, viewshed mapping, confirmatory visual assessment fieldwork, visual simulations (photographic overlays), cumulative visual impact analysis, and proposed visual impact mitigation”. 16 NYCRR § 1001.24 also requires that “the applicant shall confer with municipal planning representatives, DPS, DEC, OPRHP, and where appropriate, APA in its selection of important or representative viewpoints” (Article 10, Exhibit 24, Part 1001.24[b][4])<sup>5</sup>. To address this requirement, the Historic Architectural Resources Effects Analysis report will identify those historic resources where visual setting is an important factor in their significance and where viewshed analysis indicates potential visibility of the Facility. The report will recommend those historic resources where preparation of a visual simulation would be appropriate to assess the Facility’s potential effect.

## **2.21 GEOLOGY, SEISMOLOGY, AND SOILS**

This exhibit will describe the geology, seismology, and soils impacts of the Facility, including the identification and mapping of existing conditions, an impact analysis, and proposed impact avoidance and mitigation measures to the extent such impacts occur.

### **(a) Existing Slopes Map**

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

### **(b) Proposed Site Plan**

Preliminary design drawings showing existing and proposed contours at 2-foot intervals will be included in the Article 10 Application. The Applicant will use surveyed 2-foot contour data obtained for the Facility Site.

### **(c) Cut and Fill**

The Article 10 Application will include preliminary and approximate cut and fill calculations based on surveyed 2-foot contours obtained for the Facility Site, including separate approximations for topsoil, sub-soil and bedrock. A description of typical scenarios necessary to construct the facility that would result in cut and fill will also be included.

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<sup>5</sup> Note: “DPS” is the New York State Department of Public Service, “DEC” is the New York State Department of Environmental Conservation, “OPRHP” is the New York State Office of Parks, Recreation, and Historic Preservation, and “APA” is the Adirondack Park Agency.

(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. Stockpiled soils along the construction corridors will be used in site restoration, and all such materials will be re-graded to approximate pre-construction contours.

(f) Excavation Techniques to be Employed

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

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

(g) Temporary Cut and Fill Storage Areas

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

(h) Suitability for Construction

The Article 10 Application will include the results of a preliminary geotechnical investigation, which will include the following:

- Test borings at a sub-set of turbine locations and the substation locations
- Review of existing literature and 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 St. Lawrence County, Deep Wells in New York State, Geology of St. Lawrence County, Tectonic Units and Preliminary Brittle Structures of New York, Aquifers of New York State, Geology of New York – A Simplified Account, New York State Building Code), and test borings to be completed at a subset of turbine/substation locations.

In addition, before construction commences, a site survey will be performed to stake out the exact location of proposed Facility components. Once the surveys are complete, a detailed final geotechnical investigation will be performed to verify subsurface conditions and allow development of final wind turbine foundation and electrical design, and other Facility components as necessary. The final geotechnical investigation will involve a drill rig obtaining borings to identify the subsurface soil and rock types, strength and chemical properties (such as establishing sulfate content etc.), and will also document the presence and depth of any groundwater encountered. Testing will also be done to measure the soil's electrical properties to ensure proper grounding system design. Geotechnical borings will be conducted as determined necessary by a professional engineer to allow foundation design to be finalized.

(i) Preliminary Blasting Plan

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

(j) Potential Blasting Impacts

Blasting is not anticipated, and as indicated above, the Article 10 Application will provide additional detail, including the results of a Facility-specific preliminary geotechnical investigation. With respect to water wells, please see Section 2.23 of this PSS for additional information. With respect to natural gas production, according to the NYSDEC (2017), the Facility Area does not contain any natural gas wells (producing wells, non-commercial wells, or 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 surveys will be coordinated with applicable landowners and conducted as a groundwater well mitigation measure. 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 is located on the boundary between the Adirondack and St. Lawrence Valley Lowlands physiographic provinces of New York State. The St. Lawrence Valley Lowlands occupy the northern three-fifths of St. Lawrence County and are characterized by a landscape of little relief that consists of glacial till and glacial marine or lacustrine soils (USDA, 2005). The Adirondack physiographic province occupies the southern two-fifths of St. Lawrence County and has comparatively high relief and is underlain by complex metamorphic rocks formed during the Precambrian era (USDA, 2005). Elevations in the Facility Area range from between 600 feet to 1,150 feet above mean sea level (amsl). The bedrock underlying the Facility Area consists of Potsdam Sandstone of the Cambrian era and



biotite/hornblende granitic gneiss of the Mesoproterozoic era (Rickard & Fisher, 1970). The topography of the Facility Area becomes increasingly hilly toward the south, and is characterized by a network of hills and intervening valleys.

The surficial geology underlying the Facility Area and vicinity is dominated by glacial till, which exhibits a wide range of particle and rock fragment size. The composition of till reflects changes in bedrock over which glaciers moved from north to south. Carbonate rocks in the till, including limestone, dolostone, and dolomitic sandstone, decline in relative abundance from north to south across St. Lawrence County (USDA 2005). The till is often of variable thickness, with exposed bedrock in some areas of the county.

Based on the 2014 New York State Hazard Map (USGS, 2014), the Facility is located in an area of low to moderate seismic hazard, with a 2% or less chance of experiencing peak ground acceleration of between 20% and 30% of standard gravity during a 50 year window. There have been multiple recorded earthquakes in St. Lawrence County since 1950 with magnitudes ranging from 2.0-3.2 on the Richter scale (USGS, 2016a). While the magnitude of an earthquake does not precisely predict the degree to which damage may occur, the Modified Mercalli Intensity Scale (Intensity Scale) describes the effects from earthquakes of various magnitudes (USGS, 2016b). 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. Considering that no earthquake in St. Lawrence County since 1950 has exceeded a magnitude of 3.2, and that damage to structures is generally not anticipated to occur for earthquakes with a magnitude less than 4.0 (USGS, 2016b), the potential for damage to the Facility resulting from an earthquake is low.

In addition, the USGS Earthquake Hazards Program does not list any young faults, or faults that have had displacement in the Holocene epoch within the vicinity of the Facility Site. 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

Facility components will be sited to avoid or minimize either temporary or permanent impacts to physiography, geology, and soils, to the extent practicable. The Facility is not anticipated to result in any significant impacts to geology. However, depth to bedrock in the Facility Area is expected to be variable and it is possible that some turbine foundations may be set into bedrock (additional detail will be provided in the Article 10 Application based on the preliminary geotechnical investigation discussed above). If bedrock is encountered, it is anticipated to be rippable, and would thus be excavated using backhoes, rock rippers, or chipping hammers. In the event that the bedrock is not

rippable, pneumatic jacking or hydraulic fracturing may be utilized. Based on the Applicant's experience constructing other wind power projects (including in New York State), only temporary, minor impacts to physiography and geology are expected as a result of construction activities. For example, where turbine and access road sites are not located on completely level terrain, some cut and fill or addition of fill will be required; however, the impact to overall topography will be negligible.

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

Additional detail regarding impacts on regional geology will be provided in the Article 10 application based on the Facility-specific preliminary geotechnical investigation.

#### (n) Impacts of Seismic Activity on Facility Operation

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

(o) Soil Types Map

A map delineating soil types on the Facility Site will be prepared using data from the USDA Natural Resources 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

Due to fact that the Facility Area occurs along the boundary between two physiographic provinces, it exhibits a wide array of soil types. Rocky, course soils dominate the southern portions of the Facility Area, while finer, sandy loams become increasingly prevalent moving north.

The Soil Survey of St. Lawrence County, New York (USDA, 2005) indicates that the Facility Area includes of a total of 73 individual soil map units. The southern portion of the Facility Area is dominated by Turnbridge-Lyman-Dawson, Potsdam-Crary, and Colton-Duxbury soils. These soils tend be very rocky, and occur largely on rolling hills. The northern portion of the Facility Area is dominated by Malone loam, Kalurah loam, and Adams sand. These soils tend to be less rocky, with higher quantities of sand and loam. General descriptions of the most prevalent soil series within the Facility Area are provided in Table 4 below.

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

Soil Series	Main Characteristics
Malone Series	<ul style="list-style-type: none"><li>• Somewhat poorly drained, very stony</li><li>• Slopes range from 0-8%</li><li>• Depth to bedrock greater than 60 inches</li><li>• Gently sloping to moderately steep on broad low hills</li></ul>
Potsdam-Crary Series	<ul style="list-style-type: none"><li>• Well drained, rocky soil</li><li>• Slopes range from 3-15%</li><li>• Very deep, depth to bedrock greater than 60 inches</li><li>• Found mostly in southern portion of Facility Area</li></ul>
Adams Series	<ul style="list-style-type: none"><li>• Often sandy, somewhat excessively drained</li><li>• Sloped range from 2-8%</li><li>• Formed in sandy deposits and glacial outwash plains</li><li>• Very deep, depth to bedrock greater than 72 inches</li><li>• Found in gently sloping to mostly level areas within the Facility Area.</li></ul>

Soil Series	Main Characteristics
Kalurah Series	<ul style="list-style-type: none"> <li>• Moderately well drained</li> <li>• Slopes range from 0-8%</li> <li>• Depth to bedrock greater than 60 inches</li> <li>• Formed in loamy, calcareous glacial till</li> <li>• Found mostly in the northern portion of Facility Area</li> </ul>

Source: Soil Survey of St. Lawrence County (USDA, 2005)

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

#### (q) Bedrock Analyses and Maps

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

#### (r) Foundation Evaluation

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

#### (1) Preliminary Engineering Assessment

As previously indicated, a preliminary geotechnical investigation is planned including a literature review of publicly available data, a site visit to observe surficial features and assess general constructability of the proposed Facility, and a preliminary subsurface investigation. This information will be used to specifically

address the suitability of the on-site surface/subsurface conditions to support turbine foundations, and provide specific recommendations based on the site-specific conditions. The suitability analysis will be included in the preliminary geotechnical investigation, which will be summarized in Exhibit 21 of (and appended to) the Article 10 Application.

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

## (2) Pile Driving Assessment

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

## (3) Mitigation Measures for Pile Driving Impacts

Because pile driving is not anticipated, no related mitigation measures are proposed.

## (s) Vulnerability to Earthquake and Tsunami Events

As previously indicated, the Facility appears to have minimal vulnerability associated with seismic events based on review of publicly available data. In addition, because the Facility is located approximately 80 miles from the nearest large water body (Lake Ontario), there is no vulnerability associated with tsunami events.

## 2.22 TERRESTRIAL ECOLOGY AND WETLANDS

### (a) Plant Communities

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

#### Desktop Analysis

Land Cover in the Facility Area was determined using National Land Cover Data (NLCD) information, which is compiled by the United States Geological Survey (USGS) (Homer et. al, 2015). The Facility Area encompasses

approximately 21,314 acres and is primarily forested (79% including deciduous forests, mixed forests, evergreen forests, and woody wetlands) and agricultural land (16% including pasture/hay and cultivated crops) as shown in Table 5. According to the NLCD, the Facility Area also includes 5% or less of developed open space, grassland, and shrub/scrub, and less than 1% of coverage of open water, emergent herbaceous wetlands, barren land, and low, medium, and high intensity development.

**Table 5. Land Cover Classes Found within the Facility Area**

<b>Cover</b>	<b>Area (acres)</b>	<b>Percent Cover (%)</b>
Deciduous Forest	11,455.5	53.7
Evergreen Forest	2,760.3	13.0
Woody Wetlands	1,778.0	8.3
Cultivated Crops	1,677.3	7.9
Pasture/Hay	1,663.2	7.8
Mixed Forest	949.8	4.5
Shrub/Scrub	293.2	1.4
Developed, Open Space	273.8	1.3
Grassland/Herbaceous	207.8	1.0
Open Water	161.8	<1
Emergent Herbaceous Wetland	52.5	<1
Developed, Low Intensity	34.9	<1
Barren Land (Rock/Sand/Clay)	2.4	<1
Developed, Medium Intensity	2.4	<1
Developed, High Intensity	0.8	<1
<b>Total</b>	<b>21,313.7</b>	

Source: NLCD 2011

### Field Review

Plant communities found within the Facility Area were identified and characterized during wetland delineation surveys conducted by EDR during the fall of 2016. All of the major plant communities found within the Facility Area are common to New York State. Field review confirmed that forestlands and agricultural lands are the dominant community types in the Facility Area, while successional old field and wetland community type occur to a lesser extent. Brief descriptions of each of these ecological communities are provided below.

