

# FINAL SCOPING STATEMENT

High Bridge Wind Project, Case 18-F-0262

Town of Guilford, Chenango County, New York

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## COMMONLY USED TERMS

<u>Facility:</u>	Collectively refers to all components of the proposed project, including wind turbines, access roads, collection lines, overhead transmission line, substations, meteorological towers, staging areas, operations and maintenance building.
<u>Facility Site:</u>	Those parcels or portions of parcels currently under, or being pursued, for lease (or other real property interests) with the Project Sponsor for the location of all Facility components.

## COMMONLY USED ACRONYMS AND ABBREVIATIONS

APLIC	Avian Power Line Interaction Committee
BBA	Breeding Bird Atlas (New York State)
BBS	Breeding Bird Survey
Calpine	Calpine Corporation
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
NCBP	Net Conservation Benefit Plan
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
NYNHP	New York Natural Heritage Program
NYSA&M	New York State Department of Agriculture and Markets
NYSDEC	New York Department of Environmental Conservation
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 Plan	Public Involvement Program Plan
POI	point of interconnection
Project Sponsor	High Bridge Wind, LLC
PSL	Public Service Law
PSS	Preliminary Scoping Statement
FSS	Final 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 USACE of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VIA	Visual Impact Assessment

## 1.0 INTRODUCTION AND ARTICLE 10 PROCESS OUTLINE

High Bridge Wind, LLC (the “Project Sponsor” or “High Bridge”), a wholly owned subsidiary of Calpine Corporation (“Calpine”), is proposing to submit an Application to construct a Major Electric Generating Facility (the “High Bridge Wind Project” or the “Facility”) under Article 10 of the Public Service Law (“PSL”). Pursuant to the rules of the New York State Board on Electric Generation Siting and the Environment (“Siting Board”), not less than 90 days before the date on which a Project Sponsor files an Application to construct a Major Electric Generating Facility under Article 10 (the “Application”), the Project Sponsor must submit a Preliminary Scoping Statement (“PSS”). In addition, under 16 NYCRR § 1000.5(c), a Project Sponsor can file a PSS with the Siting Board no earlier than 150 days following the submission of a Public Involvement Program (“PIP”) Plan. A PIP Plan for the High Bridge Wind Project was filed on April 27, 2018. This PSS 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 Project Sponsor and filing a copy with the Secretary. Further details for filing comments on this PSS are provided in the PSS Notice, which is included in Appendix A to this FSS.

A PSS generally provides an outline and summary of what will eventually become the company’s formal Article 10 Application, which High Bridge hopes to file in the summer of 2019. While the PSS will provide the scope and methodology of the many environmental studies the State will require for the Facility, as well as the information required to satisfy the regulations, the PSS will not provide the level of specific detail about the Facility layout and components that many stakeholders and members of the public may be seeking. For example, the PSS cannot yet identify the precise locations of wind turbines. This is because the PSS and related “scoping” process are designed to gather stakeholder input at a relatively early stage, before a Project Sponsor has a fully developed proposal, so that issues and resources of concern to the community can be identified and incorporated into final project design. The studies and information outlined in this document will be used to develop the layout of the Facility and inform the Application, which will provide a much greater level of detail on the High Bridge Wind Project.

Stakeholders and members of the public have the opportunity at this early stage to ask questions or submit comments on the proposed scope and methodology of High Bridge’s studies, through their PSS comments. These comments will help to ensure that local issues of concern are identified and addressed in the Application and will allow High Bridge the opportunity to adjust its approach to certain studies and/or information-gathering efforts before the Application is filed. High Bridge will provide responses to PSS comments within a few weeks of receiving them. This comment-and-response process will also help to narrow the number of issues that parties might potentially disagree about during later phases of the proceeding, which can help to reduce the cost and burden for stakeholders participating in the Article 10 process. Issues can also be identified and addressed through a formal Stipulations process. The formal Stipulations process is authorized by the Presiding Examiner in the Article 10 case and can commence following the

Pre-Application Conference—usually 60 days after a PSS is filed. Formal Stipulations developed by High Bridge would be posted for public review and comment prior to formal agreement and signing; notices to that effect would be circulated at that time as well.

Once the Article 10 Application is submitted, certain State agencies have 60 days to review the Application and identify any deficiencies that the Project Sponsor would need to address. Once the agencies determine the Application is complete, the Siting Board will have one year to make a decision on the Application. During that one-year period, the Siting Board will hold Public Statement Hearings to take public comment; discovery and evidentiary hearings would likely be held, through a formal litigation phase; and a Recommended Decision would be issued by the Presiding Examiners to the Siting Board, for its review and consideration. The Siting Board would then decide whether to grant, grant with conditions, or deny the requested Certificate of Environmental Compatibility and Public Need (“CECPN”) that is required of all electric generation facilities over 25 MW in size under Article 10 of the Public Service Law.

Given the complexity and timelines involved in the process, it is important to High Bridge that stakeholders come forward as soon as possible to identify potential issues, impacts, or concerns which should be addressed in the Application. By law, the Town of Guilford will be a party to this proceeding at all stages, as will numerous State agencies. Other local parties who meet the eligibility requirements set forth in NY Public Service Law § 166 will also be permitted to participate formally. Comments and questions will be accepted from all stakeholders and members of the public throughout all stages of the proceeding on the Siting Board’s website, under Case 18-F-0262. High Bridge will update its Project Website, and will continue its outreach efforts with local, regional, state and federal stakeholders, to ensure that a complete picture of the benefits, potential impacts, and details of the proposed High Bridge Wind Project, as presented in the Application, is communicated to stakeholders.

Additional information on the Article 10 process is available at the Siting Board’s website: <http://www.dps.ny.gov/SitingBoard>.

## **1.1. FACILITY DESCRIPTION**

The Project Sponsor is proposing a wind energy generating facility of up to 100.8 megawatts (MW) in the Town of Guilford, Chenango County, New York (Figure 1). The Facility will be located on leased private lands that are rural in nature. Those parcels or portions of parcels currently under, or being pursued, for lease (or other real property interests) with the Project Sponsor for the location of all Facility components (the “Facility Site”) collectively total approximately 28,000 acres. The Facility Site is depicted in various figures included in this Final Scoping Statement (FSS). The regional Facility location and the general Facility Site are depicted in Figures 1 and 2, respectively. The Facility’s footprint will be substantially smaller than the Facility Site and will have only minor impacts on land use (i.e., farming,

logging, and other operations will be largely unaffected). The Facility is being designed to avoid or minimize impacts to wetlands, sensitive wildlife habitat, archaeological resources, waterbodies, visibility and visual effects on adjacent areas, and other sensitive resources. The Facility Site will likely be further refined as the project progresses. The precise locations of proposed Facility components and the parcels that will host them, including the location(s) of any proposed alternatives, will be identified in detail in the Application. This document is a preliminary scope of the environmental impact analyses that will be provided in the Application in compliance with the specific requirements of 16 NYCRR 1001.

The High Bridge Wind Project will include the installation and operation of up to 30 wind turbines, together with the associated collection lines, access roads, permanent and temporary meteorological towers, laydown area, and an operation and maintenance (O&M) building. To deliver electricity to the New York State power grid, the Project Sponsor proposes to construct a collection substation that may include up to 5 MW of battery storage, a short 115-kV overhead electrical transmission line (less than 5 miles in length) connecting the collection substation to the NYSEG 115KV line, and a point of interconnect (POI) substation that will interconnect with NYSEG's Jennison to East Norwich 115 kV transmission line in the Town of Guilford (see Figure 4).

The anticipated components of the High Bridge Wind Project will include:

- Wind turbines: The Facility will consist of up to 30 wind turbines generating up to 100.8 megawatts (MW) of electricity.
- Access roads: During construction, access roads will be gravel surfaced and typically 16 feet wide to accommodate construction/delivery vehicles. Temporary widening would be needed at intersections, these improvements would be removed after construction. Crane walk areas would consist of compacted shoulder that would be decompact after construction. Following construction, some permanent access roads will remain for use in Facility operations.
- Temporary and Permanent Meteorological (met) towers: A 197-foot (60m) temporary NRG meteorological tower has been installed. An approximately 328-foot (100-meter) temporary lattice met tower is currently being installed to collect meteorological data. In addition to these temporary met towers, permanent met towers will be installed during Facility construction.
- Collection lines: Underground collection lines will deliver power from the turbines to the collection substation. Overhead collection lines are not proposed, unless location-specific conditions preclude burial of lines.
- Substations: To deliver electricity to the New York State power grid, the Project Sponsor proposes to construct a collection substation, which will include up to 5 MW of battery storage, and a point of interconnection (POI) substation. The collection substation will be located at the end of the Facility's 34.5 kilovolt (kV) collection system and will connect to the POI substation via a short (less than 5-mile) span of overhead 115 kV

transmission line. The point of interconnect (POI) substation will interconnect with NYSEG's Jennison to East Norwich 115 kV transmission line in the Town of Guilford

- Temporary laydown/staging areas: A temporary construction laydown yard (approximately 10 acres) will be established to accommodate construction trailers, storage containers, large project components, a temporary concrete batch plant, and parking for construction workers.
- Operation and maintenance (O&M) facility: The O&M building will be roughly 5,000 square feet and will house permanent staff offices and store maintenance equipment and supplies. Typical ancillary features (e.g., maintenance sheds, the parking lot, etc.) will be generally included in the definition of the O&M facility.

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

## 1.2. FACILITY BENEFITS

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

The proposed Facility will help the State achieve the broad goals of the 2015 State Energy Plan (SEP). See NY State Energy Law 6-104 and 16 NYCRR 1001.10(g). The SEP contains a series of policy objectives to significantly reduce greenhouse gas (GHG) emissions and diversify the State's energy portfolio, while stabilizing energy costs and encouraging economic development and innovation. The SEP is a "comprehensive strategy to create economic opportunities for communities and individual customers throughout New York." Through the SEP, New York has committed to achieving a 40% reduction in GHG emissions from 1990 levels by 2030 and reducing 80% of total carbon emissions by 2050. In addition, the SEP calls for 50% of generation of electricity to come from renewable energy sources by 2030. According to the SEP, "Renewable Energy sources, such as wind, will play a vital role in reducing

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<sup>1</sup> See CES FSEIS in Case 15-E-0302 (May 19, 2016).

