

# PRELIMINARY SCOPING STATEMENT

Heritage Wind Project  
Town of Barre, Orleans County, New York

Case No. 16-F-0546

Prepared For:



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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

Apex	Apex Clean Energy Holdings, Inc.
APLIC	Avian Power Line Interaction Committee
Applicant	Heritage Winds 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
LWRP	Local Waterfront Revitalization Program
Met	meteorological
MW	megawatt
NYNHP	New York Natural Heritage Program
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
NYSA&M	New York State Department of Agriculture and Markets
NYSERDA	New York State Energy Research and Development Authority
NYSOPRHP	New York State Office of Parks, Recreation, and Historic Preservation
NYSORPS	New York Office of Real Property Services
O&M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
PILOT	payment in lieu of taxes
PIP	Public Involvement Program
POI	point of interconnection
PSL	Public Service Law
PSS	Preliminary Scoping Statement
REV	Reforming the Energy Vision
Siting Board	New York State Board on Electric Generation Siting and the Environment
SPCC	Spill Prevention, Control, and Countermeasure
SPDES	State Pollutant Discharge Elimination System
SWPPP	Stormwater Pollution Prevention Plan
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
VIA	Visual Impact Assessment

## 1.0 INTRODUCTION

Heritage Wind, LLC (the Applicant), a wholly owned subsidiary of Apex Clean Energy, Inc. is proposing to submit an Application to construct a major electric generating facility (the Facility) under Article 10 of the Public Service Law (Article 10 Application). Pursuant to the rules of the New York State Board on Electric Generation Siting and the Environment (Siting Board), the Applicant is proposing to submit an Application to construct a major electric generating facility under Article 10 and must submit a Preliminary Scoping Statement (PSS). Under 16 NYCRR § 1000.5(c), an Applicant can file a PSS with the Siting Board no earlier than 150 days following the submission of a Public Involvement Program (PIP) Plan. The Heritage Wind Project PIP was filed on September 23, 2016. This PSS for the Heritage Wind Project 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 public notice, which is included in Appendix A of this PSS.

## 1.1 FACILITY DESCRIPTION

The proposed Facility is a 200 megawatt (MW) wind powered electric generating project located in the Town of Barre, Orleans County, New York (see Figure 1). The Facility will be located on leased private land that is generally 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 area of land within which all Facility components will ultimately be located (the Facility Area) collectively total approximately 35,300 acres as identified in the PIP and as depicted on various figures included in this PSS. However, the precise locations of Facility components (i.e., turbines, access roads, etc.) and the parcels that host them (Facility Site) will be identified in detail in the Article 10 Application. The potential environmental impacts of the Facility will be identified and assessed throughout the Application in compliance with the specific requirements of 16 NYCRR 1001. In addition, alternatives will be addressed pursuant to the requirements of 16 NYCRR 1001.9.

The proposed Facility consists of the construction and operation of a commercial-scale wind power project, including the installation and operation of up to 47 wind turbines, together with approximately 57 miles of associated 34.5 kilovolt (kV) collection lines (below grade), 15 miles of access roads, permanent meteorological tower(s), one operation and maintenance (O&M) building, and temporary construction staging/laydown areas. To deliver electricity to the New York State power grid, the Applicant proposes to construct a collection substation which will “step-up” power to 115 kV line and the point of interconnection (POI) substation will interconnect with National Grid’s existing Lockport-Mortimer 115

kV transmission line. All of these Facility components collectively constitute the “Major Electric Generating Facility” as defined in 1000.2(v) and the term “Facility” is used in this document to collectively refer to these components.

The Facility will have nameplate capacity of up to 200 MW and will generate enough electricity to meet the average annual consumption of thousands of households in New York State.

## 1.2 FACILITY BENEFITS

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

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

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

The proposed Facility will have positive impacts on socioeconomics in the area through employment opportunities, specifically by generating construction jobs. Local construction employment will primarily benefit those in the construction trades, including equipment operators, truck drivers, laborers, and electricians. The influx of construction workers to the area will also benefit local hotels and restaurants, and increase purchases of local goods and supplies. In addition, Facility operation will generate full-time jobs, such as a Site Manager, and Wind Technicians. The Facility will also result in increased revenues to the local municipal tax base, school districts, County, and payments to participating landowners. The proposed scope of study to fully assess these potential direct and indirect benefits is provided in more detail in Section 2.27 of this PSS, titled Socioeconomic Effects.

### **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-0546). The initial draft of the PIP was submitted to the Siting Board on September 23, 2016; comments on the PIP were received from the New York State Department of Public Service (DPS) on October 24, 2016; and the PIP was updated, finalized and filed by the Applicant on November 23, 2016. The PIP can be accessed, viewed and downloaded on the online case record maintained by the Siting Board on its Document Matter Management (DMM) website: (<http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=16-f-0546>) and on the Facility-specific website maintained by the Applicant (<http://www.heritagewindpower.com>).

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 proposed Facility to stakeholders, solicit information from those stakeholders during public outreach events and generally foster participation in the Article 10 review.

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

- Facility Representative

Cat Mosley, Public Affairs Manager  
Apex Clean Energy  
Court Square Building  
310 4th Street NE, Suite 200  
Charlottesville, VA 22902  
(434) 234-4405 (o)  
(434) 220-3712 (f)  
info@heritagewindpower.com

- Local Project Contact Number: (585) 563-5137

- Local Document Repositories:

- Barre Town Hall; 14317 West Barre Road, Albion, NY 14411 (585-589-5100)
- Lee-Whedon Memorial Library; 620 West Ave., Medina NY 14103 (585-798-3430)
- Haxton Memorial Library; 3 North Pearl Street, Oakfield, NY 14125 (585-948-9900)
- Holley Community Free Library; 86 Public Square, Holley, NY 14470 (585-638-6987)

In support of this PSS and per the PIP, the Applicant has consulted with the public, affected agencies, and other stakeholders, as required by 16 NYCRR § 1000.5(b). These consultations included open houses in the Towns of Barre and Albion, New York (see Section 2.02 of the PSS for additional details). In addition to the Open House, the Applicant has engaged in a wide range of outreach efforts with state and local agencies, including the following:

- Attendance at Town of Barre General Board meetings, Town of Barre Town Board Workshop meetings, and Orleans County Legislature meetings
- Participation in the Orleans County 4-H fair
- Coordination with DPS, Ag & Mkts, and NYDEC

All such consultations have been documented in a Meeting Log maintained by the Applicant, which is updated and submitted to the Siting Board regularly (also available on the case record website referenced above). The most recent Meeting Log was filed with the Siting Board in March 2018 (see Appendix D). The Applicant will continue to prepare and file a Facility-specific Meeting Log on an approximately bi-monthly basis throughout the duration of the Article 10 review process. Additional details regarding PIP implementation and outreach to stakeholders is provided in Section 2.2 of this PSS.

## 1.4 POTENTIAL IMPACTS

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

Potentially positive impacts to the local community include significant long-term economic benefits to participating landowners, as well as to the Town of Barre, the local school district(s), and Orleans County. When fully operational, the Facility will provide up to 200 MW of electric power generation with no emissions of pollutants or greenhouse gases to the atmosphere, and without the need for the use of significant quantities of water. These potentially positive impacts will be assessed by, among other things, a socioeconomic study assessing the potential positive economic benefits of the Facility's operation and construction. In addition, the positive environmental and health impacts associated with generating electricity from wind rather than other fuel sources will be addressed based on a review of recent New York State policy determinations and assessments and a review of State energy planning objectives.

Construction and operation of the Facility will necessarily result in certain unavoidable impacts to the environment. Over the last 16 years, approximately 1,850 MWs of large-scale wind projects have been developed in New York State, resulting in information regarding the potential environmental impacts to be assessed and studied related to the operation and construction of a wind project. The majority of these environmental impacts will be temporary, and will result from construction activities. The primary construction-related impacts will be temporary disturbance of soils during the development of the construction staging area, the O&M building, the installation of access roads, turbine foundations, the permanent meteorological towers, underground collection lines, collection substation and modifications of an existing POI substation. Earth moving and general soil disturbance increases 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, and addressed by such measures as a Stormwater Pollution Prevention Plan (SWPPP). 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, may result in both permanent (loss of wetland/surface water acreage) and temporary impacts to wetlands. The development and use of temporary workspaces may result in only temporary impacts to wetlands/streams. The installation of above-ground or buried electrical lines (transmission and interconnects) may temporarily disturb streams and wetlands during construction as a result of clearing (brush-hogging, or similar clearing method requiring no removal of rooted woody plants). In addition,

potential conversion of wetland communities as a result of construction activities (e.g. forested to scrub-shrub), and soil disturbance from burial of the electrical collector lines may occur. Indirect impacts to wetlands and surface waters may result from sedimentation and erosion caused by adjacent construction activities (e.g., removal of vegetation and soil disturbance).

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

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

With careful planning and design, many of the potential impacts associated with wind facilities can be avoided or minimized to be compatible with the surrounding areas. At this time, because the studies characterizing these impacts have not yet been conducted, it is difficult to identify specific avoidance, minimization and mitigation measures. However, the studies conducted in furtherance of the Article 10 Application certificate and the scope and methodologies of which are detailed in this PSS, will identify measures taken by the Applicant to avoid potential impacts as well as minimization and mitigation measures that will reduce impacts to the extent practicable.

## 1.5 IMPACT AVOIDANCE MEASURES

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

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

- Siting turbines to minimize noise, shadow flicker, and public safety concerns.
- Using existing farm roads or logging roads for turbine access whenever possible, to minimize impacts to soil, ecological and agricultural resources, including muck farm resources in the southeast portion of the Facility Area. By doing so, the Applicant will also avoid unnecessary clearing of forested areas, thus minimizing forest fragmentation.
- Minimizing the number of stream and wetland crossings and avoid impacts to sensitive flood zones or special flood hazard areas.
- Designing all electrical lines in a manner that minimizes any possibility of stray voltage.
- Siting turbines in open field areas to minimize forest clearing and impacts to habitat.
- Limiting turbine lighting to the minimum allowed by the FAA to reduce nighttime visual impacts.
- Construction procedures will follow Best Management Practices for sediment and erosion control to minimize adverse water quality impacts to local and regional surface waters.

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

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

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

## 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 to follow the topic areas and exhibits identified in 16 NYCRR § 1001 (Content of an Application). Specifically, all sub-sections of Section 2.0 (Content of the Application) of this PSS correspond directly to each Exhibit that will be included in the Application as set forth in 16 NYCRR § 1001 (e.g., Section 2.1 corresponds to 16 NYCRR § 1001.1, Section 2.2 corresponds to 16 NYCRR § 1001.2, etc.). As a result of this sequence, exhibits that are not necessarily applicable to the Facility have been included as individual PSS sections in order to maintain consistency. However, exhibits that are not applicable to this Facility (e.g., Natural Gas Power Facilities, Nuclear Facilities) have been identified in the corresponding PSS section as Not Applicable.

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

## 2.0 CONTENT OF APPLICATION

### 2.1 GENERAL REQUIREMENTS

#### (1) Applicant Information

The Applicant is Heritage Wind LLC (Heritage Wind), a subsidiary of Apex Clean Energy, Inc. (Apex). Heritage Wind's business address is 310 4th Street NE, Suite 200, Charlottesville, VA 22902.

#### (2) Facility Website

The Project Website can be found at: [www.heritagewindpower.com](http://www.heritagewindpower.com)

#### (3) Public Contact

The Project's public contact is Cat Mosley, Public Affairs Manager. Her contact information is:

Apex Clean Energy  
Court Square Building  
310 4th Street NE, Suite 200  
Charlottesville, VA 22902  
(434) 234-4405 (o)  
(434) 220-3712 (f)  
info@heritagewindpower.com

(4) Principal Officer

Heritage Wind, LLC is a member managed entity. Its managing member is Apex GCL, LLC. Contact information is:

c/o Apex Clean Energy, Inc.  
Court Square Building  
310 4th Street NE, Suite 200  
Charlottesville, VA 22902  
(315) 215-2934 (o)  
(434) 220-3712 (f)

(5) Document Service

Comments or questions about the Facility should be directed to Cat Mosley, Public Affairs Manager.

(6) Type of Business

Heritage Wind LLC, is a limited liability company incorporated under the laws of the State of Delaware and is a subsidiary of Apex.

(7) Documents of Formation

The Facility will be owned by Heritage Wind LLC (Heritage Wind) and the certification of formation for is included as Appendix B of 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 the Town of Barre, Orleans County, New York. The regional Facility location and general 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 Facility will consist of up to 47 utility-scale wind turbines, with the total Facility nameplate of up to 200 MW. Other proposed components could include: access roads, underground medium voltage collection lines, collection and point of interconnection (POI) substations, permanent meteorological (met) tower(s), construction staging/laydown yards,

and an O&M building. Currently, the proposed total length of access roads is approximately 15 miles. The proposed length of underground collection lines that will collect power from the turbines to deliver to the collection substation is 57 miles. There are expected to be temporary laydown yards, an O&M building, and permanent met towers.

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

(b) Brief Summary of the Application Contents

The Article 10 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 September 23, 2016; comments on the PIP were received from the DPS on October 24, 2016; and the PIP was updated, finalized and filed by the Applicant on November 23, 2016.

The first goal of the PIP is to identify affected stakeholders. The PIP presented this information in Exhibit A – Stakeholder Register. Since the PIP’s final submission, that master list has been updated based on the Applicant’s consultations, meetings with stakeholders, and changes to officers of stakeholder organizations as a result of elections. An updated Master List of Stakeholders is presented in Appendix C of this PSS. The next step required for PIP implementation is consultation with stakeholders. The Applicant has initiated consultations, and the results and summary of these meetings/consultations are in the Meeting Log, which is presented in Appendix D of this PSS. The

Meeting Log will continue to be updated and filed on the DPS website through the entire PSS and Article 10 Application process.

The Applicant is committed to transparent, thorough and responsible distribution of Project information to and from stakeholders and has a Facility specific website (<http://www.heritagewindpower.com>) which stakeholders and the public can use to find additional information, receive updates, and submit comments and questions, along with a phone number (585-563-5137) to call with any questions and comments. Electronic copies of significant Facility documents (i.e., PIP, PSS, Stipulations, Article 10 Application) are or will be posted on the Applicant's website, and all documents and filings are on the Facility-specific DMM website maintained by the Siting Board (<http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?Matter CaseNo=16-f-0546>). Paper copies of significant Facility documents will be available at the following repositories:

- Barre Town Hall; 14317 West Barre Road, Albion, NY 14411 (585-589-5100)
- Lee-Whedon Memorial Library; 620 West Ave., Medina NY 14103 (585-798-3430)
- Haxton Memorial Library; 3 North Pearl Street, Oakfield, NY 14125 (585-948-9900)
- Holley Community Free Library; 86 Public Square, Holley, NY 14470 (585-638-6987)

In addition, the Applicant has hosted numerous public meetings, information sessions, and forums to distribute information about the Facility. To date, public events include:

- Town of Barre on May 12, 2016
- Town of Barre on May 18, 2016
- Town of Barre on May 24, 2016
- Village of Albion on June 9, 2016
- Village of Albion on June 23, 2016
- Town of Barre on July 6, 2016
- Town of Barre on July 20, 2016
- Town of Barre on January 18, 2017
- Village of Albion on February 11, 2017, Open house at project office

At these open houses, meetings and presentations, 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. Several open houses were well attended, and members

of the public asked questions in both a group setting and a one-on-one basis, which were answered by one (or more) of the Applicant's representatives. Some of the questions included the following:

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

During the time following the PSS submission and prior to submission of the Article 10 Application, the Applicant intends to continue stakeholder outreach, including another public open house session. Concurrent with the filing of this PSS, the Applicant published notices in local newspapers and online, sent letters to elected officials, and notified other stakeholders regarding the submission of the PSS, to provide an update on the Facility, invite comments and remind the stakeholders of the comment period timeframe. The Applicant will continue to attend municipal meetings, and respond to requests for information to the best of its ability. 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 Article 10 Application. The Applicant will continue to attend Town board meetings, and will appear at other public gatherings, as appropriate. In addition, the Applicant will continue to meet with other local public stakeholders, such as the Town and County highway departments as needed, to gather information, determine potential impacts, and coordinate mitigation efforts.

The Applicant will also continue outreach to non-public entities as identified in the PIP and through PIP activities, such as notices, updates to the project website, information made available at the local project office, and other methods. For example, the Applicant will engage with any equestrian and snowmobile groups active within the Facility area regarding their trail network and use. The Applicant plans to continue conversations with these organizations following submission of the Article 10 Application to ensure that there are no conflicts between use of the trails and the Facility, and to facilitate dissemination of accurate project information to the community.

Ongoing 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 assembled and presents the relevant and material facts from the Article 10 Application, together with the information and analysis from the studies conducted in support of the Article 10 Application, which will provide a basis for the Siting Board to make the required Findings on the proposed Facility and a decision to grant the Certificate in accordance with Public Service Law (PSL) Section 168. 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, and 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 Article 10 Application that will provide the Siting Board with the information needed to determine: (a) that the Facility is a beneficial addition or substitution for electric generation capacity of the State, (b) the construction and operation of the Facility will serve the public interest, (c) that the adverse environmental effects of the construction and operation of the Facility will be minimized or avoided to the maximum extent practicable, (d) if the Facility results in or contributes to a significant and adverse disproportionate environmental impact in the community in which the Facility would be located, that the Applicant will avoid, offset or minimize impacts caused by the Facility upon the local community for the duration of certificate to the maximum extent practicable using verifiable measures; (e) and that the Facility is designed to operate in compliance with applicable state and local laws and regulations, or in the alternative that such laws and regulations as applied to the Facility are unreasonably burdensome and therefore not applicable.

## 2.3 LOCATION OF FACILITIES

(a) Topographic Maps

Mapping/figures in the Article 10 Application will show the location of the components of the major electric generation and interconnection facilities associated with the proposed Heritage Wind Project including the turbines, access roads, electrical collection system, POI substation, permanent meteorological towers, O&M building, and staging/laydown

areas. These components, collectively referred to as the “Facility”, will be mapped on the U.S. Geological Survey topographic “(USGS) Topo” tile cache base map service displayed at a scale of 1:24,000 or greater. This map service combines the most current data (Boundaries, Elevation, Geographic Names, Hydrography, Land Cover, Structures, Transportation, and other themes) that make up The National Map (USGS, 2017). The National Map is a collaborative effort between the USGS and other Federal, State, and local partners to improve and deliver topographic information for the United States (USGS, 2016). The “USGS Topo” map service is designed to provide a seamless view of the data in a geographic information system (GIS) accessible format, and depicts information consistent with the USGS 7.5-minute (1:24,000) quadrangle topographic maps at large scales (USGS, 2017).

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

In the Article 10 Application, the Facility Site will be defined as those parcels currently under, or being pursued for lease (or other real property interests) with the Applicant for the location of all Facility components. Mapping/figures in the Article 10 Application will depict the preliminary location of all Facility components within the Facility Site displayed at a scale of 1:24,000 or greater, including the following:

- wind turbines
- permanent meteorological tower(s)
- access roads
- buried electrical collection
- O&M building
- laydown areas
- POI substation
- collection substation
- alternate turbine locations

The Article 10 Application will discuss the need for and location of any proposed 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 also be mapped.

## (2) Interconnection Location

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

## (3) Location of Ancillary Features

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

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

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

## (5) Study Area

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

- Land Use (see Section 2.4 for additional detail): Various aspects of land use such as zoning, land use classification, and existing transmission facilities will be characterized within a 5-mile radius of the Facility.
- Shadow Flicker (see Sections 2.15 and 2.24 for additional detail): The potential for impacts resulting from shadow flicker will be based geometry of the specified turbine blades. The shadow flicker modeling software (i.e., Windpro) uses information on the specific wind turbine model and on the blade width of the wind turbine model to make a determination of the distance at which the blade would cover 20% of the sun's area. Beyond this maximum distance the turbine will not contribute to shadow flicker impacts.
- Noise (see Section 2.19 for additional detail): The potential for noise impacts resulting from the construction and operation of the proposed Facility will be assessed for all sensitive receptors and participating residences located within one mile of the nearest proposed turbine location.

- Historic Resources Visual Effects (see Section 2.20 for additional details): The potential for visual effects on historic resources will be assessed with a five-mile radius of the Facility components.
- Archaeological Study Area (see Section 2.20 for additional details): The potential for impacts to archaeological resources will be assessed within the proposed Facility footprint.
- Visual Study Area (see Exhibit 24 for additional detail): The study area utilized to conduct visual impact assessments for the proposed Facility will be defined as a 10-mile radius around the Facility Site.

(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.

(d) Facility Shapefiles

GIS shapefiles used in development of the Application will be provided to requesting parties, to support the information and analyses in the Application. GIS shapefiles of all Project and resource locational information, analyses and graphic exhibit preparation will be provided directly to DPS Staff on CD-ROM along with paper copies of the Application.

The Applicant will seek 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.

## 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). It is

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

(b) Transmission Facilities Map

Existing overhead and underground major facilities for electric, gas, and telecommunications within a one-mile radius of the Facility will be identified and mapped (to the extent that information is made available to the Applicant). This information will be based initially on publicly available data sources. The Applicant will also coordinate with public (i.e., NYSDPS) and private (i.e., NYSEG, GeoTel Communications, Inc.) regarding other available underground major utilities. Data on natural gas and oil wells within the Facility vicinity will be 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 Orleans and Genesee County GIS Departments and through consultations with the Towns.

(d) Zoning District Map

Zoning jurisdiction in Orleans County is at the town/village level. Existing and proposed zoning districts within a one-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 maps for each of the towns and villages within one-mile of the proposed Facility, and a summary of the local zoning districts will be presented in the Article 10 Application, with a focus on the permitted and prohibited uses within each zoning district where Facility components will be located.

(e) Comprehensive Plan

The Article 10 Application will include a review of the Comprehensive Plan for each jurisdiction hosting Facility components. The Town of Barre adopted a revised Comprehensive Master Plan in December 2017. The Article 10 Application will also discuss whether the proposed Facility land use is consistent with applicable Plans.

(f) Map of Proposed Land Uses

The Applicant will gather information about proposed land uses from discussions with local planning officials, open houses, the PIP implementation/PSS development process, and other sources. Any information gathered will be mapped in the Article 10 Application.

(g) Map of Specially Designated Areas

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

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

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

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

Recreation areas and other sensitive land uses known to the Applicant within a 5-mile radius of the Facility will be mapped in the Application. Table 2 summarizes the sources of data to be used to prepare these maps for those recreational or sensitive area types present in the Study Area.

**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	Platts, NYSDEC, NYSDPS
Major communication and utility uses and infrastructure	TBD
Institutional, community and municipal uses and facilities	ESRI; TIGER/line files; NYS GIS Clearinghouse

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

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

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

The Article 10 Application will identify 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 Town's Comprehensive Plan and other regional plans within a one-mile radius of the Facility Site will be addressed in the Article 10 Application. Based on the currently proposed Facility Area boundary the following Comprehensive Plans, in effect as of the date of this PSS, will be considered for evaluation:

- Town of Barre Comprehensive Plan
- Town of Albion Comprehensive Plan
- Town of Murray Comprehensive Plan
- Town of Clarendon Comprehensive Plan
- Town of Byron Comprehensive Plan
- Town of Shelby Comprehensive Plan
- Town of Alabama Comprehensive Plan
- Town of Oakfield Comprehensive Plan
- Town of Elba Comprehensive Plan
- Town of Ridgeway Comprehensive Plan
- Western Orleans Comprehensive Plan,
- Genesee County Comprehensive Plan
- Genesee County Agricultural & Farmland Protection Plan.

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

The NYSDAM has promulgated a guidance document that applies to Facility components sited within agricultural lands. The *Guidelines for Agricultural Mitigation for Wind Power Projects* include siting goals, construction requirements, restoration requirements, and post-construction monitoring and remediation requirements. To minimize and/or mitigate impacts to active agricultural land and farming operations, Facility siting and construction will comply with NYSDAM agricultural protection guidelines to the maximum extent practicable. The Applicant will consult with NYSDAM personnel, and will provide additional information regarding this consultation in the Article 10 Application.

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

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

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

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

(l) Conformance with the Coastal Zone Management Act

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

(m) Aerial Photographs

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

(n) Aerial Photograph Overlays

The Article 10 Application will map Facility components overlaid on aerial photographs at a readable scale, along with the proposed limits of vegetation and soils disturbance. These maps will be created using ArcGIS software. Line symbols will be used to depict the centerlines of proposed access roads and electrical collection lines; point symbols to depict turbine and permanent meteorological tower locations; and polygon symbols to depict the substation, operation and maintenance buildings, and construction laydown areas. Buffers around each Facility component will show the limits of clearing and disturbance required (e.g., 20-foot permanent width and 50-foot temporary width for access roads). This mapping will likely be prepared using 0.5-meter resolution natural color orthoimagery from the USDA's NAIP captured during the 2015 growing season.

(o) Source of Aerial Photographs

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

(p) Community Character

The Facility is proposed to be located in a rural portion of Orleans 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 land use might have on Pine Hill Airport (9G6), 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") will be prepared for the Facility on behalf of the New York Independent System Operator ("NYISO"). The SRIS will be completed spring 2018. The SRIS contains critical infrastructure information and is required by NYISO to remain confidential due to Critical Energy Infrastructure Information (CEII) Regulations. The SRIS will be submitted and filed under separate confidential cover pursuant to Section 87(2)(d) of the New York State Public Officers Law and the Commission's regulations and 16 NYCRR 6-1.4.