### **Mixed Deciduous/Coniferous Forestland**

Mixed forestland constitutes the largest ecological community type within the Facility Area, and resemble the beech-maple mesic forest and the hemlock-northern hardwood forest communities described in the *Ecological Communities of New York State* (Edinger *et. al.*, 2014). These forests occur throughout the Facility Area and make up the majority of the community types. Tree species vary based on topography and hydrology, but dominant or co-dominant species in most locations include sugar maple, red maple, and American beech. Other tree species that were present throughout most of the Facility Area to a lesser extent include eastern hemlock, white oak, northern red oak, yellow birch, gray birch, eastern hophornbeam, red spruce, white pine and quacking aspen. Understory trees and shrubs frequently observed in these communities include striped maple, dogwoods, and numerous saplings. Characteristic herbaceous plants are woodland ferns (common wood fern, New York fern, Christmas fern, interrupted fern), club moss (*Lycopodium*), and a variety of flowering plants.

### **Successional Old Field**

A successional old field is a meadow community dominated by forbs and grasses that occurs on sites that have been cleared and plowed (for farming or development), and then abandoned. Within the Facility Area, this community is located primarily along roadsides, or adjacent to active agricultural fields. Species typically observed in these areas may include orchard grass, timothy grass, goldenrods, clovers, milkweed, asters, Queen Anne's lace, and burdock. Shrubs such as honeysuckle and dogwood may also be present.

### **Agricultural Land**

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

### **Red maple-hardwood swamp**

This is a broadly defined community with several regional and edaphic variants. As defined by the *Ecological Communities of New York State* (Edinger *et. al.*, 2014), “a hardwood swamp that occurs in poorly drained depressions or basins, usually on inorganic soil, but occasionally on muck or shallow peat, that is typically acidic to circumneutral. The hydrology varies from permanently saturated to the surface to seasonally flooded or wet with hummocks and hollows”. Within the Facility Area tree species in this community include red maple, green ash, American elm, yellow birch, and gray birch. The shrub and herbaceous strata consist primarily of dogwoods, willows, sensitive fern, sedges, and jewelweed. Within the Facility Area these wetland areas may exhibit very little diversity (exclusively speckled alder or gray birch and sensitive fern), or more diverse mixtures that include red maple, swamp white oak, American elm, jewelweed, spicebush, sedges, rushes, and wetland grasses.

### **Shallow emergent marsh**

As defined by the *Ecological Communities of New York State* (Edinger *et. al.*, 2014), “a marsh meadow community that occurs on mineral soil or deep muck soils (rather than true peat), that are permanently saturated and seasonally flooded. This marsh is better drained than a deep emergent marsh; water depths may range from 15 cm to 1 m (6 in to 3.3 ft) during flood stages, but the water level usually drops by mid to late summer and the substrate is exposed during an average year.” The shallow emergent marsh communities that occur within the Facility Area are dominated primarily by cattail species, either narrow leaf or broad leaf cattail. Speckled alder and eastern hemlock often line the periphery of these communities where the wetlands and uplands meet. Other plants often found in and around the shallow emergent marsh communities observed within the Facility Area include sensitive fern, jewelweed, green ash, eastern larch, rushes, sedges, and grasses.

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

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

#### **(b) Impact to Plant Communities**

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



**Table 6. Impact Assumptions.**

Facility Components	Typical Area of Vegetation Clearing	Typical Area of Total Soil Disturbance (temporary and permanent)	Typical Area of Permanent Soil Disturbance
Wind Turbines and Workspaces	Up to 200' radius per turbine	Up to 200' radius per turbine	0.20 acre per turbine (pedestal plus crane pad)
Access Roads	75' wide per linear foot of road	60' wide per linear foot of road	20' wide per linear foot of road
Buried Electrical Collection Lines	40' wide per linear foot of line per collection line circuit	20' wide per linear foot of line per collection line circuit	None
Overhead Electrical Collection Lines	75' wide per linear foot of line	25' wide per linear foot of line	0.10 acre per pole
Permanent Meteorological Towers	1 acre per tower	0.10 acre per tower	0.10 acre per tower
O&M Building and associated site (4,000 – 6,000 sf)	6 acres	5.5 acres	5 acres
Staging Area	10 acres per staging area	10 acres per staging area	None
Collection substation	3 acres	3 acres	2 acres

These impact assumptions will be used to calculate the total impact to various resources that could result from Facility construction and operation. The method of calculating impacts typically results in a very conservative estimate, because it does not account for instances where access roads and collection lines following existing disturbed corridors such as farm lanes and logging roads. In addition, impacts will be calculated by each Facility component, which does not account for overlap of Facility Component areas. For example, in areas where collection lines and access roads are co-located, the disturbance resulting from the access road will be added to the disturbance from collection line, without accounting for overlap in these areas. This method accounts for differences in timing of vegetation disturbance. For example, if access roads are constructed prior to installation of collection line, the vegetation may be restored along access road margins but then re-disturbed during collection line

installation. This method is especially conservative for impacts to forests, because forests cleared at any point during construction will not have regenerated by the time the vegetation would be re-disturbed.

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

(c) Measures To Avoid or Mitigate Plant Community Impacts

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

(d) Vegetation, Wildlife, and Wildlife Habitats

Vegetation

See the plant communities discussion above in Section (a) for a description of the dominant plant communities found within the Facility Area. In addition, the New York Natural Heritage Program (NYNHP) is an agency that maintains data on rare, threatened, and endangered plant and animal species, as well as significant ecological communities in the State. A site-specific request for data on rare wildlife species was submitted to NYNHP on January 4, 2016. The NYNHP provided a response on January 14, 2016, which identified two rare plant species (Schweinitz's flatsedge, and Fernald's sedge) as occurring within the Facility Area. Schweinitz's flatsedge is listed as rare in New York State, while Fernald's sedge is listed as threatened in New York State. According the NYNHP, both of these species occur in one location known as the Parishville Desert, which is a flat, sandy, open area, located between Newton Road and County Route 47 just north of their intersection, in the southwest corner of the Facility Area. In addition, the NYNHP response identified the rugulose grape fern, which is listed as threatened in New York State, as occurring in old

pastures one mile east, and two miles west of the Town of Parishville. However, it should be noted that the NYNHP's record of the rugulose grape fern in these locations dates from 1949.

Since the submittal of the NYNHP inquiry in January, 2016, the boundaries of the Facility Area have been revised. 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.

## Wildlife

### *Mammals*

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

To characterize and document bat activity within the Facility Area, an on-site acoustic presence-absence survey was conducted by Stantec during the summer of 2016. In addition, a passive acoustic fall migration survey was conducted during the fall of 2016 to characterize activity, timing of activity, and when possible, species composition of bats in the area during fall migrations. Both of these surveys were developed in consultation with the NYSDEC and USFWS, and their methodologies were based on the *New York State Department of Environmental Conservation Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects* (NYSDEC, 2016c) and the *United States Fish and Wildlife Service 2016 Range-wide Indiana Bat Summer Survey Guidelines* (USFWS, 2016). Draft work plans for these bat studies were provided to the USFWS and NYSDEC, and were subsequently revised to incorporate agency input (Appendix G). The results of the bat surveys will be provided in the Article 10 Application.

### *Birds*

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

- Raptor Migration Surveys conducted by Stantec during the Spring and Fall of 2016
- Spring Breeding Bird Surveys conducted by Stantec during the Spring of 2016
- Habitat Assessment conducted by Stantec during the Spring of 2016 (As a part of the Breeding Bird Survey)

- Fall Bird Migration transect surveys conducted by Stantec in 2016
- Spring/Summer upland sandpiper surveys (2017)

The protocols for the on-site avian studies conducted by Stantec were developed in consultation with the NYSDEC and USFWS, and are included in Appendix G. 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 immediately adjacent to 11 survey blocks, including 5094B, 5094D, 5193A, 5194A, 5194B, 5194C, 5194D, 5195C, 5195D, 5294A, and 5295C. 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. The Hopkinton BBS route runs through the northeast portion of the Facility Area, and comes within a half mile of proposed Facility turbines. Of the 106 species identified since 1966 along this route, the majority are birds of the forest and forest edge. In addition, many species that occur in mid- to late successional shrub lands were identified. The most commonly observed species along the Hopkinton Route include the American crow, red-winged blackbird, American robin, common grackle, European starling, ovenbird, red-eyed vireo, song sparrow, chipping sparrow, and common yellowthroat. Two State-listed threatened species (northern harrier, and upland sandpiper), and four State-listed species of special concern (coopers hawk, horned lark, vesper sparrow, and grasshopper sparrow) have been observed along this route. No federally-listed endangered or threatened species are listed for within the Facility Area.

The primary objective of the CBC is to monitor the status and distribution of wintering bird populations across the Western Hemisphere. Counts take place on a single day during a three-week period around Christmas, when volunteers comb a 15-mile (24 km) diameter circle in order to tally up all bird species and individuals observed. Since the edge of the closest count circle to the Facility Site (the Canton-Potsdam circle) is approximately 13 miles west of

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

#### *Amphibians and Reptiles*

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

#### *Invertebrates*

Publicly available data on terrestrial invertebrate species are generally not available for upstate New York. As stated above, the New York Natural Heritage Program (NYNHP) is an agency that maintains data on rare, threatened, and endangered plant and animal species, as well as significant ecological communities in the State. NYNHP does track several invertebrate groups, however, not all invertebrate groups are monitored (NYNHP, undated). A site-specific request for data on rare wildlife species was submitted to NYNHP on January 4, 2016. The NYNHP provided a response on January 14, 2016, which did not identify any rare, threatened, and endangered invertebrates within the Study Area (see Appendix H of this PSS). The Article 10 Application will also provide information on major taxonomic groups of invertebrates likely to be found in the Facility Site, based on available habitat, but will not identify these invertebrates to the species or genus level.

#### Wildlife Habitat

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

As stated above, a request for data on occurrence of significant natural communities was submitted to NYNHP on January 4, 2016. In its response, the NYNHP did not identify any significant natural communities within the Study Area.

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

(e) Species List

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

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

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

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

The Article 10 Application will also present additional information regarding the presence of threatened and endangered (T&E) species, species of conservation concern, rare species, and Species of Greatest Conservation Need (SGCN), and the Facility's potential to impact such species or their habitats. A table containing information on all species within these categories will be compiled and included in the Article 10 Application. Species included in this table will come from a number of sources, including correspondence with NYNYP, mentioned above, and the USFWS Information for Planning and Conservation (IPaC) database. The IPaC is a tool that identifies threatened, endangered, and candidate species listed under the Endangered Species Act for a given project site. IPaC was queried for such records on January 6, 2016 (see Appendix H). The only federally-listed species identified for the Facility Area is the threatened northern long-eared bat (*Myotis septentrionalis*). Finally, any protected species documented on-site through wildlife surveys, ecological surveys, or wetland/stream delineations will be included in this table. A discussion of potential impacts to the species included in the table from construction and operation of the Facility will be included in the Article 10 Application.

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

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

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

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

(1) Avian and Bat Impacts

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

In addition, the Article 10 Application evaluate potential cumulative impacts to avian and bat species that could result from operation of the Facility. The cumulative analysis will utilize post-construction monitoring data from applicable operating wind facilities in New York State to assess potential impacts to bird and bat species given the proposed Facility's location relative to those other wind-power projects and the species most likely to be affected.

(2) Avian and Bat Post-Construction Monitoring

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

### (3) Avian and Bat Impact Avoidance and Mitigation Plan

The Article 10 Application will include the outline of a proposed Wildlife Protection Plan (WPP), which will briefly describe measures to avoid, minimize, and mitigate impacts to avian and bat species.

#### (i) Map Showing Delineated Wetland Boundaries

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

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

On-site wetland delineations, and desktop approximations, will be supported by existing databases of state- and federally-mapped wetlands. Review of NYSDEC mapping indicates that a number of freshwater wetlands occur within the Facility Area (see Figure 6). These wetlands are interspersed throughout the Facility Area and many are associated with mapped streams and/or are found within the valleys of Dan Wright Brook, Rosenbarker Brook, and Big Hollow Brook. Table 7 provides a summary of State-regulated wetlands in the Facility Area.

**Table 7. NYSDEC-Mapped Wetlands**

Wetland	Class <sup>1</sup>	Total Size (acres)	Size Within Facility Area (acres)
NV-13	II	13.6	13.6



Wetland	Class <sup>1</sup>	Total Size (acres)	Size Within Facility Area (acres)
NV-13	II	16.5	16.5
NV-14	II	19.5	19.5
NV-15	II	32.8	32.8
NV-16	II	15.4	15.4
NV-17	II	52.0	52.0
NV-18	III	16.0	16.0
NV-19	II	8.7	0.4
NV-20	III	14.4	14.2
PV-14	III	65.9	47.5
PV-15	III	11.2	11.2
PV-15	III	5.2	5.2
PV-17	II	23.2	23.2
PV-17	II	3.9	3.9
PV-18	II	56.2	56.2
PV-18	II	33.3	33.3
PV-18	II	55.0	55.0
PV-19	II	61.0	40.2
PV-20	III	21.6	21.6
PV-21	II	37.0	37.0
PV-22	II	9.5	9.5
PV-22	II	1.6	1.6
PV-22	II	19.3	19.3
PV-23	II	4.9	4.5

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

National Wetland Inventory (NWI) mapping indicates 263 wetland communities exist within the Facility Area, which cumulatively total 888 acres. The NWI data indicate that palustrine forested/shrub wetlands comprise the majority of wetland communities on-site, totaling approximately 674 acres. Other NWI-mapped wetland communities on-site include riverine wetlands (95 acres), palustrine emergent wetlands (91 acres), and palustrine ponds (29 acres).