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) to fight climate change, reduce harmful air pollution and ensure a diverse and reliable energy supply. The CES represents the most comprehensive and ambitious clean energy mandate in the state’s history and requires that at least 50% of New York State’s electricity comes from renewable energy sources by 2030, with an aggressive phase-in scheduled over the next several years.<sup>2</sup>

As a key component of the CES, new land-based wind energy projects are projected to contribute as much as 4,000 to 5,900 MW towards New York State’s energy portfolio and the CES’s green energy generation goals.<sup>3</sup> Contributions from land-based wind will be particularly important in the short term, as the CES anticipates that:

- 1) no offshore wind development will occur by 2023,<sup>4</sup>
- 2) the development of new large-scale hydropower dams or nuclear facilities is unlikely,<sup>5</sup> and
- 3) the incremental renewable target will be met largely through the addition of new large-scale renewable energy generating facilities.<sup>6</sup>

In order to reach near-term and long-term CES goals, the CES FSEIS assumes that at least half of the incremental renewable generation needed will come from land-based wind, accounting for more than 5,000 MW in *additional* installed renewable energy generation capacity through 2030.<sup>7</sup> Overall, New York State anticipates that the CES-driven procurement of large-scale renewable generation between 2017 and 2021 will be more than twice the level of generation that was procured under New York’s former procurement program for renewable energy, the Renewable Portfolio Standard (“RPS”), which added approximately 1,400 MW in renewables. See CES Order at 16.

The Facility fully advances the objectives of the SEP and potentially the CES and would assist the State in achieving the 50% renewable energy generation objective. The Facility is consistent with State policies, which encourage the development of renewable energy projects, seek solutions to fight climate change, and emphasize the need for a transition of New York’s energy markets away from a reliance on fossil fuels for electricity generation. With a nameplate capacity of up to 100.8 MW, the Facility could provide enough energy for up to 45,000 households in New York State.<sup>8</sup> As such, the Facility represents a significant addition to the State’s incremental renewable capacity in the short-term,

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<sup>2</sup> See CES Order at 154-57.

<sup>3</sup> See CES FSEIS at 5-24 to 5-25.

<sup>4</sup> CES Order at 61.

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

<sup>6</sup> See Staff White Paper on CES at Appx B, dated January 25, 2016.

<sup>7</sup> CES FSEIS at 4-3 and 4-4.

<sup>8</sup> Based on average annual electric consumption rates of 7.1 MWh per household for New York State, and an average wind energy capacity factor of 36.7% for the United States (EIA, 2017; EIA, 2018).

as larger-scale options (e.g., offshore wind) are presumably unavailable until at least 2023. The Application will discuss further the SEP, CES and the Facility's role in achieving New York's clean energy goals.

In addition to fighting climate change, it is anticipated that the proposed Facility will have significant positive impacts on socioeconomics in the area through economic development and job creation in the host communities. Facility construction will result in the local and regional employment of those in the construction trades, including equipment operators, truck drivers, laborers, and electricians. Facility operation will generate long-term, full-time jobs (e.g., site managers and technicians) that will persist for the life of the Facility. The influx of construction workers to the area will also benefit the local hospitality and restaurant industries and increase purchases of local goods and supplies. The Facility will also result in payments to local landowners, and increased revenues for the Town of Guilford, the Norwich City School District, the Bainbridge-Guilford and Gilbertsville-Mt. Upton Central School Districts, and Chenango County. The proposed scope of study to fully assess these potential direct and indirect benefits is provided in more detail in Section 2.27.

### **1.3. SUMMARY OF PRE-APPLICATION ACTIVITIES**

The Project Sponsor prepared a draft PIP Plan in accordance with 16 NYCRR § 1000.4. This initial draft was filed with the Siting Board on April 27, 2018, and the Facility was assigned a case number (Case No. 18-F-0262). Comments on the PIP Plan were received from the New York State Department of Public Service (DPS) on May 29, 2018, and the PIP Plan was updated, finalized, and filed by the Project Sponsor on June 28, 2018. The PIP Plan can be accessed 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?MatterSeq=56497&MNO=18-F-0262>) and on the Facility-specific website maintained by the Project Sponsor at [www.highbridgewind.com](http://www.highbridgewind.com).

According to 16 NYCRR § 1000.4(c), a PIP Plan 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, gather input on stakeholder and public interests and concerns to inform project development and planning, and generally foster participation in the Article 10 process.

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

- Facility Representative (for the public and stakeholders to contact with questions, concerns, etc.):  
Mr. Alec Jarvis, Director of Development, Calpine Corporation  
Address: 717 Texas Avenue, Suite 1000, Houston, TX, 77002  
Phone: (207) 956-1169  
Email: [Alec.Jarvis@calpine.com](mailto:Alec.Jarvis@calpine.com)  
Availability: Monday – Friday 9:00 AM – 5:00 PM
- Toll Free Number: 1-866-896-0508
- Local Document Repositories:
  - Guilford Town Hall, 223 Marble Road, Guilford, NY 13780. Monday – Wednesday, and Friday 9 AM – 1 PM; Thursday 4 PM – 6:30 PM; Saturday 9 AM – 12 PM.
  - Guernsey Memorial Library, 3 Court Street, Norwich, NY 13815. Patron hours are Monday – Thursday 9 AM – 8:30 PM; Friday 9 AM – 6 PM; Saturday 9 AM – 4 PM; and Sunday 1 PM – 4 PM.
  - Oxford Memorial Library, 8 Fort Hill Park, P.O. Box 552, Oxford, NY 13830. Patron hours are Monday – Thursday 9:30 AM – 8:00 PM; Friday 9:30 AM – 5:00 PM; and Saturday 9:30 AM – 1:00. The library is closed on Sunday.
  - Gilbertsville Free Library, 17 Commercial Street, P.O. Box 332, Gilbertsville, New York 13776. Patron hours are Monday 3:15 PM - 5:15 PM; Tuesday 10:00 AM – 12:00 PM and 3:15 PM - 5:15 PM; Wednesday 10:00 AM – 12:00 PM and 3:15 PM – 5:15 PM and 6:30 PM – 8:00 PM; Friday 10:00 AM – 12:00 PM and 3:15 PM – 5:15 PM; and Saturday 9:00 AM – 1:00 PM. The library is closed on Thursday and Sunday.

In support of this FSS, the Project Sponsor has consulted with the public, affected agencies, and other stakeholders, as required by 16 NYCRR § 1000.5(b). These consultations included one public information session held in the Town of Guilford on August 22, 2018. There were approximately 60 attendees at this session, including a broad mix of landowners, local officials, and stakeholders. A second public information session was held in the Town of Guilford on November 28, 2018 with approximately 55 people attending the meeting. In addition to the public information sessions, the Project Sponsor has engaged in a wide range of outreach efforts per the project PIP Plan, including the following:

- August 09, 2017 – Introduced the project to the Guilford Town Board and local residents.
- February 28, 2018 – Sent preliminary workplans for Eagle Use Survey and Raptor Migration Surveys to the USFWS, NYSDEC, and the Delaware Otsego Audubon Society (DOAS).

- April 17, 2018 – Met with multiple legislators to discuss Calpine development efforts in NY, including the High Bridge Wind Project.
- May 14, 2018 – Sent preliminary workplans for breeding bird surveys to the USFWS, NYSDEC, and DOAS and received approval.
- May 24, 2018 – Met with multiple landowners within the Facility Site
- May 25, 2018 – Sent revised workplans for Eagle Use Survey and Raptor Migration Surveys to the USFWS, NYSDEC, and DOAS and received approval.
- May 30, 2018 – Presented project updates to the Guilford Town Board and local residents.
- June 13, 2018 – Presentation to the Guilford Town Board and local residents.
- July 17, 2018 – Met with the Chairman of the Chenango County Board of Supervisors and the head of the Chenango County Planning Department. Introduced the project to the County and provided a high-level overview of the Article 10 process.
- July 18, 2018 – Outreach meeting with NYSDPS, NYSDEC, and NY Agriculture and Markets, to introduce project and begin identifying any project-specific concerns from agency stakeholders.
- August 22, 2018 – Public Open House Meeting at Guilford Town Hall, 4 p.m. to 6 p.m.
- November 8, 2018 – Met with Superintendent of Delaware-Chenango-Madison-Otsego Board of Educational Services (DCMO BOCES) to provide project updates and discuss workforce development.
- November 28, 2018 – Public Open House Meeting at Guilford Town Hall, 4 p.m. to 6 p.m.

The Town of Guilford recorded videos of the August 9, 2017 and June 13, 2018 presentations, as well as the materials at the August 22, 2018 Open House on the High Bridge Wind Project, and has made them available on the Town's website, at [https://www.guilfordny.com/community/calpine\\_wind\\_project\\_presentations](https://www.guilfordny.com/community/calpine_wind_project_presentations).

Additional details regarding PIP Plan implementation and outreach to stakeholders and the public are provided in Section 2.2. All such consultations have been documented in a Tracking Log maintained by the Project Sponsor and submitted with this FSS as Appendix B. The Tracking Log will be updated and submitted to the Siting Board regularly following PSS filing. The Tracking Log will be available on the Project Website and on the Siting Board's case record website referenced above.

#### **1.4. POTENTIAL IMPACTS**

With careful planning and design, many of the potential impacts associated with wind energy generating facilities can be completely avoided or minimized. Because the studies characterizing these impacts have not yet been conducted, it is difficult to identify specific avoidance, minimization and mitigation measures in this FSS. However, the studies

conducted in furtherance of the Article 10 certificate, the scope and methodologies of which are detailed in this FSS, will identify measures to be taken by the Project Sponsor to avoid potential impacts as well as minimization and mitigation measures that will reduce impacts to the extent practicable. In addition, the extent and quality of information required for these studies, as well as a listing of relevant pre- and post-construction studies pursuant to 16 NYCRR § 1000.5(l)(2)(iii) and (iv) are provided in subsequent sections of this FSS (e.g., a detailed scope for a Visual Impact Assessment is included in FSS Section 2.24).

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

The Facility will have numerous positive effects on the community. However, construction and operation may result in certain environmental impacts which the Application will identify and discuss. Over the last 15 years, large-scale wind energy generating facilities totaling approximately 1700 MW have been brought online in New York State. These projects have yielded important insights and information regarding the potential environmental impacts to be assessed and studied related to the operation and construction of a wind project. Temporary impacts are typically construction-related, whereas permanent impacts are generally related to the operation of the Facility. Temporary impacts will primarily include vegetation clearing and soil disturbance associated with the development of the construction staging area, the construction of the O&M facility, substations, and the wind turbine foundations, as well as the installation of access roads, wind turbines, temporary and permanent meteorological towers, collection lines, and overhead transmission line poles. Soil disturbing activities will increase the potential for wind/water erosion and surface water sedimentation, particularly in areas with moderate erosion hazards. Impacts to the community during construction will be like those experienced during any major construction project and will likely include noise and traffic impacts (see Section 2.19 and Section 2.25 for a further discussion of noise and transportation impacts related to Facility construction).