(b) Potential Reliability Impacts

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

The Article 10 Application will provide greater detail on benefits and detriments of the Facility on ancillary services and the electric transmission system, including impacts associated with reinforcements and new construction necessary as a result of the Facility.

(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. Such standards include (but are not limited to):

- ASCE – American Society of Civil Engineers,
- ANSI - American National Standards Institute,
- ASTM - American Society for Testing and Materials,
- AWEA – American Wind Energy Association,
- IEEE - Institute of Electrical and Electronic Engineers,
- OSHA - Occupational Safety and Health Administration,
- NESC - National Electrical Safety Code,
- NEC – National Electric Code,

- NERC – North American Electric Reliability Council,
- NPCC - Northeast Power Coordinating Council, Inc.,
- NYSRC - New York State Reliability Council,
- Building Code of New York State.

For the POI substation, applicable National Grid requirements will be followed. 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 Underground Collection System

The procedures and controls for inspection, testing and commissioning for the Facility's 34.5 kV underground collection system will be detailed in the Article 10 Application. The collection system will be inspected, tested and commissioned in accordance with various ANSI, IEEE, 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.

### 34.5 kV Overhead Collection System

No 34.5kV overhead collection line is proposed.

### Collection Substation

The procedures and controls for inspection, testing and commissioning for the Facility's collection substation will be detailed in the Article 10 Application. The station will be inspected, tested and commissioned in accordance with various ANSI, IEEE, 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 collection 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 substations 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 Article 10 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 Article 10 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 connecting transmission owner for this Facility. The POI substation will be a new National Grid 115 kV 5 breaker ring bus to be constructed along the Lockport-Mortimer line segment. The Article 10 Application will describe the substation facilities to be transferred and provide a timetable for the transfer.

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

The Article 10 Application will describe how the substation-interconnection design meets the transmission owner's requirement. In summary, the POI substation will be designed to National Grid's standards (i.e., the transmission owner), and will be in accordance with their requirements.

##### (3) Operational and Maintenance Responsibilities

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

(i) Facility Maintenance and Management Plans

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

(1) Turbine Maintenance and Safety Inspections

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

Scheduled Inspection and Maintenance

The Article 10 Application will contain a description of the scheduled inspection and maintenance activities for the wind turbines associated with the Facility. Routine and preventative wind turbine maintenance activities are scheduled semi-annually with specific maintenance tasks scheduled for each maintenance visit. Maintenance is done by removing the turbine from service and having wind technicians climb the tower to spend a full day carrying out maintenance activities. Consumables such as various greases used to keep the mechanical components operating and oil filters for gearboxes and hydraulic systems are used for routine maintenance tasks. Following all maintenance work on the turbine, the area is cleaned up. All surplus lubricants and grease-soaked rags are removed and disposed of as required by applicable regulations. All maintenance activities will adhere to the same spill prevention industry best practices undertaken during the construction phase.

Unscheduled Maintenance/Repairs

The Article 10 Application will contain a description of the unscheduled maintenance and repairs activities for the wind turbines associated with the Facility. Modern wind turbines are very reliable and the major components are designed to operate for over 20 years. However, wind turbines are large and complex electromechanical devices with rotating equipment and many components. As a result, at times, turbines will require repair, most often for small components such as switches, fans, or sensors; typically, such repairs will take the turbine out of service for

a short period of time until the component is replaced. These repairs can usually be carried out by a single technician visiting the turbine for several hours. Events involving the replacement of a major component such as a gearbox or rotor are not typical. If they do occur, the use of large equipment, sometimes as large as that used to install the turbines, may be required. Typically only a small percentage of turbines would need to be accessed with large equipment during their operating life.

## (2) Electric Transmission and Collection Line Inspections

### (i) Vegetation Clearance Requirements

Vegetation control will be required immediately adjacent to the interconnect line to ensure safe operation and prevent damage to the line. The Article 10 Application will provide the vegetation clearance requirements for the gathering and interconnect lines associated with the Facility.

### (ii) Vegetation Management Plans and Procedures

Vegetation will be managed in accordance with best management practices, to be incorporated into the Facility-specific plans and procedures. The Facility's Vegetation Management Plan will be submitted with the Article 10 Application.

### (iii) Inspection and Maintenance Schedules

The electrical system will require periodic preventative maintenance. Routine maintenance will include condition assessment for aboveground infrastructure and protective relay maintenance of the substation, in addition to monitoring of the secondary containment system for traces of oil. The Article 10 Application will contain an inspection and maintenance schedule for the electrical system associated with the Facility.

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

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

### (v) Minimization of Interference with Distribution Systems

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

(j) Vegetation Management Practices for Substation Yard

The Article 10 Application will describe vegetation management practices for switchyard and substation yard, specifications for clearances, inspection and treatment schedules, and environmental controls to avoid off-site effects. The vegetation management practices for substation yard will be included in the Facility's Vegetation Management Plan, to be submitted with the Article 10 Application in accordance with Section (i)(2)(ii) above.

(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 Article 10 Application will provide an assessment of equipment availability and expected delivery dates for major Facility components, including wind turbines and transformers.

(m) Blackstart Capabilities

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

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

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

## 2.6 WIND POWER FACILITIES

(a) Statement of Setback Requirements/Recommendations

The primary goal of wind turbine siting and design is to maximize the capture of wind energy to assure economic viability, while providing a design that minimizes environmental impacts, meets turbine vendor site suitability requirements, considers local laws, and minimizes potential impacts at residential receptors related to sound and shadow flicker. As such, this is an iterative process with the final Facility design reflecting a balance of these factors. The proposed location and spacing of the wind turbines and support facilities is initially based upon site constructability, landowner participation, wind resource assessment, environmental resource factors, proximity to existing transmission and review of the Facility's zoning constraints (see Figure 3). Factors considered during preliminary and final placement of turbines and other Facility components include the following:

- Wind resource assessment
- Distance from residences and other buildings, non-participating land parcels, roads, and other infrastructure
- Sufficient spacing between turbines (i.e., to avoid turbine wake effects)
- Agricultural protection measures
- Biological and cultural resources
- Unusual landform areas
- Wetland avoidance
- Minimization of potential visual, shadow flicker, and noise impacts

As indicated previously, the location of the Facility has a rural and low-density character, and high density residential land use is not widespread. The Facility will be sited to avoid and/or minimize interaction with sensitive natural and cultural resources (e.g., wetlands, streams, archaeological sites) to the maximum extent practicable. The Article 10 Application will include a summary of setbacks per the Town of Barre zoning codes, and as proposed by the Applicant, regarding the following features:

- Occupied Structures and Seasonal Dwellings
- Property Boundaries
- Substation
- Roads (Public)
- Existing Electric Transmission Lines and Overhead Utilities
- Other wind turbines (existing or proposed)
- Drinking Water Wells
- Gas Wells, if any
- State Land
- Wetlands
- Noise Related

The Article 10 Application will describe how project setbacks will be established for Facility components to address any potential public health and safety concerns, minimize impacts at residential and other sensitive structures/resources, and ensure consistency with the intent of any applicable land use/zoning setback regulations. The Article 10 Application will also present representative turbine models that would be suitable for the Facility and their dimensions. Additionally, the selection of setbacks will include consideration of public safety and infrastructure considerations, local laws and ordinances, developer experience, potential noise and shadow flicker impacts, and numerous other issues, as stated/outlined previously and below. In addition to the items listed above, the Applicant has established 100 foot setbacks from mapped NYS DEC wetlands and 25 foot setbacks from mapped NWI wetlands (see Figure 4).

(1) Manufacturer's Setback Specifications

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

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 Orleans County is at the town level. The proposed turbines are sited in the Town of Barre. The Application will provide an overview of the setbacks contained in the Town of Barre wind law, and the Facility's compliance therewith, as discussed in greater detail in Section 2.31.

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

The Article 10 Application will provide an analysis of the Facility's conformance with applicable setback requirements set forth in the Town's wind law and zoning regulations, and the degree to which the Facility layout accommodates those setbacks.

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

Equipment reliability is an important criterion in turbine selection. The Article 10 Application will present a range of turbine models anticipated to be suitable for the Facility, but the Applicant may ultimately select a turbine model different than that presented in the Article 10 Application, albeit within the range of potential impacts evaluated and assessed therein, after submission of the Article 10 Application. However, the inability to identify the final turbine manufacturer and model in the Article 10 Application will not delay the review of the Article 10 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. The wind turbine certification will be in accordance with the International Electrotechnical Commission (IEC) standards. 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 Article 10 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 intent of the wind resource analysis is to optimize the turbine layout to maximize energy production within the context of the existing, site-specific constraints. During the course of the wind analysis, micro-scale wind modeling tools such as OpenWind is utilized in order to develop the energy yield analysis for the given layout. The OpenWind model is a linear flow model, which will determine the resultant wind regime at all turbine positions given data from on-site meteorological towers and high-resolution terrain from a digital elevation model. Meteorological towers were erected to generate the site-specific data necessary for modeling purposes. A preliminary turbine layout is then devised utilizing the resulting wind resource map from the OpenWind model. The final layout is determined by correlating the most energetic layouts with the most constructible and logistically economical designs. The detailed results of these analyses are proprietary and are typically retained as trade secrets. 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.

## 2.7 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 presented in this section of the Article 10 Application will be developed using GEMAPS, PROMOD, or a similar computer-based modeling tool. The Applicant will consult with the NYSDPS and NYSDEC immediately following submission of this PSS to develop an acceptable input data set to be used in the simulation analyses, including modeling for the Applicant's proposed Facility and inputs for the emissions analysis. Portions of the data to be provided are proprietary and/or Critical Energy Infrastructure Information (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, at in service date.

(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.

(3) Estimated Capacity Factor

The Article 10 Application will provide the estimated capacity factor for the proposed Facility. A 12-month generation profile will be developed using on site met tower measurements that, based on the observed time period of the measurements compared to a nearby long-term reference station, the observed mast data will be adjusted to represent a long-term average at the positions to reduce the variability with time. From this validated and long-term adjusted distributions at each turbine position, the overall wind farm gross production will be calculated based on the specific turbine power curve and the turbine specific wind distribution based on one turbine model to be presented in the Article 10 Application. Typical 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 estimated annual and monthly, on peak, shoulder, and off-peak (MWh) output capability factors for the proposed Facility (based on one turbine model).

(5) Estimated Annual and Monthly Production Output

The Article 10 Application will provide the estimated average annual and monthly production output for the Facility in megawatt-hours (MWh). Monthly energy yield averages are determined from the observed 10-minute data in each specific month and long-term adjustments are made to the monthly data set based on historical monthly norms as described in (3) above. 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 are then taken from the gross monthly production distribution to yield the 12 estimated monthly productions in MWh. An annual production output is determined from the sum of all monthly net energy yields in MWh.

(6) Estimated Production Curve Over an Average Year

The Article 10 Application will provide an estimated production curve for the Facility over an average year. The long-term adjusted annual wind frequency distributions at each turbine position calculated in the wind flow model, produces the number of hours at each specific wind speed bin for each turbine position. The specific wind turbine power curve will show the expected production at each wind speed bin. Combining these two sets of data at each turbine yields the expected annual production curve (MWh at each wind speed). The sum of all turbine's production at each wind speed bin produces the Facility estimated production curve over an annual year.

#### (7) Estimated Production Duration Curve Over an Average Year

The Article 10 Application will provide an estimated production duration curve for the proposed Facility over an average year. An estimated production duration curve can be calculated based on the long-term adjusted annual wind frequency distributions at all turbine positions and the specific turbine power curve. Each turbine's wind frequency distribution will describe the number of hours at each wind speed and resulting power level in MWh. The sum of all hours at each specific power level from all turbines results in a facility production duration curve (total Power in MWh versus number of hours expected at those MWh levels).

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

The Article 10 Application will describe the estimated effects of the proposed Facility on the energy dispatch of existing must-run resources, to include existing wind, hydroelectric and nuclear facilities, as well as cogeneration facilities to the extent they are obligated to output their available energy because of their steam hosts.

#### (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 Orleans County, New York. As will be shown in the System Reliability Impact Study (SRIS) that will be completed by the New York State Independent System Operator (NYISO),

and submitted with the Application, this 200 MW Facility will harness the area's available wind resources to inject renewable energy into the grid at a location with sufficient transmission infrastructure and capacity to bring that wind generation to the market. Therefore, the preferred alternative is to construct a facility that can produce up to 200 MW of renewable wind 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 addressed in the Article 10 Application will be limited to sites owned by or under contract to the Applicant. Even prior to obtaining local site access or control, it is worth noting that the Applicant's 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. As will be discussed broadly in the Application, Applicant must first consider the following when selecting a general area for a potential wind energy project:

- 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
- Limited population/residential development
- Avoiding areas of statewide significance or high environmental sensitivity (e.g., Adirondack Park)

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 sited in certain locations within the state that are conducive to wind energy production. The higher the wind speed at a site, the more desirable a site is, as the energy produced by a given turbine is a function of the cube of the wind speed. New York has a relatively modest wind resource and this resource is not evenly distributed throughout the state. Winds adequate to support a commercial wind-powered generating facility are generally limited to certain unique areas in the state, which include coastal areas, ridgelines, elevated plateaus, and mountain peaks. Further, the Facility Area's 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, proximity to the existing Lockport-Mortimer 115 kV line, and the relative ease

of access to the site. These factors combine to make the proposed site desirable from the standpoint of large-scale wind power development. The Application will include a broad discussion of these site selection factors, as well as a more specific analysis of layout alternatives discussed below.

(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 detailed analysis for alternatives which do not make use of lands to which Applicant has access or control. 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 the purpose of conducting a detailed assessment of additional lands not currently under lease as potential alternative locations, or for development not permitted by the Applicant's existing leases. Therefore, the Article 10 Application will provide information regarding the general site selection and alternatives evaluation process for the Facility, some of which is summarized below.

(1) Environmental Setting

The Facility is located within the Erie-Ontario Lowlands physiographic province of New York State. Elevations range from between 570 feet to 800 feet above mean sea level (AMSL). The Erie-Ontario Lowlands in Orleans County are characterized by glacial till plains and drumlins. The local area consists of lacustrine plains, and several large swamps which are remnants of proglacial lakes (NYSDOT, 2013). The Facility Area is located within the Oak Orchard-Twelve mile watershed, located on the northwestern edge of New York state along Lake Ontario and is a sub basin of the Lake Ontario Drainage Basin. A description of the Facility's effects on water resources and aquatic ecology will be included in Exhibit 23 of the Article 10 Application; however, a description of siting process (i.e., avoiding permanent impacts to water resources, avoiding flood prone areas, etc.) will be outlined in this section of the Application.

Most of Orleans County, including the Town of Barre, where the Facility Area is located, is farmland, with forest land dispersed throughout. Shoreline areas along Lake Ontario are approximately 10 miles north of the Facility Area.

The bedrock of Orleans County formed since the last glaciation 10,000 years to 15,000 years ago, and consists of upper Silurian limestone and shale (USDA, 1977). The soil underlying the Facility Area consists of members of

the Lockport, Medina, and Clinton groups (NYSDOT, 2013). Exhibit 21 of the Article 10 Application will provide additional information on geology and soils at the Facility Site.

Wetlands in the Facility area include various palustrine-farmed, freshwater emergent, and freshwater pond communities. Exhibit 22 of the Article 10 Application will provide more information pertaining to terrestrial ecology and wetlands, their proximity to the proposed Facility, and the Facility's potential impacts on those features.

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

The Applicant has identified a few recreational facilities in the area including hiking and snowmobile trails. A Phase 1A Historic Architectural Resources Survey and Work Plan is currently being developed for the Facility, and background data on visually sensitive resources are being collected in support of a Visual Impact Assessment for the Project. The information and recommendations included in this report will assist the Department of Public Service (DPS) and the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) in their review of the proposed Facility. In addition, a Phase 1A Archeological Survey Report and Work Plan is being developed for NYSOPRHP to determine if there are any potentially unidentified and/or previously identified cultural resources in the Facility Area. Exhibits 20 and 24 of the Article 10 Application will provide more detailed information on recreational, cultural, and other concurrent uses of the area. This section of the Application will address recreational, cultural or other uses of the site which informed project development and the like.

## (3) Engineering Feasibility

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

As discussed in Section 2.6(d) of this PSS, the Applicant is conducting a rigorous wind resource analysis for this Facility, the intent of which is to optimize the turbine layout to maximize energy production within the context of the existing, site-specific constraints. A summary of potential turbine technologies and site suitability issues will be included in the Article 10 Application. To the extent that geological or other site-specific features influenced project design or layout, those issues will be discussed in this portion of the Application.

## (4) Reliability and Electric System Effects

A System Reliability Impact Study (SRIS) is anticipated to be completed in Q2, 2018 to evaluate the impact of the Facility on the reliability of the New York State Transmission System and to evaluate alternatives to eliminate adverse reliability impacts, if any, resulting from the Facility. The Facility is not expected to result in adverse impacts to transmission system. Exhibit 5 of the Article 10 Application will provide a more detailed description of the Facility's effects on the reliability of the regional transmission system.

#### (5) Environmental Impacts

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

The presence of the turbines will likely result in a change in perceived land use from some viewpoints. Overall contrast with the landscape, as determined through evaluation by an expert panel of landscape architects, will be detailed in Exhibit 24 of the Article 10 Application. The Facility layout will be designed, in part, through an iterative process of identifying existing access routes and disturbed sites, as well as sensitive environmental resources (e.g., agricultural land, wildlife habitat, wetlands/streams) and siting Facility components to avoid and minimize impacts to these resources to the extent practicable. Exhibit 22 of the Article 10 Application will provide detailed information on ecological and wetland resource impacts at the Facility Site. Exhibit 9 will provide a general overview of the ways in which environmental impact issues and identified resources influenced design and layout of the Facility.

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 relative to alternative sources of electric power. The operating Facility will generate up to 200 MW of electricity without consuming cooling water or emitting pollutants.

## (6) Economic Considerations

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

With respect to cost, the Article 10 Application will provide an estimate of the total capital costs of the Facility in Exhibit 14. With respect to alternatives analysis, the Applicant will review construction costs, access road improvements and/or other related costs as part of the iterative design process. Specifically, the Applicant will provide a description of the following economic considerations in this section of the Article 10 Application:

- Proximity to interconnecting transmission line and the resulting lower costs for interconnection
- Proximity to interstate and the resulting construction cost efficiencies
- Scale of development and the need to offset fixed costs

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

## (7) Environmental Justice

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

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

Although the proposed Facility is located in a rural area, overall safety and security risks associated with the Facility are anticipated to be minimal, the Article 10 Application will include a description of public safety impacts associated with the siting of various Facility components. 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, in coordination with local first responders. 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

Impacts to public health are anticipated to be avoided during construction and operation of the proposed Facility. However, the Article 10 Application will include a brief description of public health and safety implications associated with siting various Facility components. Additional detail is provided in Section 2.15 of this PSS and will be presented in Exhibit 15 of the Article 10 Application.

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

Based on the 2014 New York State Hazard Map (USGS, 2014), the proposed Facility is located in an area of relatively low seismic hazard. There have been no recorded earthquakes in Orleans County since 1900 (USGS, 2015). Furthermore, the USGS Earthquake Hazards Program does not list any young faults, or faults that have had displacement in the Holocene epoch within the vicinity of the Facility Area. 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 200 MW of electricity without consuming cooling water or emitting pollutants.

## (11) Objectives and Capabilities of the Applicant

The Applicant, Heritage Wind LLC, is a privately held limited liability company and a wholly owned subsidiary of Apex Clean Energy Holdings, LLC. Apex is the managing entity of Heritage LLC. Apex's headquarters are located in Charlottesville, Virginia, and the Heritage Wind LLC, maintains a local Facility office in Albion, New York. Apex Clean Energy is an independent renewable energy company focused on building utility-scale generation facilities. Apex is focused on building commercial-scale wind energy projects, and is constructing one of the nation's largest, most diversified portfolios of renewable energy resources, capable of producing more than 12,000 MW of clean energy. Last year, Apex brought online four new clean energy facilities, comprising 500 MW of capacity. In addition, Apex's Article 10 Application for Galloo Island Wind Facility in Hounsfield, New York was filed with the NYS Department of Public Service on September 25, 2017.

As will be discussed in the Application, the proposed Facility Area can meet the objective of creating an economically viable wind-powered electrical-generating facility that will provide a source of renewable energy to the New York power grid to:

- Satisfy regional energy needs in an efficient and environmentally sound manner;
- Supplement and offset fossil-fuel electricity generation in the region, with emission-free, wind-generated energy;
- Reduce the amount of electricity imported to New York State;
- Realize the full potential of the wind resource with Orleans 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. Therefore, the majority of the alternatives discussed, will be those that can be accommodated within the proposed Facility Area

where lease agreements with the landowners are in place, and within the limitations of these private lease agreements, as it pertains to the size, location, and nature of permissible activities. On-site alternatives will address the following considerations.

(1) General Arrangement and Design

The general arrangement and design of the Facility including turbine layout, access roads, collection lines, permanent met tower(s), ancillary facilities (concrete batch plant, O&M building, etc.), and interconnection facilities,

(2) Technology

It is the Applicant's intent and objective to develop a wind power project which harnesses existing wind resources. 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 (i.e. solar, geothermal, etc.) are not considered reasonable alternatives, and do not warrant detailed consideration in the Article 10 Application.

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

(3) Scale or Magnitude

As mentioned previously, various siting constraints dictate the size and layout of a wind power project. These constraints make a significantly greater number of turbines than currently proposed within the Facility Area highly unlikely. The Applicant is doing business in a wholesale electric market that is highly competitive and extremely price-sensitive. Given the economies of scale involved in the development and construction of a wind project, all other things being equal, a larger scale project produces lower cost energy. The Article 10 Application will address alternate scale and magnitude of the Facility in the context of the interconnection agreement (i.e., a 200 MW Facility). This will include a discussion of the economics of scale, and the ramifications of utilizing differently sized turbines. Information regarding economic benefit to local communities such as PILOT payments, landowner payments, and construction expenditures related to a project of this size will also be addressed.

(4) Alternative Turbine Layouts

The proposed location and spacing of the wind turbines will be directly related to a number of factors, including landowner participation, a wind resource assessment, the location of existing access roads, environmental resource factors, constructability issues, and the consideration of adjacent land uses. Factors considered during the layout design process include the following:

- *Wind Resource Assessment:* Through the use of on-site meteorological data, topographic and surface roughness data, wind flow modeling, and wind plant design software, the wind turbines will be sited to optimize exposure to wind from all directions, with emphasis on exposure to the prevailing southwest wind direction in the Facility Area.
- *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 that certain elevation and topography criteria be met (i.e., not locating a turbine on too steep of a slope or on too narrow a ridge), or else they will not certify the turbine location as suitable and the turbine cannot be constructed. To ensure turbines were placed in suitable locations, all potential turbine sites were evaluated to meet elevation and topography criteria.
- *Sufficient Turbine Spacing.* Siting turbines too close to one another can result in decreased electricity production and excessive turbine wear, due to the creation of wind turbulence between and among the turbines. Each operating wind turbine creates downwind turbulence in its wake. As the flow proceeds downwind, there is a spreading of the wake and recovery to free-stream wind conditions. The Facility turbines will be located with enough space between them to minimize wake losses and maximize the capture of wind energy.
- *Local Zoning.* The Town of Barre has 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 Facility will be designed to meet the requirements contained these local ordinances, and any exceptions will be discussed in Exhibit 31 of the Article 10 Application.
- *Wetlands and Waterbodies.* The proposed Facility Area includes numerous wetlands and streams. Facility components will avoid and/or minimize impacts to wetlands and streams to the greatest extent practicable.
- *Communication Interference.* Turbines will be sited outside of known microwave pathways or Fresnel zones to minimize the effect that they may have on existing communications.
- *Wildlife Habitat and Sensitive Natural Communities.* Turbines and facility components will be sited so as to minimize impacts to sensitive or rare natural communities, wildlife, and wildlife habitat, particularly habitat known or suspected to be utilized by federally and state-listed species.

- *Recreational Resources.* Turbines will be sited 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.* The Facility will be designed to avoid 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 47 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 200 MW. The turbine model ultimately selected for this Facility will be based upon numerous factors, such as site suitability, availability and price. Turbine locations will ultimately be chosen from among the specific locations identified in the Article 10 Application, and will be based on the wind resource and other siting factors 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 47 turbine locations, even though fewer turbines may be built.

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

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

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

Pending the results of the SRIS, this Facility is not anticipated to have any adverse effects on the New York State power grid. See Section 2.5 for a more detailed 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 environmental, and aesthetic resources, as well as community safety and welfare. The Article 10 Application will include a description of why the proposed location is best suited to promote public health and welfare.

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

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

(f) No Action Alternative

The no action alternative assumes that the Facility Area would continue to exist as-is. This no action alternative would not beneficially or adversely affect current land use, existing natural resources, ambient noise conditions, traffic or public road conditions, television/communication systems, and would maintain the area's current community character, socioeconomic, and energy-generating conditions as they currently exist. Importantly, however, given the dramatic and devastating impacts of climate change to ecological, human, and community resources, as well as the overwhelming scientific support for the pressing need to develop renewable generation and curb carbon emissions, a "no action" alternative is not without its own environmental impacts. The Article 10 Application will include a statement of the reasons why the no action is not a preferred alternative.