#### (j) Description of Wetlands

The characteristics of all field delineated wetlands will be described in the Article 10 Application, which will also include a summary of the field data collected regarding vegetation, soils, and hydrology. In addition, it is anticipated

that copies of the Corps *Wetland Determination Data Form* completed for each field delineated wetland will be included with a Wetland Delineation Report attached to the Article 10 Application.

(k) Wetland Functional Assessment

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

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

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

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

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

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

#### (l) Offsite Wetlands Analysis

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

#### (m) Wetland Impacts

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

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

#### (n) Measures to Avoid/Mitigate Wetland Impacts

In order to avoid wetland impacts to the greatest extent practicable, the Applicant conducted a field-based preliminary wetland survey during the Fall of 2016, which utilized the methodology described in 22(i) above to map wetland boundaries within much of the proposed Facility Site. The results of this survey have been used to inform Facility design, and Facility components have been sited to avoid these areas where possible.

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

(o) State and Federal Endangered or Threatened Species

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

(p) Invasive Species Prevention and Management Plan

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

(q) Agricultural Impacts

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

The Facility layout has been, and will continue to be, designed to avoid impacts to active agricultural lands to the extent practicable. Where possible, access roads will be sited along the edges of fields and forests in order to minimize impacts to both. In addition, proposed access roads will be sited along existing access roads to the extent practicable. In addition, the Applicant is engaged in discussions with landowners regarding the locations of Facility

components their land. The Article 10 Application will provide additional details on measures the Applicant has undertaken to avoid and mitigate for impacts to agricultural land.

## **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 within the Facility Area is variable, and ranges from the ground surface to greater than 200 centimeters, with high water tables most common in low-lying areas in and adjacent to wetlands. Depth to bedrock ranges from the ground surface on rocky outcrops to greater than 200 centimeters along broad ridges, and convex features. The majority of soils within the Facility Area have a depth to bedrock of greater 200 centimeters (Soil Survey Staff, 2016). The Article 10 Application will include maps showing depth to bedrock and depth to water table throughout the Facility Site, based on the Soil Survey of St. Lawrence County, New York.

#### **(2) Groundwater Aquifers and Recharge Areas**

A primary aquifer is a designation applied by US Geological Survey (USGS) and New York State Department of Environmental Conservation (NYSDEC) to aquifers that are highly productive and utilized by major municipal water supply systems (NYSDEC, 2011). The Facility Area overlays portions of one unconsolidated aquifer (which is not considered primary) mapped by NYSDEC Division of Water, Bureau of Water Resources Management (NYSDEC, 2008). This aquifer is unconfined, with yields of 10-100 gallons/minute per minute. The location of this aquifer in relation to the Facility Area is depicted on Figure 7. The US Environmental Protection Agency (USEPA) maintains data on sole source aquifers, which are those that supply at least 50% of the drinking water in a given area. The Tug Hill Sole Source Aquifer is the nearest sole-source aquifer, located over 65 miles southwest of the Facility Area (USEPA, 2011). Therefore, it is anticipated that the Facility will not result in impacts to sole-source aquifers.

To identify existing water wells in the area, a Freedom of Information Law (FOIL) request letter was sent to the NYSDEC on December 12, 2016 and to the St. Lawrence County Department of Health on February 2, 2017. These letters requested any information pertaining to groundwater wells (including location, construction logs,

depths, and descriptions of encountered bedrock) within the Facility Area. The Article 10 Application will include any information received from the NYSDEC and St. Lawrence County in response to these FOIL requests.

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 parcel map indicating those parcels that were provided a survey. However, the Applicant cannot guarantee that a response to all (or even a majority of the) surveys will be received.

### (3) Groundwater Impacts

Many of the proposed turbines will be located in higher elevation uplands, generally above and outside of the aquifer footprints located in the valleys and low areas. However, a portion of the Facility Area is underlain by an unconfined, mid-yield (10-100 gal/min) aquifer. This aquifer is labeled as “Not a Primary Aquifer” in a GIS dataset maintained by NYSDEC Division of Water, Bureau of Water Resources Management entitled *Unconsolidated Aquifers at 1:250,000* (NYSDEC, 2008). As currently sited, nine of the 40 proposed turbines for the Facility are underlain by the aquifer. There are no primary aquifers within the Facility Area. Please see Figure 7 for locations of mapped aquifers in the Facility Area.

In addition, the town of Parishville maintains an Aquifer Protection Zone (shown on Figure 7) to provide supplemental land use and development protections to the immediate area of recharge for the municipal water source for the Parishville water district. The aquifer protection zone is located south of the hamlet of Parishville along White Hill Road, and encompasses approximately 420 acres. As currently sited, the nearest proposed Facility turbine is located over one mile away from the boundary of the Parishville Aquifer Protection Zone, on the other side of the St. Regis River. Consequently, no impacts the Parishville Aquifer Protection Zone resulting from the construction and operation of the Facility are anticipated.

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 site, and will have a negligible effect on groundwater recharge. Additional detail regarding groundwater impacts will be provided in the Article 10 Application, including results from a geotechnical evaluation (as

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 site, including intermittent streams (to the extent such streams are identified in publicly available data). Sources of information will include publicly available data from the NYSDEC and ESRI, along with stream data collected during on-site wetland and stream delineations. This map will be included and references in Exhibit 23 of the Article 10 Application.

(2) Description of Surface Waters

As described in Section 2.21 of this PSS, the Facility Area is located on the boundary between the Adirondack and St. Lawrence Valley Lowland physiographic provinces in New York State. Consequently, surface water general flows south to north within the Facility Area. The entirety of the Facility Area lies within the St. Regis River Basin (USGS Hydrologic Unit 4150306). The St. Regis River Basin drains approximately 534.3 square miles of New York State, and is a tributary of the St. Lawrence River. There are approximately 1,734 miles of rivers and streams and many significant lakes and ponds in the St. Regis River Basin (NYSDEC, 2009b).

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. According to NYSDEC data, there are 14 NYSDEC-protected streams within the Facility Area (Figure 8). The Article 10 Application will identify the classification for all NYSDEC mapped streams within the Facility Site. Characteristics of the streams in the

Facility Site will be described in the Article 10 Application, based on publicly available data and when available, supplemented by field data collected during any on-site wetland and stream delineations.

With respect to fish species, an email request was submitted to the NYSDEC on December 20, 2016 for data on fish communities in streams associated with the Facility Area. The streams for which data was requested included Dan Wright Brook, Trout Brook, Big Hollow Brook, Hopkinton Brook, and Rosenbarker Brook. A response from the NYSDEC was received on February 8, 2017 which contained a spreadsheet of results from a statewide database query (see Appendix I for a copy of all related correspondence). These data provide information on fish species that have been caught or identified in the streams of interest. The data were compared to the state and federal databases of threatened and endangered species, which indicated that these streams contain no documented federally-listed threatened or endangered species. In addition, according to the data received from the NYSDEC, there are no occurrences of State-listed endangered, threatened, or special concern fish species in these streams.

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

### (3) Drinking Water Supply Intakes

A FOIL request on the location of downstream surface drinking water intake sites was submitted to St. Lawrence County Department of Public Health on February 1, 2017. The inquiry requested data on public surface drinking water intake sites within 1 mile of the proposed Facility or, if there are no such intake sites, the nearest intakes downstream of the Facility Area. The Applicant requested data for the St. Regis watershed, as this is the only watershed within which the Facility is located. The Article 10 Application will identify the surface drinking water intake sites documented through this correspondence, and discuss the type, nature, and extent of services provided by each source, if available, based on the information received. The Article 10 Application will also address potential Facility-related impacts to drinking water supplies.

### (4) Impacts to Surface Waters

Facility components have been preliminarily sited to avoid or minimize both temporary and permanent impacts to surface waters to the extent practicable. Large built components of the Facility, including wind turbine



foundations, the O&M facility, and substation, are anticipated to avoid surface waters to the maximum extent practicable as a result of careful siting of these components. Please see Figure 8 for a depiction of proposed Facility turbines in relation to mapped surface waters. The results of a formal wetland delineation will be included in the Article 10 Application. In addition, large temporary construction areas (e.g., staging areas) will avoid surface water impacts to the maximum extent practicable. The number of, and area of impacts due to, access road and collection line crossings will be minimized by utilizing existing crossings and narrow crossing locations to the extent practicable.

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

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

#### (5) Measures to Avoid or Mitigate Surface Water Impacts

Direct impacts to surface waters will be minimized by designing the Facility layout to avoid surface water impacts where practicable, and other measures such as utilizing existing or narrow crossing locations whenever possible. In addition, the results of on-site approximate wetland and stream surveys conducted during November, 2016 have been incorporated into the Facility design. Upgrading existing crossings that are under-maintained/undersized will have a long-term beneficial effect on water quality, as it will help to keep farm equipment or other vehicles out of surface waters. Special crossing techniques, equipment restrictions, herbicide use restrictions, and erosion and sedimentation control measures will be utilized to reduce adverse

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

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

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

(c) Stormwater

(1) Stormwater Pollution Prevention Plan

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

(2) Post-Construction Erosion and Sediment Control Practices

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

Following Certification of the Facility, it is anticipated that hydrologic models (e.g., Hydraflow Hydrographs Extension for AutoCAD Civil 3D software, or other industry accepted models) based upon measurable watershed characteristics will be utilized by professional engineers to calculate stormwater discharges. Stormwater runoff rates discharged from the site under existing conditions (pre-construction) will provide the basis for evaluation and comparison to proposed conditions (post-construction). Design points of interest will be established where stormwater runoff exits the site (e.g., where proposed Facility access roads intersect with existing public roads/roadside ditches). These design points will provide fixed locations at which existing and proposed stormwater quantities can be compared. The areas draining to these design points will be delineated using land survey information and proposed grading plans, and a hydrologic analysis of each of the drainage areas will be conducted to model their discharges (typically for the 1, 10, and 100-year storm events). Because

final engineering will not be completed until the Facility has been certified, and because the Applicant will ultimately seek coverage under the SPDES General Permit independent of the Article 10 process, a final SWPPP will not be included in the Application.

(d) Chemical and Petroleum Bulk Storage

(1) Spill Prevention and Control Measures

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

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

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

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

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

(e) Aquatic Species and Invasive Species

(1) Impact to Biological Aquatic Resources

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

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

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

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

#### (f) Cooling Water

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

## **2.24 VISUAL IMPACTS**

#### (a) Visual Impact Assessment

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

## (1) Character and Visual Quality of the Existing Landscape

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

Although a 5-mile study area is typical in some instances, a 10-mile study area will be established for the purpose of identifying visually sensitive resources of regional and/or statewide significance. A more inclusive inventory of locally significant visually sensitive resources will be conducted for the area within five 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 must be defined within the visual study area to be shown along with other indicators of potential visual impact (i.e. viewshed maps). Definition of discrete landscape types within a given study area provides a useful framework for the analysis of a project's potential visual effects. These landscape types, referred to in the PSS and Application as Landscape Similarity Zones (LSZs), are defined based on the similarity of various landscape characteristics including landform, vegetation, water, and/or land use patterns, in accordance with established visual assessment methodologies (Smardon et al., 1987; USDA Forest Service, 1995; USDOT Federal Highway Administration, 1981; USDI Bureau of Land Management, 1980). Distinct LSZs within the visual study area will be identified, defined, and the approximate location of these LSZs will be illustrated in the Application.

## (2) Visibility of the Facility

The VIA will include an analysis of potential visibility and identify locations within the visual study area where it may be possible to view the proposed Facility turbines or substations. Topographic and Vegetation viewshed maps will be created to identify potential visibility of wind turbines. The methodology for these analyses is described in detail below in Section (b)(2). In addition, visual field review will be conducted in the study area. During these site visits, public roads and public vantage points will be visited to document locations from which

the turbines would likely be visible, partially screened, or fully screened. This determination will be made based on the visibility of the distinctive Facility site features, including existing tall structures (such as silos and temporary meteorological towers), which will serve as locational and scale references. These site visits will result in photographs from numerous (typically over 100) representative viewpoints within the study area. The viewpoints will document potential visibility of the Facility from the various LSZs, distance zones, directions, visually sensitive resources, and area of high public use throughout the visual study area.