Impacts to wetlands will be avoided and minimized wherever practicable. However, some direct and indirect impacts to wetlands and surface waters will likely occur. These impacts will be identified prior to construction through the field studies detailed in Section 2.22 and Section 2.23. Direct impacts to wetlands, including forest clearing, earthwork (excavating and grading activities), and the direct placement of fill in wetlands and surface waters, will likely be associated with the installation of access roads, collection lines, and overhead transmission lines, and the construction of turbine foundations and turbine workspaces. Many of these wetland impacts will be temporary (e.g., impacts to emergent wetlands along collection lines); however, some will likely be permanent (e.g., impacts to wetlands intersecting access roads). Permanent wetland impacts will be mitigated, such mitigation will be described in the compensatory wetland impact plan that will be included in the Application. Permanent impacts will be mitigated. Indirect

impacts to wetlands and surface waters may also result if sedimentation and erosion caused by adjacent construction activities occurs. These impacts would be temporary.

The process for siting Facility components is designed to avoid and minimize impacts to undisturbed terrestrial habitats wherever practicable. However, Facility construction will result in some temporary and permanent impacts to terrestrial ecology. During Facility construction direct impacts to terrestrial ecology will likely include vegetation clearing, stumps and root systems removal, and soil disturbance and exposure. These direct impacts to terrestrial ecology may precipitate indirect impacts, which may include wildlife food and cover losses, increased soil erosion and sedimentation, nutrient cycling disruptions, and the introduction or spread of invasive plant species. In disturbing terrestrial habitats and clearing forested areas, the construction of the Facility will likely have positive and negative impacts on wildlife habitat. Edge effects, which can be induced by land conversion activities, can increase biodiversity, while habitat fragmentation poses a threat to threatened and endangered species. Detailed studies will be conducted to assess impacts to terrestrial ecology, and a detailed analysis will be provided which describes efforts to avoid, minimize and mitigate such impacts. These studies are described in Section 2.22.

In addition to construction impacts, impacts associated with the 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 residences (i.e., receptor locations) and result in a permanent loss of forest land and wildlife habitat, and some level of avian and/or bat mortality. These and other operational impacts will be evaluated in the studies identified in this FSS, and the results of these studies will be provided in the Application.

## **1.5. IMPACT AVOIDANCE MEASURES**

Although detailed studies have not yet been completed, the Project Sponsor is considering local and regional environmental concerns (i.e., flooding, forest conversation, etc.) as well as accepted impact avoidance, minimization and mitigation measures in designing the Facility.

Through the Article 10 process, avoidance and minimization measures will be identified and conditions relative to the Article 10 Certificate will be imposed to ensure that the Facility does not result in unavoidable significant adverse impacts. The Project Sponsor will implement a range of impact avoidance and minimization practices in designing the Facility and the final Facility layout will comply with various siting criteria, guidelines, and design standards that serve to avoid or minimize adverse environmental impacts per 16 NYCRR § 1000.5(l)(2)(v) and (vi), including:

- Minimizing the number of stream and wetland crossings and avoiding impacts to sensitive flood zones or special flood hazard areas (see Figure 3);

- Designing, engineering, and constructing the Facility in compliance with applicable codes and industry standards to assure safety and reliability;
- Siting turbines to minimize sound, shadow flicker, and public safety concerns;
- Using existing roads, farm roads and/or logging roads for turbine access whenever possible to minimize impacts to soil, ecological, and agricultural resources, and avoid unnecessary clearing of forested areas;
- Designing all electrical lines in a manner that minimizes any possibility of stray voltage;
- Minimizing overhead electrical lines and designing any such lines in accordance with Avian Power Line Interaction Committee (APLIC) guidelines to minimize impacts on birds;
- Limiting Facility lighting, where permitted by FAA regulations and local laws, to reduce nighttime visual impacts;
- Installing turbines with appropriate grounding and redundant shutdown/braking capabilities to minimize public safety concerns; and
- Complying with the New York State Department of Agriculture and Markets (NYSDAM) [guidelines](#) [Guidelines for Agricultural Mitigation for Wind Power Projects](#), to the extent practicable and as allowed in landowner lease agreements, to minimize impacts on agricultural land and farming practices. [If NYSDAM guidelines cannot be met, the Applicant will consult with NYSDAM.](#)

Throughout the development, construction and operation of the Facility, specific measures to mitigate potential resource impacts will be employed, including:

- Developing and implementing various plans (i.e., a dust control plan, a stormwater pollution prevention plan (SWPPP), an Environmental Compliance and Monitoring Plan, an Inadvertent Return Plan, and a Spill Prevention, Control, and Countermeasure (SPCC) plan) and following construction Best Management Practices to minimize adverse impacts to air, soil, and water resources;
- Documenting existing road conditions, undertaking public road improvements or repairs as required by the Road Use Agreements with the objective of mitigating Facility impacts to local roadways, implementing a Traffic Control Plan, and offering Road Use Agreements with local municipalities;
- Employing an environmental monitor to evaluate best practices to be employed at sensitive areas such as stream and wetland crossings;
- Implementing Net Conservation Benefit Plan and an Invasive Species Control Plan;
- Developing and implementing a Complaint Resolution Plan to address potential local landowner and public concerns throughout Facility construction and operation;
- Developing a historic resource mitigation program in consultation with the SHPO;

- Preparing a compensatory wetland mitigation plan to mitigate impacts to streams and wetlands (if required);
- 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 town, 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 Action Plan; and
- Implementing a Decommissioning Plan.

Impact avoidance, minimization and mitigation measures for specific resources are defined in the relevant sections of the FSS and will be further defined in the Application.

## **1.6. ORGANIZATION OF THE FSS**

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 FSS has been organized in accordance with 16 NYCRR § 1001 (Content of an Application). Specifically, all sub-sections of Section 2.0 (Content of the Application) of this FSS correspond directly to each Exhibit that will be included in the Application as set forth in 16 NYCRR § 1001 (i.e., Section 2.1 corresponds to 16 NYCRR § 1001.1, Section 2.2 corresponds to 16 NYCRR § 1001.2, etc.). Exhibits that are not applicable to the Facility (e.g., Natural Gas Power Facilities, Nuclear Facilities) have been included as individual FSS sections to maintain consistency with the content of an Application but have been identified as Not Applicable.

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

In addition to complying with the various service and notice requirements set forth in 16 NYCRR § 1000.6 for filing and service of an Application, High Bridge will provide GIS Shapefiles of the Facility Site and related resource information, to the New York State Departments of Public Service, Health, and Environmental Conservation, and to other parties upon request, in conjunction with the Application submission.

## 2.0 CONTENT OF APPLICATION

### 2.1. GENERAL REQUIREMENTS

(a) Project Sponsor Information

The Project Sponsor is High Bridge Wind, LLC (“High Bridge Wind”), a wholly owned subsidiary of Calpine Corporation. (“Calpine”). The Project Sponsor can be contacted at:

High Bridge Wind, LLC  
717 Texas Avenue, Suite 1000  
Houston, TX, 77002  
Phone: 713-830-2000

(b) Facility Website

The Facility website can be found at [www.calpine.com/highbridgewind](http://www.calpine.com/highbridgewind)

(c) Public Contact

The Project Sponsor’s public contact is Alec Jarvis, Director of Development, Calpine Corporation. His contact information is:

Alec Jarvis, Director of Development  
Calpine Corporation  
717 Texas Avenue, Suite 1000  
Houston, TX 77002  
Phone: (207) 956-1169  
Toll Free Number: 1-866-896-0508  
Email: [Alec.Jarvis@calpine.com](mailto:Alec.Jarvis@calpine.com)

(d) Principal Officer

The Principal Officer of High Bridge Wind, LLC is William Whitlock, Vice President of Development. His contact information is:

William Whitlock  
Calpine Corporation  
717 Texas Avenue, Suite 1000  
Houston, TX 77002  
Phone: (713) 332-2505  
Email: [William.whitlock@calpine.com](mailto:William.whitlock@calpine.com)

(e) Document Service

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

(f) Type of Business

High Bridge Wind, LLC, is a limited liability company incorporated in the State of Delaware and registered to conduct business in New York State. High Bridge Wind, LLC is a wholly owned subsidiary of Calpine.

(g) Documents of Formation

The Facility will be owned by High Bridge Wind, LLC. The certificate of formation for High Bridge Wind, LLC is included as Appendix C to this FSS.

## **2.2. OVERVIEW AND PUBLIC INVOLVEMENT**

### **2.2.1. Discussion**

The Facility is a large-scale wind energy generating facility located in Chenango County, New York (see Figure 1 and Figure 2 for Facility location). The proposed Facility components will be situated on leased land. Farmers and landowners will be able to continue with existing land uses such as farming, mining and forestry alongside Facility components.

The Project Sponsor prepared a draft PIP Plan in accordance with 16 NYCRR § 1000.4. This initial draft was filed with the Siting Board on April 27, 2018, and the Facility was assigned a case number (Case No. 18-F-0262). Comments on

the PIP Plan were received from the New York State Department of Public Service (DPS) on May 29, 2018, and the PIP Plan was updated, finalized, and filed by the Project Sponsor on June 28, 2018.

The purpose of the PIP Plan is to identify potentially affected agencies, municipalities, school districts, local interest groups, and other stakeholders, and to outline a plan for engaging those stakeholders and gathering information about their interests, concerns, and questions on the project, in order to inform the development process and contents of the Application. Exhibit A of the PIP Plan presented an initial list of identified stakeholders. Since the PIP Plan's final submission, that list has been updated based on the Project Sponsor's consultations and meetings with stakeholders. An updated Stakeholder List is presented in Appendix D of this FSS.<sup>9</sup> The Project Sponsor has initiated consultations, and the results and summary of these meetings/consultations are in the Tracking Log, which is presented in Appendix B of this FSS. The Tracking Log will be updated on the DPS website throughout the PSS and Application process.

A primary method identified for stakeholder and public outreach was the use of Open House meetings held in the community to make information available and answer community questions on the proposed Facility. To date, the Project Sponsor hosted two open houses in the Town of Guilford. In addition to the required notices outlined in the PIP Plan, the Project Sponsor mailed notices of the open houses to all residents and businesses within the Facility Area identified in the PIP Plan. The open houses were held on August 22, 2018 and November 28, 2018 from 4:00 PM to 6:00 PM, in the Guilford Town Hall.

At both open houses, the Project Sponsor provided information associated with the proposed Facility, including a series of poster boards and maps of the Facility. The Project Sponsor provided a company fact sheet and outlined an overview of the Article 10 process along with technical information related to construction, environmental studies and sound. The open house was well attended, with approximately 50-60 people in attendance. Some of the main items discussed by those in attendance included environmental impacts, Article 10 regulatory review process, and land leases.

As stated previously, the Project Sponsor has also held meetings or otherwise consulted with wide range of local municipalities, regional environmental groups and state agencies, including:

- Guilford Town Board
- Guilford Town Supervisor
- Chenango County Chairman of the Board of Supervisors
- Chenango County Planning Department

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<sup>9</sup> Note, the Facility layout is preliminary and has not had the opportunity to evolve in response to input from stakeholders and field data. Accordingly, host and adjacent landowners cannot be identified or included on the Stakeholder List at this point. In anticipation of this, all notifications provided to the Stakeholder List have also been provided to landowners within the Facility Area presented in the PIP Plan.