(g) Energy Supply Source Alternatives

Alternative power generation technologies, such as fossil-fuel and biomass combustion, would not meet the goals of the Facility, are not the area of expertise of the Applicant, and would result in more significant adverse environmental impacts, particularly on air quality but also on land use, water resources and public health and welfare. Therefore, the Article 10 Application will not provide a detailed evaluation of alternative energy sources. Applicant will include a general, high-level discussion of the broad impacts and scale of a 200 MW solar generation facility at this location, though detailed alternative calculations, engineering, or impact calculations are beyond the scope of the Applicants objectives and capabilities for this Facility, as discussed in detail above.

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

Due to the constraining factors of siting wind energy projects discussed in Section 2.9(a) of this PSS, a comparison of the advantages and disadvantages of the proposed and alternative energy sources will not be discussed in the Article 10 Application.

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

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

## 2.10 CONSISTENCY WITH ENERGY PLANNING OBJECTIVES

(a) Consistency with State Energy Plan

The Facility will help the State achieve the goals of the 2015 State Energy Plan (See NY State Energy Law 6-104), the Clean Energy Standard (CES), and the Reforming the Energy Vision (REV) initiative. The New York State Energy Plan, issued in 2015, set forth a broad set of statewide goals and policy objectives to increase the use of renewable energy and to significantly reduce greenhouse gas (GHG) emissions while stabilizing energy costs, consistent with the State's commitments in the Regional Greenhouse Gas Initiative (RGGI). Through the State Energy Plan, New York has committed to achieving a 40 percent reduction in GHG emissions from 1990 levels by 2030 and reducing total carbon emissions 80 percent by 2050. In addition, the State Energy Plan calls for 50 percent of generation of electricity from renewable energy sources by 2030. The proposed Facility is consistent with the objectives of the State Energy Plan and will assist the State in achieving the 50 percent renewable energy generation objective, as will be discussed more fully in the Application.

As the State Energy Plan states, “[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, and to implement specific actions and regulatory reforms which further the State Energy Plan's objectives, on August 1, 2016 the Public Service 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 percent 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 Heritage Wind Project advances these policy goals and objectives, 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 and these other important State policies and initiatives. 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 November 2017, and will be completed by the New York Independent System Operator (NYISO) prior to submission of the Application. SIRS results will be presented in exhibit 10 of the Article 10 application. The scope and methodology for an SRIS is established by NYISO, and is a standardized approach the State has adopted for assessment of these issues. A number of power flow base cases will be evaluated both with and without the proposed Facility in service, including 2018 summer peak, winter peak, and light load. The Article 10 Application will describe the impact of the proposed Facility on reliability in the State in greater detail using analyses conducted as part of the SRIS.

(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. As the Siting Board has held, production of renewable generation in the state is beneficial for the State’s electric system and is in the public interest (Cassadaga Order at 15-16, 2018). The New York electric utility system relies on supply from numerous fuel sources, including natural gas, hydroelectric, nuclear, wind, solar, oil, and coal, as well as interconnections with its neighbors and demand-response resources. Maintaining and improving fuel diversity in New York will lead to less volatile electric prices, improved reliability, and positive environmental impacts (NYISO, 2008). The Article 10 Application will include discussion of the current electric generation capacity by fuel type to demonstrate that the addition of the Facility will increase fuel diversity. Current fuel mix data will be obtained from NYISO.

(d) Impact on Regional Requirements for Capacity

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

(e) Impact on Electric Transmission Constraints

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

(f) Impact on Fuel Delivery Constraints

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

(g) Impact on Energy Policy

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

The Commission 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 CES plans. In the FSEIS the Department recognizes the vital role that renewable resources such as wind play in helping the state meet its goals under the State Energy Plan. Projects such as Heritage Wind are pivotal in helping the State reach its energy goals. 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 CES sets required renewable consumption targets for distribution utilities throughout the state, and created a market for Renewable Energy Credits (RECs), financial mechanisms which assign a value to the environmental and societal benefits of renewable generation. Projects such as Heritage Wind will aid in achievement of State and regional generation and emissions reduction targets, as will be discussed more fully in the Application.

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

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

Given the unique nature and constraints associated with the siting of wind-powered electric generation facilities, such as the regional availability of adequate wind resources, and the need for willing land lease participants and host communities, and adequate access to the bulk power transmission system, the alternatives available for wind energy development are limited. A wind energy generation facility such as Heritage Wind is proposed in a location because of its available wind resources; deployment of an alternative generation technology, such as solar or biomass, would not represent the best use of the State's limited available wind resources, or of lands in areas where wind resources are sufficient to support energy generation. With those constraints in mind, the Article 10 Application will focus on comparing alternative facility configurations within the proposed Facility Area, primarily in Exhibit 9. Such alternatives may include alternative project layouts, alternative project size, alternative turbine heights, and a no action alternative and as identified in Section 2.9 of this PSS. A discussion of the broader considerations which steer and constrain geographic opportunities for wind development will also be included in the Application.

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

As will be discussed in detail in the Application, the Facility will have a positive impact on public health and welfare by producing electricity with zero emissions. Electricity delivered to the grid from wind energy projects can off-set the generation of energy at existing conventional power plants, such as coal and nuclear facilities slated for closure in the near term, and less efficient oil and gas plants responsible for significant air pollution in their communities. 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 and the price volatility that can result from an overreliance on natural gas.

## 2.11 PRELIMINARY DESIGN DRAWINGS

All Preliminary Design Drawings prepared in support of the Article 10 Application will be prepared using computer software (e.g., AutoCAD, MicroStation), will be labeled “preliminary” and “not for construction purposes”, and will be prepared under the direction of a professional engineer who is licensed and registered in New York State. Four, full size copies of the drawing set, utilizing a common engineering scale, will be provided to DPS Staff. A single, full size drawing set will also be provided to the NYSDEC Central Office and to NYSDEC Region 6 Staff (total of two full sized sets). All other printed copies (included with the Application) will be at a legible and reduced size (i.e., 11"x17"), also utilizing a common engineering scale (for example: 1"=60'; 1"=100; or 1"=200'). Additionally, a CD-ROM containing electronic PDF files will be submitted to DPS Staff.

### (a) Site Plan

The Preliminary Design Drawings will constitute the site plan drawings for the Facility and will be prepared at a scale of 1" = 100'. These drawings will depict the following Facility components:

- Access road travel lanes (temporary and permanent);
- Turbine foundations, tower outline, and crane pads;
- Turn-around areas to be used during turbine deliveries (if needed);
- Proposed grading (temporary grading for construction purposes and approximate final contours);
- Electric collection lines – the required number of circuits for each collection line route will be indicated on site; plans; also, underground cable routes will be differentiated with specific line-types;
- Limits of disturbance for all project components (turbines, access roads, buildings, electric lines, substation, etc.);
- Clearing limits for all project components (turbines, access roads, buildings, electric lines, etc.);
- Indication of all permanent right-of-way (ROW) for all electric cable installations;
- Proposed locations that will utilize trenchless methods of electric cable installations (including laydown area and approximate trenchless installation distances);
- Project substation outline, including access driveway and fence-line;

- O&M Building and parking area;
- Permanent meteorological towers;
- Outline of concrete batch plant (if proposed); and
- Laydown and staging areas.

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 include a construction operations plan, and it will depict the location of all anticipated construction staging/material laydown areas, work spaces, general location of the temporary concrete batch plant, contractor trailers/offices, and parking for the proposed Facility. 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, more spread out, and designed to fit within the existing land form. A sediment and erosion control plan will be presented in the Article 10 Application consistent with the requirements of 16 NYCRR 1001.11(c). Publicly available elevation data will be obtained from FEMA Great Lakes Area 2014 1-meter resolution Digital Elevation Models. Using AutoCAD software, a three-dimensional (3D) surface will be created, from which 2-foot contour intervals will then be interpolated. Existing and proposed contours (2-foot intervals) will be depicted on the plan view sheets of the Preliminary Design Drawings. In addition, a soils type map will be included with the drawing set. Exhibit 21 of the Article 10 Application will provide soil type and depth to bedrock information based on publicly available data and preliminary geotechnical evaluation. Preliminary cut and fill calculations will be included along with a general description of typical cut and fill scenarios.

(d) Landscaping Plan

Landscaping and site restoration plans will be developed as part of the Preliminary Design Drawings. These plans will indicate areas to be replanted or restored following construction, as well as areas to include plantings to improve general landscape character of the site (i.e., substation). A tree removal map will be developed by depicting the Facility

footprint on recent aerial imagery and will be used to determine the areas where trees may be removed. The anticipated acreage of tree removal will be discussed in Exhibit 22 of the Article 10 Application. However, an on-site survey of all trees to be removed will not be included in the Article 10 Application.

(e) Lighting Plan

The Article 10 Application will provide lighting specifications for FAA lights on turbines and typical lights to be used at the substation, O&M facility, and permanent meteorological towers.

(f) Architectural Drawings or Typical Details

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

(g) Typical Design Detail Drawings

The Preliminary Design Drawings will include relevant drawings depicting typical design details and notes associated with the Facility, such as access roads, buried and above-ground interconnect, turbine laydown areas, wind turbines, and wind turbine foundations. In addition, the Article 10 Application will include specifications and the technical and safety manuals associated with the range of turbine types anticipated to be used at the Facility. These manuals are available for certain turbines to be presented in the Application, but may not be available for all turbines.

(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 Article 10 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 may

not be completed until after the Certificate is issued by the Siting Board. The general arrangement of the POI substation (i.e., schematic drawings) 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 a representative list of applicable codes and standards, which will be updated following Certification.

## 2.12 CONSTRUCTION

(a) Preliminary Quality Assurance and Control Plan

The Applicant will develop a Project Execution Plan based on its experience and existing quality assurance and quality control (QA/QC) plans for its parent company's operational wind farms. The Project Execution Plan is designed to convey basic QA/QC procedures, guidelines, and instructions that must be followed by all employees, consultants, and contractors. Once a Balance of Plant (BOP) contractor is selected, the preliminary QA/QC procedures will be provided to the BOP contractor, who is responsible for the construction of the Facility and implementing the preliminary QA/QC procedure through the development of a final QA/QC plan. At that point, the specific staffing positions and qualifications of the individuals/entities responsible for demonstrating how the Applicant will monitor and assure conformance of Facility installation with all applicable design, engineering and installation standards and criteria will be identified. The final QA/QC plan is site specific and therefore will not be developed until the BOP has been selected.

Below is a general outline of the components of a Project Execution Plan. This outline was developed based on the Applicant's historical experience with plans that were developed for its operational wind farms.

- Project Organization
- Quality
- Health, Safety, Security and the Environment (HSSE)
- Schedule and Milestones
- Contract Management
- Cost Management
- Engineering and Design
- Permit and Stakeholder Management
- Risk Management

- Records
- Handover Preparation and Operations Period

A Project Execution Plan will be provided in the Article 10 Application, which will address all of the information required under 1001.12.

The Article 10 Application will describe how the Applicant will monitor and ensure conformance of Facility installation with all applicable design, engineering, and installation standards and criteria. Furthermore, the Article 10 Application will describe how the Applicant will monitor the BOP contractor for ensuring compliance of applicable standards and criteria.

(b) Conformance with Public Service Commission Requirements

(1) Protection of Underground Facilities

The Applicant and its BOP contractor will conform to the requirements of Public Service Law §119-b. The Article 10 Application will include in Exhibit 12 a statement from a responsible company official that the Applicant and its contractors will conform to the requirements for protection of underground facilities contained in Public Service Law §119-b, as implemented by NYCRR Part 753.

(2) Pole Numbering and Marking Requirements

The Applicant will comply with the Commission's regulations regarding identification and numbering of above ground utility poles (16 NYCRR Part 217).

(c) Plans to Avoid Interference with Existing Utility Systems

The Applicant will provide the information required by 1001.12(c), including information regarding location of known utilities. Certain known utilities have been included in the stakeholder list for the PIP. These utilities have received and will continue to receive updates and notifications on the Facility. The Applicant will talk with landowners regarding utilities located on their properties. Additionally, the Applicant will request information from DPS and will order data from companies that maintain databases on utilities. This data will include existing power plants, pipelines, transmission lines, substations, and cable/fiber optic lines. Data on natural gas and oil wells within the Facility vicinity will be obtained from the NYSDEC via the New York State GIS Clearinghouse. This information on utilities will be taken into account during Facility component siting in order to avoid and minimize conflicts with any utilities.

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

Following 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 excavation or utility work.

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

The Applicant will develop a Complaint Resolution Plan that will be provided in the Article 10 Application. The Complaint Resolution Plan will discuss specifically how public complaints and disputes should be raised, documented and resolved during construction and operation of the Facility. The Complaint Resolution Plan will include the following components:

- Communications protocol and contacts for construction, operation and decommissioning, including how contact information will be disseminated to the public
- Registering a complaint
- Process for gathering and analyzing information regarding the complaint, including any specific protocols for certain types of complaints (e.g. noise)
- Complaint response and tracking
- Complaint response follow up
- Procedure for logging, review and transmittal of complaints, updates, and plans for resolution to DPS Staff

The Article 10 Application will provide a detailed description of each of these steps in the complaint resolution process and will also include general information on community outreach and communications.

## 2.13 REAL PROPERTY

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

The Article 10 Application will include a tax parcel map of the Facility Area which depicts the following: (i) the tax parcel IDs for land parcels that are part of the Facility; (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) any known existing easements on the parcels that are part of the Facility, to the extent the information is reasonably available; (v) proposed laydown area(s) and operation and maintenance building; and (vi) public roads planned for use as access to the Facility Area. The data for this map will be obtained from the Orleans 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 Area

The Article 10 Application will provide a description of the agreements for parcels that are secured or under option for the Facility, including ingress/egress access to public roads, easements and rights-of-way. Included in the Application will be 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 inconsistent with future wind power use. Please also note that the Applicant has been working with all landowners to obtain leasing or easement rights for the Facility, 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 include a statement that the Applicant has or will obtain the necessary access to parcels needed for the Facility, interconnects, and utility infrastructure.

(e) Improvement District Extensions

The Facility is not anticipated to need any improvement district extensions, and therefore the requirement that the Applicant demonstrate such extensions can be obtained is not applicable.

## 2.14 COST OF FACILITIES

### (a) Total Capital Costs

The Article 10 Application will provide an estimate of the total capital costs of the Project; however, this information will be submitted under separate and confidential cover. Total estimated capital and intangible costs will be provided. Capital costs will include development costs, construction design and planning, equipment costs, and construction costs. Capital costs will be broken down by:

- Overall turbine cost
- Civil and electrical engineering
- Construction (including contingency)
- Development (including contingency)
- Insurance

### (b) Source of Cost Estimates

The cost estimate is based on the following sources:

- Wind industry standards
- Applicants experience
- Historical and recent price quotes obtained by the Applicant on similar project across the eastern United States

The cost estimate will be provided in 2018 dollars.

### (c) Work Papers

If requested by DPS, the Applicant will provide an internal work paper, or cost estimate documentation, that describes the assumptions in estimating the total capital costs as described above in (a).

## 2.15 PUBLIC HEALTH AND SAFETY

Wind generated power is generally safer and healthier than many other forms of electricity generation. Unlike conventional power plants, wind farms produce energy without emitting pollutants that impact air quality. This is a major

public health benefit since the negative effects of air pollution and climate change are well-established. See Section 2.10 for additional benefits of the proposed Facility on public health.

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

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

One of the advantages of producing electricity from wind is that it does not produce gaseous wastes, and only a minimal amount of liquid and solid wastes during operation. Moreover, liquid and solid wastes are generally contained within the nacelle or other component, and are included within a Spill Prevention Control and Countermeasure Plan (SPCC). Applicant will include its proposed preliminary SPCC in the Article 10 Application at Exhibit 23. 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 Balance of Plant (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

The Article 10 Application will include the results of a literature review to identify the potential public health and safety concerns associated with potential blade throw and tower collapse. The Article 10 Application will 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 applicable) and local provisions will also be provided.

(2) Audible Frequency and Low Frequency Noise

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

Human response to audible 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. See section 2.19 (g) for details on the Facility's proposed thresholds for audible noise limits during operation.

A thorough literature review including government, scientific, and peer reviewed professional studies, including the guidelines and recommendations of the WHO, regarding the effects on human health from audible frequency sound, low frequency sound, and infrasound will be included in the Article 10 Application. This will include a discussion of the results of project-specific studies of potential sound impacts on sound sensitive receptors identified in Exhibit 19. Community complaint potential will be evaluated based upon identified factors, thresholds, and guidelines. Sound propagation modeling and sound level monitoring performed for the Facility will be compared with thresholds from the literature review to further evaluate potential impacts.

The Application will include, among others, the review of the following references:

- i. Guidelines for Community Noise WHO (1999);
- ii. Night Noise Guidelines for Europe, WHO (2009);
- iii. Review of the evidence on the response to amplitude modulation from wind turbines. Phase 2 Report. Department for Business, Energy and Industrial Strategy. U.K. Commissioned by the Department of Energy & Climate Change (DECC). United Kingdom. August 2016;
- iv. "Best Practices Guidelines for Assessing Sound Emissions from Proposed Wind Farms and Measuring the Performance of Completed Projects," October 13, 2011. Prepared for: The Minnesota Public Utilities Commission Under the auspices of the National Association of Regulatory Utility Commissioners (NARUC), Washington, DC. (for complaint potential and annoyance);
- v. Wind Energy & Wind Park Siting and Zoning Best Practices and Guidance for States, January 2012. Prepared for: The Minnesota Public Utilities Commission Under the auspices of the National Association of Regulatory Utility Commissioners (NARUC), Washington, DC;
- vi. Annex D of ANSI standard S12.9 -2005/Part 4 (Sounds with strong low-frequency content) for minimization of annoyance from low frequency sound;
- vii. ANSI/ASA S2.71-1983 (R August 6, 2012) Guide to Evaluation of Human Exposure to Vibration in Buildings;
- viii. OSHA Standards for Hearing loss for Facility workers during work shifts.

### (3) Ice Throw

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

### (4) Shadow Flicker

To determine operational effects of the Facility, a shadow flicker analysis will be conducted, as outlined in detail

in Section 2.24(a)(9) of this PSS. The analysis will look at the potential shadow flicker occurrence on nearby potential sensitive receptors (both participating and non-participating), including number of potential receptors and predicted annual hours of shadow flicker at each receptor within the shadow flicker study area. Sensitive receptors include any known residential structures with a certificate of occupancy, schools, office buildings, store fronts, hospitals or nursing homes, or high-use public recreation areas that are located within the shadow flicker study area. The receptor identification codes for shadow flicker will be identical to those used for the sound study in Exhibit 19.

Potential shadow flicker impacts will be expressed in hours per year, as discussed in Section 24(a)(9) of this PSS. The results of the shadow flicker analysis will be summarized in a stand-alone study, including a summary literature review of shadow flicker thresholds, 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. Data sources are anticipated to include the NYS GIS Clearinghouse, FEMA, and the USGS, as well as local sources from emergency response resources.

(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. The Article 10 Application will include a brief summary of potential impacts on the environment, public health, and safety associated with the information identified above in subsections (a) through (e).

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

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

(i) Irreversible and Irrecoverable 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), Orleans County, and the Town of Barre 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. To offset some of these expenditures on the part of local stakeholders, including the Town, Applicant will submit intervenor funding monies with this PSS and at the time of Application filing to offset the cost of legal and technical assistance during the Article 10 process.

The Facility also represents a commitment of land throughout its operational life, which is expected to be approximately 20-25 years, associated with its footprint (e.g., the land to be developed for wind turbines, access roads, the O&M building, meteorological towers, the transmission line, and substation(s)). However, because many of the Facility components are to be removed at the end of their useful life (i.e., wind turbines, meteorological towers, etc), the commitment of this land to the Facility may be reversible or retrievable.

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

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

(j) Impact Minimization Measures

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

#### (k) Mitigation Measures

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. In addition, as previously mentioned in Section 2.12(d), the Applicant will implement a Complaint Resolution Plan.

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 for non-participating residential receptors, if needed, and discuss what additional measures could feasibly be implemented once the Facility is constructed.

#### (l) Proposed Monitoring

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

### **2.16 POLLUTION CONTROL FACILITIES**

The proposed Facility will not require pollution control facilities, and as such, the requirements of 1001.16 are not applicable and will not be included in the Article 10 Application. Please see Section 2.17 of this PSS for information on temporary emissions during construction, and Section 2.23 for information on the Facility's compliance with the State Pollution Discharge Elimination System (SPDES) General Permit for Stormwater Discharges Associated with Construction Activities (GP 0-15-002).

### **2.17 AIR EMISSIONS**

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

In accordance with Section 111 of the Clean Air Act Extension of 1970, the U.S. Environmental Protection Agency (EPA) established New Source Performance Standards (NSPSs) to regulate emissions of air pollutants from new stationary sources. These standards apply to a variety of facilities including landfills, boilers, cement plants, and electric generating units fired by fossil fuels. The New York State Department of Environmental Conservation (NYSDEC)

Division of Air Resources administers an air permitting program as required by the Clean Air Act and 6 NYCRR Part 201. The two most common types of permit for air contamination sources are state facility and Title V facility permits. Since wind turbines generate electricity without releasing pollutants into the atmosphere, the proposed facility will not be subject to NSPSs, and will not require air pollution control permits under the Clean Air Act or New York State law or regulation.

The 1984 State Acid Deposition Control Act required the reduction of sulfur dioxide (SO<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> 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 the 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 local regulatory requirements pertaining to air emissions that are applicable to the Facility.

The Application will also discuss impacts to air quality expected to result from the proposed Facility's construction and operation, including from temporary emissions sources such as increased traffic and on-site concrete batch plant and fuel-fired generators, and identification of appropriate control and mitigation measures to minimize adverse impacts. The Application will identify any air permitting and registration requirements that may be required.

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

Wind turbines generate electricity without combusting fuel or releasing pollutants into the atmosphere. Therefore, the information required by Section 1001.17(b) assessing existing ambient air quality is not applicable to the Facility and will not be included in the Article 10 Application.

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 Ambient Air Quality Report for 2016* (NYSDEC, n.d.). 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 and will be summarized in the Application.

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

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

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

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

Potential impacts to ambient air quality resulting from the construction of the Facility will be discussed in the Article 10 Application. Potential impacts that could occur as a result of Facility construction include emissions from engine exhaust, concrete batch plant, fuel-fired generators, 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. The Article 10 Application will identify appropriate control measures to minimize any adverse impacts.

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

#### (e) Offsite Consequence Analysis for Ammonia Stored Onsite

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

## 2.18 SAFETY AND SECURITY

The Article 10 Application will describe the methodology to be used to determine potential safety and security impacts, during both construction and operation of the Facility, based on the Applicant's experience with other projects and

reasonable expectations associated with the proposed Facility. The Article 10 Application will also identify a protocol regarding the safety and security of the wind turbine construction and operation stages, starting with off-site transport and including all the steps through turbine erection and operation. Overall safety and security risks associated with the Facility are anticipated to be minimal.

(a) Preliminary Plans for Site Security During Facility Construction

To reduce safety and security concerns, public access to the Facility shall be limited. The Balance of Plant (BOP) contractor will be required to provide a site security plan for Facility construction, which will be developed post certification. Preparation of the site security plan will initiate immediately following selection of the BOP contractor, and will be provided to the Siting Board upon completion. The Article 10 Application will describe preliminary provisions for security during construction in the Site Security Plan, which will include the following:

(1) Access Controls

The Article 10 Application will provide a description of access controls to the Facility during construction.

(2) Electronic Security and Surveillance Facilities

The Article 10 Application will provide a description of alarms systems and video recording during construction.

(3) Security Lighting

The Article 10 Application will provide a discussion on security and safety lighting during construction, including considerations such as the use of task lighting and full cut-off fixtures to avoid off-sight light trespass.

(4) Setback Considerations

Please see Section 2.6(a) of this PSS for information related to setbacks, and Section 2.15(j) regarding minimizing safety concerns through appropriate setbacks. The Article 10 Application will provide additional details associated with setbacks and related safety concerns.

(b) Preliminary Plans for Site Security During Facility Operation

The Article 10 Application will contain a preliminary Site Security Plan for operation, which will provide information on the following:

(1) Access Controls

The Article 10 Application will provide a description of access controls to the Facility during operation.

(2) Electronic Security and Surveillance Facilities

The Article 10 Application will provide a description of alarms systems and video recording during operation.

(3) Security Lighting

The Article 10 Application will provide a detailed description of security lighting activities associated with the Facility, including additional considerations such as the use of task lighting and full-cutoff fixtures.

(4) Aircraft Safety Lighting

Lighting of the turbines (and other infrastructure as needed) will be in accordance with Federal Aviation Administration (FAA) regulations, to minimize collision risk. The Article 10 Application will provide details associated with proposed FAA lighting for the Facility.

(5) Setback Considerations

Please see Section 2.6(a) of this PSS for information related to setbacks, and Section 2.15(j) regarding minimizing safety concerns through appropriate setbacks.

(6) Cyber Security Program

The Article 10 Application will discuss how the Applicant will comply with the North American Electric Corporations (NERC's) CIP standards. A description of the Applicant's cyber security program will be included.