During the site visits, photos will be taken using digital SLR cameras with a minimum resolution of 10 megapixels. All cameras will utilize a focal length between 28 and 35 mm (equivalent to between 45 and 55 mm on a standard 35 mm film camera). This focal length is the standard used in visual impact assessment because it most closely approximates normal human perception of spatial relationships and scale in the landscape (CEIWEF, 2007). Viewpoint locations will be documented using hand-held global positioning system (GPS) units and high resolution aerial photographs (digital ortho quarter quadrangles). The time and location of each photo will be documented on all electronic equipment (cameras, GPS units, etc.) and noted on field maps and data sheets. The results of the field review will be presented in detail with visual aids in the VIA.

### (3) Visibility of Above-ground Interconnections and Roadways

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

### (4) Appearance of the Facility Upon Completion

To show anticipated visual changes associated with the proposed Facility, high-resolution computer-enhanced image processing will be used to create realistic photographic simulations of the proposed Facility from selected viewpoints. The photographic simulations will be developed by using appropriate software (e.g., Autodesk 3ds Max Design®) to create a simulated perspective (camera view) to match the location, bearing, and focal length of each existing conditions photograph. Existing elements in the view (e.g., topography, buildings, roads) will be modeled based on aerial photographs and DEM data, and a three dimensional ("3-D") topographic mesh of the landform (based on DEM or LIDAR data) will be brought into the 3-D model space. At this point minor adjustments will be made to camera and target location, focal length, and camera roll to align all modeled

elements with the corresponding elements in the photograph. This assures that any elements introduced to the model space (i.e., the proposed turbines) will be shown in proportion, perspective, and proper relation to the existing landscape elements in the view. As a result, the alignment, elevations, dimensions and locations of the proposed Facility structures will be accurate and true in their relationship to other landscape elements in the photograph.

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

Once the proposed Facility is accurately aligned within the camera view, a lighting system will be created based on the actual time, date, and location of the photograph. Thus, light reflection, highlights, color casting, and shadows will be accurately rendered on the modeled Facility based on actual environmental conditions represented in the photograph. The rendered Facility will then be superimposed over the photograph and portions of the turbines that fall behind vegetation, structures or topography will be masked out. In addition, for some views, "wireframe renderings" may be prepared to illustrate the potential screening effect of vegetation or other features in the photograph from a given viewpoint that screen or partially screen views of the Facility. In these wireframe renderings, the portions of the proposed turbines that would be screened by vegetation (or other factors) will be shown in a bright color (for illustrative purposes). These wireframe renderings may be prepared for viewpoints that are being considered as candidates for visual simulations, or for the explicit purpose of illustrating the effects of screening.

#### (5) Lighting

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

#### (6) Photographic Overlays

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



#### (7) Nature and Degree of Visual Change from Construction

Visual impacts during construction are anticipated to be relatively minor and temporary in nature. Representative photographs of construction activities will be included in the VIA. Anticipated visual effects during construction will include disturbance, loss of vegetation, and addition of construction equipment and materials to certain views. Impacts will be fully described and illustrated in the Article 10 Application.

#### (8) Nature and Degree of Visual Change from Operation

To evaluate anticipated visual change, the photographic simulations of the completed Facility will be compared to photos of existing conditions from each of the selected viewpoints. These “before” and “after” photographs, identical in every respect except for the Facility components to be shown in the simulated views, will be provided as 11 x 17 inch color prints to 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 in Appendix J to this PSS. Along with having proven to be accurate in predicting public reaction to wind power facilities, this methodology 1) documents the basis for conclusions regarding visual impact, 2) allows for independent review and replication of the evaluation, and 3) allows a large number of viewpoints to be evaluated in a reasonable amount of time. Landscape, viewer, and Facility-related factors to be considered by the landscape architects in their evaluation will include the following:

- *Landscape Composition:* The arrangement of objects and voids in the landscape that can be categorized by their spatial arrangement. Basic landscape components include vegetation, landform, water and sky. Some landscape compositions, especially those that are distinctly focal, enclosed, detailed, or feature-oriented, are more vulnerable to modification than panoramic, canopied, or ephemeral landscapes.
- *Form, Line, Color, and Texture:* These are the four major compositional elements that define the perceived visual character of a landscape, as well as a Facility. Form refers to the shape of an object that appears unified; often defined by edge, outline, and surrounding space. Line refers to the path the eye follows when perceiving abrupt changes in form, color, or texture; usually evident as the edges of

shapes or masses in the landscape. Texture in this context refers to the visual surface characteristics of an object. The extent to which form, line, color, and texture of a Facility are similar to, or contrast with, these same elements in the existing landscape is a primary determinant of visual impact.

- *Focal Point:* Certain natural or man-made landscape features stand out and are particularly noticeable as a result of their physical characteristics. Focal points often contrast with their surroundings in color, form, scale or texture, and therefore tend to draw a viewer's attention. Examples include prominent trees, mountains and water features. Cultural features, such as a distinctive barn or steeple can also be focal points. If possible, a proposed Facility should not be sited so as to obscure or compete with important existing focal points in the landscape.
- *Order:* Natural landscapes have an underlying order determined by natural processes. Cultural landscapes exhibit order by displaying traditional or logical patterns of land use/development. Elements in the landscape that are inconsistent with this natural order may detract from scenic quality. When a new Facility is introduced to the landscape, intactness and order are maintained through the repetition of the forms, lines, colors, and textures existing in the surrounding built or natural environment.
- *Scenic or Recreational Value:* Designation as a scenic or recreational resource is an indication that there is broad public consensus on the value of that particular resource. The particular characteristics of the resource that contribute to its scenic or recreational value provide guidance in evaluating a Facility's visual impact on that resource.
- *Duration of View:* Some views are seen as quick glimpses while driving along a roadway or hiking a trail, while others are seen for a more prolonged period of time. Longer duration views of a Facility, especially from significant aesthetic resources, have the greatest potential for visual impact.
- *Atmospheric Conditions:* Clouds, precipitation, haze, and other ambient air related conditions, which affect the visibility of an object or objects. These conditions can greatly impact the visibility and contrast of landscape and Facility components, and the design elements of form, line, color, texture, and scale.
- *Lighting Direction:* Backlighting refers to a viewing situation in which sunlight is coming toward the observer from behind a feature or elements in a scene. Front lighting refers to a situation where the light source is coming from behind the observer and falling directly upon the area being viewed. Side lighting refers to a viewing situation in which sunlight is coming from the side of the observer to a

feature or elements in a scene. Lighting direction can have a significant effect on the visibility and contrast of landscape and Facility elements.

- *Scale*: The apparent size of a proposed Facility in relation to its surroundings can define the compatibility of its scale within the existing landscaping. Perception of Facility scale is likely to vary depending on the distance from which it is seen and other contextual factors.
- *Spatial Dominance*: The degree to which an object or landscape element occupies space in a landscape, and thus dominates landscape composition from a particular viewpoint.
- *Visual Clutter*: Numerous unrelated built elements occurring within a view can create visual clutter, which adversely impacts scenic quality.
- *Movement*: Moving Facility components can make them more noticeable, but in the case of wind turbines, have also been shown to make them appear more functional and visually appealing. Numerous studies have documented that viewers prefer to see wind turbines in motion.

#### (9) Operational Effects of the Facility

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

#### (10) Measures to Mitigate for Visual Impacts

Mitigation options are anticipated to be limited, given the nature of the Facility and its siting criteria (very tall structures typically located in open fields at the highest locally available elevations). However, in accordance with New York State Department of Environmental Conservation (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

The Application will discuss feasibility and potential effectiveness of the various mitigation options.

#### (11) Description of Visual Resources to be Affected

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

- Properties listed on or determined eligible for listing on the National Register of Historic Places.
- State Parks.
- Urban Cultural Parks (now referred to as New York State designated Heritage Areas).
- The State Forest Preserve (i.e., the Adirondack or Catskill Parks).
- National Wildlife Refuges, State Game Refuges, and State Wildlife Management Areas.
- National Natural Landmarks.
- National Parks, Recreation Areas, Seashores, or Forests.
- Rivers designated as National or State Wild, Scenic or Recreational Rivers.
- A site, area, 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.
- Palisades Park.

- Bond Act Properties purchased under Exceptional Scenic Beauty or Open Space category.

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

#### (b) Viewshed Analysis

The Visual Impact Assessment will include a Viewshed analysis to identify locations within the visual study area where it may be possible to view the proposed wind turbines and other proposed above-ground facilities from ground-level vantage points. The methodology to be employed in this analysis is described below.

##### (1) Viewshed Maps

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

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

##### (2) Viewshed Methodology

Topographic viewshed maps for the Facility will be prepared using 10-meter resolution USGS digital elevation model (DEM) data (7.5-minute series) or LIDAR data (if available) for the visual study area, the location and

height of all proposed turbines, an assumed viewer height of 1.7 meters, and ESRI ArcGIS® software with the Spatial Analyst extension. Two ten-mile radius topographic viewsheds will be mapped, one to illustrate “worst case” daytime visibility (based on a maximum blade tip height above existing grade) and the other to illustrate potential visibility of turbine lights (based on an assumed height for the lights on top of the nacelle above existing grade).

The ArcGIS program defines the viewshed by reading every cell of the DEM data and assigning a value based upon the existence of a direct, unobstructed line of sight to the proposed location/elevation coordinates for each proposed turbine from observation points throughout the 10-mile study area. The resulting viewshed maps define the maximum area from which any portion of any turbine in the completed Facility could potentially be seen within the study area during both daytime and nighttime hours based on a direct line of sight, and ignoring the screening effects of existing vegetation and structures. A turbine count analysis will also be performed to determine how many wind turbines are potentially visible from any given point within the viewshed. The results of this analysis will then be grouped by number of turbines potentially visible and presented on a viewshed map.

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

To supplement the topographic viewshed analysis, a vegetation viewshed will also be prepared to illustrate the potential screening provided by forest vegetation. A base vegetation layer will be created using the USGS National Land Cover Dataset (NLCD) to identify the mapped location of forest land within the visual study area. Based on standard visual assessment practice, the mapped locations of the forest land will be assigned an assumed height of 40 feet and added to the DEM. The viewshed analysis will then be re-run, as described above. As with the topographic viewshed analysis, two vegetation viewsheds will be mapped, one based on maximum blade tip height to illustrate “worst case” daytime visibility and the other based on nacelle height to illustrate potential visibility of FAA warning lights. If high-resolution LIDAR data is available for the 10-mile study area, the viewshed methodology will be adjusted to reflect the capabilities of the data. The vegetation viewshed is based on the assumption that in most forested areas, outward views will be well screened by the overhead tree canopy. During the growing season the forest canopy will fully block views of the proposed turbines, and such views will typically be almost completely obscured, or at least significantly screened by tree trunks and

branches, even under “leaf-off” conditions. Although there will be certainly areas of mapped forest that may have natural or man-made clearings that could provide open outward views, these openings are rare, and the available views would typically be narrow/enclosed and include little of the proposed Facility.

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

Per the requirements set forth in 16 NYCRR § 1000.24(a), the potential cumulative visual effect of the Facility as well as other wind energy projects built or 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 Application will address the potential cumulative visual impacts that may arise from simultaneous visibility of the proposed Facility and other nearby operating wind projects. However, the closest operating wind project to the proposed Facility is the Jericho Rise Wind Project, which is located approximately 33 miles to the east. Consequently, it is not anticipated that any cumulative visual impacts will occur between any operational wind project and the proposed Facility.

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

To identify visually sensitive resources within the visual study area, a variety of data sources including digital geospatial data (shapefiles) obtained primarily through the NYS GIS Clearinghouse or the Environmental Systems Research Institute (ESRI) will be used to identify visually sensitive resources of local and statewide significance. This data consists of 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. Identified aesthetic resources of statewide or local significance, areas of intensive land use within five miles of the proposed Project, and location of visually sensitive resources within the visual study will be included with the Article 10 application.

The process of identifying visually sensitive resources was initiated in the fall of 2016. Specifically, EDR conducted a preliminary desktop inventory of visually sensitive resources of potential statewide significance within 10 miles of the proposed Project and a more detailed inventory (including potential locally significant resources) within a 5-mile visual study area. Aesthetic resources of statewide significance located within 10 miles of the proposed Facility include 16 sites and three districts listed on the National Register of Historic Places (NRHP), portions of designated wild/scenic/recreational rivers, multiple state forests, several summits of mountains located within the Adirondack Park, and the St. Regis and Deer Rivers (both of which are included in the National Rivers Inventory). Visually sensitive resources identified by the applicant to date within 10 miles of the proposed Facility are depicted on Figure 9.