- Delaware-Otsego Audubon Society
- NYSDPS
- NYSDEC
- NYS Department of Agriculture and Markets
- NYSERDA
- NYSOPRHP
- State legislators with districts intersecting the Facility Site
- USFWS

These meetings focused on wide range of topics (i.e., cultural landscape, avian and bat habitat, etc.). The results of these discussions have been incorporated in this FSS where applicable. In addition to these outreach efforts, the Project Sponsor has a Facility specific website ([www.highbridgewind.com](http://www.highbridgewind.com)) as well as a toll-free number (1-866-896-0508) to call with any questions or comments. Paper copies of documents presented at the open house, the final PIP Plan, and this FSS have been provided to the following document repositories:

- Guilford Town Hall, 223 Marble Road, Guilford, NY 13780.
- Guernsey Memorial Library, 3 Court Street, Norwich, NY 13815.
- Oxford Memorial Library, 8 Fort Hill Park, P.O. Box 552, Oxford, NY 13830.
- Gilbertsville Free Library, 17 Commercial Street, P.O. Box 332, Gilbertsville, NY 13776.

To provide the public with notice of the PSS and related deadlines, a notice of PSS filing was mailed, prior to PSS filing, to the Stakeholder List (see Appendix D) and to all landowners within the Facility Area presented in the PIP Plan. This mailing was completed to provide an update on the Facility and invite comments and notify the stakeholders of the comment period timeframe. Notice letters were also provided to the members of the State legislature in whose district the Facility is proposed and to individuals who have filed a notice with the Secretary seeking to receive notices in this proceeding. A PSS filing notice was submitted for publication in the local newspapers identified in the PIP Plan and posted to the Project Website. All these notices outline the purpose of the PSS document and highlight the fact that there is a 21-day public comment period for stakeholders and members of the public interested in providing input on this document, and the scopes and methodologies of studies outlined herein. Proofs of service and publication will be submitted separately to the Siting Board website following the filing of the PSS.

During the time before the submission of the Application, the Project Sponsor intends to continue stakeholder outreach. There are numerous resource-specific consultations which will need to occur with stakeholders, such as visual

stakeholder outreach on viewpoint locations for the Visual Impact Assessment, and private well surveys. Those consultations will be tracked and listed in the PIP Plan Tracking Logs and/or Exhibit 2 of the Application.

Section 5.3 of the PIP Plan requires the Project Sponsor to identify additional practical measures to encourage stakeholder participation during the Application process. These activities will include: periodically updating the Stakeholder List; attending stakeholder meetings to provide project updates, if needed; providing notice of construction activities to stakeholders; and implementing complaint-resolution procedures (see Section 2.12).

Specific to the period after the Application is filed, Project Sponsor's PIP activities will focus on disseminating information about the proposed Facility, participation in the Article 10 process, and important deadlines or milestones. The Application will be made available online and at Local Document Repositories, and project representatives will be available to answer questions about the Application or the Siting Board's review thereof, in addition to the general information available throughout all phases of the project.

## 2.2.2. Proposed Content of the Application

*Consistent with the requirements of 1001.2 of the Article 10 Regulations, Exhibit 2 of the Application will contain the following information.*

### (a) Brief Description of the Proposed Facility

Exhibit 2(a) of the Application will contain a brief description of the major components of the Project, including all proposed turbine locations and the footprint of all other Project components. The major components of the Facility are to be described as follows:

- (1) **Facility:** Proposed components will include up to 30 wind turbines, access roads, permanent and temporary meteorological towers, collection lines, a collection substation, which will include battery storage, a POI substation, a short (non-Article VII) overhead transmission line, staging/laydown areas, a batch plant, and an operations and maintenance building.<sup>10</sup> The specific location of all Facility components will be identified in the Application. The final turbine model selected may be one of those provided in the Application or may be similar to those analyzed in the Application.
- (2) **Facility Site:** The parcels or portions of parcels proposed to host the Facility components, which will be identified in the Application.

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<sup>10</sup> This includes ancillary features, such as a maintenance shed, parking lot, etc.

- (3) **Off-site Ancillary Features:** Limited to temporary public road improvements, which will be in the vicinity of the Facility Site.

(b) Brief Summary of the Application Contents

Exhibit 2(b) of the Application will include a detailed table that provides a brief summary of all applicable exhibits required under 16 NYCRR Part 1001 and will follow the organization of the Application's Table of Contents and will satisfy the requirements of Part 1001.2(b).

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

Exhibit 2(c) of the Application will contain a brief description of the PIP Plan conducted by the Project Sponsor prior to submission of the Application and an identification of significant issues raised by the public and affected agencies during such program and the response of the Project Sponsor to those issues including a summary of changes made to the proposal, if any, as a result of the PIP. Specific components of the PIP conducted to date and the topics addressed will be discussed, including: opportunities for public involvement; development and use of a stakeholder list; the Project Sponsor's efforts relating to language access; identification of any environmental justice areas; the use of document repositories; consultation with affected agencies and stakeholders; factsheets on the Article 10 process and intervenor funding and other outreach materials; use of meeting logs tracking PIP activities, significant questions and/or issues raised by the public and the Project Sponsor's response or follow-up action; and the establishment of a Project website, toll-free phone number and, if applicable, local project office.

The Application will include a statement indicating that paper copies of all major documents (e.g., PIP Plan, PSS, FSS, Article 10 Application), except those subject to protective order, are properly filed at the designated local repositories as identified in the PIP Plan. Further, the Project Sponsor will ensure that electronic copies of all major documents, except those subject to protective order, are properly filed on the designated website.

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

The Project Sponsor agrees to provide the information required by 1001.2(d). Specifically, the Application will include:

- (1) A brief description of the public involvement program to be conducted by the Project Sponsor after submission of the Application, such as hearings, notification of construction activities, complaint resolution procedures, etc.

- (2) An updated stakeholder list that will be appended to the Application, including host and adjacent landowners and additional stakeholders identified through the public outreach process. For the purposes of the Stakeholder List, the Applicant will define “adjacent landowners” as (1) all landowners owning parcels within 500 feet of the Facility Site, and (2) all landowners owning property within 0.5 miles of a wind turbine or substation.
- (3) A discussion of how stakeholders have been identified and subsequently added to the list during the scoping, stipulation, and public involvement processes, and a description of how the list will be used for distribution and notification regarding Project milestones, including submittal of the Application.
- (4) In addition to notifications required under 16 NYCRR 1000.6 and 1000.7, the Project Sponsor will mail notice of the Application submittal to a project mailing list comprised of the updated stakeholder list, including host and adjacent landowners, and additional addresses received through public outreach. The notice will include information on the project generally and the Article 10 Application specifically. A copy of the mailing list and documentation indicating the dates and mailings that were made will be provided to the Secretary.
- (5) In addition to newspaper publication as required under 16 NYCRR 1000.7(a), the Project Sponsor will publish notice of the Application filing and any related public hearings in at least one free local community newspaper circulated in the project and study areas, if available.

(e) Brief Overall Analysis

The Application will include the information required by 1001.2(e).

## **2.3. LOCATION OF FACILITIES**

### **2.3.1. Discussion**

Maps/figures in the Application will show the location of the components of the major electric generation and interconnection facilities associated with the proposed High Bridge Wind Energy Facility, including the wind turbines, access roads, electrical collection lines, collection substation (which includes battery storage), point of interconnection (POI) substation, overhead transmission line (non-Article VII), temporary and permanent meteorological towers, operation and maintenance (O&M) building, as well as temporary features such as a concrete batch plant and laydown area.

### 2.3.2. Proposed Content of the Application

*Consistent with the requirements of 1001.3 of the Article 10 Regulations, Exhibit 3 of the Application will contain the following information.*

Maps, drawings and explanations showing the location of the proposed Facility, including all interconnections, and all ancillary features such as roads, which together comprise the proposed Major Electric Generating Facility, in relation to municipalities (county, city, town and village) and taxing jurisdictions associated with any part of the overall development proposal.

#### (a) Topographic Maps

Maps will include the most recent edition United States Geological Survey (USGS) 1:24,000 topographic quadrangles printed at full scale (obtained through the digital USGS Topo Map Service) showing:

- (1) The information required by 1001.3(a)(1); plus, the location of temporary project met towers. With respect to alternatives, the mapping will depict those alternatives as defined in Section 2.9.2(c).
- (2) The Project Sponsor agrees to provide the information required by 1001.3(a)(2)
- (3) The Project Sponsor agrees to provide the information required by 1001.3(a)(3)
- (4) Section 1001.3(a)(4) is not applicable to the Facility.
- (5) The Facility will be subject to many studies in support of the Application. The various studies undertaken in support of the Application will apply appropriate, resource-specific study areas, as described below. This section of the Application will also provide a reference to the exhibit in which more information is provided.
  - 5-mile Study Area – The area within a 5-mile radius of Facility components. Various land use characteristics (e.g., zoning, land use classifications, and existing utilities) and the potential for impacts to historic resources will be assessed within this study area.<sup>11</sup>
  - Area of Potential Effect (APE) for Direct Effects – The area containing all proposed soil disturbance potentially associated with Facility construction and operation. Direct effects on archaeological resources will be analyzed within this area.

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<sup>11</sup> A detailed review of land use will also be conducted within the Facility Site.

- Area of Potential Effect (APE) for Indirect Effects – The area within a 5-mile radius of proposed turbines and within the potential viewshed (based on topography) of the Facility. Indirect effects on cultural resources (e.g., visual and auditory effects) will be analyzed within this area.<sup>12</sup>
- Bird and Bat Survey Area – A variety of surveys will be implemented to support bird and bat studies. The specifics will be study dependent. Transects will be utilized for spring breeding bird surveys, and radius plots will be utilized for raptor migration surveys.
- Communications Study Area – The baseline study area will be the area within a 2-mile radius of Facility components. This baseline study area will be used to assess the potential impact of the Facility on communications and will be extended as necessary for some communication types (e.g., radio, television, microwave, radar, etc.) as required by 16 NYCRR § 1001.26.
- Environmental Justice Study Area – The area within a 0.5-mile radius of Facility components. Consistent with the criteria set forth in 6 NYCRR § 487.4, the potential impact of the Facility on environmental justice (EJ) communities will be assessed within this study area.
- Noise Study Area – The area within a 1-mile radius of proposed turbine locations and substations. The potential for noise impacts resulting from the construction and operation of the proposed Facility will be assessed within this study area.
- Route Evaluation Study Area – All proposed transportation routes, beginning where these routes exit major interstates or state highways and ending at Facility access roads. Transportation impacts resulting from the construction and operation of the proposed Facility will be assessed within this study area.
- Shadow Flicker Study Area – The area within a 10-rotor-diameter radius of proposed turbine locations.<sup>13</sup> The potential for impacts resulting from shadow flicker will be assessed within this study area.
- Visual Study Area – The area within a 10-mile radius of Facility components. The potential for visual impacts resulting from the construction and operation of the proposed Facility will be assessed within 5 miles of Facility components for resources of local importance and within 10 miles of Facility components for resources of national and statewide significance.
- Water Well Study Area – The area within a 1-mile radius of the Facility Site, for publicly available groundwater well data; and the area within a 500-foot radius of the Facility Site and within a 0.5-mile

<sup>12</sup> Note: the Applicant has also agreed to assess indirect effects on cultural resources (e.g., visual and auditory effects) for those areas within the City of Norwich and the Village of Sidney that are within the potential viewshed (based on topography) of the Facility.