(c) Preliminary Safety Response Plan

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, will be made available to the employees of the Applicant and any visitors or workers to the Facility, and will outline the procedures to follow in the event of an emergency. The EAP, a draft of which will be provided with the Article 10 Application, is established to give additional awareness to the following:

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

(1) Identification of Contingencies that Would Constitute an Emergency

The EAP as described above will outline the contingencies that would constitute a safety or security emergency. A draft EAP will be provided in the Article 10 Application.

(2) Emergency Response Measures by Contingency

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

(3) Evacuation Control Measures by Contingency

Unlike a nuclear facility or a natural gas facility, a wind power project does not create safety concerns of a magnitude that would necessitate an evacuation. Therefore, Facility-related operations are not anticipated to require evacuation. Although unlikely, natural disasters (e.g., tornadoes, earthquakes) represent the only possible circumstances that may require evacuation. 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 the Applicant, the BOP contractor and its subcontractors, as well as the general public and emergency responders.

(4) Community Notification Procedures by Contingency

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

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

The Article 10 Application will include documentation of submittal of the preliminary Site Security Plan and 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 Orleans County Emergency Management Office and provide to them a copy of the Site Security Plan and EAP.

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

The EAP, as described above, will include a detailed list of all equipment available for responding to fire emergencies or hazardous substance incidences. No additional information will be provided here.

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

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

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

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

## 2.19 NOISE AND VIBRATION

(a) Sensitive Sound Receptor Map

- 1) A map showing the location of sensitive sound receptors in relation to the Facility will be provided in the Application. Sensitive sound receptors include non-participating residences, schools, hospitals, care centers, libraries, places of worship, public parks, and non-participating seasonal homes. Sensitive sound receptors will be defined by local and state regulations, ordinances, and tax designations. Sound levels at residences on both participating parcels and non-participating parcels will be included in the analyses presented in Exhibit 19. A desktop analysis using aerial imagery and field verification will be used to develop and classify sensitive sound receptors within the Facility Site boundary. For sensitive receptors outside the Facility Site boundary,

only aerial imagery and limited field verification will be used to identify those receptors within 1 mile of the nearest turbine. In either case, any sensitive receptor within one mile of a wind turbine or substation will be included in the Exhibit 19 analyses. 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).

Tabular summaries will designate receptors by parcel ID and/or tax ID numbers. Alternatively, cross reference tables with receptor identifications and ID tax numbers will be included. If letters or abbreviations are used to describe receptors or boundary lines, explanations will be included. Receptor location signifiers for noise and shadow flicker will be correlated. Data reported in tabular format will be clearly identified and headers will be included with a short description of the information contained on each column such as:

- i) Noise descriptors (e.g.: Leq, L10, L50, L90, etc.);
- ii) Duration of evaluation (E.g.: 8-hour, 9-hour, daytime, nighttime, one-week, 2-week, summer, winter, full year, etc.);
- iii) Whether the value is a maximum, minimum or average and the corresponding time frame of evaluation (e.g. max 1-hour in a year, etc.).

If the column reports averaged data information, indicate whether the averages are logarithmic or arithmetic, and provide brief explanation of the procedure followed for calculation.

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

##### *Ambient Noise Monitoring Locations*

On behalf of the Applicant, Epsilon will complete a winter (leaf off) background sound level monitoring at eight representative locations in and around the Facility Area. Summer (leaf on) background level monitoring will also be conducted at the same representative locations and in the same manner as the winter ambient season. The various representative areas include rural residential, farming, and low and high traffic roads. The existing noise levels within the Facility Site and at potentially impacted receptors will be evaluated in accordance with applicable portions of ANSI Standards S12.100-2014, S12.9 Part 2-1992 R-2013, S1.13-2005 (R-2010), and ANSI S1.43-1997. The sound levels will be measured continuously (24 hours/day) using ANSI S1.4-1983 Type 1 Sound Level Analyzers (or equivalent). The sound level meters will measure various broadband A-weighted (dBA) and one-third octave band sound levels for 14 consecutive days including the Leq, Lmax, L10, and L90 required by Article 10. The one-third octave band data will determine whether a prominent discrete (pure) tone currently exists in the baseline. The sound meters also measured low frequency and infrasound levels down to 6.3 Hz. Two locations will be fitted with a special microphone to measure infrasound down to 0.5 Hz. Ground-level wind speed will be continuously measured at two sound level monitoring

locations for the duration of the ambient noise surveys. The Article 10 application will provide justification for selected measurement locations including why they are considered to be representative of potentially impacted noise receptors. Location data will include GPS coordinates of the sound microphones and AADT information of the nearest road, to the extent that the data is available from the County and/or the NYSDOT.

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.

A summary of ambient noise monitoring results at each of the monitoring sites in the winter and summer will be included in the Article 10 Application.

#### *Temporal Accuracy*

Temporal accuracy will be calculated for the Leq and the L90 noise descriptors by following the procedures indicated in ANSI/ASA Standard S12.9/Part 2-1992 (R-2013) or any other applicable statistical procedure as appropriate for a 95% confidence interval at each measurement location, and will be reported in the Application to include mean values as well as upper and lower limits for the 95% confidence interval.

#### (c) Future Noise Levels at Receptors During Facility Construction

Noise resulting from construction will be modeled using the Cadna/A software or similar, predicted construction traffic levels, construction equipment and construction activities sound emissions, and by following the guidelines and recommendations of Federal Highway Administration (FHWA) Highway Construction Noise Handbook FHWA-HEP-06-015 as applicable. Measured ambient data will be assigned to each specific potentially impacted and representative noise receptor at both property line(s) and at the receptor itself giving consideration to similarity of soundscapes between the evaluated position and the location where the ambient noise levels were measured. This will provide construction sound levels at residences for the main phases of construction (e.g., excavation, foundation, erection of turbines), and will compare them to existing sound levels. Expected hours and days of construction will be included in the Application. If noise-generating construction activities with the potential to create sleep disruptions at sensitive sound receptors will occur at night (between 10:00 p.m. and 7:00 a.m.), the expected maximum sound levels will be compared to sleep disruption criteria. 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 short-term sound levels (e.g., 1-hour; 8-hour) at each noise-sensitive location identified in subsection (a) to be produced by operation of the proposed Facility assuming sound propagation under worst-case wind and atmospheric conditions using industry accepted computer noise modeling software, for example Cadna/A utilizing the ISO 9613-2 standard. Cadna/A model performs calculations for the full octave bands from 31.5 Hertz (Hz) to 8000 Hz. Sound levels will be predicted at both specific sensitive receptors and for a grid which will generate sound level contours within the project area. Participating and non-participating receptors will be clearly identified.

For calculation of annualized statistical sound levels, a full year of on-site meteorological data will be used to calculate the hub height wind speed and related sound power levels for each hour of the year (8,760 hours). This information will be aggregated into “bins” for each sound power level provided by the wind turbine manufacturer under consideration. From these data, the sound exceeded for 10% of the time over the course of one year (L10) can be calculated, as well as the sound exceeded for 50% of the time over the course of one year (L50). These will be done by running ISO 9613-2 with the sound power level associated with the L10 and L50 condition calculated above. The sound levels will be driven by the hourly wind speed, which drives the resultant sound power level of the wind turbines. This will be used to provide worst case (L<sub>10</sub>) and typical (L<sub>50</sub>) sound levels at the most impacted sensitive sound receptors, as required by Section (f) below. The model will also include relevant noise sources from substations. The Application will include a brief discussion about the accuracy of selected outdoor propagation models, methodologies, ground absorption values, assumptions and the correlation between measurements and predictions for documents cases as compared to other alternatives, if available.

(e) Future Noise Levels at Receptors During Facility Operation

This section of the Application will provide the following:

(1) Future Noise Levels During Operation

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

## (2) Tonal Evaluation

Analysis of tonality (Prominent tones) from both wind turbines and substation transformers in accordance with the constant level differences (Kt) described in ANSI S12.9 Part 3, Annex B, section B.1. (informative). 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. One-third octave band data will be used for the turbine models where information from the manufacturers is available to determine if a tonal (prominent tone) condition is possible. Calculations for both the transformer and wind turbines will use a spreadsheet approach since CADNA/A does not accommodate one-third octave band data.

## (3) Turbine Model Selection

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 those presented in the Application.

## (4) Potential for Low Frequency and Infrasound

A discussion of the potential for low frequency and infrasound emissions using literature and manufacturer data, extrapolated as applicable and appropriate, and manufacturer low frequency and infrasound data if available. If turbine models for the project have lower broadband A-weighted sound power levels but a greater maximum unweighted (Z or linear) sound power levels at the 31.5 Hz full-octave bands, the discussion of low frequency noise impacts for those bands will be based on modeling scenarios that use the maximum sound power levels at the low frequency bands. The application will also discuss in the scope of studies the divergence pattern that will be assumed for propagation of infrasound at long distances (e.g. 3 dB or 6 dB per doubling distance) as well as the lowest frequency that will be evaluated.

#### (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. Additionally, a literature review will be conducted of amplitude modulation from wind turbines, including a description of the phenomenon and whether it can be predicted.

#### (f) Predicted Sound Levels Table

The Article 10 Application will provide the A-weighted/dBA sound levels at the sensitive sound 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. Contours will be at 1-dB increments above 40 dBA and at 5-dBA increments below 40 dBA, with each 5 dBA contour interval clearly identified. All maps will be generated at a scale that is legible to the reader. Measured ambient data will be assigned to each noise receptor giving consideration to similarity of soundscapes between the evaluated position and the location where the ambient noise levels were measured. 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 (10PM to 7AM), 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 (summer and winter), 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 sensitive sound 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 sensitive sound 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) after exclusions from the background sound level measurements over the daytime period at each monitoring location. These calculations will include both summer and winter data after all exclusions are applied. 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. The median sound pressure level will be calculated by determining the 50<sup>th</sup> percentile of the sound levels at a receptor with the use of the 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 after exclusions 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 any local laws, 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, and Annex D of ANSI standard S12.9 -2005/Part 4 (Sounds with strong low-frequency content).

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 (BMPs) 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 OSHA standards, the recommendations of the 1974 US EPA "Levels" document, and the guidelines of the WHO (1999).

(2) Potential for Speech Interference

A discussion of the potential for indoor and outdoor speech interference based on guidelines from the 1974 United States Environmental Protection Agency "Levels" document, and the World Health Organization (1999).

(3) Interference in the Use of Outdoor Public Facilities and Areas

If a public facility is identified, then the application will include a discussion of the potential for interference of use at outdoor spaces based on guidelines from the 1974 United States Environmental Protection Agency "Levels" document and the World Health Organization (1999). As stated previously, the Applicant will evaluate impacts at actual locations intended for use at public facilities, such as gazebos, gathering areas, etc., within the publicly owned land.

#### (4) Potential for Annoyance/Complaints

Potential for annoyance and complaints will be evaluated by conducting a review of studies, peer reviewed publications, government, scientific and professional publications, specific to the relationship between wind turbine noise and annoyance/complaints. Community complaint potential will be evaluated based upon identified factors, thresholds and guidelines. The review will include but will not be limited to the following references: NARUC 2011; Pedersen. The review will also include a discussion about the effect of infrasound, Amplitude Modulation and Prominent tones in Annoyance/Complaints or adverse community noise reaction.

#### (5) Potential for Ground-borne Vibration

Potential for ground-borne transmitted vibrations from the operation of the Facility to reach noise sensitive receptors and cause vibrations on the floors or on building envelope elements that may be perceived at the receptor. The discussion can be illustrated with publicly available or measured data from similar projects and an analysis of whether ground borne transmitted vibrations from the operation of the turbines could exceed vibration thresholds as recommended by ANSI S2.71-1983 (R 2012) or ISO 2631-2-2003 for residential use. Description of the validity and applicability of data from other Wind Facilities will include technical considerations such as similarities between oscillating masses, frequency of rotation, vibration isolation, foundation, soil type and distances.

#### (6) Potential for Air-borne Vibration

The potential for air-borne induced vibrations from the operation of the facility to generate annoyance, cause vibrations, rumbles or rattles in windows, walls or floors of sensitive receptor buildings will be analyzed by applying the outdoor criteria established in annex D of ANSI standard S12.9 - 2005/Part 4. Applicable portions of ANSI 12.2 (2008) may be used for the evaluation of frequency bands where ANSI 12.2 (2008) may be more restrictive criteria, or if it is expected that ANSI S12.9-2005/Part 4- Annex D guidelines would be met but still represent a potential for perceptible vibrations at indoor locations of sensitive sound receptors, if any.

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

A map and a discussion about the potential of low-frequency noise including infrasound and vibration from operation of the facility to cause interference with the closest seismological and infrasound stations within 50 miles

of the Facility site will be created based on available information and included in the Article 10 Application. If the distances from the Facility Site are more than 50 miles, a discussion may be substituted for a map.

(l) Post-construction Noise Evaluation Studies

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

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

The Article 10 Application will include an identification of practicable post-construction operational controls and other mitigation measures that will be available to address reasonable complaints including a description of a 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 (Noise Reduced Operations mode, etc.). 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>1</sup> These submissions are described in greater detail below.

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<sup>1</sup> NYSOPRHP's Cultural Resources Information System is accessible at: <http://www.nysparks.com/shpo/online-tools/>.

Based on a recent review of SHPO's CRIS database, there are 14 NYSOPRHP archaeological sites, two New York State Museum archaeological sites and two National Register of Historic Places (NRHP)-listed architectural sites located within the Facility Area. Ongoing consultations and outreach with NYSOPRHP and visual stakeholders (i.e., host communities, local municipal officials, DPS, NYOPRHP, etc.) (see section 2.24 of this PSS) will aid in identifying potential historic properties and/or other potential visually sensitive sites within the Study Area, to the extent they exist. Exhibit 20 and other relevant portions of the Application, such as the Visual Impact Assessment in Exhibit 24 and sound impact assessment in Exhibit 19, will identify and address potential impacts to those resources, if any.

The Applicant intends to avoid archeological impacts, to the extent practicable, by shifting project components away from archaeological sites, if any archaeological sites are identified within the Facility Site. It is not anticipated that it will be necessary to mitigate impacts to archaeological resources. However, if avoidance is impracticable, and mitigation is necessary, the Article 10 Application will address proposed mitigation measures.

(a) Archaeological Resources

(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. If any archaeological resources cannot be avoided by Facility design, the Applicant will consult with NYSOPRHP to minimize or mitigate impacts to archaeological resources.

(2) Phase 1A Cultural Resources Study

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

- review of NYSOPRHP's Cultural Resources Information System (CRIS) database to identify previously recorded archaeological sites located within or immediately adjacent to the proposed Facility Site;
- identification and review of previous archaeological survey reports conducted in the project vicinity;
- review of historical research materials, with particular emphasis on historic cartographic sources;

- preparation of a GIS-based landscape classification analysis and Phase 1B archaeological survey research design, in accordance with the SHPO Wind Guidelines; and,
- performance of a site reconnaissance to document (photograph) representative existing conditions in the cultural resource study area.

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

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

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

As indicated above, the scope and methodology for the Phase 1B Archaeological Survey will be included in the *Phase 1A Archaeological Resources Survey & Phase 1B Fieldwork Plan*. 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, Applicant will use 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* will summarize the methodology used for the GIS analysis and present the landscape classification analysis in tabular and graphical formats.

The primary methods to be used during the archeological survey will include pedestrian surface surveys (in active agricultural settings where ground-surface visibility was greater than 80 percent); 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 the 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. The latter includes flat areas of well-drained soils in close proximity to perennial streams or large wetlands.

Please note that the Facility layout will be reviewed prior to conducting the Phase 1B survey. It is also worth noting that, prior to conducting the Phase 1B survey, the Facility APE for direct effects and survey effort will be adjusted in accordance with Facility layout modifications consistent with the assumptions and methodology for determining the APE for direct effects as presented herein.

#### (4) Phase 2 Study

If recommended avoidance measures, 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

During cultural resource studies, it is possible that artifacts will be discovered which would need to be handled properly. Thus, 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 investigation 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

The Applicant will provide a Phase 1A Historic Architectural Resources Survey & Work Plan to NYSOPRHP staff prior to completing a Historic Architectural Survey. 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 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, and/or potential noise. 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 or auditory impacts. 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). State- or federally listed historic properties will also be identified as sensitive receptors for purposes of the Noise Impact Analysis in Exhibit 19, and potential significant impacts, avoidance measures, and/or mitigation, where relevant, will be discussed for such resources. The five-mile-radius study area for the Facility includes parts of the towns of Albion, Barre, Clarendon, Murray, Ridgeway, and Shelby in Orleans County, New York, and the towns of Alabama, Byron, Elba, and Oakfield in Genesee County, New York.

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

Applicant reviewed the CRIS website maintained by NYSOPRHP to identify significant historic buildings and/or districts located within five miles of the Facility. There are two S/NRHP architectural resource sites located within the Facility Area. Located within five miles of the Facility are over 500 architectural sites recognized by NYSOPRHP, but only a percentage are S/NRHP listed or eligible.

The NRHP-listed and NRHP-eligible properties within the study area include residences, bridges, churches, 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, 2004a]), and often derive their significance from being representative examples of vernacular nineteenth-century architectural styles that retain their overall integrity of design and materials. The architectural integrity of historic resources throughout the five-mile radius study area is highly variable, with many showing noticeable alteration, or deterioration due to the elements.

- (2) The Applicant will prepare a Historic Architectural Resources Effects Analysis for the 5-mile study area. The Historic Architectural Resources Effects Analysis will be conducted by a qualified architectural historian who meets the Secretary of Interior’s Standards for Historic Preservation Projects (36 CFR Part 61) and will be summarized in the Article 10 Application and appended to Exhibit 20. 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 and potential impacts from noise/vibration (see Section 2.19 of this PSS). The potential effect of the Facility on the visual setting associated with historic resources is highly variable, and is dependent on a number of factors including the distance to the project, the number of visible turbines, the extent to which the Facility is screened or partially screened by buildings, trees, or other objects, and the amount of existing visual clutter and/or modern intrusions in the view. It is also worth noting the 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. These impacts will be described in the Article 10 Application.

In addition to potential visual effects on historic resources, impacts from construction such as blasting are possible and will be described in the Article 10 Application, if applicable.

## 2.21 GEOLOGY, SEISMOLOGY, AND SOILS

This exhibit will include a study of the geology, seismology, and soils impacts of the Facility Area consisting of the identification and mapping of existing conditions, an impact analysis, and proposed impact avoidance and mitigation measures, as appropriate.

### (a) Existing Slopes Map

A map delineating existing slopes (0-3 percent, 3-8 percent, 8-15 percent, 15-25 percent, 25-35 percent, 35 percent 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.

### (b) Proposed Site Plan

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

### (c) Cut and Fill

The Article 10 Application will include preliminary and approximate cut and fill calculations based on 2-foot contours interpolated from publicly available 10-meter resolution elevation data, including separate approximations for topsoil, sub-soil and bedrock. The Application will include a description of typical scenarios that would result in cut and fill necessary to construct the Facility, such as constructing an access road on a side slope. Information regarding invasive species will be addressed in the Article 10 Application as set forth in Section 2.22(b).

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

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

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

Applicant does not anticipate removing any materials from the Facility Area. Stockpiled soils along the construction corridors will be used in site restoration, and all such materials will be re-graded to approximate pre-construction contours.

(f) Excavation Techniques to be Employed

Activities associated with the construction of wind power projects in New York State are well understood, and although a given site can have unique characteristics in comparison to other sites, construction methodologies can be reasonably anticipated based on the Applicant's experience (in New York and other states) and available site conditions data. The majority of excavation activities will be associated with turbine foundation and substation construction, while additional excavations will likely be associated with other aspects of Facility construction in specific locations as needed. For example, it is anticipated that the majority of the Facility's buried electrical interconnect will be installed through use of a cable plow or blade; however, in select locations a backhoe may excavate a trench for cable installation due to the subsurface characteristics. If any Horizontal Directional Drilling is proposed, a preliminary inadvertent release contingency plan will be included in Application, which identifies site specific potential receptors and establishes inadvertent release mitigation and response methods.

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 identified, in the Article 10 Application. Final cut and fill storage areas will be determined following certification, and included in the final construction drawings, which will be submitted as compliance filings.

(h) Suitability for Construction

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

- Literature review of 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 (including a focus on the risk of foundation corrosion)
  - 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 Orleans County*, *Deep Wells in New York State*, *Geology of Orleans 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*).

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

(i) Preliminary Blasting Plan

Based upon review of publicly available data, a general constructability review conducted by the Applicant's construction manager on-site at the Facility, and the Applicant's experience with wind facility construction, blasting may be required. The Preliminary Geotechnical Investigation will provide the information necessary to determine whether blasting is required, which will be discussed in further detail in the Article 10 Application.

#### (j) Potential Blasting Impacts

As indicated above, the Article 10 Application will provide additional detail, including the results of a Facility-specific Preliminary Geotechnical Investigation. With respect to water wells, please see Section 2.23 of this PSS for additional information. With respect to natural gas production, according to the NYSDEC (2015), the Facility Area contains approximately two exploratory dry gas well (see Figure 5). The wells are typically drilled to a depth of approximately 3,000 feet. All turbines will be sited a minimum of 500 feet from gas wells, which is expected to eliminate potential impacts associated turbine foundation construction.

#### (k) Mitigation Measures for Blasting Impacts

If blasting is required, it will be conducted in accordance with the Facility-specific blasting plan, will include surveys of drinking water wells located in close proximity to proposed blasting locations, and any necessary blasting will receive oversight by an Environmental Monitor. In addition, pre- and post-blasting surveys will be conducted as a mitigation measure if blasting is needed. 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 quality and quantity) and after construction. Although not anticipated, any impacts identified through these inspections will be addressed on a case-by-case basis and appropriately mitigated.

#### (l) Regional Geology, Tectonic Setting, and Seismology

The Facility is located within the Erie-Ontario Lowlands physiographic province of New York State. Elevations range from between 570 feet to 800 feet above mean sea level (AMSL). The Erie-Ontario Lowlands in Orleans County are characterized by glacial till plains and drumlins. The local area consists of lacustrine plains, and several large swamps which are remnants of proglacial lakes, as the entire county was formerly covered by a prehistoric lake (USDA, 1977).

The bedrock of Orleans County consists of upper Silurian limestone and shale (USDA, 1977). 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 majority of soil in the Facility Area were formed in parent material of glacial origin, 10,000 years to 15,000 years ago, during the Wisconsin glaciation. The underlying soil of the Facility Area consists of members of the Ontario, Hilton, Appleton, Palms Muck, and Sun series (USDA, 1977). Exhibit 21 of the Article 10 Application will provide additional information on geology and soils at the Facility Site.

#### (m) Facility Impacts on Regional Geology

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

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

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

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

As previously indicated, faults within the vicinity of the Facility Area 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 Area will be prepared using data from the USDA Natural Resource Conservation Service (NRCS) Web Soil Survey. It is anticipated that soil data from this source will be categorized by mapping unit and hydric characteristics, at a minimum. The Applicant will include a map identifying any locations in the Facility Area where the land is designated as prime farmland, prime farmland (if drained), unique farmland, farmland of statewide importance, and farmland of local importance as well as the locations of drainage tile in designated farmland. If the above features are identified in the Facility Area, the application will include a discussion of how siting, construction and operation of the Facility will avoid or mitigate impacts to agricultural soils through implementation of the Department of Agriculture and Market's Guidelines. A plan for protecting agricultural topsoil from mixing with subsoil and other spoil material such as waste rock, for the preservation of such soils, and avoidance of compacting agricultural spoils, along with other Agricultural and Markets requirements, including a full-time agricultural monitor, will be included in the Article 10 Application.

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

The Article 10 Application will include the results of a detailed geotechnical study that will be conducted for the proposed Facility. The geotechnical study will extensively characterize the soil conditions in the proposed locations of Facility components, and address the suitability of these soils for construction of the Facility. The geotechnical analysis will, in general terms, address the suitability and limitations of existing soils for the proposed site development including excavation stability, erosion hazard, corrosion potential, and foundation integrity. These items will also be addressed with discussions pertaining to BMP's that should be employed by the designer/contractor to help minimize potential risks/hazards. Areas where dewatering is anticipated will be identified and typical dewatering methods will be described. If dewatering is addressed in another Exhibit (e.g., Exhibit 23), an appropriate reference to that information will be provided in the Article 10 Application.

(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 Investigation conducted for the Facility. These data will identify depth to bedrock and underlying bedrock types, including vertical profiles showing soils, bedrock, water table, and seasonal high groundwater, in relation to typical foundation depths on the Facility Area, and any area to be disturbed for roadways to be constructed, and all off-site interconnections required to serve the Facility Area.

Areas designated for stockpiling of spoils and fill materials will be identified. If spoil materials will be temporarily stockpiled adjacent to turbine, access road, and trench locations, typical layouts will be provided.

(r) Foundation Evaluation

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

(1) Preliminary Engineering Assessment

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

Following Facility certification and prior to commencement of construction, 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 anticipated that pile driving will not be needed for this Facility. If this is required, an assessment will be provided.

(3) Mitigation Measures for Pile Driving Impacts

It is anticipated that pile driving will not be needed for this Facility. However, if required an assessment of mitigation measures will be provided.