Resources located within the 5-mile visual study area that may be regionally or locally significant/sensitive, include seven hamlets; three NRHP-listed sites, a snowmobile trail maintained by the St. Lawrence County Snowmobile Association, one public school, Route 11B, the hamlets of West Stockton, Parishville Center, Parishville, Hopkinton, Nicholville, Fort Jackson, and Lawrence, and several recreational water resources. Appendix K of this PSS includes a table of the identified visually sensitive resources, which provides information about each site, including the name and 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 detailed summary of this process will be included in the VIA.



#### (4) Viewpoint Selection

16 NYCRR § 1000.24(b)(4) includes the requirements that “*the applicant shall confer with municipal planning representatives, DPS, DEC, OPRHP, and where appropriate, APA in its selection of important or representative viewpoints*”. In correspondence dated March 3, 2017 the Applicant has initiated outreach to agency staff and stakeholder groups to determine an appropriate set of viewpoints for the development of visual simulations. Initial outreach efforts included the following:

- The Applicant distributed a request in the form of a Visual Outreach Letter (Appendix K) 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 provided as part of this request included: a summary of the purpose and necessity of consultation per the requirements of Article 10; a definition, explanation, and map of the visual study area; a preliminary inventory and map of visually sensitive resources identified in accordance with the NYSDEC Program Policy DEP-00-2 *Assessing and Mitigating Visual Impacts*; a 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.

In a letter dated March 28, 2017, the NYSDEC provided a response to the Visual Outreach Letter in which multiple additional sensitive resources were identified. These included many areas of state land, and recreational resources within these areas. The additional sensitive resources identified by the NYSDEC, as well as any additional sensitive resources identified by other stakeholders in response to the Visual Outreach Letter, will be provided in the Article 10 Application, and evaluated with respect to viewpoint selection.

Following receipt of feedback from the initial outreach effort, field work will be conducted to obtain photos from representative and sensitive locations throughout the study area. Upon completion of the visual fieldwork and associated data processing, the following actions will be taken:

- The Applicant will distribute a memorandum related to recommendations for Visual Simulations to the visual stakeholders. This memo is anticipated to include: a summary of research and consultation undertaken to date; description of the field review/photography for the Facility; a rationale for viewpoint selection; and,

recommendations for viewpoints to be considered by agencies and stakeholders from which a subset will be selected for the preparation of visual simulations. Viewpoint selection will include the following factors:

- Providing representative views from the various LSZs and Distance Zones within the study area.
  - The locations of visually sensitive resources/sites within the study area, including recommendations for sensitive sites received from stakeholders.
  - The predicted visibility of the Facility based on viewshed analysis.
  - The availability of open views towards the proposed Facility as determined by field review/site visits.
- The Applicant will host up to 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 use as simulations; and, a discussion of any additional suggestions or comments regarding: viewpoint selection.

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

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

#### (5) Photographic Simulations

In order to show anticipated visual changes associated with the Facility, high-resolution computer-enhanced image processing will be used to create photo-realistic simulations of the completed turbines from each of the selected viewpoints. As indicated in Section (b)(4) above, viewpoints to be included in the VIA will be selected, in

part, for their open views and as such there will be no significant screening of the proposed Facility due to foreground vegetation in the photographic simulations. Therefore, it is not anticipated that both leaf-on and leaf-off simulations will be necessary. For public outreach purposes, the Applicant has prepared preliminary simulations of the proposed Facility from a number of representative viewpoints within the Facility Area, which are included in Appendix L of this PSS. Viewpoints selected for the preliminary simulations were selected based on a combination of 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 to the typical height of individual turbines and the geographic extent of a given wind power project, mitigation measures such as screening of individual turbines with earthen berms, fences, or planted vegetation will generally not be feasible or effective in reducing Facility visibility. Therefore, additional simulations specific to 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 member of the rating panel will be calculated for each viewpoint, and an average score for each viewpoint will be determined. A copy of the visual rating form is included in Appendix J to this PSS, and will be included in the VIA. The methodology for the rating panel exercise is described 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.

However, even under the conditions described above, the proposed Facility is not anticipated to necessarily be perceived by viewers as having an adverse visual impact. Wind turbines are unlike most other energy/infrastructure facilities, such as transmission lines or conventional power plants that are almost universally viewed as aesthetic liabilities. Wind turbines have a clean sculptural form that is considered attractive by some viewers (Pasqualetti et al., 2002). In EDR's experience, operating wind power projects in New York State have generally received a positive public reaction following their construction. This observation is supported by multiple public opinion surveys conducted by Jefferson County Community College in Lewis County, New York (location of the 195-turbine Maple Ridge Farm Facility in operation since 2006), which revealed strong community support for wind power (JCCS, 2008, 2010, 2011, 2012). A significant majority (approximately 90%) of Lewis County residents who participated in these surveys expressed support for the development of additional wind energy projects (JCCS, 2010, 2011, 2012). Specific to visual impact, the 2008 survey revealed that 77% of individuals that were able to see and/or hear turbines from their homes indicated that the wind farms have had a positive impact on Lewis County. Additionally, only 7.5% of the participants who lived within 1 mile of the nearest wind turbine felt that wind farms have had a negative impact (JCCS, 2008).

#### (8) Visible Effects Created by the Facility

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

## **2.25 EFFECT ON TRANSPORTATION**

### **(a) Conceptual Site Plan**

For the purposes of the Article 10 Application, the preliminary design drawings prepared in association with Exhibit 11 will serve as the conceptual site plan, and those drawings will identify access road locations and widths, and the number of turbines to be accessed per road. A Route Evaluation Study will be prepared, which will establish a Route Evaluation Study Area, identify public road constraints (e.g., inadequate turning radii/intersections and road widths)

and anticipated haul routes, and will be used to inform the preliminary design drawings through haul route identification, anticipated delivery direction, and associated access to various turbines. The final haul routes for the turbines and necessary components will be finalized in coordination with the turbine manufacturer.

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

(1) Traffic Volume and Accident Data

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

(2) School District Bus and Routes

The Article 10 Application will include a review of school district routes for the Parishville-Hopkinton Central School District, the Brasher Falls Central School District, and the Saint Regis Falls Central School District that serve the Facility Site. This will be accomplished by obtaining school bus routes, number of buses, and times from these school districts.

(3) Emergency Service Providers

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

These consultations will result in the fire departments learning about the Facility, the Article 10 process, and how the Applicant typically interacts with fire and emergency service providers during construction and operation.

The Applicant will alert all Fire Departments that there will be a fire and emergency training and communication plan developed as part of the Article 10 process.

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

#### (4) Available Load Bearing and Structural Rating Information

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

#### (5) Traffic Volume Counts

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

### (c) Facility Trip Generation Characteristics

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

An estimate of the number, frequency and timing of vehicle trips will be based on the above-referenced haul routes, site plan and location of turbines as presented in the Article 10 Application, along with the number of phases, and estimated quantities of earthwork and materials to construct Facility Components. Exact scheduling of construction work and required vehicles will be determined by the Applicant's contractor following construction. Therefore, the study to be conducted and included in the Article 10 Application will only provide an

estimate based on typical volume of materials and number of vehicles per turbine installation. The Application will tabulate construction vehicle volumes for the Facility broken down by Facility component/truck type.

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

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

(3) Cut and Fill Activity

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

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

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

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

(d) Traffic and Transportation Impacts

(1) Levels of Service along Linear Segments of Highway

Based on the experience of the Applicant and analysis on traffic volumes from other wind projects, typical operations of the Facility will have a negligible increase over existing traffic volumes during operation. Synchro and HCS software or similar software generally accepted by the industry will be utilized to determine levels of

service for linear segments of highways used by construction and delivery vehicles. As indicated above, the Facility is not in a congested urbanized area requiring detailed intersection analysis.

## (2) Route Evaluation Study

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

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

## (3) Over-sized Deliveries

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

- Clearing and grubbing of existing vegetation.
- Grading of the terrain to accommodate the improvement.
- Extension of existing drainage pipes and/or culverts.
- Re-establishment of ditch line (if necessary).



- Construction of a suitable roadway surface to carry the construction traffic (based on the existing geotechnical conditions).

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

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

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

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

#### (5) Road Use and Restoration Agreements

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

In addition, the Article 10 Application will summarize the meetings and consultations that the Applicant has had with the local road departments of the municipalities within the Facility Area. During these meetings the Applicant will continue to discuss the proposed Facility, Article 10 process, road use agreements and general construction and transportation process when constructing a wind farm.

(e) Impact of the Facility on Mass Transit Systems

No rail or bus mass transit systems are expected to be impacted by this Facility. St. Lawrence County – Potsdam Municipal Airport, and Massena International Airport, along with additional smaller airports and heliports, are known to be within approximately 15-20 miles of the Facility. The Article 10 Application will provide in-depth description of the Facility tower locations and heights in relation to the local airports.

(f) Federal Aviation Administration Review

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

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

(1) Department of Defense Review

The Applicant has submitted applications for FAA determinations. This submission initiates formal consultation and review by the DoD of the applications, which is coordinated by the FAA. The results of the FAA review will be discussed in the Article 10 Application, providing that they are received by the Applicant before the proposed Article 10 Application filing date.

## (2) Consultation with Nearby Airports/Heliports

In accordance with the PIP filed on behalf of the Facility, prior to the submission of the Article 10 Application, letters regarding the Facility's development and status will be sent to any public airports or heliports identified on the Facility's stakeholder list (Appendix D). In addition, the Applicant will meet with the above-mentioned aviation stakeholders to discuss Facility-specific information as necessary. 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 of AM radio stations within approximately 30 kilometers (18.6 miles) of the proposed Facility will be compiled. The results will be presented in the Article 10 Application.

#### (2) FM Radio

A review of FCC license data and a list of AM and FM radio stations within approximately 30 kilometers (18.6 miles) of the proposed Facility will be compiled. 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 off-air 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 St. Lawrence 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 the Fresnel Zones of licensed, proposed, and applied non-federal government microwave systems in the area will be included in the Article 10 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 proposed 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 a compromise in coverage was determined to be possible, 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 that these can be determined by the Applicant.

#### (9) Doppler/Weather Radar

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

Wind turbine and weather spectra can span the same Doppler frequencies and share a similar dynamic range, causing conventional radar clutter filtering algorithms, which only filter energy returned from nearly stationary objects (buildings, terrain, etc.), to fail in isolating the weather signal. When wind farms are located in a

NEXRAD radar beam/radar line of sight, the spinning blades can reflect unfilterable energy back to the radar system and appear as clutter in the base data. The unfiltered wind turbine clutter can adversely impact radar data quality and the performance of the radar's internal weather detection algorithms. Turbines sited within 18 kilometers (11.2 miles) of a NEXRAD begin to impact multiple elevation scanning angles and create multipath scattering returns that show up as spikes of enhanced reflectivity down range of the wind farm (Vogt et al., 2011; Norin and Haase, 2012).

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

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

#### (10) Air Traffic Control

The FAA is the organization in the United States government responsible for air traffic control and for evaluating and issuing determinations on petitions for objects that penetrate the nation's airspace. The Applicant will submit the proposed Facility layout to the FAA so that aeronautical studies of locations of each proposed turbine can be conducted under the provisions of Title 49 of the U.S. Code, Section 44718. The FAA can issue two types of determinations, one that identifies a presumed hazard and another that identifies no hazard. As a part of this process, an interim letter is issued called a Notice of Presumed Hazard if the proposed structure is over 499 feet or if a potential hazard to air navigation is identified based on the structure's location and/or height. Structures over 499 feet automatically receive an NPH and must be publicly circularized prior to a final determination being issued. Otherwise, this notification identifies a potential issue that must be further studied or mitigated in some manner. Mitigation could include changes by the Applicant, such as relocating a turbine or reducing turbine height, upgrading a radar system, or by the government, such as changing flight procedures, cancelling underutilized approaches, or a number of other methods. The aeronautical studies for the proposed Facility will be included in the Article 10 Application, along with a discussion of potential impacts to air traffic control and air navigation.

In addition, the FAA is one of the federal agencies represented in the IRAC, which has reviewed the proposed Facility as part of the NTIA review, as discussed in (a)(9) above.

#### (11) Armed Forces

As discussed above, the NTIA provides plans for the proposed Facility to the federal agencies represented in the IRAC, which include the Department of Homeland Security, U.S. Air Force, U.S. Army, U.S. Navy, U.S. Coast Guard, and Department of Veteran Affairs. The Department of Defense (DoD), through its Siting Clearinghouse, can either respond informally or formally to a project. Informal consultations may be initiated by a project proponent. Formal consultations may be initiated either by the FAA or project proponent. The Applicant has initiated FAA review of turbine locations and the DoD will formally be consulted with by the FAA through its review process.

#### (12) GPS

Global Positioning System (GPS) is a U.S.-owned utility that provides users with positioning, navigation, and timing services. This system consists of three segments: the space segment, the control segment, and the user segment. The U.S. Air Force develops, maintains, and operates the space and control segments. The GPS control segment consists of a global network of ground facilities that track the GPS satellites, monitor their transmissions, perform analyses, and send commands and data to the satellites. 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 (ARRL, 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 these can be determined. This information will be obtained from a private firm, which maintains a database of this information.