<sup>13</sup> The 10-rotor-diameter distance will be described in feet in the Application.

radius of blasting locations, for groundwater well data not publicly available (e.g., groundwater wells identified through water well surveys, non-public data received directly from government agencies).<sup>14</sup>

- ~~Wetland and Stream Study Areas~~

- ~~500-foot Wetland Study Area~~ – All areas in the Facility Site within 500 feet of areas to be disturbed by construction. ~~Wetlands and streams will be delineated within this area via on-site field investigations conducted by qualified individual, who will observe hydrology, vegetation and soil characteristics, and define wetland boundaries.~~

- ~~100-foot Wetland Study Area~~ – All areas in the Facility Site within 100 feet of linear Facility components (e.g., access roads, collection lines) and within 265 feet of non-linear Facility components (e.g., turbines, the O&M building, and the collection substation). Wetlands and streams will be delineated within this area per 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).

(b) Municipal Boundary Maps

The Project Sponsor agrees to provide the information required by 1001.3(b). In addition to these maps, Project Sponsor will also provide the latitude, longitude, and ground surface elevation, based on publicly available data, of all proposed turbines and meteorological towers, measured in feet above sea level.

(c) Description of Proposed Facility Locations

The Project Sponsor agrees to provide the information required by 1001.3(c).

## 2.4. LAND USE

### 2.4.1. Discussion

The Facility is proposed to be located in a rural portion of Chenango County, which is characterized by a mix of agricultural and forested land and rural residences. The Application will quantify the existing land use(s) in the area based on parcel data and New York State Office of Real Property Services (NYSORPS) classification codes, specifying

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<sup>14</sup> See Section 2.23.2(a)(2)(ii) for a full description of the survey methodology. Please note, as detailed in Section 2.2.2(d)(2), for the purposes of the Stakeholder List, all landowners owning parcels within 500 feet of the Facility Site and/or within 0.5 miles of a wind turbine or substation (i.e., within the private water well survey area), will be considered "adjacent" landowners and will be included on the Stakeholder List.

the area and percentage of the total Facility Site occupied by each land use type. Proposed land uses will be identified through consultation with State and local officials (i.e., Town Supervisors, Planning Boards, Code Officers, etc.), review of town planning documents, attendance at Town meetings, and/or other outreach efforts.

Anticipated permanent and temporary impacts to each of the existing and proposed land use classes to be physically affected by the Facility will be assessed in the Application. The compatibility of the Facility with existing and proposed future uses, with respect to community character, will be assessed in the Application and avoidance and mitigation measures will be identified.

No land use changes are predicted outside the Facility Site. The presence of the turbines, foundations, access roads, overhead transmission, substations, and the O&M facility will result in the conversion of some land from its current use to built facilities. During Facility operation, additional impacts to land use should be infrequent and minimal. Aside from occasional maintenance and repair activities, Facility operation is not expected to interfere with on-going land use (i.e., farming and forestry activities).

Facility components will be located entirely within the Town of Guilford, which has no established zoning. Within the 5-mile Study Area, only the Town of Oxford, the Villages of Oxford and Gilbertsville, and the City of Norwich have established zoning ordinances. Existing and proposed zoning districts for these municipalities will be depicted in the Application. The Facility's consistency with the Town of Guilford Comprehensive Plan, and other relevant plans for the region and the State will also be addressed in the Application.

Designated coastal areas, inland waterways, agricultural districts, special flood hazard areas, and other specially designated areas potentially occurring within the 5-mile Study Area will be mapped in the Application. There are no designated Critical Environmental Areas (CEAs) in Chenango County. Table 1 summarizes the sources of data that will be used to prepare these maps.

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

<b>Mapping Requirement</b>	<b>Data Source</b>
Designated Coastal Areas	NYS GIS Clearinghouse, NYS Dept. of State
Inland Waterways	NYS GIS Clearinghouse, NYS Dept. of State
Local Waterfront Revitalization Program – Approved Plans	NYS GIS Clearinghouse, NYS Dept. of State
Groundwater management zones	NYS GIS Clearinghouse
Agricultural Districts	Cornell Institute for Resource Information Sciences (IRIS)
Special Flood Hazard Areas	NYS GIS Clearinghouse, FEMA
NYS Open Space Conservation Plan – Priority Conservation Projects	NYSDEC
Critical Environmental Areas	NYSDEC

Recreation areas and other sensitive land uses known to the Project Sponsor within the 5-mile Study Area will be mapped in the Application. Although archaeological sites qualify as a type of sensitive land use, per National Historic Preservation Act § 304, 9 NYCRR § 427.8 and New York State Public Service Law § 15, the location of any sites identified in the studies described in Exhibit 20 of the Application will not be disclosed. The location of these sites is confidential and will be included in reports provided to the New York State Office of Parks, Recreation and Historic Preservation only under confidential cover. Table 2 summarizes the sources of data to be used to prepare these maps, to the extent the identified resources exist in the project 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 (WSR) River Corridors <sup>15</sup>	National Wild and Scenic Rivers System
Open Space	NYS GIS Clearinghouse and local governments
Wildlife management lands	NYS GIS Clearinghouse, NYSDEC, U.S. Fish and Wildlife Service
Forest management lands	NYS GIS Clearinghouse, NYSDEC
Conservation easement lands	National Conservation Easement Database; NYS GIS Clearinghouse
State and federal scenic byways	NYS DOT; NYS GIS Clearinghouse
Nature preserves	NYS GIS Clearinghouse
Designated trails	NYS GIS Clearinghouse and local governments
Public access fishing areas, camping areas	NYS GIS Clearinghouse, NYSDEC, Chenango County

<sup>15</sup> Note; although not a WSR-designated river corridor, the Unadilla River will be identified as a recreational resource and will be evaluated in the Application.

Requirement	Source
Oil and gas production	NYSDEC
Gas pipelines	Platts, NYSDEC, NYSDPS
Major communication and utility use and infrastructure	NYSDEC, Comsearch
Institutional, community and municipal uses and facilities	ESRI; TIGER/line files; NYS GIS Clearinghouse

The Facility's Visual Impact Assessment (discussed in greater detail in Section 2.24) will identify visually sensitive resources, including recreational and other sensitive land uses that may be affected by potential visibility of the Facility. This will include visually sensitive resources of potential statewide significance and potentially significant resources within the Visual Study Area (i.e., the area within a 10-mile radius of Facility components). The Facility's Preconstruction Noise Impact Assessment (discussed in greater detail in Section 2.19) will also identify sensitive sound receptors within 1 mile of proposed turbine locations and substations (i.e., the Noise Study Area), and potential impacts on those receptors.

The Application will address the potential for the Facility to have a direct impact on the recreational resources and other sensitive areas identified.

#### **2.4.2. Proposed Content of Application**

*Consistent with the requirements of 1001.4 of the Article 10 Regulations, Exhibit 4 of the Application will contain the following information.*

Maps submitted in support of Exhibit 4 will include the Facility Layout.

(a) Map of Existing Land Uses

Exhibit 4(a) of the Application will include a map of existing land use within a 5-mile radius of the Facility. Land use will be depicted using the three-digit classification codes of the NYSORPS, which are included in parcel data obtained from Chenango County. To the extent the Facility Site includes "vacant land" classifications, the Project Sponsor will provide additional information on the existing use of such land based on consultations with the respective landowners or municipal officials, and/or based on analysis of publicly available information.

A separate map of properties subject to NYS 480-a forest management programs located within the Facility Site, enrolled in NYS Agricultural Districts, conservation programs, or similar long-term program enrollments within or adjoining the Facility site will be included in the Application.

(b) Transmission Facilities Map

The Project Sponsor agrees to provide mapping of existing overhead and underground major transmission facilities for electric, hazardous liquids, or telecommunications, as directed by DPS Staff within the 5-mile Study Area. This information will be based on coordination with local utilities, facility owners and operators, and data obtained from the DEC and DPS, to the extent that such information is made available to the Project Sponsor. Any known crossing of existing electric transmission facilities by proposed collection lines within the Facility Site will be shown on this mapping.

(c) Tax Parcel Map

The Project Sponsor agrees to provide mapping of tax parcels within 2,000 feet of wind turbines or other proposed Facility components. In addition, any publicly known proposed land use plans for any of these parcels will be mapped using data from the Chenango County Department of Real Property Tax Services or the Town of Guilford.

(d) Zoning District Map

Exhibit 4(d) of the Application will include mapping depicting existing and proposed zoning districts within a 5-mile radius of the Facility, based on publicly available data obtained from local governments. Facility components will be located entirely within the Town of Guilford, which has no established zoning.

(e) Comprehensive Plan

The Project Sponsor agrees to provide a review of the Town of Guilford Comprehensive Plan (adopted 2014) and the Chenango County Comprehensive Plan (adopted 2016). The consistency of the proposed Facility with such plans will be assessed.

(f) Map of Proposed Land Uses

The Project Sponsor agrees to provide the information required by 1001.4(f), including the location of known gas wells<sup>16</sup> and permitted mines based on publicly available information.

(g) Map of Specially Designated Areas

The Project Sponsor agrees to provide the information required by 1001.4(g), where identified items are applicable.

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

The Project Sponsor agrees to provide the information required by 1001.4(h), which will include:

- (1) An assessment of the compatibility of the Facility with initiatives identified in the 2016 NYS Open Space Conservation Plan, including various Priority projects for Region 7 – Central New York.
- (2) The Facility's Visual Impact Assessment (as will be presented in Exhibit 24 of the Application) will also identify visually sensitive resources within the Visual Study Area, including recreational and other sensitive land uses that may be affected by potential visibility of the Facility. Visually sensitive resources will be identified and assessed within 10 miles of Facility components for resources of national or statewide significance and within 5 miles of Facility components for resources of local importance.
- (3) The Facility's Preconstruction Noise Impact Assessment (PNIA) (as will be presented in Exhibit 19 of the Application) will also identify sensitive sound receptors.
- (4) The Application will include a description of land leases and the effects (or lack thereof) to future gas development.