(s) Vulnerability to Earthquake and Tsunami Events

Based on the 2014 New York State Hazard Map (USGS 2014), the Facility Area is located in an area of relatively low seismic hazard, with a 2 percent or less chance that in a 50-year window, peak ground acceleration<sup>2</sup> will exceed 6 percent of standard gravity. There have been no recorded earthquakes in Orleans County since 1900 (USGS, 2015). There have been three earthquakes in neighboring counties including a magnitude 3.2 in 2004, a magnitude 3.1 in 2007, and a magnitude 1.9 in 2013 (USGS, 2017). The USGS Earthquake Hazards Program does not list any young faults, or faults that have had displacement in the Holocene epoch within the vicinity of the Facility Area.

As stated above, 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 11 miles from the nearest large water body (Lake Ontario), there is no vulnerability associated with tsunami events. Therefore, Application will not address these topics.

## 2.22 TERRESTRIAL ECOLOGY AND WETLANDS

### (a) Plant Communities

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

Land Cover in the Facility Area will be 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 35,214 acres and is primarily agricultural lands (61 percent including cultivated crops and pasture/hay) and forest lands (29 percent including forested wetlands and deciduous forest) as shown in Table 3.

**Table 3. Land Cover Classes Found within the Facility Area**

Land Cover Class	Area (acres)	Percent Cover (%)
Cultivated Crops	15198	43
Palustrine Forested Wetlands	7882	22
Pasture/Hay	6511	18
Deciduous Forest	2749	7
Palustrine Emergent Wetland	827	2
Developed, Low Intensity	643	2
Palustrine Scrub/Shrub Wetland	543	2
Mixed Forest	399	1
Bare Land	110	<1

<sup>2</sup> peak acceleration is the largest increase in velocity recorded by a particular station during an earthquake.

Land Cover Class	Area (acres)	Percent Cover (%)
Scrub/Shrub	108	<1
Evergreen Forest	80	<1
Developed, Medium Intensity	67	<1
Grassland/Herbaceous	34	<1
Open Water	29	<1
Developed, Open Space	21	<1
Developed, High Intensity	12	<1
Unconsolidated Shore	1	<1
<b>Total</b>	<b>35,214</b>	

Source: NLCD 2011

The Article 10 Application will build on the NLCD data presented above. Descriptions of all Ecological communities within the Facility Site will follow the 2014 *Ecological Communities of New York State, Second Edition*, a revised and expanded edition of *Carol Reschke's Ecological Communities of New York State*, and will contain the following specific information:

- Plant community mapping, which will be created using GIS software.
- Detailed description of all ecological communities identified within the Facility Site
- Plant species list based on Facility-specific field investigations, or incidentally observed during other activities on the Facility Site, which will identify the month and year observed to the extent available.

(b) Impact to Plant Communities

(1) Calculations of Potential Impact

Proposed temporary and permanent impacts to plant communities to be presented in the Article 10 Application will be calculated using GIS software. Facility-related impacts will be based on specific assumptions associated with approximate limit of vegetation clearing for each type of Facility component as identified in the Preliminary Design Drawings associated with Section 2.11 along with the assumptions presented in Table 4 below, will be calculated for all plant communities depicted in the mapping described above in support of 1001.22(a). The impact assumptions will be used to calculate the total impact to various resources that could result from Facility construction and operation. Additionally, the Article 10 Application will discuss any indirect impacts to forest.

Table 4. 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	15' wide per linear foot of line per collection line circuit	None
Overhead Electrical Collection Lines	100' wide per linear foot of line	15' wide per linear foot of line	0.05 acre per pole
Permanent Meteorological Towers	1 acre per tower	0.10 acre per tower	0.05 acre per tower
O&M Building and associated site (4,000 – 6,000 sf)	2.5 acres	2.5 acres	1 acre
Staging Area	5 acres per staging area	5 acres per staging area	None
Collection substation	4 acres	4 acres	3 acres

These estimates of impacts are very conservative estimate, because impacts are calculated by each Facility component without accounting for overlap of Facility component areas. The Application will account for areas where overlap occurs, such as in areas where collection line and access roads are co-located. However, 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 appropriate for impacts to forests, because forests cleared at any point during construction will not regenerate by the time the vegetation would be re-disturbed.

## (2) Identification of Invasive Species

A list of all non-native invasive plant and insect species observed during site-specific field investigations and known to occur within the Facility, and maps of any concentrations of non-native invasive plant species will be included. The list of invasive insect species shall be limited to incidental observations of concentrations of insects during field surveys conducted in support of Exhibits 22 and 23.

## (3) Invasive Species Control Plan

An Invasive Species Control Plan that addresses the plant species listed in 6 NYCRR Part 575 will be included in the Article 10 Application. The Invasive Species Control Plan will include:

- A summary of the survey methods to be used to identify existing non-native invasive species;
- Specific methods the Applicant proposes to use to ensure that any imported fill and any fill leaving the Facility Site will be free of non-native invasive plant and insect species or material to the extent practicable;
- A specification on whether fill material brought to the Facility site will be free of non-native invasive plant and insect species and material or describe how fill brought to the Facility will not be used in areas free of invasive species;
- A description of specific methods the Applicant proposes to use to prevent the introduction, proliferation and spread of non-native invasive plant and insect species associated with site grading, erosion and sediment control measures;
- Insect and plant species (i.e. reed canary grass and wild parsnip) to be identified by incidental observations while on-site performing other field studies (i.e., wetland delineations);
- Details of procedures for preventing the spread of invasive insects, such as the emerald ash borer and hemlock woody adelgid, and plants, such as reed canary grass and wild parsnip, and a discussion of how the Applicant will comply with the state quarantine and protective zones, where applicable;
- Implementation plans for ensuring that equipment and personnel arrive at and depart from the Facility Site clean and free of non-native invasive plant and insect species, including description of options for cleaning equipment, personnel, and proper disposal of materials known to be infested;
- A detailed description of the Best Management Practices or procedures that will be implemented, and the education measures that will be used to educate workers; and
- A plan for post-construction monitoring and survey measures, and procedures for revising the Invasive Species Control Plan in the event that the established goals are not met.

(c) Measures to Avoid or Mitigate Plant Community Impacts

The Article 10 Application will include a description of measures that will be implemented to avoid or minimize any impacts to plant communities within the Facility Site as required by 1001.22(c). Such measures may include siting considerations, demonstrated avoidance of sensitive vegetative communities, Facility Component locations within existing disturbances (e.g., logging roads), and access restrictions during construction and operation.

The Application will also include information regarding post-construction vegetative restoration, which will include reseeded of disturbed areas with appropriate native seed mixes or, in the case of agricultural lands, with crops or species desired by the landowner.

(d) Vegetation, Wildlife, and Wildlife Habitats

The Application will include a characterization of vegetation, wildlife, and wildlife habitats present on the Facility Site, specifically:

(1) Vegetation

See Plant Communities discussion above in Section (a). The New York Natural Heritage Program (NYNHP) 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 will be submitted to NYNHP. The NYNHP provided a response on January 2, 2018, which identified one significant ecological community. The silver-maple-ash swamp community was identified as being of high-quality occurrence of uncommon community type. This type of vegetative community can be found in the northeastern portion of the Town of Barre and primarily consists of silver maple (*Acer saccharinum*), red maple (*Acer rubrum*), and Freeman's maple (*Acer x freemaniai*). During avian surveying efforts by Ecology and Environment, Inc (E&E), primary habitat types were identified and will be identified in the Article 10 Application.

(2) Wildlife

(vi) Mammals

Publicly available information regarding the occurrence of mammalian species in the Facility Area is generally not available. Therefore, the occurrence of mammals will be documented through observations made during on-site field surveys for other studies such as wetland and stream delineations. Observations will target signs of occurrence such as tracks or scat, and evaluation of available habitat. Mammal species expected to be found in

the Facility Area include raccoon, porcupine, gray squirrel, eastern chipmunk, whitetail deer, opossum, beaver, skunk, muskrat, woodchuck, mink, weasels, foxes, and a variety of small mammals (mice and shrews).

No pre-construction monitoring or sampling will be conducted for bat species; rather the Applicant will focus on developing an adaptive management plan and Bird and Bat Conservation Strategy (BBCS) with input from the NYSDEC and USFWS that avoids or minimizes impacts to bats to the extent practicable, and monitors the effectiveness of these measures during operations. This will be summarized in the Article 10 Application.

(vii) Birds

To evaluate avian activity within the Facility Area, the Applicant has coordinated with NYSDEC and USFWS in developing work plans the following studies:

- 2016-2017 Wintering Grassland Raptor Survey dated March 25, 2017
- 2017 Breeding Bird Survey dated September 26, 2017
- 2017 Spring Migratory Raptor Survey dated October 30, 2017
- Year 1 (December 2016-November 2017) Avian/Eagle Use (Ongoing)
- 2017 Fall Migratory Raptors (Ongoing)
- 2017-2018 Winter Grassland Raptors (Ongoing)
- 2018 BBS (Ongoing)
- Year 2 (December 2017-December 2018) Avian/Eagle Use

The studies were conducted by E&E and the methodologies were developed in consultation with the NYSDEC and USFWS and in accordance with their guidelines. Study Plans and reports compiled to date are included in Appendix E.

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 8 survey blocks, including 2278B, 2378A, 2378B, 2478A, 2278D, 2378C, 2378D, and 2478C. 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 Byron BBS route runs adjacent to the east-west of the eastern border of the Facility Area for 5.5 miles. The most commonly observed species along the Byron Route include the European starling (*Sturnus vulgaris*), red-winged blackbird (*Agelaius phoeniceus*), American robin (*Turdus migratorius*), song sparrow (*Melospiza melodia*), common grackle (*Quiscalus quiscula*), American goldfinch (*Spinus tristis*), mourning dove (*Zenaida macroura*), American crow (*Corvus brachyrhynchos*), savanna sparrow (*Passerculus sandwichensis*), barn swallow (*Hirundo rustica*), and yellow warbler (*Setophaga petechia*). One State-listed threatened species (northern harrier [*Circus cyaneus*]) and eight State-listed species of special concern (coopers hawk [*Accipiter cooperii*], horned lark [*Eremophila alpestris*], vesper sparrow [*Pooecetes gramineus*], grasshopper sparrow [*Ammodramus savannarum*], red-headed woodpecker [*Melanerpes erythrocephalus*], cerulean warbler [*Setophaga cerulean*], sharp-shinned hawk [*Accipiter striatus*], and American bittern [*Botaurus lentiginosus*]) have been observed along this route. No federally-listed endangered or threatened bird 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 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 Rochester circle) is approximately 10 miles east 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.

The NYNHP provided a report on rare birds in the general vicinity of the Facility Area. The report identifies 14 bird species that may exist within 10 miles of the Facility Area. Eight of the bird species identified are threatened and include: least bittern (*Ixobrychus exilis*), pied-billed grebe (*Podilymbus podiceps*), upland sandpiper (*Bartramia longicauda*), northern harrier (*Circus cyaneus*), sedge wren (*Cistothorus platensis*), Henslow's sparrow (*Ammodramus henslowii*), king rail (*Rallus elegans*), and the bald eagle (*Haliaeetus leucocephalus*). Additionally, two species were identified as endangered (the short-eared owl [*Asio flammeus*] and the black tern [*Chlidonias niger*]), three protected species (great blue heron [*Ardea herodias*], sandhill crane [*Grus canadensis*], prothonotary warbler [*Protonotaria citrea*]), and one game species (ruddy duck [*Oxyura jamaicensis*]) (see Appendix F of this PSS).

In addition to the sources of information mentioned above regarding birds occurring in or near the Facility Area, other sources of information that will be used to inform on bird species presence and use of the Facility shall include: NYSDEC and USFWS data, and Hawk Migration Association of North America (HMANA) data, to the extent that this information is relevant and accurate. Preliminary review of the HMANA data indicates that no travel routes are known near the Facility Area. This information will be documented in the Article 10 Application.

#### (viii) Amphibians and Reptiles

The New York State Amphibians & Reptile Atlas Facility (Herp Atlas) conducted a statewide survey between 1990 and 1999 designed to document the geographic distribution of New York State's herpetofauna using USGS 7.5-minute topographic quadrangle as the unit of measurement for data collection. Data from this survey will be queried for the Knowles, Albion, and Holley USGS 7.5 minute quadrangles. Information based on this query, as well as database records obtained from NHP, NYSDEC, and USFWS, and assessments of suitable habitat in the vicinity of the Facility Site will be included in the Article 10 Application. Vernal pool surveys will be completed as part of the wetland delineation effort. Vernal pools, if any, that will be disturbed by construction or operation of the Facility, will be identified in the Application.

#### (ix) Invertebrates

Publicly available data on terrestrial invertebrate species are generally not available for upstate New York. The New York Natural Heritage Program (NYNHP) 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 December 22, 2017. The NYNHP provided a response on January 2, 2018, which did not identify any rare, threatened, and endangered invertebrates within the Facility Area (see Appendix F of this PSS). The Article 10 Application will also provide information on major taxonomic groups of invertebrates likely to be found in the Facility Site, based on available habitat, but will not identify these invertebrates to the species or generic level.

### (3) Wildlife Habitat

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

As stated above, a request for data on occurrence of significant natural communities was submitted to NYNHP on December 22, 2017. In its response, the NYNHP identified one significant natural community within the Facility

Area. The NYNHP inquiry identified a silver maple-ash swamp wetland/aquatic community in the northeastern portion of the Town of Barre. The community is categorized as a high-quality occurrence of an uncommon community type. If any Facility components are proposed within the vicinity of this habitat, the Article 10 Application will include a discussion.

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 to identify species that are reasonably likely to occur in the vicinity of Facility Site. Both lists will be based on existing data, on-site surveys, and publicly available data including the NYNHP, NYSDEC, USFWS, BBA, USGS BBS, and eBird. The inventory will specify whether species were observed, known to occur in the Facility Site, or are predicted to occur based on habitat characteristics or historical records. Information regarding terrestrial invertebrates will be limited to a general discussion regarding the range of terrestrial invertebrates likely to occur in the Facility Site.

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

The Application will include the following information, with regard to impacts to vegetation, wildlife, wildlife habitats, and wildlife travel corridors.

(1) Potential Construction and Operation Impacts to Habitat

A summary narrative and associated mapping to explain and illustrate potential and expected construction and operational impacts to vegetative cover types, wildlife habitats (including a discussion of impacts from habitat fragmentation), wildlife concentration areas or travel corridors if identified, during pre-construction field studies in relation to the proposed limits of disturbance.

(2) Direct and Indirect Construction-related Impacts to Wildlife

A discussion of any direct and indirect construction-related impacts that may occur to wildlife and wildlife habitat, including incidental injury and mortality due to construction activity and vehicular movement, habitat disturbance and loss associated with clearing and earth-moving activities, and the indirect impacts of displacement of wildlife.

### (3) Direct and Indirect Operational-related Impacts to Wildlife

A discussion of potential direct and indirect operational impacts, including loss of habitat, forest and grassland fragmentation as applicable, wildlife displacement, and avian and bat collisions. To the extent any documented wildlife travel corridors or winter concentration areas are identified within or adjacent to the Facility Site, direct and indirect impacts to such corridors will be addressed.

### (4) Potential Short- and Long-term Impacts from Biocides

A discussion of potential short- and long-term impacts to plants, animals, and habitats that may result from the application of biocides, if any, during site preparation, construction, maintenance, or operations.

### (5) Quantification of Temporary and Permanent Impacts

A summary impact table quantifying anticipated temporary and permanent impacts associated with the various Facility components in relation to wildlife habitats, identified concentration areas or travel corridors (to the extent data associated with such areas or corridors are readily available or provided to the Applicant by NYSDEC personnel), and vegetation cover types, particularly grasslands and interior forests, if affected.

### (6) Protected Species

Information regarding the presence of federally and state-listed Threatened and Endangered (T&E) species, state-designated Species of Special Concern ("SSC"), and state-designated Species of Greatest Conservation Need (SGCN), and the Facility's potential to impact such species or their habitats will also be discussed. Documented T&E species, SSC, and SGCN will be based on database records obtained from the NHP, other known records documented by NYSDEC, USFWS, and on-site surveys. If it is determined by the NYSDEC that construction or operation of the Facility is likely to result in a take of state-listed T&E species, including the adverse modification of habitat on which a listed species depends (i.e., breeding, hibernation, reproduction, feeding, sheltering, migration and overwintering), the Applicant will submit an avoidance, minimization, and mitigation plan that demonstrates a net conservation benefit to the affected species pursuant to 6 NYCRR Section 182.11 (Part 182), along with the informational requirements of an Incidental Take Permit (ITP), as provided for in Part 182.

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

Regarding impact avoidance and mitigation measures to plant communities (including vegetation), please see 1001.22(c) above.

The Article 10 Application will include a description of measures to be implemented to avoid or mitigate impacts to wildlife and wildlife habitat within the Facility Site. It is anticipated such measures will include careful site design (e.g., utilizing existing roads, avoiding sensitive habitat, and minimizing disturbance to the extent practicable), adherence to designated construction limits, 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 studies are being completed in coordination with NYSDEC and USFWS. Methodologies for each survey were presented to, and approved by, the NYSDEC. Based on the results of these studies, and standard industry practice, the Article 10 Application will discuss potential construction and operation-related impacts to protected avian and bat species, including northern long-eared bat.

In addition, the Article 10 Application will include an analysis of potential cumulative impacts to avian and bat species that could result from operation of the Facility. The cumulative analysis will include:

- Cumulative Collision Mortality
  - Examining data on installed wind capacity in New York as well as the projected increase in installed New York wind capacity during the life of the Project.
- Cumulative Avian Impacts
  - Examining bird mortality (birds/turbine/year) across New York State in the past 10 years as well as within 100 miles of the Project.
  - Based on the results of the studies, species composition of potential avian mortality will be estimated.
  - Based on the two years of eagle use surveys completed at the Project, an assessment of risk to bald and golden eagles at the Project.
- Cumulative Bat Impacts
  - Examine bat mortality (bats/turbine/year) across New York State in the past 10 years as well as within 100 miles of the Project.
  - Potential for take of northern long-eared bat will be examined based on the most recent publicly-available data and past mortality data from wind projects across New York State and within 100

miles of the Facility, in light of the bat impact avoidance and minimization measures planned for the Facility.

The cumulative analysis will utilize post-construction monitoring data from operating wind facilities within New York State and within 100 miles of the Project to assess potential impacts to bird and bat species given the proposed Facility's location relative to other wind-power projects.

## (2) Avian and Bat Post-Construction Monitoring

The Article 10 Application will provide information associated with any proposed post-construction monitoring program to be implemented to assess direct and indirect impacts of the wind facility on avian and bat species and their habitats in a manner consistent with the NYSDEC's *Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects* (Guidelines) (Revised June 2016). Exact details of the post-construction monitoring program will ultimately be determined on a site-specific basis through discussions between the Applicant, NYSDEC, NYSDPS and USFWS, and be in place prior to the start of Facility operation.

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

The Article 10 Application will provide details on bird and bat impact avoidance measures to be implemented for the Project, which will include details on any mitigation required per Article 11 for state listed T&E species and will describe compliance with the substantive requirements of 6 NYCRR Part 182.

### (i) Map Showing Delineated Wetland Boundaries

Wetland delineations within the Facility Site will be conducted within a 200-foot wide corridor centered around linear Facility components (e.g., access roads, buried electrical interconnect, overhead transmission line); within a 200-foot radius of other components such as permanent meteorological towers, operations and maintenance (O&M) building, staging areas, and the collection substation; and within 250 feet of turbines. 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, identification of hydric soils listed in existing databases, and existing databases of wetland mapping maintained by National Wetland Inventory (NWI) and NYSDEC. Wetlands identified in this way will be referred to as approximate wetlands.

(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 USACE *Wetland Determination Data Form* will be included with the Wetland Delineation Report attached to the Article 10 Application.

(k) Wetland Functional Assessment

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

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

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

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

1. Recreation
2. Education/Scientific Value

3. Uniqueness/Heritage
4. Visual Quality/Aesthetics
5. Threatened or Endangered Species Habitat

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

(l) Offsite Wetlands Analysis

As described above in 22(i), wetland boundaries within 500 feet of all Facility components will be mapped using interpretation of aerial imagery signatures, on-site observations, analysis of topography, and existing databases 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. NYSDEC will be consulted to determine hydrologic connections with state mapped wetlands and the potential for meeting state mapping criteria. All information provided with the Application (including GIS shapefiles of delineated wetlands), along with a site visit conducted during the growing season, will be used by NYSDEC personnel and the Applicant to determine the full extent of NYSDEC wetland jurisdiction.

(m) Wetland Impacts

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). Impacts will be presented in a table that identifies the type of impact and associated crossing methodology, clearly discerning between federal and state wetland (and 100-foot adjacent area) impacts.

(n) Measures to Avoid/Mitigate Wetland Impacts

The Article 10 Application will discuss measures to be implemented to avoid and mitigate wetland impacts. It is anticipated that direct impacts to wetlands/streams will be minimized by utilizing existing or narrow crossing locations whenever possible. Additional measures may include special crossing techniques, equipment restrictions, herbicide use restrictions, and erosion and sedimentation control measures. Compensatory mitigation measures may be considered, depending on level of impacts anticipated. Where impacts are unavoidable, the anticipated mitigation measures to be implemented to offset impacts to wetlands (and any state regulated 100-foot adjacent areas), including the use of reasonable alternative stream and wetland crossing methods. Pursuant to 6 NYCRR 663.5(g), mitigation for impacts to state-regulated wetlands and adjacent areas must meet the following provisions: (a) the mitigation must occur on or in the immediate vicinity of the Facility; (b) the area affected by the proposed mitigation must be regulated

by the Freshwater Wetlands Act and 6 NYCRR Part 663 after mitigation measure are completed, and; (c) the mitigation must provide substantially the same or more benefits than will be lost through the proposed activity. If final verification of wetland boundaries and jurisdictional determination occurs after the Application is submitted, the Applicant will supplement its discussion of avoidance and minimization in the record. This section of the Application will also describe the anticipated Environmental Compliance and Monitoring Program (ECMP) to be implemented during Facility construction to adhere to various permit conditions and protect wetlands, streams, and other waterbodies. The Facility's ECMP will include an Environmental Monitor(s) during construction and restoration activities on the Facility Site. The duties of the Environmental Monitor will be described in the Application.

(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 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 (see Figure 6), and other sources when available, such as information from local landowners. 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.

## 2.23 WATER RESOURCES AND AQUATIC ECOLOGY

(a) Groundwater

(1) Hydrologic Information

Based on preliminary evaluations conducted in support of this PSS, depth to groundwater ranges from the ground surface to greater than 80 inches throughout the Facility Area, with high water tables most common in low-lying

areas in and adjacent to wetlands. Depth to bedrock ranges from 10 inches to greater than 80 inches, the large majority of the Facility Area having soils greater than 80 inches (Soil Survey Staff, 2018). 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 Orleans County, New York.

## (2) Groundwater Aquifers and Recharge Areas

Preliminary evaluations of the Project show the presence of four aquifers, two principal aquifers and two unconsolidated aquifers underneath the Facility Area. Principal aquifers make up the majority of the Facility Area and include one unclassified principal aquifer and a portion of the New York and New England carbonate-rock principal aquifer (USGS, 1998). The term principal aquifer refers to a regionally extensive aquifer or aquifer system that has the potential to be used as a source of potable water. Additionally, two unconsolidated aquifers were identified within the Facility Area (NYSDEC, 2008). Unconsolidated aquifers typically consist of sand and gravel and supply at least 50 percent of the drinking water in a given area. The Facility Area does not contain sole source or primary aquifers. This will be confirmed in the Article 10 Application.

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

In addition, private wells will also be identified by sending a well survey to all residences/businesses located within 500 feet of proposed ground disturbance activities (i.e. grading, excavation, blasting, etc.). A summary of responses received from the well survey will be included in the Article 10 Application, along with a corresponding GIS-based parcel map. However, the Applicant cannot guarantee that a response to all (or even a majority of the) surveys will be received.

If any wells are identified, the Application will include a map showing these wells in relation to Facility components and will identify the location, depth, yield, and use, if such data are available.

## (3) Groundwater Impacts

The Facility will minimize or avoid impacts to groundwater by siting components and construction activities appropriately. A majority of the Facility area overlays the "New York and New England carbonate-rock aquifer".

The northwestern portion of the Facility Area also contains two separate unconsolidated aquifers. These unconsolidated aquifers are not identified as “primary aquifers” according to a GIS dataset maintained by NYSDEC Division of Water, Bureau of Water Resources Management entitled *Unconsolidated Aquifers at 1:250,000* (NYSDEC, 2008). The southern portion of the Facility Area does not contain an aquifer. The Applicant will consult with the NYSDEC in an attempt to identify the exact location of any primary aquifers in this area. Please see Figure 7 for locations of mapped aquifers in the Facility Area.

Despite proximity to mapped aquifers, the Facility is not anticipated to result in any significant impacts to groundwater quality or quantity, drinking water supplies, or aquifer protection zones. Excavations for foundations, roadways, and underground collection lines are expected to be relatively shallow, and are not anticipated to intercept groundwater within the surrounding aquifers. The Facility will add only small areas of impervious surface, which will be dispersed throughout the Facility site, and will have a negligible effect on groundwater recharge. Additional detail regarding groundwater impacts will be provided in the Article 10 Application, including results from a geotechnical evaluation, as well as specific avoidance, minimization, and mitigation measures that will be implemented to protect groundwater resources during construction of the Facility.