#### (c) Anticipated Effects on Communication Systems

Section (a) of Exhibit 26 of the Application will provide a description of the communication systems in and around the Facility and any expected impacts to those systems. A more general discussion of the anticipated effects of the proposed Facility and the electrical collection system on the communication systems identified above in Sections (a) and (b), will be provided as Exhibit 26(c) of the Application, and 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 Article 10 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 Article 10 Application. Complaints can 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 FAA, NOAA, DoD, Department of Homeland Security, National Aeronautics and Space Administration, and National Science Foundation.

## 2.27 SOCIOECONOMIC EFFECTS

The Facility is located in rural St. Lawrence County. Information regarding population, educational attainment and race within St. Lawrence County and the Towns of Hopkinton and Parishville is summarized below in Table 8.

**Table 8. Socioeconomic Data for Host Municipalities**

	Hopkinton	Parishville	St. Lawrence County
<i>Population</i>			
2010 Total Population [1]	1,077	2,153	111,944
2015 ACS 5-Year Population Estimate	1,108	2,289	111,007
Median Age	41.1 yrs	36.8 yrs	37.8 yrs
<i>Educational attainment</i>			
% high school graduate or higher	90.7%	84.6%	88.0%
Total housing units	868	1,441	52,203
Median household income	\$39,792	\$47,500	\$44,705

	Hopkinton	Parishville	St. Lawrence County
Foreign born population	27	63	4,948
Individuals below poverty level	13.5%	14.8%	19.4%
Veterans	88	224	8,001
<i>Race and Hispanic Origin</i>			
White alone	1,084	2,222	104,302
Black or African American alone	0	0	2,489
American Indian and Alaska Native alone	9	0	939
Asian alone	6	31	1,125
Native Hawaiian & Other Pacific Islander	0	0	89
Some Other Race alone	3	0	912
Two or More Races	6	36	2,155
Hispanic or Latino (of any race)	4	7	2,415
White alone, Not Hispanic or Latino	1,084	2,222	103,238

<sup>1</sup> 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, expands the local economy by direct and indirect means. Income generated from direct employment during the construction and operation phases is subsequently used to purchase local goods and services, creating a ripple effect throughout the local economy. The Article 10 Application will analyze three levels of impact that the proposed Facility will have on the economy:

- **On-site labor impacts:** These are the direct impacts experienced by the companies engaged in the construction and operation of the Facility. This value estimates the dollars spent on labor and professional services by Facility developers, consultants, and construction contractors, as well as operation and maintenance (O&M) personnel. On-site labor impacts do not reflect material expenditures.
- **Local revenue and supply chain impacts:** These impacts measure the estimated increase in demand for goods and services in industry sectors such as local food and hotel industries, that supply or otherwise support the companies engaged in construction and operation (also known as “backward-linked” industries).
- **Induced impacts:** Induced impacts estimate the effect of increased household income resulting from the Facility. Induced impacts reflect the reinvestment of earned wages, as measured throughout the first two levels of economic impact. This reinvestment can occur anywhere within the economy, on household goods, entertainment, food, clothing, transportation, etc.

Each of these three categories can be measured in terms of three indicators: jobs (as expressed through the increase in employment demand), the amount of money earned through those jobs, and the overall economic output associated with each level of economic impact. These indicators are described in further detail below:

- **Jobs:** Jobs refer to the increase in employment demand as a result of Facility development. These positions are measured across each level of impact, so that they capture the estimated number of jobs on site, in supporting industries, and in the businesses that benefit from household spending. For the purposes of this analysis, this term refers to the total number of year-long full-time equivalent (FTE) positions created by the development. Persons employed for less than full time or less than a full year are included in this total, each representing a fraction of a FTE position (e.g. a half-time, year-round position is 0.5 FTE).
- **Earnings:** This measures the wages generated by the employment described above.
- **Output:** Output refers to the value of industry production in the state or local economy, across all appropriate sectors, associated with each level of impact. For the manufacturing sector, output is calculated by total sales plus or minus changes in inventory. For the retail sector, output is equal to gross profit margin. For the service sector, it is equal to sales volume.

To quantify the local economic impacts of constructing and operating the Facility, the Job and Economic Development Impact (JEDI) model will be used, which was created by the National Renewable Energy Laboratory (NREL), a facility of the United States Department of Energy. The JEDI model requires Facility-specific data input (such as year of construction, size of Facility, turbine size and location), and then calculates the impacts described above through the use of state-specific multipliers. These multipliers account for the change in jobs, earnings, and output likely to occur throughout the local, regional, and statewide economy as a result of Facility-related expenditures. The resulting data are paired with industry standard values (e.g., wage rates) and data reflecting personal spending patterns (e.g., percent of household income dedicated to housing expenditures) to calculate on-site, supply chain, and induced impacts. This model allows impacts to be estimated for both the construction and operation phases of the proposed development. The Article 10 Application will present the results of the JEDI model.

#### (a) Construction Workforce

The Article 10 Application will identify the estimated construction workforce associated with the Facility, as indicated above. The results of the JEDI model output will be evaluated by the Applicant's construction management team to provide an estimate of the average work force, by discipline, for each quarter during construction.

(b) Construction Payroll

The Article 10 Application will identify the estimated annual construction payroll and non-payroll expenditures associated with the Facility, as indicated above. The results of the JEDI model output will be evaluated by the Applicant's construction management team to provide an estimate of the annual construction payroll by trade.

(c) Secondary Employment and Economic Activity Generated by Facility Construction

The Article 10 Application will identify the estimated secondary employment and economic activity associated with Facility construction, as indicated above. The results of the JEDI model output will be included in the Application and the economic multiplier factors or other assumption(s) used will be described.

(d) Workforce, Payroll, and Expenditures During Facility Operation

The Article 10 Application will identify the estimated number of jobs associated with Facility operation, as indicated above. The Article 10 Application will also provide an estimate of other expenditures likely to be made in the vicinity of the Facility during operation.

In addition, Facility operation will also result in payment to local landowners in association with the lease agreements executed to host Facility components. The Article 10 Application will provide additional information regarding the economic benefit associated with these expenditures.

(e) Secondary Employment and Economic Activity Generated by Facility Operation

The Article 10 Application will identify the estimated secondary employment and economic activity associated with Facility operation, as indicated above.

(f) Incremental School District Operating and Infrastructure Costs

The Facility is not expected to result in any additional operating or infrastructure costs to the local school districts. The Article 10 Application will provide further description.

(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 provide further description.

(h) Jurisdictions that Will Collect Taxes or Benefits

The Facility is anticipated to result in economic benefits for the following jurisdictions:

- St. Lawrence County
- Town of Hopkinton
- Town of Parishville
- Parishville-Hopkinton Central School District
- Brasher Falls Central School District

(i) Incremental Amount of Annual Taxes or Payments

The Applicant expects to enter into a 30-year term PILOT agreement with local tax jurisdictions but the specific terms of the PILOT agreement have not yet been negotiated. The PILOT payments will increase the revenues of the local taxing jurisdictions, and will represent a significant portion of their total tax levy. The Applicant also intends to enter into a Host Community Agreement (HCA).

The Article 10 Application will provide more detail regarding the anticipated PILOT agreement with local tax jurisdictions.

(j) Comparison of Incremental Costs and Incremental Benefits

As indicated above, the Facility is not expected to result in any additional costs to local tax jurisdictions, but will result in significant benefit through implementation of a PILOT Agreement and the potential increase in sales tax revenue.

(k) Equipment or Training Deficiencies in Local Emergency Response Capacity

As indicated in Section 2.18 of this PSS, Exhibit 18 of the Article 10 Application (along with a Preliminary Health and Safety Plan and Emergency Action Plan to be appended to the Application) will provide specific detail on emergency equipment that the Applicant will maintain for the Facility. The local emergency responders are not expected to have

specialized equipment in order to respond to a fire, hazardous substance, or medical emergency beyond the typical first aid, medical emergency and fire vehicles and equipment that would be at a local fire and emergency department. For example, fire and emergency responders are not expected to have the necessary equipment to bring injured personnel down from the tower to ground level but will not be expected to do so. The Applicant will consult 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 and the expectations of the local emergency responders in the event of an emergency.

#### (I) Consistency with State Smart Growth Public Infrastructure Criteria

The New York State Smart Growth Public Infrastructure Policy Act is meant to maximize the social, economic, and environmental benefits from public infrastructure development by minimizing the impacts associated with unnecessary sprawl. State infrastructure agencies, such as the NYSDOT, shall not approve, undertake, or finance a public infrastructure facility, unless, to the extent practicable, the facility is consistent with the smart growth criteria set forth in ECL § 6-0107.

Although there are no state infrastructure agencies, as defined in the ECL, impacted by this Facility, and although the Applicant does not intend to install infrastructure that will promote or facilitate secondary growth covered by this law, the Application will address the Facility's consistency with the criteria provided in ECL 6-0107(2).

## **2.28 ENVIRONMENTAL JUSTICE**

Exhibit 28 of the Article 10 Application requires the Applicant to provide sufficient information for the New York State Department of Environmental Conservation (NYSDEC) and others to assess the potential impact of the Facility on Environmental Justice communities. However, it should be noted that the intent of an Environmental Justice evaluation is to determine if air quality and associated health impacts are disproportionately affecting certain communities or populations. As previously indicated, the Facility is a wind powered electric generation facility that will not result in emissions or air quality impacts beyond vehicle/equipment emissions and fugitive dust during construction (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](http://www.dec.ny.gov/public/911.html)), there are no Potential Environmental Justice Areas within the Impact

Study Area. The nearest Potential Environmental Justice Area to the Facility is within the Town of Potsdam and approximately 2.5 miles from the Facility Area boundary (see Figure 10). Appendix M of this PSS indicates the location of Potential Environmental Justice Areas in St. Lawrence County, as indicated on the NYSDEC website. A map of these potential Environmental Justice Areas, in relation to the Facility Site, will be provided in the Article 10 Application.

The Applicant provided this information in the PIP and, to date, no comments have been received regarding potential impacts to these Environmental Justice Areas. Because of the distance between the proposed Facility and the Potential Environmental Justice 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 adequate to fund the decommissioning of the Facility at the end of its useful life (approximately 30 to 40 years), including site restoration. The decommissioning bond will take into account the independently estimated salvage value and/or resale value of the Facility components.

### **(b) Decommissioning and Restoration Plan**

Megawatt-scale wind turbine generators typically have a life expectancy of up to 25 years. The current trend in the wind energy industry has been to replace or “re-power” older wind energy projects by upgrading older equipment with more efficient turbines, resulting in the useful life of a Facility in the range of 30 to 40 years. At the end of its useful life, the Facility will be decommissioned, in accordance with a Decommissioning Plan. This Plan will be included in the Article 10 Application and will address the following provisions:

- Decommissioning would be triggered if a wind turbine is non-operational for not less than two years, unless otherwise agreed to by the Towns and DPS staff.

- All above-ground structures, including turbines, blades, nacelles, towers, transformers, above-ground collection cables and poles, permanent meteorological towers, and the collection substation, will be removed.
- Foundations and collection lines buried above a depth of 36 inches will be removed, but components buried beneath 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 type of financial assurance, as needed and secured by the Applicant, for the purpose of adequately performing decommissioning will be described. The value of the financial assurance will be based on a 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 pre-existing condition following decommissioning activities.
- The time when the Applicant will post and maintain financial assurance in the amount of the net decommissioning costs will be indicated.
- 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 are to occur will have access to the Facility Area, 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 will not be addressed in the 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 addressed in the Article 10 Application.

## **2.31 LOCAL LAWS AND ORDINANCES**

The Facility is proposed within the Towns of Parishville and Hopkinton in St. Lawrence County, New York.

During preparation of the Article 10 Application, the Applicant will continue its consultation with the municipalities whose requirements are the subject of Exhibit 31 to determine whether all such requirements have been correctly identified, and to determine whether any potential request by the Applicant that the Board elect not to apply any such local requirement could be obviated by design changes to the proposed Facility or potential modifications to local laws.