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

The Project Sponsor agrees to provide the information required by 1001.4(i), based on consultation with the host communities and a review of relevant State planning documents, including the 2016 New York Open Space Conservation Plan; the New York State Historic Preservation Plan 2015-2020; the Statewide Comprehensive Outdoor Recreation Plan 2014-2019; and the Southern Tier Upstate Revitalization Plan (2015) adopted by the Southern Tier Regional Economic Development Council. The Application will include a review of each of the above

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<sup>16</sup> In this context, "known gas wells" includes all active or pending oil or gas wells in the New York State Department of Environmental Conservation (NYSDEC) dataset (i.e., wells with a status of "Active," "Application Received to Drill/Plug/Convert," "Drilling Completed," "Drilled Deeper," "Drilling in Progress," "Not Listed," "Permit Issued," "Temporarily Abandoned," or "Transferred Permit."

plans, discuss whether the proposed Facility is consistent with these plans, and provide electronic versions/links to such plans.

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

The Application will present an assessment of compatibility of any above ground ~~collection~~interconnect lines with existing and proposed land uses within ~~300 feet~~1 mile of the interconnect lines. To the extent land use impact is quantified in other exhibits (e.g., agricultural land, wetlands, forest) such information will be summarized and/or cross-referenced in this subpart.

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

The Project Sponsor agrees to provide the information required by 1001.4(k)

(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, the Coastal Zone Management Act or the Waterfront Revitalization of Coastal Areas and Inland Waterways Act are not applicable.

(m) Aerial Photographs

The Project Sponsor agrees to provide mapping that shows aerial photographs within ~~a 4~~the 5-mile ~~radius of the Facility with the Application Study Area~~. This mapping will likely be prepared using 1-meter resolution natural color orthoimagery from the USDA's National Agriculture Imagery Program (NAIP) captured during the 2017 growing season, or the latest NAIP imagery available at the time of the Article 10 Application. The aerial photograph mapping will be depicted on multiple 8.5x11inch or 11x17inch sheets at a scale that will allow the identification and discrimination of natural and cultural features.

(n) Aerial Photograph Overlays

The Project Sponsor agrees to provide mapping that depicts Facility components overlaid on aerial photographs, along with the proposed limits of vegetation and soil disturbance. These maps will be created using ArcGIS software. Line symbols will depict the centerlines of proposed access roads and electrical collection lines; point

symbols will depict turbines and temporary and permanent meteorological tower locations; and polygon symbols will depict the substation, O&M facility, batch plant, and temporary laydown/staging areas. Buffers around each Facility component will show the limits of clearing and disturbance required. This mapping will likely be prepared using 1-meter resolution natural color orthoimagery from the USDA's NAIP captured during the 2017 growing season, or the latest NAIP imagery available at the time of the Article 10 Application.

(o) Source of Aerial Photographs

It is anticipated that mapping associated with (n) above will be prepared using 1-meter resolution natural color orthoimagery from the USDA's NAIP captured during the 2017 growing season, or the latest NAIP imagery available at the time of the Article 10 Application. The ultimate source will be identified in the Application.

(p) Community Character

The Project Sponsor agrees to provide the information required by 1001.4(p). Sources of information used to describe community character will include local community master plans, and county master plans, among other sources. The Applicant will also prepare a stand-alone photolog, which will be appended to the Application and will include photographs of landscape features and defining elements within the vicinity of the Facility Site.

## 2.5. ELECTRIC SYSTEM EFFECTS

### 2.5.1. Discussion

#### System Reliability Impact Study (SRIS)

A System Reliability Impact Study (SRIS) will be prepared for the Facility (excepting the battery storage component), on behalf of the New York Independent System Operator (NYISO). A separate SRIS will be prepared for the battery storage component. Reliability criteria will be identified in the SRIS, which includes input from the NYISO and NYSEG. In addition, the Project Sponsor will consult with DPS regarding reliability criteria to confirm that consultation completed through the SRIS will be sufficient for compliance with relevant reliability criteria. The Facility's SRIS is scheduled to be completed in Q2 2019 and will be included with the Application.

Based on the NYISO scope, the SRIS will identify and evaluate the impact of the Project on the 115 kV and above portions of the NYSTS in the following NY load zones: Central (Zone C) and Mohawk Valley (Zone E), region(s) that are most likely to be affected by the Project; the Study will also evaluate the impact of the Project on the local (i.e.,

below 115 kV, as applicable) system in the electrical proximity to the POI. The impact of the proposed Project will be evaluated for summer peak, winter peak and light load conditions.

### **Criteria, Plans, and Protocols**

The Facility will be designed in accordance with applicable standards, codes, and guidelines. For portions owned by the Project Sponsor (e.g., collection system), best industry practices will be used, along with any standards/preferences set by the companies designing the Facility. The Project Sponsor will develop the construction drawings to include appropriate safety measures (i.e., grounding) per best industry practices and standards listed in this section of the FSS. For the point of interconnection (POI) substation, New York State Electric & Gas (NYSEG) requirements will be followed.

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

- ACI - American Concrete Institute
- ANSI - American National Standards Institute
- ASCE – American Society of Civil Engineers
- ASTM - American Society for Testing and Materials
- Generating Plants and High Voltage Direct Current Converter Stations
- IBC - International Building Code
- IEEE – Institute of Electrical and Electronic Engineers
  - IEEE 48 - Standard Test Procedures and Requirements for Alternating-Current Cable Terminations 2.5 kV through 765 kV
  - IEEE 80 - Guide for safety in AC substation grounding
  - IEEE 400 - Guide for Field Testing and Evaluation of the Insulation of Shielded Power Cable Systems
  - IEEE 400.1 - Guide for Field Testing of Laminated Dielectric, Shielded Power Cable Systems Rated 5kV and Above with High Direct Current Voltage
  - IEEE 400.3 - Guide for Partial Discharge Testing of Shielded Power Cable Systems in a Field Environment
  - IEEE C2 - National Electric Safety Code (NESC)
  - IEEE C37.2 - IEEE standard electrical power system device function numbers and contact designation
  - IEEE C37.90 - IEEE standard for relays, relay systems and associated with electrical power apparatus
  - IEEE C37.110 - Guide for the application of current transformers used for protective relaying purposes
  - IEEE C57.13 - IEEE standard requirement for instrument transformers

- IEEE C57.12.10 - American National Standards for Transformers
- IEEE 485 - IEEE Recommended Practice for Sizing Lead-Acid Batteries for Stationary Applications
- IEEE C57.12.10 - American national standards for transformers
- IEEE 998 - IEEE Guide for direct stroke shielding of lightning for substations
- IEEE C37.119 - IEEE Guide for Breaker Failure Protection of Power Circuit Breakers
- IEEE C37.605 - IEEE Guide for Design of Substation Rigid-Bus Structures
- IEEE 605 - Guide for Design of substation rigid-bus structures
- IEEE 693 - IEEE Recommended practices for seismic design of substation
- IEEE 980 - IEEE Guide for Containment and control of spills in substations
- National Electric Safety Code (NESC)
- NEC – National Electric Code
- NEMA - National Electrical Manufacturer’s Association
- NESC - National Electric Safety Code.
- NFPA 70 - National Electric Code (NEC)
- NFPA 70 - National Fire Protection Association - National Electric Code
- NFPA 850 - National Fire Protection Association – Recommended Practice for Fire Protection for Electric
- OSHA – Occupational Safety and Health Administration
- RUS Bulletin 1724E-200
- TIA/EIA - Telecommunications Industry Association/Electric Industry Alliance

The Application will provide additional detail on the Facility’s electric system codes, standards, guidelines, and practices. For the POI substation, NYSEG’s requirements will be followed.

The Project Sponsor 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.

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

#### Underground Collection System

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

Underground cable systems have comparatively less components than overhead lines or substations. 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.

### Overhead Transmission Systems

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

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

### Collection Substation

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

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

- Main transformer
- High/medium voltage circuit breakers
- Disconnect switches

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

### Wind Turbines

Turbine commissioning will occur once the wind turbines and substation are fully installed and the NYISO is ready to accept transport of power to the New York State 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 Application.

The Project Sponsor will prepare a Preliminary Operations and Maintenance Plan (O&M Plan) for inclusion in the Application. The Preliminary O&M Plan will be based on the Project Sponsor's experience and typical O&M maintenance requirements for energy generating facilities and will serve as the foundation of the Final O&M Plan that will be implemented once the Facility becomes operational. The Project Sponsor's Facility operators will be responsible for implementing the Final O&M Plan. The objective of the Final O&M Plan will be to optimize the Facility's operational capacity and availability through best in class maintenance guidelines and inspections that are designed to proactively detect any significant safety or maintenance issues.

### **Interconnection Substation Transfer Information**

The POI substation will be a new NYSEG 115 kV 3 breaker ring bus to be constructed along the existing Jennison to East Norwich 115 kV transmission line. The Application will include a general arrangement plan view drawing of the POI substation. The exact future transaction and timetable to transfer the POI switchyard to NYSEG will not be known until the Facilities Study is complete.

The Application will describe how the substation-interconnection design meets the transmission owner's requirement. The POI substation will be designed to NYSEG's standards (i.e., the transmission owner), and will be in accordance

with their requirements. NYSEG, as the transmission owner, will define the operational and maintenance responsibilities for the POI substation.

## **Maintenance and Management Plans**

The Project Sponsor will be responsible for the operation, inspection, and maintenance requirements of all Facility components, except for the POI substation, which will be turned over to NYSEG following construction. 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 and will be discussed in the Application.

### Turbine Maintenance and Safety Inspections

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

#### *Scheduled Inspection and Maintenance*

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

#### *Unscheduled Maintenance/Repairs*

Modern wind turbines are very reliable. The major components are designed to operate for 20 to 25 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.

### Electric Transmission and Collection Line Inspections

#### *Vegetation Clearance Requirements*

Vegetation clearing requirements for the underground collection lines and the overhead transmission line will be provided in the Application. It is anticipated that all vegetation within the collection line and overhead transmission line rights-of-way (the “clearing boundary”) will need to be cleared during construction.<sup>17</sup> All vegetation within the clearing boundary, except for low-lying growth, will be completely cleared. In addition, vegetation control will be required immediately adjacent to the overhead transmission line clearing boundary to ensure safe operation and prevent damage to the line: vegetation extending above the danger tree clearance line (outside of the clearing boundary) will be cleared to prevent trees from falling into the line.

#### *Vegetation Management Plans and Procedures*

Initial vegetation management (i.e., clearing) along the underground collection lines and the overhead transmission line rights-of-way during construction will utilize manual/mechanical methods (e.g., chainsaws, pruners, or heavy machinery).