(b) Surface Waters

(1) Surface Waters Map

All surface waters within the Facility Area, including intermittent streams (to the extent such streams are identified in publicly available data) are mapped in Figure 4. Sources of information will include publicly available data from the NWI, NYSDEC and ESRI, along with stream data collected during on-site wetland and stream delineations. Wetland and stream delineations will identify all surface waters (ponds; ephemeral, intermittent, and perennial streams; and wetlands) within a 200-foot wide corridor centered on proposed access roads, turbines, electrical interconnects, buried electrical collection lines, and all proposed construction work areas. Stream mapping outside of these areas will be based on NYSDEC mapping and stream classifications and other mapping sources as applicable. Shape files identifying the foregoing shall be submitted to NYSDEC.

(2) Description of Surface Waters

The Facility Area is located entirely within one watershed, the Oak Orchard-Twelve Mile River Basin (USGS Hydrological Unit 4130001). The Oak Orchard-Twelve Mile River Basin drains approximately 1,015 square miles of New York State directly into Lake Ontario. There are approximately 2,936 miles of rivers and streams and 25 significant lakes and ponds in the Oak Orchard-Twelve Mile River Basin.

Under Article 15 of the Environmental Conservation Law (Protection of Waters), 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 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, more specifically, streams designated (ts) indicate support for trout spawning. The Article 10 Application will identify the classification for all NYSDEC mapped streams within the Facility Site (see Figure 4). Characteristics of the streams in the Facility Area will be described in the Article 10 Application, based on publicly available data and, when available, supplemented by field data collected during on-site wetland and stream delineations.

**Table 5. Stream Classification within the Facility Area**

<b>Waterbody Name</b>	<b>Waterbody Classification</b>
Oak Orchard Creek and tributaries	Class C
Fish Creek and tributaries	Class C
West Branch Creek and tributaries	Class C
Otter Creek (upper) and tributaries	Class A

With respect to fish species, an email request was submitted to the NYSDEC on December 22, 2017 for data on state-listed species or species of special concern. A response from the NYSDEC was received on January 2, 2018 and indicated that streams within the Facility Area do not contain State-listed endangered, threatened, or special concern fish species.

Please note that aquatic invasive species identified by the NYSDEC (<http://www.dec.ny.gov/animals/50272.html>), and observed during delineation and field investigation efforts, 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

As indicated above in Section 2.23(a)(2), the Applicant will submit a FOIL request to Orleans County regarding the location of drinking water intake sites. The inquiry will request 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 Article 10 Application will include an inventory of potential surface drinking water intake sites identified through this correspondence, and discuss the type, nature, and extent of services provided by each source based on the information received.

### (4) Impacts to Surface Waters

Facility components will be sited to avoid or minimize both temporary and permanent impacts to surface waters to the extent practicable. The Application will include a calculation of the approximate acreage and linear distance of surface waters that would be temporarily or permanently impacted by the proposed Facility footprint, based on impact assumptions and field delineated stream boundaries. Such impacts will be presented in a table that identifies the type of impact (e.g., buried collection, access road) and associated crossing methodology and protection measures (e.g., HDD with appropriate bore pit setbacks, access road utilizing stream crossings guidelines and Best Management Practices [BMPs]).

A map of all anticipated HDD locations in relation to surface water resources will also be included, if applicable. Finally, included in the Application will be a statement that BMPs and guidelines for crossing streams regulated under Article 15 will be developed in consultation with NYSDEC and NYSDPS, if such crossings are proposed.

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

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

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

#### (d) Chemical and Petroleum Bulk Storage

##### (1) Spill Prevention and Control Measures

The Article 10 Application will describe the BMPs to be implemented during construction to prevent and contain spills. In addition, the Article 10 Application will contain a Preliminary Spill Prevention, Containment and Countermeasure (SPCC) Plan that will be implemented during Facility operation to minimize the potential for unintended releases of petroleum and other hazardous chemicals.

(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) pursuant to 6 NYCRR Part 182. 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. Where impacts are unavoidable, the Application will discuss mitigation measures to

address impacts on such biological aquatic resources, including species and invasive species impacts (if any) and to assure compliance with applicable water quality standards (6 NYCRR Part 703). 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 the Facility's visual impacts. 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 (1995), the U.S. Department of Transportation, Federal Highway Administration (2015), and the New York State Department of Environmental Conservation (NYSDEC, 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. The Article 10 Application will address these matters at Exhibit 24, and will include the VIA results, documentation, and other submissions as Appendices to Exhibit 24.

(1) Character and Visual Quality of the Existing Landscape

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

A 10-mile visual study area will be established for the purpose of identifying visually sensitive resources of regional and/or statewide significance. Although a five-mile study area is typical in some instances, a 10-mile study area

will be used in order to identify any potential “significant resource concerns” beyond five miles that would warrant the use of a larger study area. A more inclusive inventory of locally significant visually sensitive resources will be conducted for the area within five miles of the proposed Facility.

The Article 10 Application will discuss the physiographic and vegetative community characteristics of the 10-mile radius Visual Study Area. Per the requirements set forth in 16 NYCRR § 1000.24(b)(1), Landscape Similarity Zones (LSZs) will be defined within the Visual Study Area and will be identified along with other indicators of potential visual impact on viewshed maps. Definition of discrete landscape types within a given study area will provide a useful framework for the analysis of a project’s potential visual effects. These landscape types, referred to in the PSS and Article 10 Application as LSZs, will be 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 (USDA Forest Service, 1995; USDOT Federal Highway Administration, 2015; 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 Article 10 Application.

## (2) Visibility of the Facility

The VIA will include an analysis of potential visibility and identify locations within the Visual Study Area (see Figure 8) where it may be possible to view the proposed Facility turbines and substations. This analysis will include identifying potentially visible areas on viewshed maps and verifying line of sight conditions in the field. The purpose of these field visits will be to verify the existence of direct lines of sight to the Facility as indicated by a viewshed analysis, and to obtain photographs for subsequent use in the development of visual simulations. With respect to the methodology to be used for line of sight profiles, please see section (b)(1) below.

Topographic and vegetation viewshed maps will be created to identify potential visibility of wind turbines. The methodology for these analyses is described in detail below in Section (b)(2). In addition, visual field review will be conducted in the Visual Study Area. During these site visits, public roads and public vantage points will be visited to document locations from which the turbines would likely be visible, partially screened, or fully screened. This determination will be made based on the visibility of the distinctive Facility Site ridges/landforms, as well as existing tall structures (such as silos and temporary meteorological towers) on the Facility Site, which will serve as locational and scale references. These site visits will result in photographs from many (in excess of 100) representative viewpoints within the Visual 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. Site visits will be planned for clear days when views are not anticipated to be obscured by light, shadow, or atmospheric conditions.

During the site visits, photos will be taken using digital SLR cameras with a minimum resolution of 12 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 assessments 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

The proposed Facility does not include any overhead collection line. Therefore, this information will not be included in the Article 10 Application. The Application will, however, address visibility of roadways.

### (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 proposed viewpoint selection process, including outreach, is detailed below under 24(b)4]. The photographic simulations will be developed by using appropriate software (e.g., Autodesk 3ds Max 2017®) 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 digital elevation model (DEM) data, and a three dimensional (3-D) topographic mesh of the landform (based on DEM data) will be brought into the 3-D model space. At this point minor adjustments will be made to camera and target location, focal length, and camera roll to align all modeled elements with the corresponding elements in the photograph. This assures that any elements introduced to the model space (i.e., the proposed turbines) will be shown in proportion, perspective, and proper relation to the existing landscape elements in the view. As a result, the alignment, elevations, dimensions and locations of the proposed Facility structures will be accurate and true in their relationship to other landscape elements in the photograph.

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

the location and appearance of proposed meteorological towers or other visible components of the Facility, including substation facilities, will also be incorporated into the photographic simulations.

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 evaluated, as described in Section (b)(1) below. The Article 10 Application will include discussion of potential visibility from exterior lighting at the O&M facility, the collection substation, and the POI substation.

#### (6) Photographic Overlays

Photographic simulations developed by using Autodesk 3ds Max Design 2015® (or similar) 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., buildings, existing transmission structures, roads) will be modeled based on aerial photographs and DEM data in AutoCAD Civil 3D 2014® (or similar). A three dimensional ("3-D") topographic mesh of the landform (based on DEM data) will then be brought into the 3-D model space. At this point minor adjustments are made to camera and target location, focal length, and camera roll to align all modeled elements with the corresponding elements in the photograph. 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

Representative photographs of construction activities will be included in the VIA. The VIA will include a discussion of short term visual impacts associated with the clearing of trees, construction of access roads, erection of turbines and transmission structures, and general construction activity. Anticipated visual effects during construction will also be described 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 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 is a simplified version of the U.S. Bureau of Land Management (BLM) contrast rating methodology (USDI BLM, 1980). It involves using a short evaluation form, and a simple numerical rating process to assign visual contrast ratings on a scale of 0 (insignificant) to 4 (strong). A copy of this form is included as Appendix G 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, structure, 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 an element 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

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

The distance between a wind turbine and a potential shadow-flicker receptor affects the intensity of the shadows cast by the blades, and therefore the intensity of flickering. Shadows cast close to a turbine will be more intense, distinct, and focused. This is because a greater proportion of the sun's disc is intermittently blocked by the turbine (BERR, 2009).

The Article 10 Application will include a Facility-specific shadow flicker analysis. Specifically, a study of potential shadow flicker impacts on nearby receptors will be conducted, using the largest turbine model under consideration for this Facility. Sensitive receptors are those identified within 2.19(a)(1) and that are located within the shadow flicker study area. A maximum distance of potential effect will be determined by the geometry of the specified turbine blades. The shadow flicker modeling software (i.e., Windpro) uses information on the specific wind turbine model and on the blade width of the wind turbine model to make a determination of the distance at which the blade would cover 20% of the sun's area. Beyond this maximum distance the turbine will not contribute to shadow flicker impacts. This distance, which will be based off of the largest proposed turbine model, will be calculated when the shadow flicker analysis is conducted and referred to as the "Shadow Flicker Study Area". However, WindPRO uses a fixed maximum distance default of 2,000 meters for the purpose of setting up the calculation module. Therefore, the model will incorporate all potentially sensitive receptors within 2,000 meters of Facility turbines. Potential shadow flicker impacts will be expressed in hours per year, as discussed further below.

The shadow flicker analysis for the proposed Facility will use WindPRO version 2.9 software (or similar version) and the associated Shadow module. This is a widely-accepted modeling software package developed specifically for the design and evaluation of wind power projects. The stand-alone shadow flicker analysis will include the

results from the WindPRO software, in tabular format, as both “worst-case” and “real/expected-case.” Input variables and assumptions used for shadow flicker modeling calculations will include:

- Latitude and longitude coordinates of all proposed wind turbine sites under consideration in the Article 10 Application.
- Latitude and longitude coordinates for sensitive receptors located within 2,000 meters of all proposed turbine locations (the shadow flicker study will be limited to the area defined by 10 times the rotor diameter of the turbines).
- USGS 1:24,000 topographic mapping and USGS digital elevation model (DEM) data (10-meter resolution).
- The rotor diameter and hub height of the largest proposed turbine model at the time of submittal.
- Annual wind rose data.
- The average monthly percent of available sunshine at the Rochester, New York National Oceanic and Atmospheric Administration (NOAA) weather station. Data will be obtained from NOAA’s “Comparative Climatic Data for the United States through 2015” (NOAA, n.d.).

The Applicant will work with the Towns to identify, 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. If these developments are within 2,000 meters of a Facility turbine, they will be included in the shadow flicker assessment.

Shadow flicker effects on receptors are expressed in terms of predicted frequency (hours per year and minutes per day). 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 the Shadow Flicker Study Area. The model calculations will include the cumulative sum of shadow hours for all Facility turbines. This omni-directional approach reports total shadow flicker results at a receptor regardless of the presence or orientation of windows at that particular receptor (i.e., it assumes shadows from all directions can be perceived at a receptor, which may or may not be true). A receptor in the model will be defined as a one square meter area located one meter above ground; consistent with industry standards, actual house dimensions are not taken into consideration. In addition, shadow flicker contours that are generated by the WindPRO software will be overlain on mapping of identified public recreational and sensitive areas (e.g., trails).

As will be discussed in the Application, 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. The Ohio Power Siting Board uses 30 annual hours of shadow flicker as a threshold of acceptability in certifying commercial wind power projects (OPSB, 2011a, 2011b, 2012, 2013, 2014). The New York State Department of Public Service has suggested “operations shall be limited to a maximum of 30 hours annually at any non-participating residential receptor” (NYSDPS, 2017). Additionally, international guidelines from Europe and Australia have suggested 30 hours of shadow flicker per year as the threshold of significant impact, or the point at which shadow flicker is commonly perceived as an annoyance (NRC, 2007; DECC, 2011; DPCD, 2012). Accordingly, 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.

The results of the shadow flicker analysis will be summarized in a stand-alone study, which will be included with the Article 10 Application. A literature review regarding shadow flicker impacts will be presented in Exhibit 15 of the Article 10 Application, as discussed further in Section 2.15 of this PSS.

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

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

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

Not all of these mitigation measures are anticipated to be feasible for the Facility. The Article 10 Application will discuss feasibility of the various mitigation options.

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

Visually sensitive resources of statewide significance will be identified within the larger 10-mile Study Area (see Figure 9). As defined in the NYSDEC Visual Policy, and as applicable to this Facility, these include any of the following types of resources, many of which are not present in the Study Area:

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

In addition, resources of local significance within the 5-mile study area will 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 residents. See (b)(3) below for additional detail on identification visually sensitive resources, including stakeholder consultation to aid in this effort.

#### (b) Viewshed Analysis

As mentioned above in Section (a)(2) the Visual Impact Assessment will include identification of locations within the Visual Study Area where it may be possible to view the proposed wind turbines and other proposed above ground facilities from ground-level vantage points. This analysis includes identifying potentially visible areas on viewshed maps. The methodology to be employed is described below, and the results of this analysis will be set forth in Exhibit 24 of the Application.

## (1) Viewshed Maps

Viewshed maps define the maximum area from which any turbine within the completed Facility could potentially be seen within the 10-mile radius visual study area. Maps showing the and 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. These maps will also show the 5-mile and 10-mile distance zones. Viewshed analysis will be based on maximum blade tip height and FAA warning light height. These maps will be presented on both USGS DEM Hillshade and the most recent edition 1:24,000 scale topographic base map. Additionally, results of the viewshed analysis will also be shown on maps that depict visually sensitive sites, viewpoint locations, and LSZs within the study area.

With respect to line of sight profiles, please note that the computer model program defines the viewshed (when evaluating topography only for instance) by reading every cell of the DEM data and assigning a visible or not visible value based upon the existence of a direct, unobstructed line of sight to turbine location/elevation coordinates from observation points throughout the entire visual study area. Therefore, for the purposes of the Article 10 Application, the viewshed analyses will also serve to document the line of sight profiles for resources of statewide concern. However, line of sight profiles may still be prepared to highlight potential or lack of visibility to a certain sensitive receptor.

## (2) Viewshed Methodology

Topographic viewshed maps for the Facility will be prepared using 10-meter resolution USGS digital elevation model (DEM) data (7.5-minute series) for the Visual Study Area, the location and height of all proposed turbines, an assumed viewer height of 6-feet, and ESRI ArcGIS® software with the Spatial Analyst extension. Two ten-mile radius topographic viewsheds will be mapped, one to illustrate “worst case” daytime visibility (based on a maximum blade tip height above existing grade) and the other to illustrate potential visibility of turbine lights (based on an assumed height for the lights on top of the nacelle above existing grade).

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

turbines are potentially visible from any given point within the viewshed. The results of this analysis will then be grouped by number of turbines potentially visible and presented on a viewshed map.

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

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

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

Per the requirements set forth in 16 NYCRR § 1000.24(a), the potential cumulative visual effect of the Facility as well as other wind energy projects proposed in the surrounding region must be considered. Cumulative impacts are two or more individual environmental effects which, when taken together, are significant or that compound or

increase other environmental effects. The individual effects may be effects resulting from a single project or from separate projects. The Article 10 Application will address the potential cumulative visual impacts that may arise from interactions between the proposed Facility and the nearest operating wind project. At this time, there are no operating wind facilities within a 15-mile radius of the proposed Heritage Wind 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 New York State Department of Environmental Conservation (NYSDEC) Program Policy DEP-00-2 Assessing and Mitigating Visual Impacts (NYSDEC, 2000), which define specific types of properties as visually sensitive resources of statewide significance. The types of resources identified by NYSDEC in Program Policy DEP-00-2 are consistent with the types of resources identified in 16 NYCRR § 1000.24(b)(4) and—while not all are present in or applicable to the Study Area—may include such resources as 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 Catskill Park State Land Master Plan (2008) 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; areas specifically targeted in the New York State Open Space Conservation Plan (2016); state parks or historic sites; sites listed on National or State Registers of Historic Places; areas covered by scenic easements, public parks or recreation areas; locally designated historic or scenic districts and scenic overlooks; and high-use public areas.

To identify visually sensitive resources within the Visual Study Area, a variety of data sources will be consulted including digital geospatial data (shapefiles) obtained primarily through the NYS GIS Clearinghouse or the Environmental Systems Research Institute (ESRI); numerous national, state, county and local agency/program websites as well as websites specific to identified resources; the DeLorme Atlas and Gazetteer for New York State; USGS 7.5-minute topographical maps; and web mapping services such as Google Maps. Aesthetic resources of statewide significance will be identified within 10 miles of the proposed Facility, and locally significant aesthetic resources and areas of intensive land use will be identified within five miles of the proposed Facility.

In addition, per the requirements set forth in 16 NYCRR § 1000.24(b)(4), the Project Applicant will conduct a public outreach to assist in the identification of visually sensitive resources. Initial outreach letters to visual stakeholders regarding locally sensitive sites will be sent upon the filing of the PSS and prior to conducting the visual field work. A detailed discussion of this process will be included in the VIA and the Article 10 Application.

#### (4) Viewpoint Selection

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

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

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

1. They provide open views of proposed turbines (as indicated by field verification), or provide representative views of the screening effects of vegetation and/or buildings from selected areas.
2. They illustrate Facility visibility from sensitive resources within the visual study area identified by local stakeholders and state agencies.
3. They illustrate typical views from all LSZs within the study area 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 (i.e., within the 5-mile and 10-mile study areas), from a variety of orientations, and under different lighting conditions, to illustrate the range of visual change that will occur with the Facility in place.
6. The photos obtained from the viewpoints display good composition, lighting, and exposure.

#### (5) Photographic Simulations

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

#### (6) Additional Simulations Illustrating Mitigation

Due 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 effective in reducing 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 LA will be calculated for each

viewpoint, and an average score for each viewpoint will be determined. Copies of the rating forms will be included in the VIA. The methodology for the rating panel exercise is described in detail above in Section (a)(8).

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

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

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

## 2.25 EFFECT ON TRANSPORTATION

### (a) Conceptual Site Plan

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

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

#### (1) Traffic Volume and Accident Data

Data will be obtained from the New York State Department of Transportation (NYSDOT) Traffic Data Online Viewer to review existing traffic volumes along proposed approach and departure routes for the Facility. Accident information along those routes contained in the Accident Location Information System (ALIS) will be requested

from the local police agencies and/or NYSDOT regional office. These data will be compared with the Transportation Study Area, which will be identified and presented in the Article 10 Application. However, the final haul routes ultimately will be defined in coordination with the turbine manufacturer.

#### (2) School District Bus and Routes

The Article 10 Application will include a review of school district routes for those districts that serve the Facility Site. This will be accomplished by obtaining school bus routes, number of buses, and times from the Albion Central School Districts, Elba Central School District, Holley Central School District, Medina Central School District, and the Oakfield-Alabama Central School District, by reviewing publicly available information and consulting with district personnel.

#### (3) Emergency Service Providers

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

These consultations will give fire departments an opportunity to learn more about the Facility, the Article 10 process, and how Applicant typically interacts with fire and emergency service providers during construction and operation, and will enable Applicant to gather information regarding available local resources, existing training and apparatus, and potential local concerns. The Applicant will alert all fire and rescue Departments that a fire and emergency training and communication plan will be developed as part of the Article 10 process, and will seek local input thereon.

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

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

The Applicant's consultant will drive all potential haul routes roads to identify Load Restricted Bridges and/or roadways along the proposed approach and departure routes for the Facility. For non-posted bridges along those routes, information from the NYSDOT's Highway Data Services website will be reviewed to determine potential load capacity restrictions. In addition, the Applicant will correspond with local highway supervisors. 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 necessary and will not be included in the Article 10 Application. The Application will generally discuss potential impacts from construction activities on traffic, which will be covered elsewhere in this section of the PSS and in Application Exhibit 25.

(c) Facility Trip Generation Characteristics

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

An estimate of the number, frequency and timing of vehicle trips will be based on the above-referenced haul routes, site plan and location of turbines as presented in the Article 10 Application, along with the number of phases, estimated quantities of earthwork and materials to construct Facility components. Exact scheduling of construction work and required vehicles will be determined by the Applicant's contractor. Therefore, the study to be conducted and included in the Article 10 Application will only provide an estimate based on typical volume of materials and number of vehicles per turbine installation, and not a specific schedule for such work. The Article 10 Application will tabulate construction vehicle volumes for the Facility broken down by Facility component/truck type, and will provide additional information on the procedures and notification techniques which Applicant will use to inform stakeholders and the public regarding specific construction schedules, activities, routes and other details.

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

During Facility construction, all trucks carrying water, fuels, or chemicals will utilize the same haul routes used by other construction vehicles/component delivery haulers. These routes will be shown in the Article 10 Application, as described above.

### (3) Cut and Fill Activity

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

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

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

Please note that the final haul routes cannot be determined until the turbine manufacture has been selected and has reviewed and approved, or amended, the haul routes, and therefore the final haul routes will be provided to the Siting Board prior to Facility construction, but will be filed later as a compliance filing and/or to fulfill certificate condition obligations. However, conceptual haul routes will be identified by an experienced transportation engineer, the details of which will be included in the Article 10 Application.

## (d) Traffic and Transportation Impacts

### (1) Levels of Service along Linear Segments of Highway

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

### (2) Route Evaluation Study

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

Once the Facility is operational and construction activities are officially concluded, traffic will be negligible and likely concentrated around the O&M building resulting from Facility employees traveling to and from the O&M building. Some of these personnel will need to visit each turbine location and return to the O&M building. Each turbine typically requires routine maintenance visits once every three months, but certain turbines or other Facility improvements may require periods of more frequent service visits should a maintenance issue arise, or for purposes of required monitoring or post-construction study activities. Such service visits typically involve one to two pick-up trucks or similarly sized vehicles. However, because all turbines and associated access road are located on (and accessed from) private land, public road use due to routine maintenance activities will be very limited. If major maintenance is needed, such as maintenance involving a crane, the language in the Road Use Agreement between the Applicant and the host communities will dictate the procedures followed by the Applicant to ensure that any impacts to public roads are avoided or mitigated. Anticipated terms of this agreement will be presented in Exhibit 25 d(4) and d(5) of the Article 10 Application.

### (3) Oversized Deliveries

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

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

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

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

Prior to construction, any public road upgrades that may be required to accommodate construction vehicles will be identified. These improvements will be made at the Applicants' expense prior to the arrival of oversized/overweight vehicles. Final transportation routing will be designed in consultation with the County and each Town's Highway Superintendent to avoid and/or minimize, to the extent practical, safety issues associated with the use of the approved haul routes, which will confine the heavy truck travel to a few select roads. These and other commitments are anticipated to be included in the Draft Road Use Agreement as a means of mitigating traffic and transportation impacts, and will be included in the Article 10 Application.

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

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

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

In addition, the Article 10 Application will detail the meetings and consultations that the Applicant has had with the municipal highway departments located within the Facility Area. During these meetings the Applicant will discuss the proposed Facility, the 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. The Article 10 Application will provide in-depth description of the Facility tower locations and heights in relation to the local airports, as well as a discussion of consultation with the Federal Aviation Administration (FAA).

#### (f) Federal Aviation Administration Review

The Federal Aviation Administration (FAA) is responsible for evaluating proposed tall structures which penetrate the nation's airspace, as well as construction near airports, to ensure proposed development does not pose a threat to commercial aviation or 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 through this process: 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 (such as in the case of the Heritage Wind Project) 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, which identifies potential issues that need to be further studied, reviewed by relevant lawmakers, and mitigated where necessary, prior to a final determination being issued. The aeronautical studies for the proposed Facility, along with a discussion of potential impacts to air traffic control and air navigation, a summary of the FAA consultation process, and description of any necessary mitigation measures, will be included in the Article 10 Application.

(1) Department of Defense Review

The 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 will initiate FAA review of turbine locations and the DoD will formally be consulted with FAA through its established federal review process, which will be described in more detail in the Application.

(2) Consultation with Nearby Airports/Heliports

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

(3) Responses from the FAA and DoD

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

## 2.26 EFFECT ON COMMUNICATIONS

(a) Existing Broadcast Communication Sources

This section of the Article 10 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 compiled, of AM and FM radio stations within approximately 30 kilometers (18.6 miles) of the proposed Facility will be presented in the Article 10 Application.