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

The Applicant has compiled the following preliminary listing of all applicable local ordinances, laws, resolutions, regulations, standards, and other requirements of a procedural nature required for the construction or operation of the proposed Facility:

Town of Parishville Local Law 1 of 2012, Wind Energy Facility Law

- Article I §5 Permits Required (A), (B), (C), (D), (I); Transfer (H)
- Article II § 10 Creation of Wind Overlay Zones
- Article II §11 Applications for Wind Energy Conversion Systems
- Article II §12 Application Review Process
- Article II §16 Noise Standards and Setbacks for Wind Energy Conversion Systems (E)
- Article II §17 Issuance of Permits
- Article II §17A Variances
- Article II § Permit Revocation
- Article IV §31 Fees
- Article IV §33 Enforcement; Penalties and Remedies for Violations

Town of Parishville Local Law 1 of 2013, Amending the Land Use and Development Code

- Article III § 3.01 Permit Required
- Article III §3.03 Application Procedure; Required Information
- Article V § 5.12 Wind Overlay Zone (B)
- Article VII §7.13 Alternate Energy Systems and External Outdoor Wood or Other Solid Fuel Burning Furnaces (A)

Town of Parishville Local Law 1 of 2011, Reimbursement to the Town for Expert Fees Pertaining to Land Use Applications

- §3 Retention of Expert Assistance; Reimbursement by Applicant

Town of Parishville Local Law 1 of 2010, Providing for the Administration and Enforcement of the New York State Uniform Fire Prevention and Building Code

- §4 Building Permits (a), (d), (e), (f), (g), (h), (i), (j),
- §5 Construction Inspections
- §6 Stop Work Orders
- §7 Certificate of Occupancy/ Certificates of Compliance
- §12 Complaints
- §15 Violations
- §16 Fees

Town of Hopkinton Local Law No. 1 of 2011, Wind Energy Facilities Law

- Article II §5 Town of Hopkinton Planning Board (1), (6)
- Article II § 5.1.1 Powers and Authorities of the Planning Board
- Article II § 5.1.3 Issuance of Building Permit Conditioned
- Article II § 5.1.4 Appeals Procedure
- Article II § 5.1.5 Violations and Enforcement
- Article II § 6 Variances (A), (B), (C), (D)
- Article II § 8 Permits Required

- Article III § 11 Creation of Wind Overly Zones
- Article III § 12 Applications for Wind Energy Conversion Systems
- Article III § 13 Application Review Process
- Article III § 17 Noise Standards and Setbacks for Wind Energy Conversion Systems
- Article III § 18 Issuances if WECS Permits
- Article III § 19 Abatement
- Article III § 21 Permit Revocation
- Article III § 31 Fees
- Article III § 33 Enforcement and Penalties

Town of Hopkinton Local Law No. 2 of 2010, Reimbursement for Expert Fees

- §3 Retention of Expert Assistance; Reimbursement by Applicant

Town of Hopkinton Local Law No. 2 of 2007 Providing for the Administration and Enforcement of the New York State Uniform Fire Prevention and Building Code

- §4 Building Permits (a), (d), (e), (f), (g), (h), (i), (j), (k)
- §5 Construction Inspections
- §6 Stop Work Orders
- §7 Certificate of Occupancy/ Certificates of Compliance
- §12 Complaints
- §15 Violations
- §16 Fees

These local procedural requirements are supplanted by PSL Article 10, as a matter of law, unless the Board expressly authorizes the exercise of the procedural requirement by the local municipality or agency.

It is noted the Town of Parishville and the Town of Hopkinton have stated an intent to consider amendments to their respective local laws regulating wind energy facilities. Any relevant amendments or changes adopted following the publication of this PSS will be addressed in the Article 10 Application.

#### (b) Local Procedural Requirements Requiring Board Authorization

To the extent that the Towns require permits or other approvals for work performed on Town roads or within the Towns' right of way, at this time, it is the Applicant's intent to request that the Board expressly authorize the Towns to issue such permits or alternatively enter into road use agreements with the Applicant.

The Applicant will work with the Towns to follow their procedural and substantive requirements for the permitting of highway work permits. Highway work and similar road permits are primarily an issue of local concern and ministerial in nature provided the Applicant meets the applicable standards.

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

The Towns of Parishville and Hopkinton are responsible for reviewing and approving building plans, inspecting construction work, and certifying compliance with the New York State Uniform Fire Prevention and Building Code, and the Energy Conservation Code of New York State to the extent that a municipal official is a qualified individual.

Due to the complex nature of the Facility, there is the potential that the Applicant will arrange with the Towns to pay for consultant services for the review, approval, inspection and compliance certification for work required to comply with the New York State Uniform Fire Prevention and Building Code, and the Energy Conservation Code of New York State, if necessary. For a wind powered electric generating facility, typically, this work is limited to turbine foundations and operations and maintenance buildings. The Applicant will work with the Towns prior to submission of the Article 10 Application to identify the appropriate individuals to conduct this review and the Article 10 Application will include a description of any preliminary arrangements between the Applicant and the Towns and the process for review.

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

The Applicant has compiled the following preliminary listing of all applicable local ordinances, laws, resolutions, regulations, standards, and other requirements of a substantive nature required for the construction or operation of the proposed facility:

Town of Parishville Local Law 1 of 2012, Wind Energy Facility Law

- Article I §5 Permits Required (A), (B), (C), (D), (I); Transfer (H)
- Article I §6 Applicability
- Article II §10 Creation of Wind Overlay Zones
- Article II § 13 Standards for WECS
- Article II § 14 Required Safety Measures
- Article II § 15 Traffic Routes
- Article II § 16 Noise Standards and Setbacks for Wind Energy Conversation Systems
- Article II § 17A Variances
- Article II § 18 Abatement
- Article II § 19 Limitations on Approvals; Easements on Town Property
- Article II § 20 Permit Revocation

Town of Parishville Local Law 1 of 2013, Amending the Land Use and Development Code

- Article III § 3.01 Permit Required
- Article V § 5.12 Wind Overlay Zone
- Article VII § 7.13 Alternate Energy Systems and External Outdoor Wood or Other Solid Fuel Burning Furnaces (A), (B)

Town of Parishville Local Law 1 of 2010, Providing for the Administration and Enforcement of the New York State Uniform Fire Prevention and Building Code

- §4 Building Permits (a)
- §7 Certificate of Occupancy/ Certificates of Compliance (a)
- §12 Complaints (b), (c), (d)
- §15 Violations (a)

Town of Hopkinton Local Law No. 1 of 2011, Wind Energy Facilities Law

- Article II §5 Town of Hopkinton Planning Board (1), (6)
- Article II § 5.1.1 Powers and Authorities of the Planning Board
- Article II § 5.1.3 Issuance of Building Permit Conditioned
- Article II § 5.1.6 Excavation of Soil Following Approval of a Site Plan
- Article II § 6 Variances (A), (B), (C), (D)
- Article II § 8 Permits Required (A), (B), (C), (D), (I); Transfer (H)
- Article II § 10 Applicability
- Article II § 11 Creation of Wind Overlay Zones
- Article II § 14 Standards for WECS
- Article II § 15 Required Safety Measures
- Article II § 16 Traffic Routes
- Article II § 17 Noise Standards and Setbacks for Wind Energy Conversion Systems
- Article III § 19 Abatement
- Article II § 20 Limitations on Approvals; Easements on Town Property
- Article III § 21 Permit Revocation

Town of Hopkinton Local Law 2 of 2007, Providing for the Administration and Enforcement of the New York State Uniform Fire Prevention and Building Code

- §4 Building Permits (a)
- §7 Certificate of Occupancy/ Certificates of Compliance (a)
- §12 Complaints (b), (c), (d)
- §15 Violations (a)

The location of the proposed Facility will conform to all such local substantive requirements, except any that the Applicant requests that the Board elect to not apply. Copies of zoning, floodplain, and similar maps, tables and/or documents related to local substantive requirements will be included in the Article 10 Application.

(e) List of Substantive Local Ordinances/Laws That the Applicant Requests the Board Not Apply

The Facility will comply with all substantive requirements of the local laws, except those laws which are unreasonably burdensome... 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 and will provide the information required by Exhibit 31 on the justification for any waivers.

(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 Towns of Hopkinton and Parishville are described within their respective Town Zoning Laws. The Applicant will review zoning regulations for each of the towns and villages within 5-miles of the proposed Facility, and a summary of the zoning regulations will be presented in the Application, with a focus on the permitted and prohibited uses within each zoning district where Facility components will be located. The Article 10 Application will outline where the turbines and other Facility components 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 below in Table 9.

**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
New York State Department of Environmental Conservation	Water Quality Certification (WQC), Section 401 of the Clean Water Act	The request for a 401 WQC will not be filed until a federal U.S. Army Corps of Engineers permit application is filed (if necessary). Under the Siting Board regulations, the WQC will be issued by the Siting Board.

State Agency	Requirement	Discussion
New York State Office of Parks, Recreation, and Historic Preservation (OPRHP)	Consultation Pursuant to §14.09 of the New York State Historic Preservation Act	The Applicant has initiated (and will continue) consultation with the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) to ensure compliance with §14.09 of the New York State Historic Preservation Act.
New York State Department of Environmental Conservation	Endangered and Threatened Incidental Take Permit Article 11, 6 NYCRR Part 182	The NYSDEC may issue a license or permit to “take” any species listed as endangered or threatened. This permit may be required if, in consultation with state agencies, it is determined that the project could result in incidental take of any state-listed endangered or threatened fish or wildlife species from occupied habitat. If this permit is required, the procedural requirements are supplanted by Article 10.
New York State Department of Environmental Conservation	Permit for Protection of Waters Article 15, 6 NYCRR Part 608	This permit would be required for the crossing of protected streams by Facility components. Protected streams are particular portions of streams designated by the NYSDEC with one of the following classifications: AA, AA(t), A, A(t), B, B(t) or C(t). The permit is required for any change, modification, or disturbance of any protected streams, streambeds, or stream banks. If this permit is required, the procedural requirements are supplanted by Article 10.
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 Public Service Commission	Certificate of Public Convenience and Necessity NY PSL §68	No electric corporation shall begin construction of an electric plant, having a generating capacity of at least 80 MW, without first having obtained the permission and approval of the commission. The procedural requirements of Section 68 are supplanted by Article 10.

As indicated in the table above, some of these state procedural requirements are supplanted by PSL Article 10, except for permits to be issued by the New York State Department of Environmental Conservation (NYSDEC) pursuant to Federal recognition of State authority, or pursuant to federally delegated or approved authority, in accordance with the Clean Water Act, the Clean Air Act and the Resource Conservation and Recovery Act, and permits pursuant to Section 15-1503, Title 9 of Article 27, and Articles 17 and 19 of the ECL, unless the Board expressly authorizes the exercise of such authority by the state agency.



(b) List of Procedural State Approvals/Permits/Etc. that the Applicant Requests the Board Not Apply

As indicated in the chart above, the Applicant anticipates requesting that the Siting Board authorize the DOT to issue the applicable over-sized vehicle permits, highway work permits and other ministerial permits associated with road work in State highways or rights-of-ways. Generally, these approvals are issued immediately prior to construction and are submitted by the contractor. It is anticipated that the information required to be included in the submission will not be available until after a contractor is selected and post-certification. The Applicant will provide an additional explanation of why such an authorization would be desirable and/or appropriate in the Article 10 Application.

(c) List of State Approvals, Consents, Permits, Certificates, or Other Conditions of a Substantive Nature

The Applicant will construct and operate the Facility in a manner that conforms to all State substantive requirements for those approvals, consents, permits, certificates, or other conditions. The following is a list of all substantive state requirements:

- Water Quality Certification (WQC), Section 401 of the Clean Water Act 6 NYCRR Part 621.4e (Water Quality Certifications in Accordance with Section 401 of the Clean Water Act)
- Consultation Pursuant to 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)

(d) Summary Table of Substantive State Requirements

The substantive state requirements preliminarily identified above in (c) will be presented in a table in the Article 10 Application, and formatted per the associated requirements.

(e) State Approvals/Permits/Etc. for Offsite Features Not Encompassed by Major Electric Generating Facility

To the extent that offsite ancillary features, which are not considered part of the Major Electric Generating Facility, are needed, a list of all state approvals, consents, permits, certificates, or other conditions for the construction or operation of said offsite ancillary features will be listed in the Article 10 Application.

## 2.33 OTHER APPLICATIONS AND FILINGS

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

Besides the list of approvals identified in Section 2.32 and below in subparagraph (b) the Applicant does not have, and is not aware of, any other application or filing before any governmental agency, department or court which concerns the subject matter of this proceeding (i.e., the Facility).

### (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 <sup>1</sup>	Description of Permit or Approval Required
U.S. Army Corps of Engineers	TBD	Section 10 of the Rivers and Harbors Act of 1899 Section 404 or Nationwide Permit for Placement of Fill in Federal Jurisdictional Wetlands/Waters of the U.S. NEPA Compliance Compliance with Section 106 of the National Historic Preservation Act (NHPA) Compliance with Section 7 of the Endangered Species Act
Federal Aviation Administration	TBD	Lighting Plan and Clearances for Potential Aviation Hazard. Includes formal consultation with Department of Defense

<sup>1</sup> The anticipated application submittal date will be identified in the Article 10 Application.