The Application will provide typical details associated with vegetation management for the underground 34.5 kV lines. It is anticipated that the maintenance of collection line and overhead transmission line rights-of-way during the operation of the Facility will involve manual/mechanical trimming and, where permitted, herbicide

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<sup>17</sup> Where collection lines are collocated with access roads, clearing associated with the requirements of the access roads may extend beyond the rights-of-way of the collection line.

treatments. The frequency of inspection and maintenance will depend on the rate of growth at the location along the lines.

#### *Inspection and Maintenance Schedules*

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

#### *Notifications and Public Relations for Work in Public Rights-of-Way*

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

#### *Minimization of Interference with Distribution Systems*

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

The Application will describe vegetation management practices for the collection substation yard. It is anticipated that the perimeter of the substation, areas outside of the substation fence, and limits of the gravel yard will be mowed to prevent emergence of woody plants or trees. Within the fence, the gravel base will largely limit the growth of vegetation. If needed, pre-emergent herbicide will be used to prevent vegetation from becoming established within the substation fence, but post-emergent herbicide and/or manual weed removal may also be used in the event vegetation becomes established within the substation fence.

### **Criteria and Procedures for Sharing Facilities with Other Utilities**

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

## **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 plants located onsite. Not all power stations have or need blackstart capability. Wind energy facilities, such as the proposed Facility, are generally not suitable for blackstart because there is no guarantee that wind would be blowing at a sufficient speed to produce sufficient electricity at the time of the need of the blackstart demand event. Therefore, the Facility is not anticipated to have blackstart capabilities.

### **2.5.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.5 of the Article 10 Regulations, Exhibit 5 of the Application will contain the following information.*

(a) System Reliability Impact Study

The Project Sponsor agrees to provide the information required by 1001.5(a).

(b) Potential Reliability Impacts

The Project Sponsor agrees to provide an analysis and/or statement of the impact of the proposed Facility on reliability in the state of New York as evaluated in the System Reliability Impact Study (SRIS).

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

The Project Sponsor agrees to provide a discussion of the impacts of the Facility on ancillary services as evaluated in the SRIS.

(d) Reasonable Alternatives to Mitigate Adverse Reliability Impacts

The Project Sponsor agrees to provide a summary of reasonable alternatives that would mitigate adverse reliability impacts (if such impacts are found to be possible) as evaluated in the SRIS.

(e) Estimated Change in Total Transfer Capacity

The Project Sponsor agrees to provide an estimate of the increase or decrease in the total transfer capacity across each affected interface based on analysis in the SRIS, including an evaluation of reasonable corrective measures if transfer capabilities are affected and require mitigation.

(f) Criteria, Plans, and Protocols

The Project Sponsor agrees to provide the information required by 1001.5(f), including a discussion of Facility maintenance and potential impacts which may arise during operation.

(g) Heat Balance Diagrams

There is no thermal component to the Facility, and therefore the information required by 1001.5(g) is not applicable and will not be addressed in the Application.

(h) Interconnection Substation Transfer Information

The Project Sponsor agrees to provide the information required by 1001.5(h).

(i) Facility Maintenance and Management Plans

The Project Sponsor agrees to provide the information required by 1001.5(i).

(j) Vegetation Management Practices for Collection Substation Yard

The Project Sponsor agrees to provide the information required by 1001.5(j).

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

The Project Sponsor agrees to provide the information required by 1001.5(k).

(l) Availability and Expected Delivery Dates for Major Components

The Project Sponsor agrees to provide the information required by 1001.5(l).

(m) Blackstart Capabilities

Wind energy facilities, such as the proposed Facility, are not suitable for blackstart. Therefore, the Application will not address blackstart.

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

The information required by 1001.5(n) will be provided through the SRIS, the development of which included consultation with NYISO and the local transmission owner.

## **2.6. WIND POWER FACILITIES**

### **2.6.1. Discussion**

#### **Setbacks**

The primary goal of wind turbine siting and facility design is to maximize the capture of wind energy to assure economic viability, while providing a design that minimizes environmental impacts, meets turbine vendor site suitability requirements, takes local laws into consideration, and minimizes potential impacts (e.g., noise and shadow flicker) at sensitive receptors. The preliminary location and spacing of Facility components will be based on site constructability, landowner participation, wind resource data, preliminary environmental resource factors, and access to bulk power transmission systems. As the project progresses, preliminary and final Facility component layouts will be developed through an iterative process based on:

- The wind resource (as determined based on Site-specific modeling);
- Distances between Facility components and participating residences, non-participating residences, other non-residential sensitive receptors such as schools, roads, other infrastructure, etc.;
- Turbine spacing requirements;
- Agricultural protection measures;
- Environmental (e.g., wetland, avian, etc.) and cultural resources identified within the Facility Site; and
- Visual, shadow flicker, and noise impacts.

As the Facility Site is rural, development density is low, and high-density residential land use is limited. Facility components will be sited to avoid and/or minimize interaction with sensitive environmental and cultural resources (e.g., protected wetlands, streams, archaeological sites) to the maximum extent practicable. Additional detail regarding the Facility's potential proximity to these and other resources (e.g., schools and historic properties), will be included in other exhibits of the Application (e.g., Exhibit 20 and Exhibit 24).

The Application will describe how setbacks will ultimately be applied to Facility turbines to minimize impacts and ensure consistency with the intent of any applicable land use setback regulation. Generally, setbacks will be tied to the maximum blade tip height of the turbines selected, except in cases where local laws or other third-party recommendations are presented as fixed distances, regardless of turbine height. The Application will also present representative turbine models that would be suitable for the Facility and their dimensions.

Zoning jurisdiction within Chenango County is at the town, village or city level. The proposed turbines are sited in the Town of Guilford, which has not adopted laws or ordinances specific to wind energy generating facilities, or zoning laws generally, and therefore does not have any local laws or ordinances specifically governing wind turbine setbacks. As the Project Sponsor continues its outreach and consultations with the Town of Guilford, it will share with the Town the typical setbacks used for wind energy facility components, and the setbacks proposed by High Bridge for this specific Facility. This Exhibit will reflect the substantive setback requirements at the time of Application submission, including any setback requirements adopted by the Town of Guilford prior to the Application submission date.

### **Equipment Reliability**

Equipment reliability is an important criterion in turbine selection. The Project Sponsor has not made a final decision on the turbine manufacturer or model. However, based on preliminary evaluations, 3.8 MW to over 5 MW represents the range of turbine size types considered for this Facility. The turbine manufacturers and models presented in the Application and pursued by the Project Sponsor for installation may vary depending on the technology options available. These turbines will have been independently certified as meeting international design standards by independent product safety certification organizations such as Germanischer Lloyd and Underwriters Laboratories. These certifications require that the wind turbines have a design life of at least 20 years for the specified wind regime. The wind regime considers factors such as weather extremes, average wind speed, wind gusts, and turbulence intensity.

### **Wind Meteorological Analysis**

One 197-foot (60-meter) temporary NRG meteorological tower has been installed within the Facility Site. One 328-foot (100-meter) temporary lattice tower is currently being installed. The meteorological towers have been and are being erected to generate the site-specific data necessary for modeling purposes and validation of the wind resource. The wind resource analysis process is ongoing and will continue until the Facility layout is finalized. The purpose of the analysis process is to optimize the turbine layout for maximum energy production within the context of the existing, site-specific constraints and to support the estimated capacity factor for the Facility.

During the wind analysis process, micro-scale wind modeling tools along with mesoscale wind resource databases, reanalysis datasets, and high-resolution terrain data are utilized to develop the wind resource map. Linear flow models as well as Computational Fluid Dynamic (CFD) models are used to determine the wind regime at all turbine positions given data from on-site meteorological towers and high-resolution topographical data from a digital elevation model. The final layout will be determined by merging the most energetic layouts with the most constructible and logistically economical designs.

## **2.6.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.6 of the Article 10 Regulations, Exhibit 6 of the Application will contain the following information.*

The Project Sponsor agrees to provide the information required by 1001.6, as outlined in the following subsections.

### **(a) Statement of Setback Requirements/Recommendations**

The Application will include a summary table of setback requirements and recommendations established by the Town of Guilford, the Applicant, and manufacturers, as applicable, and an explanation of the rationale for the setback distances. Additionally, the Project Sponsor will consult with turbine manufacturers regarding setback recommendations or requirements for developing the layout and siting turbines. The Project Sponsor will consider such recommendations or requirements and report the results of consultation with manufacturer(s) in the Application.

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

In accordance with 16 NYCRR § 1001.6(b), the Application will provide a detailed explanation of the degree to which the Project Sponsor's proposal conforms to setback distances required or recommended by the turbine

manufacturer's specifications, the Project Sponsor and any local ordinance or law.<sup>18</sup> In the event the proposed layout does not conform to the setbacks recommended by the turbine manufacturers or the Project Sponsor, or required by any local ordinance or law, if applicable, the Applicant will seek a waiver from the Siting Board and the Application will include a table that lists the non-conforming turbines, denotes the difference between required or recommended setbacks and those proposed in the Application, and provides an explanation of why the required or recommended setback was not applied.

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

The Application will provide an example type certification (in accordance with International Electrotechnical Commission (IEC) 61400) for at least one of the turbines (or its predecessor) under consideration for the Facility.

(d) Wind Meteorological Analyses

A table will be provided in the Application for turbine models under consideration showing each wind turbine class with corresponding information on the suitability of the turbines for use in conditions typical of the Facility Site, such as weather extremes, average wind speed, wind gusts and turbulence intensity.

## 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 Application.

## 2.8. ELECTRIC SYSTEM PRODUCTION MODELING

### 2.8.1. Discussion

The analyses to be presented in Exhibit 8 of the Application will be developed using GEMAPS, PROMOD, or a similar computer-based modeling tool. The Project Sponsor will consult with the NYSDPS and the NYSDEC following submission of this FSS to develop an acceptable input data set to be used in the simulation analyses, including modeling for the Project Sponsor's proposed Facility and inputs for the emissions analysis, as required by 16 NYCRR § 1001.8.

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<sup>18</sup> If any such requirements are identified in the course of consulting with the Town of Guilford and Chenango County. At present, the Town of Guilford does not have zoning or other local ordinances related to wind energy.

Digital copies of all inputs used in the simulations described in this section will be included on a compact disc (CD) submitted concurrently with the Application, directly to NYSDPS Staff.

## **Estimates**

### Emissions

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

### Spot Prices

The 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.

### Production

The Application will provide the estimated capacity factor for the proposed Facility. An 8760-hour per year generation profile will be developed using on-site meteorological tower wind measurements. These measurements will be adjusted to represent a long-term average at the wind turbine locations by comparing observed wind measurements over a set period to those observed at nearby long-term reference stations (i.e., “long-term adjusted”). The gross production of the Facility will be calculated from the validated and long-term adjusted data, based on the turbine power curve and wind distribution of one of the turbine models identified in Exhibit 6 of the Application (the “selected turbine model”). Typical loss assumptions for availability, environmental considerations, curtailment, and any other potential sources of energy loss will be subtracted from gross production to yield a long-term net energy yield and capacity factor.