(2) FM Radio

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

(3) Television

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

(4) Telephone

Wireless operators are granted area-wide licenses from the FCC to deploy their cellular networks, which often include handsets with Emergency 911 capabilities. Mobile phone market boundaries differ from service to service. The carriers' licensed areas will be disaggregated down to the county level. The type of service (e.g., cellular [CELL], advanced wireless service [AWS], personal communication service [PCS]) for each mobile phone carrier in Orleans County will be provided in the Article 10 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 provide long-distance and local telephone service, backhaul for cellular and personal communication service, data interconnects for mainframe computers and the Internet, network controls for utilities and railroads, and various video services. To assure an uninterrupted line of communication, a microwave link should be clear, not only along the axis between the center point of each microwave dish, but also within a formulaically calculated distance around the center axis of the radio beam, known as the Fresnel Zone. A study evaluating the potential impact of the Facility wind turbines on licensed, proposed, and applied non-

federal government microwave systems in the area will be included in the Article 10 Application. These will also be depicted on a Figure to be included in the Article 10 Application.

#### (6) Emergency Services

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

The Applicant will work with the public safety entities described above to remedy any potential interference related to the wind farm. If evaluations indicate the Facility could have significant impact on coverage, the public safety entity would have many options to improve its signal coverage to the area through optimization of a nearby base station, or even adding a repeater site. Utility towers or meteorological towers within the Facility Site could potentially serve as the platform for a base station or repeater site. The Application will identify potential mitigation options, should they be necessary.

#### (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 the A information is available to the Applicant.

#### (9) Doppler/Weather Radar

The Applicant will send written notification of the proposed Facility to the National Telecommunications and Information Administration (NTIA) of the U.S. Department of Commerce. The NTIA will provide copies of the plans for the proposed Facility to the federal agencies represented in the Interdepartment Radio Advisory Committee

(IRAC), which include the National Oceanic and Atmospheric Administration (NOAA), the 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, if any, will be addressed in the Article 10 Application.

#### (10) Air Traffic Control

The Federal Aviation Administration (FAA) is responsible for evaluating proposed tall structures which penetrate the nation's airspace, as well as construction near airports, to ensure proposed development does not pose a threat to commercial aviation or 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 through this process: 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 (such as in the case of the Heritage Wind Project) 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, which identifies potential issues that need to be further studied, reviewed by relevant lawmakers, and mitigated where necessary, prior to a final determination being issued. The aeronautical studies for the proposed Facility, along with a discussion of potential impacts to air traffic control and air navigation, a summary of the FAA consultation process, and description of any necessary mitigation measures, will be included in the Article 10 Application

In addition, the FAA is one of the federal agencies represented in the IRAC, which will also review 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 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 will initiate FAA review of turbine locations and the DoD will formally be consulted with FAA through its established federal review process, which will be described in more detail in the Application.

## (12) GPS

The agencies represented on the National Executive Committee, who are included in the IRAC process described in section (9) above, are also responsible for addressing potential impacts or mitigation related to US Global Positioning Systems (GPS). The GPS system consists of three segments: the space segment, the control segment, and the user segment. The U.S. Air Force develops, maintains, and operates the space and control segments. The GPS control segment consists of a global network of ground facilities that track the GPS satellites, monitor their transmissions, perform analyses, and send commands and data to the constellation. The GPS ground facility located closest to the proposed Facility will be identified in the Article 10 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 National Aeronautics and Space Administration (NASA) (National Coordination Office for Space-Based Positioning, Navigation, and Timing, 2017). Through established federal review processes, any potential concerns regarding impacts to GPS resources will be identified and, if necessary, mitigated, and those issues will be addressed in the Application.

## (13) LORAN

LORAN was a long range navigation system developed during World War II that has since been deemed obsolete. 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 Article 10 Application.

## (14) Amateur Radio Licenses

Database searches of all amateur radio licenses registered to users with zip codes overlapping a two-mile radius of the Facility will be conducted via the FCC License Data Search on the website of the American Radio Relay League (AARL, 2017) and via RadioQTH's database of call signs (Lewis, 2017), and will be described in the Application.

### (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 Article 10 Application, to the extent known. This information was obtained from GeoTel Communications LCC, which maintains a database of this information.

(c) Anticipated Effects on Communication Systems

Section (a) of Exhibit 26 of the Article 10 Application will provide a description of the communication systems in and around the Facility and any expected impacts to those systems. A more general discussion of the anticipated effects of the proposed Facility and the electric interconnection on the communication systems identified above in Sections (a) and (b), will be provided as Exhibit 26(c) of the Article 10 Application, organized as follows:

- (1) Potential Structure Interference with Broadcast Patterns
- (2) Potential for Structures to Block Lines-of-sight
- (3) Physical Disturbance by Construction Activities
- (4) Adverse Impacts to Co-located Lines due to Unintended Bonding
- (5) Other Potential for Interference

(d) Evaluation of Design Configuration

A map illustrating Facility components and relevant communication system constraints (e.g., Fresnel zones, radio station exclusion zones, etc.) will be provided in the 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 make 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 will be able to be made in person at the Facility's O&M building, via phone, or by writing, and the Applicant will contact the individual within 48 hours of receipt of the complaint. The Applicant will implement the Complaint Resolution Plan in response to 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 Article 10 Application, including a proposed system for tracking complaints.

(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, NASA, and National Science Foundation. These issues will be discussed in further detail in the Application.

## 2.27 SOCIOECONOMIC EFFECTS

The Facility is located in the Town of Barre, within the southern portion of rural Orleans County. Information regarding population, educational attainment and race within the Town of Barre is summarized as follows, and will be discussed further in the Application:

**Table 6. Town of Barre Demographics**

<i>Population</i>	<i>Town of Barre</i>
2010 Total Population [1]	2,025
2016 ACS 5-Year Population Estimate	1,994
Median Age	47.8 yrs
<i>Educational attainment</i>	
% high school graduate or higher	88.2 %
Total housing units	862
Median household income	\$58,000
Individuals below poverty level	22.3%

<sup>1</sup> Demographic profile of 2010 US Census. All other data from the 2012-2016 American Community Survey 5-Year Estimates

The proposed Heritage Wind Project is anticipated to have local and statewide economic benefits, as will be discussed in the Application. Wind power development, like other commercial development projects, can expand the local, regional, and statewide economies through both direct and indirect means. Income generated from direct employment during the construction and operation phases of the wind farm is used by project workers to purchase local goods and services, creating a ripple effect throughout the community and the state. The Article 10 Application will analyze three levels of impact that the proposed Facility will have on the economy, using the Job and Economic Development Impact (JEDI) model, which was created by the National Renewable Energy Laboratory (NREL), a division of the United States Department of Energy:

- **On-site labor impacts:** These are the direct impacts experienced by the companies/individuals residing in New York State engaged in the on-site construction and operation of the Facility. These values represent

expenditure of dollars on labor (wages, salaries and associated expenses) by Facility on-site construction personnel as well as operation and maintenance (O&M) personnel. On-site labor impacts do not reflect material expenditures. Most other input-output models consider this level as “direct impacts,” referring to changes in jobs, economic activity and earnings associated with the immediate impacts created by the investment, which would include the equipment installed on-site, the concrete used onsite, etc. However, the immediate economic impacts of the physical items used on-site, normally included in direct impacts, typically occur at some geographic distance from the project itself. Because of the Job and Economic Development Impact (JEDI) Model’s focus on the local impacts of a Facility, only the labor associated with the on-site location of the Facility (Construction, Construction-Related Services and Onsite Labor during Operational Years) is counted at this level.

- **Local revenue and supply chain impacts:** These impacts measure the estimated increase in demand for goods and services in industry sectors that supply or otherwise support the companies engaged in construction and operation (also known as “backward-linked” industries). These measures account for the demand for goods and services such as turbine components, project analysis, legal services, financing, insurance, etc. Most other input-output models consider this level as “indirect impacts,” referring to economic impacts associated with linked sectors in the economy that are upstream of the direct impacts, such as suppliers of hardware used to make the equipment installed onsite or the concrete used onsite. Because of JEDI’s focus on the local impacts of the Facility, labor for components of this Facility (e.g., turbine manufacturers) occurring at off-site locations is also counted in this level as a local revenue and supply chain impact.
- **Induced impacts:** Induced impacts measure the estimated effect of increased household income resulting from the Facility. Induced impacts reflect the reinvestment of earned wages, as measured throughout the first two levels of economic impact. This reinvestment can occur anywhere within the economy, on household goods, entertainment, food, clothing, transportation, etc.

Each of these three levels of impact 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:

- **Jobs:** Jobs refer to the increase in employment demand because of Facility development. These positions are measured across each level of impact, so that they capture the estimated number of jobs on-site, in supporting industries, and in the businesses that benefit from household spending. For the purposes of this analysis, this term refers to the total number of year-long full-time equivalent (FTE) positions created by the

Facility. Persons employed for less than full time or less than a full year are included in this total, each representing a fraction of a FTE position (e.g. a half-time, year-round position is 0.5 FTE).

- **Earnings:** This measures the wages and salary compensation paid to the employees described above.
- **Output:** Output refers to the value of industry production in the state 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. For example, output would include the profits incurred by those businesses that sell electrical transmission line, concrete, or motor vehicle fuel to the Applicant.

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 division of the United States Department of Energy. The JEDI model allows users to estimate the jobs and economic development impacts from wind power generation projects for both the construction and operation phases of a proposed project (USDOE NREL, 2017). These economic development impacts, categorized by the levels of impact and indicators described above, include onsite jobs and earnings, economic output from these onsite earnings, local revenue/supply chain jobs and earnings, economic output from these local revenue/supply chain earnings, induced jobs and earnings, and economic output from these induced jobs and earnings. It then calculates the aforementioned indicators for each level of impact using project-specific data provided by the Applicant and geographically-defined multipliers. These multipliers are produced by IMPLAN Group, LLC using a software/database system called IMPLAN (IMpact analysis for PLANing), a widely-used and widely-accepted general input-output modeling software and data system that tracks unique industry groups in various levels of the regional data (IMPLAN Group, 2018).

Calculating the number of jobs and economic output from a proposed facility using the JEDI model is a two-step process. The first step requires facility-specific data inputs (such as year of construction, size of facility, turbine size and location). Using this facility-specific data, the JEDI model then creates a list of default values, which include project cost values, default financial parameter values, default tax values, default lease payment values, and default local share of spending values. These default values are derived from 10 years of research by NREL, and stem from various sources, including interviews and surveys from leading project owners, developers, engineering and design firms, and construction firms active in the wind energy sector. The second step of the JEDI model methodology requires the review, and if warranted, the customization of default project cost values and financial parameter values to more reasonable estimates. This model allows on-site, supply chain and induced impacts to be estimated for both the construction and operation phases of the proposed Facility. The Article 10 Application will present the results of the JEDI model.

(a) Construction Workforce

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

(b) Construction Payroll and Non-Payroll Expenditures

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. The construction management team will also provide relevant and available non-payroll construction related expenses if applicable.

(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 basis of economic multiplier factors or other assumption(s) used will be stated.

The Application will also include a discussion of the economic impacts associated with possible changes in the price of electricity with the addition of the proposed Facility to the state electric grid, if any changes are predicted to occur based on NYISO's analysis in the System Reliability Impact Study (SRIS) prepared for Exhibit 5 of the Application, and discussed further in section 2.5 of this PSS.

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

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

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

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

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

(f) Incremental School District Operating and Infrastructure Costs

The Facility is not expected to result in any additional operating or infrastructure costs to the local school districts. The Article 10 Application will confirm this expectation.

(g) Incremental Municipal, Public Authority, or Utility Operating and Infrastructure Costs

The Facility is not expected to result in any additional operating or infrastructure costs to local municipalities, authorities, or utilities. The Article 10 Application will confirm this expectation.

(h) Jurisdictions that Will Collect Taxes or Benefits

The Facility is anticipated to result in economic benefits to the Town of Barre, Orleans County, and local school districts, as will be discussed in greater detail in the Application.

(i) Incremental Amount of Annual Taxes or Payments

The Applicant anticipates negotiating a PILOT agreement with local tax jurisdictions, but the specific terms of the PILOT agreement have not yet been finalized. The PILOT payments will increase the revenues of the local taxing jurisdictions, will provide a consistent and predictable payment amount over the life of the project, 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, as well as any proposed HCA.

(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 economic benefits through implementation of PILOT Agreements.

(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 first aid, medical emergency and fire vehicles and equipment typical of 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. Instead, that equipment will be supplied by the Applicant or others under an arrangement with the Applicant. The Applicant will engage with all local fire departments regarding equipment or training necessary to respond to a potential fire, hazardous substance, or medical emergency at the Facility. The Applicant will continue consultation with local fire departments and first responders in order to ensure that all specialized equipment required to respond to turbine and substation-related emergencies will be available for fire and medical emergencies, and that local departments have an understanding of what kinds of emergencies might arise for which their assistance would be sought.

(l) Consistency with State Smart Growth Public Infrastructure Criteria

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

Although there are no state infrastructure agencies, 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 generally address the Facility's consistency with the criteria provided in ECL 6-0107(2).

## 2.28 ENVIRONMENTAL JUSTICE

Exhibit 28 of the Article 10 Application requires the Applicant to provide sufficient information for the New York State Department of Environmental Conservation (NYSDEC) and others to assess the potential impact of the Facility on Environmental Justice communities. However, it should be noted that the intent of an Environmental Justice evaluation is to determine if air quality and associated health impacts are disproportionately affecting certain communities or populations. As previously indicated, the Facility is a wind powered electric generation facility that will not result in

emissions or air quality impacts (see Section 2.15). Therefore, for the purposes of the Environmental Justice evaluation, and based on the criteria set forth in 6 NYCRR 487.4, the Applicant has defined the "Impact Study Area" to consist of a 0.5 mile radius around each of the Facility components.

Based on data obtained from the *NYSDEC's Geospatial Information System (GIS) Tools for Environmental Justice* website ([www.dec.ny.gov/public/911.html](http://www.dec.ny.gov/public/911.html)), there are no Potential Environmental Justice Areas in the Impact Study Area or in Orleans County. The nearest Potential Environmental Justice Areas is approximately 6 miles southwest of the Facility in Genesee County (see Figure 10). A map of Potential Environmental Justice Areas, in relation to the Facility Site, will be provided in the Article 10 Application.

The Applicant also provided this information in the PIP and, to date, no comments have been received regarding potential impacts to Environmental Justice Areas. Due to the distance between the proposed Facility and the Potential Environmental Justice Area, as described above, the Facility is not expected to have an impact on any Environmental Justice Areas and the full Environmental Justice Analysis outlined in 6 NYCRR 487.6 is not required, and will not be provided in the Article 10 Application.

## 2.29 SITE RESTORATION AND DECOMMISSIONING

### (a) Performance Criteria

The Article 10 Application will provide a statement of the performance criteria proposed for the restoration or decommissioning of the Facility in relation to the following environmental considerations:

- 1) Safety and Removal of Hazardous Conditions
- 2) Environmental Impacts
- 3) Aesthetics
- 4) Salvage and Recycling
- 5) Potential Future Uses
- 6) Useful Life of Facility and Repowering

The Application will also provide information regarding the financial security mechanism to be used for decommissioning and site restoration, including what entity would hold said financial security, how the amount of security will be calculated, and how estimates will be recalculated and/or revised through the life of the project to reflect future costs.

(b) Decommissioning and Restoration Plan

Megawatt-scale wind turbine generators typically have a life expectancy of 20 to 25 years. The current trend in the wind energy industry has been to replace or “re-power” older wind energy projects by upgrading older equipment with more efficient turbines. Performance criteria applicable to decommissioning would also be applicable to re-powering (please see discussion of performance criteria above in (a)).

However, if not upgraded or if the turbines are not expected to return to operation, they will be decommissioned, in accordance with a Decommissioning Plan. A discussion of relevant issues, as well as the Decommissioning 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 an extended period of time (such that there is no expectation of it returning to operation).
- All above-ground structures, including turbines, blades, nacelles, towers, transformers, above-ground collection cables and poles, permanent meteorological towers, and the collection substation, will be removed.
- The POI substation will not be removed during decommissioning, because it will be owned and operated by National Grid following its construction.
- Foundations and collection lines buried above a depth of 36 inches in non-agricultural lands and 48 inches in agricultural lands will be removed, but components buried lower than these depths will remain in place.
- Ground disturbance during decommissioning will be minimized to the extent practicable and the site will be restored to its original ground contours to the extent practicable.
- The Applicant will provide written notification to the Towns two weeks prior to the commencement of site restoration following decommissioning activities.
- The types of financial assurance, as needed and secured by the Applicant, for the purpose of adequately performing decommissioning, in an amount equal to the Professional Engineer’s certified estimate of decommissioning cost, less the expected salvage value and/or resale value of the wind farm components. The decommissioning estimate will be prepared, and the Application will outline a proposed review and updating process for that estimate, to ensure consistency with the methodology approved in the Certificate.
- 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-decommissioning condition upon completion of decommissioning activities.
- The Decommissioning Plan will be binding upon the Applicant, or any of its successors, assigns, or heirs.

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 specified depth, as discussed further above. 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 included in the Article 10 Application.

## **2.31 LOCAL LAWS AND ORDINANCES**

The Facility is proposed within the Town of Barre, Orleans County, New York.

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

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

The Applicant has compiled the following preliminary listing of local ordinances, laws, resolutions, regulations, standards, and other requirements of a procedural nature required for the construction or operation of the proposed Facility, which are preempted by Article 10 by operation of law.

It is Applicant's understanding that amendments have been proposed to the Town of Barre code which may be applicable to the proposed Facility. Applicant will continue to monitor the Town's consideration of such changes, and will include any relevant adopted provisions in the Application, where applicable.

### Town of Barre

Town Wind Law, Article XI of the Town Zoning Code [Local Law Number 2 of 2008]

- Article XI § 350-99 Creation of Wind Energy Overlay Zones
- Article XI § 350-100 Permits and Zoning Required; Exemptions; Transfer
- Article XI § 350-101 Application Procedure; Waiver
- Article XI § 350-102 Application Review Process
- Article XI § 350-103 Standards
  - (A)(1), second sentence on Town requirements for addressing communications issues<sup>3</sup>
  - (A)(2), second sentence/provisions regarding Town-directed remedies of signal interference<sup>1</sup>
  - (B)(2)-(3), Town-directed noise study methodology<sup>4</sup>
  - (C)(1), additional Town-directed signage requirements
  - (D)(2) lighting study
  - (D)(3), lighting plan notification requirements<sup>1</sup>
  - (E)(1), Town review/approval of transmission lines
  - (E)(2), stray voltage notification<sup>1</sup>
  - (G)(3), Town permit conditions<sup>1</sup>
  - (G)(4), posting of public improvement bond<sup>5</sup>
  - (J), Town shutdown of Facility under certain circumstances<sup>6</sup>
  - (K), Town letter of credit requirement for oils and chemicals<sup>1</sup>
  - (O), post-installation field reports and facility shutdown<sup>1</sup>
- Article XI § 350-104 (B)-(D) Waivers for Noise and Setback Requirements; Easements; Variances
- Article XI § 350-105 Decommissioning<sup>7</sup>
- Article XI § 350-106 (C)-(E) Other Operating Considerations; Permit Revocation

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<sup>3</sup> Mitigation of potential impacts of this nature would be addressed in Facility's Certificate, if needed/applicable.

<sup>4</sup> The methodology for noise studies will be addressed in Stipulations amongst the parties, and/or in the Application. Results of noise studies will be expressed in a manner which allows for their comparison to substantive Town noise standards.

<sup>5</sup> While procedural portions of this section are preempted, Applicant nevertheless anticipates that these matters will be addressed with the Town in a Road Use Agreement or similar contract that addresses Applicant's remediation of damaged roads, including the financial security appropriate therefor.

<sup>6</sup> Applicant anticipates that shadow flicker restrictions, and required procedures in the event of noncompliance with those restrictions, would be addressed in the Facility's Certificate.

<sup>7</sup> While the Town's process outlined in the local law is preempted, the matter of decommissioning of the Facility and financial assurance therefor will be addressed in the Application and the Facility Certificate.

- Article XI § 350-107 (A)-(B) and (D), Certifications
- Article XI § 350-108 Wind Measurement Towers *[as applied to permanent towers only]*<sup>8</sup>
- Article XI § 350-109 Penalties
- Article XI § 350-110 Fees
- Article XI § 350-111 Tax Exemptions

#### Town Zoning Law

- Article III § 350-12 through -17, Zoning Permits
- Article VIII § 350-44, Special Permit Criteria
- Article V § 350-27 Flood Hazard Overlay Zone
- Article VI § 350-29(B), Sign permits required
- Article VI § 350-29(G), Procedures for Obtaining an Sign Permit
- Article VI § 350-33(B), Planning Board review of fencing
- Article IX § 350-86, Special Use Permit Procedures
- Article X § 35089 through -94, Site Plan Approval

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

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

To the extent that the Town requires 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 Town to issue such permits or alternatively enter into road use agreements with the Applicant.

The Applicant will work with the Town 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.

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<sup>8</sup> The Applicant has used, and will continue to use, the procedures outlined in § 350-108 to apply for local permits to erect and operate temporary Wind Measurement Towers prior to Facility Certification. To the extent that the Facility contemplates the inclusion of permanent Wind Measurement Towers, the procedural requirements of this section would not apply to those permanent facilities, though the substantive standards outlined in § 350-108 (C)(1) would still apply.

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

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

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

Due to the complex nature of the Facility, there is the potential that the Applicant will arrange with the Town 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.<sup>9</sup> The Applicant will work with the Towns prior to submission of the Article 10 Application to identify the appropriate individuals to conduct this review and the Article 10 Application will include a description of any preliminary arrangements between the Applicant and the Towns and the process for review.

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

The Applicant has compiled the following preliminary listing of local ordinances, laws, resolutions, regulations, standards, and other requirements of a substantive nature required for the construction or operation of the proposed Facility. In the event that any other applicable local ordinances, laws regulations, regulations, standards or other requirements are identified prior to submission of the Application, Applicant will incorporate those laws into Exhibit 31 of the Application.

Town of Barre

Town Wind Law, Article XI of the Town Zoning Code [Local Law Number 2 of 2008]

- Article XI § 350-103 Standards (as outlined below):
  - (A)(1) "No individual wind energy conversion unit shall be installed in any location along the major axis of existing communications links or telephone transmission lines where the operation is likely to produce interference in said link's operation."

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<sup>9</sup> The NYS DOS has stated that the Building Code of New York State does not regulate wind generators or free standing communication towers. See NYSDOS, Division of Code Enforcement and Administration, Technical Bulletin January 1, 2003, Communication Towers, Cellular Towers and Wind Generators.

- (A)(2) "No individual wind energy conversion unit shall be installed in any location where such unit's proximity with existing fixed broadcast, or reception antenna (including residential reception antenna or satellite system) for radio, television or wireless phone or other personal communication systems where such unit would produce interference with signal transmission or reception."
- (A)(3) through (A)(8) Location requirements
- (B)(1) Noise standard
- (B)(2) "In the event that the ambient noise level (exclusive of the development in question) exceeds the applicable standard given above, the applicable standard shall be adjusted so as to equal the ambient noise level. The ambient noise level shall be expressed in terms of the highest whole number sound pressure level in dBA, which is not exceeded for more than six minutes per hour (L 90)."
- (C) "At least one sign shall be posted at the base of each tower warning of electrical shock or high voltage. A sign shall be posted on the entry area of the fence around each tower or group of towers and any building (or on the tower or building if there is no fence) containing emergency contact information, including a local or toll-free telephone number with twenty-four hour, seven-day-a-week coverage."
- (D)(1) and (4) Lighting
- (D)(2) "Light shields, if commercially available, or other devices to mitigate or control light pollution/spilling of light shall be used to minimize the amount of light visible at ground level."
- (E)(1) "All power transmission lines servicing the project or any portion thereof shall be underground to a minimum depth of 48 inches or to such depth as required by applicable state and federal regulations and codes, whichever is greater. If this standard is deemed to be technically infeasible, rationale and alternative solutions and designs shall be submitted."
- (F), Blade sweep and tip height
- (G)(1)-(2) Access Roads
- (G)(3) "Construction and delivery vehicles for WECS and associated facilities shall use traffic routes established as part of the application review process. Factors in establishing such corridors shall include: 1) minimizing traffic impacts from construction and delivery vehicles; 2) minimizing WECS-related traffic during times of school bus activity; 3) minimizing wear and tear on local roads; and 4) minimizing impacts on local business operations . . . Notification to all applicable highway authorities and superintendents will include the number and type of vehicles and their size, their maximum gross weight, the number of round trips per day and the dates and time periods of expected use of designated traffic routes."
- (G)(5) Seasonal Use Roads
- (H) Access structures/facilities

- (I) Security
- (J) Shadow Flicker
- (L) Below-grade foundations
- (M) Construction hours
- (N) Removal of solid waste
- Article XI § 350-104 (A)-(B), where adjacent parcels are participants in Facility, setback and noise restrictions are waived by written consent of adjoining landowner.
- Article XI § 350-106 (A)-(B) Landscaping, Building and Grounds Maintenance.
- Article XI § 350-106 (D) "A WECS shall be maintained in operational condition at all times, subject to reasonable maintenance and repair outages."
- Article XI § 350-107 (C) National and State Standards
- Article XI § 350-108 (C)(1), Standards for Wind Measurement Towers

#### Town Zoning Law

- Article V § 350-22(D)(8); -23(D)(3); -24(D)(3); -25(A)(10) or (D)(4)—Essential Services and Utilities permitted as special uses
- Article VI § 350-29 (B); (C)(5), (6) & (13); (D); and (E) Substantive Standards for Signs
- Article VI § 350-30, Off-street Parking
- Article VI § 350-31, Off-Street Loading
- Article VI § 350-33(A), (C)-(F), Fences

The location of the proposed Facility will conform to all such local substantive requirements, except any that the Board elects to not apply following a showing by the Applicant that such requirements are unreasonably burdensome. 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 the Board finds are unreasonably burdensome in view of existing technology, or the needs of or costs to ratepayers. The Applicant will continue to consult with the local municipalities and will provide more detail in the Article 10 Application, including a statement justifying why any identified local law is unreasonably burdensome as applied to the Facility.