## 2.34 ELECTRIC INTERCONNECTION

Interconnection of the Facility to the electric transmission system will be achieved using multiple systems. The wind turbines themselves produce power at a low voltage, which is stepped up to a medium voltage at the output of each turbine. A medium voltage collection system comprised of underground and overhead conductors transmits the power to a collection substation. The collection substation then transforms the power up to 115 kV and delivers the

power to the adjacent, new POI substation. The POI substation connects the Facility to the National Grid 115kV transmission system.

(a) Design Voltage and Voltage of Initial Operation

A pad mount transformer located near the base of each wind turbine tower, or internally within the tower, will raise the voltage of electricity produced by the turbine generator from approximately 650 volts up to 34.5 kilovolts (kV); the voltage level of the collection system. The length and anticipated number of circuits for the electrical collection system will be described in the Article 10 Application.

(b) Type, Size, Number, and Materials of Conductors

The length of the collection system, broken down by anticipated length of overhead and underground lines, will be described in the Article 10 Application. The underground system will be comprised of numerous cable sections in parallel, connecting each of the wind turbines to the collection substation. Each section is anticipated to be comprised of 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 feeding power into that conductor, but will typically range from 1/0 to 1250 kcmil AWG.

The overhead system is similar in concept to the underground section. Each section is anticipated to be comprised of three aluminum conductor, steel reinforced (ACSR) 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 for any overhead sections of the collection line. Insulators in the POI substation are anticipated to be porcelain.

(d) Length of the Transmission Line

The Facility is not proposing a transmission line. The collection substation and the existing POI substation are expected to be located adjacent to each other.

(e) Typical Dimensions and Construction Materials of the Towers

It is anticipated that any sections of overhead collection line will be carried on treated wood pole structures. Additional detail including the range of 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 wood poles. The design standards for wood pole structures carrying the overhead collection line will be described in the Article 10 Application.

The foundation for each pole is anticipated to be native soil or granular fill that is installed around the pole after it has been installed in the hole drilled for embedment. The fill will be 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 generator and transport it to an overhead collection line or to the collection substation. 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 the 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” or narrow cut 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 42 inches in most areas, and 48 inches in active agriculture and pasture lands. Sidecast material will be replaced with a small excavator or bulldozer. All areas will be returned to approximate pre-construction grades and revegetated.

(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

Electrical equipment to be installed in the POI substation and collection substation will be described in the Article 10 Application. The Application will include a plan/overview of the POI substation and collection substation.

(j) Any Terminal Facility

The only terminal facilities expected are the POI and collection substation, which will be described/shown above in the Article 10 Application as described above in Section (i).

(k) Need for Cathodic Protection Measures

No cathodic protection measures are expected to be required for installation of the underground systems, as no metallic pipelines are anticipated to be used. Therefore, cathodic protection measures will not be discussed further in the Article 10 Application.

## **2.35 ELECTRIC AND MAGNETIC FIELDS**

The information presented in Exhibit 35 of the Article 10 Application will be derived from an electric and magnetic field (EMF) study to be prepared for the Facility.

(a) Every Right-of-way Segment Having Unique Electric and Magnetic Field Characteristics

None of the electrical lines from the turbines to the collection station/POI station will exceed 34.5 kV; therefore, the Facility will not have a Right-of-way (ROW) associated with high voltage transmission power lines. However, the Article 10 Application will identify 34.5 kV ROW segments with unique EMF characteristics, which will be evaluated in the EMF study. The strength and location of EMFs will be modeled on representative areas of these segments. Modeling calculations will identify existing EMFs and future EMFs that would result from construction and operation of the Facility. For the purposes of calculations, the ROW is assumed to be 75 feet (37.5 feet from centerline) for all segments of the collection system. 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 overhead and underground ROW segments, the EMF study will provide both base case (where existing facilities are present) and proposed cross sections that will show, to scale, the following features:

- any known overhead electric transmission, sub-transmission, and distribution facilities showing structural details and dimensions and identifying phase spacing, phasing, and any other characteristics affecting EMF emissions;
- any known underground electric transmission, sub-transmission (i.e., 34.5 kV collection system), and distribution facilities;
- ROW boundaries; and
- structural details and dimensions for all structures (dimensions, phase spacing, phasing, and similar categories) and an overview map showing locations of structures.

The station numbers associated with each of the unique ROW segments will be included in the Article 10 Application.

(c) Enhanced Aerial Photos/Drawings Showing Exact Locations of Each:

The EMF study to be included in the Article 10 Application will include a set of aerial photos/drawings showing the exact location of each unique ROW segment and each cross-section, and any residences or occupied buildings within the ROW segments. If no residence or occupied building is within the ROW segments, the measurement of the distance between the edge of the ROW segment and the nearest residence or occupied building will be provided.

(d) Electric and Magnetic Field Study

(1) Licensed Professional Engineer

The EMF study included in the Article 10 Application will be signed and stamped/sealed by a licensed professional engineer registered and in good standing in the State of New York.

(2) Computer Software Program

The software to be used in the EMF study will be identified in the Article 10 Application.

### (3) Electric Field Calculation Tables and Field Strength Graphs

The EMF study will model the strength and locations of electric fields to be generated by the Facility. Modeling will be conducted at rated voltage, and the measurement location and interval will be described in the Application. Electric field strength graphs depicting electric fields along the width of the entire ROW and out to the property boundary of the Facility will be included in the EMF study. Digital copies of all input assumptions and outputs for the calculations will be provided under separate cover.

### (4) Magnetic Field Calculation Tables and Field Strength Graphs

The EMF study will 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 under separate cover.

### (5) Magnetic Field Calculation Tables and Field Strength Graphs for Maximum Annual Load within 10 Years

There is no expected change in amperage in maximum average load initially versus for 10 years after initiation of operation. Therefore, the modeling of magnetic fields described above in 1001.35(d)(4) (including both the graphs and tables included in the EMF study) will be applicable to both initial operation and operation after 10 years.

### (6) Base Case Magnetic Field Calculation Tables and Field Strength Graphs

There are no proposed high voltage transmission lines, therefore this analysis is not applicable to the proposed Facility, and will not be included in the Article 10 Application.

## **2.36 GAS INTERCONNECTION**

The proposed Facility will not require gas interconnection facilities, and as such, the requirements of 1001.36 are not applicable and will not be included in the Article 10 Application.

#### **2.37 BACK-UP FUEL**

The proposed Facility will not require back-up fuel, and as such, the requirements of 1001.37 are not applicable and will not be included in the Article 10 Application.

#### **2.38 WATER INTERCONNECTION**

The proposed Facility will not 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 St. Lawrence County Department of Health during this process. If an existing building is used for O&M purposes, the Applicant will evaluate the adequacy of the existing water supply.

#### **2.39 WASTEWATER INTERCONNECTION**

The proposed Facility will not 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 St. Lawrence County Department of Health throughout this process. If an existing building is used for O&M purposes, the Applicant will evaluate the adequacy of the existing wastewater treatment system.

#### **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. However, the Applicant will conduct a review of existing communication facilities to determine whether new facilities will be required to meet off-site communication needs prior to submitting the Article 10 Application. 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 building construction.



(a) Operational Data Transmitted to NYISO

The Facility's operational generating data will be transmitted to NYISO/Nation Grid through a fiber-optic shield wire from the collection substation into the POI, and will include generation data (MW output, MVAR, and any curtailment) and meteorological data (wind speed, wind direction, barometric pressure, ambient temperature, dew point, and humidity). The Article 10 Application will provide additional information on the 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 building, allowing for telecommunications to the public and first responders/emergency responders if necessary, and communications to the Applicant's corporate offices for monitoring and access to the Facility.

(c) Status of Negotiations

The Regulations require a description of the status of negotiations, or a copy of agreements that have been executed, with companies or individuals for providing the communications interconnection, including any restrictions or conditions of approval placed on the Facility imposed by the provider, if applicable. Such negotiations have not yet been initiated for the Facility because at this time, the need for these agreements has not been identified. Although not anticipated, any changes in status will be discussed in the Article 10 Application.

## **2.41 APPLICATIONS TO MODIFY OR BUILD ADJACENT**

The Applicant is not proposing to modify or build adjacent to an existing facility, and as such, the requirements of this exhibit are not applicable and will not be included in the Article 10 Application.

### 3.0 SUMMARY AND CONCLUSIONS

This Preliminary Scoping Statement has been prepared for the Facility, which is proposed to include up to 40 turbines and generate up to 100 MW of renewable energy with no emissions of pollutants or greenhouse gases to the atmosphere, and without the need for the use of significant quantities of water. Other proposed Facility components will include: access roads, overhead and underground collection lines, a collection substation, a point of interconnection substation, up to three permanent meteorological (met) towers, construction staging/laydown yards, and an Operations and Maintenance (O&M) building. This document has been prepared to facilitate an understanding of the proposed Facility, to further solicit input from the various stakeholders, and to satisfy the requirements of 1000.5(l) of the New York Public Service Law.

The proposed Facility is a utility scale wind project located in St. Lawrence County, New York in the Towns of Hopkinton and Parishville. The proposed Facility Area boundary (see Figure 2) consists of approximately 15,268 acres of private land, including a mix of agricultural and forest land. There are no villages or other urban areas within the Facility Area boundary.

The Application will identify a range of turbine models that may ultimately be selected for installation. In no case will the Facility consist of more than 40 turbines or have an operating capacity of greater than 100 MW. For example, if a 2.5 MW model is selected, then up to 40 turbines will be constructed, whereas, if a 3.0 MW model is selected then up to 33 turbines will be constructed.

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 May 9, 2016, comments on the PIP were received from the New York State Department of Public Service (DPS) on June 8, 2016, and the PIP was updated, finalized and filed by the Applicant on July 11, 2016. 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-0268>)
- (<http://www.avangridrenewables.us/northridge/>)

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 Parishville. The address of the local office is 15 Mill Street, Parishville, NY 13672, and it is currently open on Wednesdays from

10:00 am to 2:00 pm or by appointment. The Applicant intends to increase the open hours of the office in the near future. The Applicant has also held various 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 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:

- Hopkinton Reading Center
- Potsdam Public Library
- Hepburn Library

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

Finally, as previously indicated, the Applicant has prepared a content matrix to allow for a comparison of the content of this document with the requirements of 1000.5(l), which is provided below as Table 11.

**Table 11. Comparison of Contents of this PSS with the Requirements of 1000.5(l)**

PSL 1000.5(l) Section	Requirement	Corresponding Section of the North Ridge Wind Farm 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 North Ridge Wind Farm 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 North Ridge Wind Farm 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 North Ridge Wind Farm PSS	Notes
PSL 1000.5 (l)(2)(x)	A statement of the reasons why the primary proposed location and source, taking into account the potentially significant and adverse environmental impacts, is best suited, among the alternatives, including a "no action" alternative, to promote public health and welfare, including the recreational and other concurrent uses that the site may serve, except that a private facility applicant may limit its description and evaluation of alternative locations to parcels owned by, or under option to, such private facility applicant or its affiliates and its description and evaluation of alternative sources to those that are reasonable alternatives to the proposed facility that are feasible considering the objectives and capabilities of the sponsor;	Section 2.9	This Section of the PSS specifically addresses alternatives, including a "no action" alternative and a statement of the reasons why the primary proposed location and source, taking into account the potentially significant and adverse environmental impacts, is best suited, among the alternatives, to promote public health and welfare, including the recreational and other concurrent uses that the site may serve. However, as indicated in Section 2.9, this Project is being proposed by a private facility applicant and therefore the description and evaluation of alternative locations will be limited to parcels owned by, or under option to, such private facility applicant or its affiliates.
PSL 1000.5 (l)(2)(xi)	A preliminary identification of the demographic, economic and physical attributes of the community in which the facility is proposed to be located and in which any alternative location identified is located, and a preliminary environmental justice evaluation of significant and adverse disproportionate environmental impacts of the proposed facility and any alternative facility identified that would result from construction and operation considering, among other things, the cumulative impact of existing sources of emissions of air pollutants and the projected emission of air pollutants from the proposed or alternative facility in a manner that is in accordance with any requirements for the contents of an Article 10 preliminary scoping statement contained in 6 NYCRR Part 487 promulgated by the DEC for the analysis of environmental justice issues; and	Sections 2.27 and 2.28	Section 2.27 provides demographic information for the host towns, while Section 2.28 specifically address Environmental Justice, including identification of the nearest Potential Environmental Justice Area



PSL 1000.5(l) Section	Requirement	Corresponding Section of the North Ridge Wind Farm 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 beyond what will be addressed in the Article 10 Application. However, Appendix B of the PSS includes the most recently filed Meeting Log, which outlines all consultation activities conducted by the Applicant since January, 2016.
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) Section	Requirement	Corresponding Section of the North Ridge Wind Farm PSS	Notes
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 (l)(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 (l)(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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