#### (f) List of Procedural Local Ordinances/Laws Related to Use of Water, Sewer, or Telecommunication Lines

The Applicant does not anticipate connecting to any water, sewer, telecommunication or steam lines in public rights of way. 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 way.

(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 way. 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 way.

(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 comply with each requirement. To the extent that the Applicant intends to seek relief from substantive local zoning requirements, the Application will identify those requirements and explain why they would be unreasonably burdensome as applied to the Facility.

(j) Zoning Designation

Zoning regulations within the Facility Area are described within the applicable Town Zoning Laws. The Article 10 Application will outline where the turbine locations within the Facility Site will be located and how they will comply with zoning districts to allow for the construction of wind energy generation facilities with a 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 the requirements below are applicable, the Applicant intends to comply with such requirements unless the Applicant specifically requests relief from the Siting Board.

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

The Applicant has compiled a preliminary listing of state approvals, consents, permits, or other conditions of a procedural nature required for the construction or operation of the proposed Facility, as summarized in the Table 7.

**Table 7. List of All State Approvals for the Construction and Operation of the Facility that are Procedural in Nature and Supplanted by Article 10**

State Agency	Requirement	Discussion
New York State Department of Environmental Conservation	Water Quality Certification (WQC), Section 401 of the Clean Water Act	The request for a 401 WQC will not be filed until a federal U.S. Army Corps of Engineers permit application is filed (if necessary). Under the Siting Board regulations, the WQC will be issued by the Siting Board.
New York State Office of Parks, Recreation, and Historic Preservation (OPRHP)	Consultation Pursuant to §14.09 of the New York State Historic Preservation Act	The Applicant has initiated (and will continue) consultation with the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) to ensure compliance with §14.09 of the New York State Historic Preservation Act.
New York State Department of Environmental Conservation	Endangered and Threatened Incidental Take Permit Article 11, 6 NYCRR Part 182	The NYSDEC may issue a license or permit to “take” any species listed as endangered or threatened. This permit may be required if, in consultation with state agencies, it is determined that the project could result in incidental take of any state-listed endangered or threatened fish or wildlife species from occupied habitat. If this permit is required, the procedural requirements are supplanted by Article 10.
New York State Department of Environmental Conservation	Permit for Protection of Waters Article 15, 6 NYCRR Part 608	This permit would be required for the crossing of protected streams by Facility components. Protected streams are particular portions of streams designated by the NYSDEC with one of the following classifications: AA, AA(t), A, A(t), B, B(t) or C(t). The permit is required for any change, modification, or disturbance of any protected streams, streambeds, or stream banks. If this permit is required, the procedural requirements are supplanted by Article 10.

State Agency	Requirement	Discussion
New York State Department of Environmental Conservation	Permit for Freshwater Wetlands 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.
New York State Department of Transportation	Special Use Permit for Oversize/Overweight Vehicles  Section 385, NYS Vehicle and Traffic Law	Special hauling permits from the New York State Department of Transportation (NYSDOT) are required for loads that exceed legal dimensions or weights. Thus, transport of the blades, nacelles, tower sections, and cranes will require a variety of special hauling permits. Actual loads and permits will depend on the specific turbine supplier, crane equipment chosen, and degree of disassembly of the crane. These permits are typically obtained by the contractor immediately prior to construction. Although these ministerial permits are supplanted by Article 10, it is anticipated that the Applicant will request that the Siting Board authorize the DOT to issue these permits because of the timing of these submissions and the likelihood that the information will not be available from the contractor until post-Certification.
New York State Department of Transportation	Highway Work Permit NYS Highway Law, Article 3, Section 52	The use of New York State highway ROWs must be carried out in accordance with terms and conditions of a highway work permit issued by the DOT. This includes permits for crossing state highways, which are not supplanted by Article 10.

State Agency	Requirement	Discussion
New York State Department of Agriculture and Markets	Notice of Intent NYS Agriculture & Markets Law (AML) Section 305(4)	Notice to the NYSDAM of proposed non-agricultural construction within a designated agricultural district. The Applicant will coordinate with NYSDAM to identify project impacts and potential mitigative measures. Notice of Intent procedural requirements are supplanted by Article 10. However, the Applicant will continue to consult with NYSDAM and anticipates that NYSDAM will provide recommendations to the Siting Board regarding more substantive aspects of the NYSDAM's <i>Guidelines for Agricultural Mitigation for Wind Power Projects</i> .

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 NYSDOT 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)
- Endangered and Threatened Incidental Take Permit Standards, Article 11, 6 NYCRR 182.12 (Incidental Take Permit Standards)

(d) Summary Table of Substantive State Requirements

The substantive state requirements preliminarily identified above in (c) will be presented in a table in the Article 10 Application, and formatted per the associated requirements.

(e) State Approvals/Permits/Etc. for Offsite Features Not Encompassed by Major Electric Generating Facility

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. That said, Heritage Wind does not anticipate that the proposed Project will include offsite interconnections or ancillary features not otherwise encompassed by the Major Electric Generating Facility, which would make this section inapplicable.

## 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., Heritage Wind).

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

Table 8 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 8. 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 1898; Section 404 or Nationwide Permit for Placement of Fill in Federal Jurisdictional Wetlands/Waters of the U.S. National Environmental Policy Act (NEPA) Compliance; Compliance with Section 106 of the National Historic Preservation Act (NHPA); and Compliance with Section 7 of the Endangered Species Act.
U.S. Fish and Wildlife Service	TBD	Consultation Pursuant to Section 7 of the Endangered Species Act, associated with the aforementioned Section 404 Permit.
Federal Aviation Administration	TBD	Lighting Plan and Clearances for Potential Aviation Hazard. Includes formal consultation with Department of Defense, and the National Telecommunications and Information Administration (which includes review of potential impacts to weather radar) if required or applicable.

<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, described in general detail below, and which will be more fully described in the Application. 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 wires transmits the power to a collection substation. The substation steps the voltage up to a high voltage and a high voltage transmission line carries the power to a POI substation. The proposed POI substation will be generally located adjacent to, and will connect to National Grid's existing Lockport-Mortimer 115 kV transmission line.

### (a) Design Voltage and Voltage of Initial Operation

A pad mount transformer located near the base of each wind turbine tower, or internally within the tower, will raise the voltage of electricity produced by the turbine generator from approximately 650 volts up to 34.5 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

Information regarding the type, size, number and materials to be used for conductors will be described in detail in the Application. Generally, though, the length of the collection system, broken down by anticipated length underground

lines, will be described in the Article 10 Application. The underground system will be comprised of numerous cable sections in parallel, connecting each of the wind turbines to the collection substation. Each section is anticipated to be comprised of 3 type URD aluminum conductors, each surrounded by electrical insulation (typically tree-retardant cross-linked polyethylene, TRXLPE) and an overall jacket (typically linear low-density polyethylene, LLDPE). The size of each conductor will depend on how many turbines are producing power into that conductor, but will typically range from 4/0 to 1500 kcmil AWG.

Any overhead system will be similar in concept to the underground section. Each section would be comprised of 3 ACSR (aluminum conductor, steel reinforced) conductors. The size would range from 336.4 to 795 kcmil. Determination of specular or non-specular material construction will be made during final design.

(c) Insulator Design

Typical utility-grade ceramic/porcelain or composite/polymer insulators, designed and constructed in accordance with ANSI C29, are anticipated to be used. Insulators in the POI substation and the collection substation are anticipated to be porcelain. Additional detail will be provided in the Application.

(d) Length of the Transmission Line

As will be described more fully in the Application, the overhead transmission line will run approximately 300 feet between the collector substation and the POI substation.

(e) Typical Dimensions and Construction Materials of the Towers

Overhead collection line is not anticipated.

(f) Design Standards for Each Type of Tower and Tower Foundation

The proposed Facility does not include any overhead collection line. Therefore, this information will not be included in the Article 10 Application.

(g) Type of Cable System and Design Standards for Underground Construction

From the transformer within each wind turbine, three power cables along with the fiber optic communication cables that comprise a single circuit will collect the electricity produced by wind turbine generators. Direct burial methods through use of a cable plow, rock saw, rock wheel trencher and/or similar equipment will be used during installation of the

underground electrical collection system whenever possible. If a rock saw is used, water or another nonhazardous compound would be used as a lubricant. Direct burial will involve the installation of the bundled cable (electrical and fiber optic bundles) directly into a “rip” in the ground created by the plow, saw blade or rock wheel. The rip disturbs an area approximately 24 inches wide with bundled cable installed to a minimum depth of 36 inches in most areas, and 48 inches in active agriculture and pasture lands. Sidecast material will be replaced with a small excavator or small bulldozer. All areas will be returned to approximate pre-construction grades and restored. Horizontal direction drilling (HDD) may be utilized to installed underground collection lines in or near areas of sensitive areas (i.e., wetlands, streams, etc.) or as needed (i.e., to cross roadways, etc.). Typical constructions details regarding the use of HDD will be included in the Article 10 Application.

The Article 10 Application will include the type of cable system to be used and the design standards for that system. Additionally, a description of potential mitigation measures will be included regarding proposed electric facility crossings of existing utility lines.

#### (h) Profile of Underground Lines

A typical drawing of the underground collection cable and associated material will be provided in the Article 10 Application.

#### (i) Equipment to be Installed in Substations or Switching Stations

The POI substation and the collection substation equipment, including a description of the purpose and need, sizing criteria, and summary of coordination with National Grid, will be provided in the Article 10 Application. The Article 10 Application will include a schematic plan of the POI substation and the collection substation.

#### (j) Any Terminal Facility

The only terminal facilities expected are the POI substation and the collection substation and are described/shown above in section (i).

#### (k) Need for Cathodic Protection Measures

There are no cathodic protection measures expected to be required for installation of the underground systems, as no metallic pipelines are anticipated to be used. Therefore, cathodic protection measures will not be discussed further in the Article 10 Application.

## 2.35 ELECTRIC AND MAGNETIC FIELDS

The information presented in Exhibit 35 of the Article 10 Application will be derived from an electric and magnetic field (EMF) study to be prepared for the Heritage Wind Project and will address the requirements of 16 NYCRR 1001.35.

### (a) Every Right-of-way Segment Having Unique Electric and Magnetic Field Characteristics

The EMF study will identify every right-of-way (ROW) segment having unique EMF characteristics due to structure types and average heights, rights-of-way widths, and co-location of other transmission facilities in the ROW. The Article 10 Application will identify each ROW segments with unique EMF characteristics, which will be evaluated in the EMF study. The strength and location of EMFs will be modeled on representative areas of these segments. Modeling calculations will identify existing EMFs and future EMFs that would result from construction and operation of the Facility. For the purposes of calculations, the ROW is assumed to be 100 feet (50 feet from centerline) for all of the segments. The Article 10 Application will identify the name and calculation number of each segments.

### (b) For Each Right-of-way Segment, Base Case and Proposed Cross Sections Showing:

For each of the unique ROW segments, the EMF study will provide both base case (where existing facilities are present) and proposed cross sections that will show, to scale, the following features:

- any known overhead electric transmission, sub-transmission, and distribution facilities showing structural details and dimensions and identifying phase spacing, phasing, and any other characteristics affecting EMF emissions;
- any known underground electric transmission, sub-transmission (i.e., 34.5 kV collection system), and distribution facilities;
- ROW boundaries; and
- structural details and dimensions for all structures (dimensions, phase spacing, phasing, and similar categories) and an overview map showing locations of structures.

The station numbers associated with each of the unique ROW segments will be included in the Article 10 Application.

### (c) Enhanced Aerial Photos/Drawings Showing Exact Locations of Each:

The EMF study to be included in the Article 10 Application will include a set of aerial photos/drawings showing the exact location of each unique ROW segment and each cross-section, and any residences or occupied buildings within

the ROW segments. If no residence or occupied building is within the ROW segments, the measurement of the distance between the edge of the ROW segment and the nearest residence or occupied building will be provided.

(d) Electric and Magnetic Field Study

(1) Licensed Professional Engineer

The EMF study included in the Article 10 Application will be signed and stamped/sealed by a licensed professional engineer registered and in good standing in the State of New York.

(2) Computer Software Program

The software to be used in the EMF study will be identified in the Article 10 Application.

(3) Electric Field Calculation Tables and Field Strength Graphs

The EMF study will model the strength and locations of electric fields to be generated by the Facility. Modeling will be conducted at rated voltage, and the measurement location and interval will be described in the Article 10 Application. Electric field strength graphs depicting electric fields along the width of the entire ROW 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 Article 10 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 will be 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 existing power lines within the right-of-way in which the proposed transmission line will be located, therefore this analysis is not applicable to the proposed Facility. The proposed collection line is anticipated to cross existing 155 kV corridors. The locations of these crossings and potential impacts will be discussed 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 is not expected to require water interconnection facilities, and as such, the requirements of 1001.38 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 Orleans County Department of Health during this process. If the proposed O&M building is sited so that it would require connection into a regulated water line, then the Applicant will work with the Town's water district. If an existing building is used for O&M purposes, the Applicant will evaluate the adequacy of existing water supply.

### **2.39 WASTEWATER INTERCONNECTION**

The proposed Facility is not expected to require wastewater interconnection, and as such, the requirements of 1001.39 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 design any on-site wastewater treatment systems to meet local/state specifications and will coordinate with the Orleans County Department of Health, or any other relevant agency, throughout the Article 10 process as needed. If an existing building is used for O&M purposes, the Applicant will evaluate the adequacy of existing wastewater treatment systems.

## **2.40 TELECOMMUNICATIONS INTERCONNECTION**

Generally, it is not anticipated that the Facility will require telecommunication interconnections as defined by Article 10, 16 NYCRR 1000.40, in that no new off-site telecommunication lines are anticipated at this time. It is likely that data will be transmitted to National Grid and others using existing telecommunications facilities as the area is generally served by existing cellular and broadband services. In addition, Facility communications will be installed on-site as part of substation and O&M building improvements.

### **(a) Operational Data Transmitted to NYISO**

The Facility's generating operational data will be transmitted to NYISO/National Grid through a fiber-optic shield wired 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 Heritage Winds Project, which is proposed to include up to 47 turbines and generate up to 200 MW of renewable energy with no emissions of pollutants or greenhouse gases to the atmosphere and without the need for the use of significant quantities of water. Other proposed components will include: permanent meteorological towers, access roads, buried electrical collection, O&M Building, laydown areas, POI substation, collection substation, and alternate turbine locations. 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 Orleans County, New York in the Town of Barre. The proposed Facility Area boundary (see Figure 1) consists of approximately 35,000 acres of private land, and the general landscape is a mix of agricultural and forest land. There are no Villages or other urban areas within the Facility Area boundary.

The Application will provide a range of turbine models that may ultimately be selected. In no case will the Facility consist of more than 47 turbines or be greater than 200 MW.

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 September 23, 2016, comments on the PIP were received from the New York State Department of Public Service (DPS) on October 24, 2016, and the PIP was updated, finalized and filed by the Applicant on November 23, 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-0546&submit=Search>
- <http://www.heritagewindpower.com/>

In addition to the websites identified above, the Applicant has established a local project number (585-563-5137) community members may call with any questions and comments on the Facility, and set up a Project Facebook page through which stakeholders and the public can submit comments and questions on the Facility. The Applicant also held nine open houses, which included the following information:

- Facility and company fact sheet
- Article 10 Consumer Presentation
- Facility maps from the PIP

The Applicant has provided or will provide paper copies of all major Project filings (PIP, PSS, etc.) at the following repositories:

- Barre Town Hall; 14317 West Barre Road, Albion, NY 14411 (585-589-5100)
- Lee-Whedon Memorial Library; 620 West Ave., Medina NY 14103 (585-798-3430)
- Haxton Memorial Library; 3 North Pearl Street, Oakfield, NY 14125 (585-948-9900)
- Holley Community Free Library; 86 Public Square, Holley, NY 14470 (585-638-6987)

During the time before the submission of the Article 10 Application, the Applicant intends to continue stakeholder outreach. The Applicant will continue to attend municipal meetings and will hold at least one additional open house prior to submitting the Application. Finally, the Applicant will also attempt to identify additional community events in which it would participate.

Section 2.0 (Content of Application) of this PSS has been organized in accordance with 16 NYCRR § 1001 (Content of an Application). Specifically, all sub-sections of Section 2.0 correspond directly to 16 NYCRR § 1001 (e.g., Section 2.1 corresponds to 16 NYCRR § 1001.1, Section 2.2 corresponds to 16 NYCRR § 1001.2, etc.). These subsections of the PSS identify numerous Facility-specific support studies that will be conducted and included in the Article 10 Application, including:

- Preliminary Emergency Action Plan
- Complaint Resolution Plan
- Noise Impact Assessment
- Phase 1B Archeological Survey
- Historic Architectural Resources Survey
- Preliminary Geotechnical Investigation
- Invasive Species Control Plan
- Preliminary Stormwater Pollution Prevention Plan
- Preliminary Spill Prevention Containment and Countermeasure Plan
- Plant and Wildlife Species Inventory
- Wetland and Stream Delineation Report
- Visual Impact Assessment
- Shadow Flicker Assessment
- Transportation and 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 9.

Table 9. PSS Content Matrix

PSL 1000.5(l) Section	Requirement	Corresponding Section of the Heritage Winds PSS	Notes
PSL 1000.5 (l)(1)	as much information as is reasonably available concerning the proposed facility, generally in the form (though in less detail) that it will appear in the application;	Section 2.0	This Section, and all associated subsections, of the PSS contain reasonably available information related to existing conditions, potential impacts and minimization/mitigation.
PSL 1000.5 (l)(2)	a preliminary scope of an environmental impact analysis containing a brief discussion, on the basis of reasonably available information, of the following items:	Section 1.3	This section includes general information regarding Project-related impacts.
PSL 1000.5 (l)(2)(i)	a brief description of the proposed facility and its environmental setting;	Section 1.1, Sections 2.21(l), 2.22(a), 2.22(d), 2.23(a), 2.23(b)	Section 2.1 provides a brief description of the Project, while Sections 2.21(l), 2.22(a), 2.22(d), 2.23(a), 2.23(b) provide a brief description of its environmental setting
PSL 1000.5 (l)(2)(ii)	potentially significant adverse environmental and health impacts resulting from the construction and operation of the proposed facility including also an identification of particular aspects of the environmental setting that may be affected, including any material impacts or effects identified in consultations by the public, affected agencies, and other stakeholders, and a responsive analysis by the Applicant as to those issues identified in consultations;	Section 1.3, Sections 2.15(e) and 2.17(d), Sections 2.21 (m), 2.22 (b), 2.22(f), 2.22(m), 2.22(q), 2.23(b)(4), 2.23(e)(1), 2.24(b)(7), 2.25(d)(2)	Section 1.3 includes general information regarding Project-related impacts, Sections 2.15(e) and 2.17(d) provide information regarding potential health impacts, and Sections 2.21 (m), 2.22 (b), 2.22(f), 2.22(m), 2.22(q), 2.23(b)(4), 2.23(e)(1), 2.24(b)(7), 2.25(d)(2) provide information regarding potential environmental impacts. As of the date of the filing of this PSS, no material impacts have been identified during any consultations.
PSL 1000.5 (l)(2)(iii)	the extent and quality of information needed for the application to adequately address and evaluate each potentially significant adverse environmental and health impact, including existing and new information where required, and the methodologies and procedures for obtaining the new information;	Section 2.0	This Section, and all associated subsections, identify the extent and quality of information that is proposed to be included in the Article 10 Application, including numerous stand-alone support studies.

PSL 1000.5(l) Section	Requirement	Corresponding Section of the Heritage Winds PSS	Notes
PSL 1000.5 (l)(2)(iv)	for proposed wind-powered facilities, proposed or on-going studies during pre-construction activities and a proposed period of post-construction operations monitoring for potential impacts to avian and bat species;	Sections 2.22(d) and 2.22(h)(1), Section 2.22(h)(2)	Sections 2.22(d) and 2.22(h)(1) discuss the methodology by which the Applicant proposed and implemented pre-construction avian and bat surveys, while Section 2.22(h)(2) discusses post-construction monitoring.
PSL 1000.5 (l)(2)(v)	a description of how the applicant proposes to avoid adverse impacts to the environment and health;	Section 1.3, Sections 2.15(j) and 2.17(d), Sections 2.22 (c), 2.22(g), 2.22(n), 2.22(q), 2.23(b)(5), 2.23(e)(2), 2.24(a)(10), 2.25(d)(4)	Section 1.3 includes general information regarding Project-related avoidance, minimization and mitigation measures, Sections 2.15(j) and 2.17(d) describe avoidance, minimization and mitigation measures associated with health impacts, and Sections 2.22 (c), 2.22(g), 2.22(n), 2.22(q), 2.23(b)(5), 2.23(e)(2), 2.24(a)(10), 2.25(d)(4) describe avoidance, minimization and mitigation measures associated with environmental impacts.
PSL 1000.5 (l)(2)(vi)	for those adverse environmental and health impacts that cannot be reasonably avoided, an identification of measures proposed to mitigate such impacts;	see above	see above
PSL 1000.5 (l)(2)(vii)	where it is proposed to use petroleum or other back-up fuel for generating electricity, a discussion and/or study of the sufficiency of the proposed on-site fuel storage capacity and supply;	Not applicable to this Project	

PSL 1000.5(l) Section	Requirement	Corresponding Section of the Heritage Winds PSS	Notes
PSL 1000.5 (l)(2)(viii)	a description and evaluation of reasonable and available alternative locations for the proposed facility, including a description of the comparative advantages and disadvantages of the proposed and alternative locations, except that a private facility applicant may limit its description and evaluation of alternative locations to parcels owned by, or under option to, such private facility applicant or its affiliates;	Section 2.9	This Section of the PSS specifically addresses alternatives, including reasonable and available alternative locations and the comparative advantages and disadvantages of the proposed and alternative locations. However, as indicated in Section 2.9, this Project is being proposed by a private facility applicant and therefore the description and evaluation of alternative locations will be limited to parcels owned by, or under option to, such private facility applicant or its affiliates.
PSL 1000.5 (l)(2)(ix)	If the proposed facility affects any land or water use or natural resource of the coastal area and federal authorization or funding is necessary, a preliminary analysis of the consistency of the proposed facility with the enforceable policies of the New York State coastal management program or, where the action is in an approved local waterfront revitalization program area, with the local program;	Not applicable to this Project	

PSL 1000.5(l) Section	Requirement	Corresponding Section of the Heritage Winds PSS	Notes
PSL 1000.5 (l)(2)(x)	<p>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;</p>	Section 2.9	<p>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.</p>
PSL 1000.5 (l)(2)(xi)	<p>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</p>	Sections 2.27 and 2.28	<p>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</p>

PSL 1000.5(l) Section	Requirement	Corresponding Section of the Heritage Winds PSS	Notes
PSL 1000.5 (l)(2)(xii)	an identification of any other material issues raised by the public and affected agencies during any consultation and the response of the applicant to those issues.	Appendix D	As of the date of filing this PSS, no material issues have been raised by the public or affected agencies. However, Appendix D of the PSS includes the most recently filed Meeting Log, which outlines all consultation activities conducted by the Applicant since January 2015.
PSL 1000.5 (l)(3)	an identification of all other state and federal permits, certifications, or other authorizations needed for construction, operation or maintenance of the proposed facility;	Sections 2.32 and 2.33	Section 2.32 addresses state laws and regulations, which Section 2.33(b) addresses anticipated federal permits and approvals.
PSL 1000.5 (l)(4)	a list and description of all state laws and regulations issued thereunder applicable to the construction, operation or maintenance of the proposed facility and a preliminary statement demonstrating an ability to comply;	Section 2.32	Section 2.32 addresses state laws and regulations.
PSL 1000.5(l)(5)	a list and description of all local laws, and regulations issued thereunder, applicable to the construction, operation, or maintenance of the proposed facility and a statement either providing a preliminary assessment of an ability to comply or indicating specific provisions that the applicant will be requesting the Board to elect not to apply, in whole or in part, and a preliminary explanation as to why the Board should elect not to apply the specific provisions as unreasonably burdensome in view of the existing technology or the needs of or costs to ratepayers whether located inside or outside of such municipality;	Section 2.31	Section 2.31 addresses local laws and ordinances.

PSL 1000.5(l) Section	Requirement	Corresponding Section of the Heritage Winds 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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