The Application will provide the typical annual and monthly on-peak and off-peak megawatt-hours (MWh) output capability factors for the proposed Facility, based on the specifications of the selected turbine model.

The Application will provide the estimated average annual and monthly production output for the Facility in MWh. Monthly energy yield averages will be determined from the long-term adjusted 10-minute data in each specific month. Based on the long-term adjusted average energy yield for each month, a gross monthly energy distribution for the year can be determined. Month-specific loss assumptions for availability, environmental considerations, and curtailment will then be subtracted from the gross monthly production distribution to yield the estimated

production in MWh for each month. The annual production output will be determined from the sum of all monthly net energy yields in MWh.

The Application will include an estimated production curve for the Facility over the year. The number of hours at each specific wind speed bin for each turbine position will be extracted from the long-term adjusted annual wind frequency distributions at each turbine position.<sup>19</sup> The power curve of the selected turbine model will show the expected production at each wind speed bin. Combining these two sets of data at each turbine position will yield the expected annual production curve (MWh at each wind speed). The sum of production for all turbines at each wind speed bin will produce the estimated annual production curve for the Facility.

The Application will include an estimated production duration curve for the Facility over an average year. An estimated production duration curve will be calculated from the long-term adjusted annual wind frequency distributions at all turbine positions and the power curve of the selected turbine model. The wind frequency distribution at each turbine position will describe the number of hours at each wind speed and the resultant power level in MWh. The Facility production duration curve will be calculated from the sum of all hours at all turbine positions at each specific power level (total Power in MWh versus number of hours expected at those MWh levels).

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

## **2.8.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.8 of the Article 10 Regulations, Exhibit 8 of the Application will contain the following information.*

The Project Sponsor agrees to provide the information required by 1001.8.

## **2.9. ALTERNATIVES**

### **2.9.1. Discussion**

#### **Preliminary Site Selection**

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<sup>19</sup> Calculated in a wind flow model.

The preliminary selection of wind turbine locations on a regional or statewide basis is constrained by several factors that are essential for a wind energy generating facility to operate in a manner that is viable both technically and economically. These factors include:

- An adequate wind resource;
  - Across New York State, the wind resource varies based on topography, prevailing wind direction, and location. Large-scale wind power projects can only be built in certain areas 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. Winds adequate to support a commercial wind-powered generating facility are generally found near coastal areas, ridgelines, elevated plateaus, and mountain peaks.
- Adequate access to the bulk power transmission system from the standpoints of proximity and ability of the system to accommodate the interconnection and accept and transmit the power from the facility;
- Contiguous areas of available land;
- Compatible land use;
- Willing landowner participants and host communities; and
- Limited population/residential development.

The Town of Guilford has been selected as the location of the proposed Facility because the Project Sponsor has determined that the area meets the company's objective of creating an economically viable wind-powered electrical-generating facility that will:

- Satisfy regional energy needs in an efficient and environmentally sound manner;
- Reduce the amount of electricity imported to New York State;
- Realize the potential of the Chenango County wind resource;
- Provide energy not coupled to fuel commodity prices;
- 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 and the reduction of greenhouse gas emissions.

### **General Arrangement and Design**

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

- *Wind Resource Assessment.* Using on-site meteorological data, topographic and surface roughness data, wind flow modeling, and wind plant design software, the wind turbines will be sited to optimize exposure to wind from all directions, with emphasis on exposure to the prevailing southwest wind direction in the Facility Site.
- *Topography.* Elevation is a key component of maximizing the capture of wind energy, and higher elevations typically correspond to higher wind resource. In addition, turbine manufacturers require certain elevation and topography criteria be met (i.e., not locating a turbine on too steep of a slope or on too narrow a ridge), or else they will not certify the turbine location as suitable and the turbine cannot be constructed. To ensure turbines were placed in suitable locations, all potential turbine sites were evaluated to meet elevation and topography criteria.
- *Sufficient Turbine Spacing.* Siting turbines too close to one another can result in decreased electricity production and excessive turbine wear, due to the creation of wind turbulence between and among the turbines. Each operating wind turbine creates downwind turbulence in its wake. As the flow proceeds downwind, there is a spreading of the wake and recovery to free-stream wind conditions. The Facility turbines will be located with enough space between them to minimize wake losses and maximize the capture of wind energy.
- *Wetlands and Waterbodies.* Facility components will need to avoid and/or minimize impacts to wetlands and streams to the greatest extent practicable.
- *Communication Interference.* Turbines will be sited outside of known microwave pathways or Fresnel zones to minimize the effect that they may have on existing communications.
- *Recreational Resources.* Turbines should be sited in such a way that does not cause any significant 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 impacts to prehistoric or historic resources.

The Facility's turbine layout is also a function of the turbine model that will ultimately be used. The actual number of turbines constructed will depend on the capacity of the turbine model selected, to reach a total generating capacity of up to 100.8 MW. For example, if a 3.8 MW model is selected, then up to 26 turbines will be constructed. The turbine model ultimately selected for this Facility will be based upon numerous factors, such as site suitability, availability and price. Turbine locations will ultimately be chosen from among the specific locations identified in the Application and will be based on the wind resource and other siting factors. However, to assure a worst-case evaluation, the Application will assess the impacts associated with up to 30 turbine locations, even though fewer turbines may be built.

## **Scale or Magnitude**

As mentioned previously, numerous siting constraints dictate the size and layout of a wind energy generating facility, as do the practical constraints inherent in the limited number of available turbine models and technologies available to the Project Sponsor, and factors of economics. These constraints reduce the feasibility of constructing a facility with electric power generation capabilities above 100.8 MW within the proposed the Facility Site.

Constructing a facility with a reduced generating capacity would not be economically advantageous. The Project Sponsor is doing business in a highly competitive, price sensitive wholesale electric market. 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. Since the Facility has a 100.8 MW interconnection request with NYSEG, the preferred alternative is to construct a facility that can produce up to 100.8 MW. A facility with significantly smaller production capacity would pose challenges to the economic feasibility of the Facility and would not meet its stated objectives.

In particular, if the proposed generating capacity were significantly reduced: (1) the maximum benefit of the available wind resource would not be realized; (2) the Facility would not as readily address the significant State policy considerations relating to reducing greenhouse gas emissions, increasing renewable energy generation, and decarbonizing the electric system; (3) economies of scale related to construction costs would not be realized while fixed costs related to constructing the Facility would remain the same (e.g., mobilization costs for expensive equipment such as erection cranes); and (4) the cost of environmental monitoring and mitigation would be proportionately higher

With respect to the economic benefits to the community, reducing the sale/magnitude of the Facility would also reduce PILOT and Host Community Agreement contributions to local taxing jurisdictions, which are typically developed per MW or per turbine. In addition, if the physical extent of the Facility Site was reduced, revenues related to landowner agreements would also be reduced. Finally, the smaller the Facility, the smaller the direct and indirect economic benefits associated with its construction and operation.

## **Alternative Energy Supply Sources**

In considering alternative energy supply sources, the objectives and capabilities of the sponsor need to be considered. The objective of the High Bridge Wind Project is to add a significant source of renewable energy to the State's electric system that will qualify for participation in the New York State Clean Energy Standard program. This objective excludes consideration of non-renewable facilities and impounded hydroelectric facilities, the only hydroelectric technology that could generate the quantity of energy the High Bridge Wind Project will produce.

Solar energy developments have a larger relative footprint than wind energy developments, i.e., they require a greater land surface area to generate the same amount of energy. One consideration in siting a solar energy development is forest cover—forested areas are generally avoided to minimize environmental and cultural impacts. Considering that most of the Facility Site is forested (see Table 4), the Facility Site is not well suited to solar energy development. Overall, available alternative power generation technologies do not meet the objectives or capabilities of the Project Sponsor. The Application will include a high-level discussion of these issues.

Although not an alternative, the Project Sponsor has incorporated battery storage into the design of the Facility. This technology will increase the utility of the energy generated by the Facility, helping the system manage peak demand by storing excess supply and deploying it during periods of greater demand.

### **Objectives and Capabilities of the Project Sponsor**

It is the Project Sponsor's intent and objective to develop a wind power project which harnesses the existing wind resource in Chenango County. Accordingly, other power generative technologies (i.e. coal, solar, geothermal, etc.) are not considered reasonable alternatives, as they would either not be renewable, or would not take advantage of the abundant wind resources available in this location. Regarding alternative wind turbine technologies, the Project Sponsors is proposing to utilize the latest in wind power generation technology. Additional detail regarding proposed and alternative wind turbine technology will be provided in the Application.

With respect to capabilities, the Project Sponsor is a wholly owned subsidiary of Calpine Corporation (Calpine), which is headquartered in Houston, Texas. Calpine specializes in developing, constructing, owning and operating generation assets that use advanced technologies to produce power in a low-carbon and environmentally responsible manner. In early 2015, Calpine launched a new development group with the goal of being a long-term owner and operator of wind energy projects throughout the United States. Given the Project Sponsor's capabilities, the proposed Facility best advances company objectives, as well as the State Energy Plan, Clean Energy Standard, and Reforming the Energy Vision initiative.

The Project Sponsor, as a private facility Project Sponsor, does not have eminent domain authority. To build this Facility, the Project Sponsor located landowners and municipalities within the Facility Site eager to work with the Project Sponsor, land within the Facility Site available to site components, and existing land uses that were compatible. Access to the site for component delivery and Facility operation was also considered and determined to be adequate. No areas of statewide significance or high environmental sensitivity area located within the Facility. A System Reliability Impact

Study (SRIS) has been initiated that anticipates up to 100.8 MW of electric power being generated by the proposed Facility.

### **Preferred Alternative**

The preferred alternative is to construct a wind Facility that can produce up to 100.8 MW of renewable energy. Considering that the Project Sponsor is a private facility Project Sponsor, Article 10 requires only that the Application identify and describe reasonably available alternative site locations within areas owned by or under contract/option to the Project Sponsor (i.e., locations within the Facility Site). The Project Sponsor will design the Facility layout to optimize the balance between energy generation and the protection of agricultural, environmental, and aesthetic resources, as well as community safety and welfare. The Application will include a description of why the proposed location is best suited to promote public health and welfare.

The benefits of the Facility are anticipated to include positive impacts on socioeconomics (e.g., increased employment, increased revenues to local municipalities, and 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, and aid New York in avoiding the potentially devastating effects of climate change. The Application will discuss why the proposed technology, scale, and timing of the Facility are best suited to promote public health and welfare.

### **2.9.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.9 of the Article 10 Regulations, Exhibit 9 of the Application will contain the following information.*

(a) Description of Reasonable Alternative Sites

An identification and description of reasonable and available alternate location sites for the proposed Facility that will necessarily be limited to sites leased, owned by, or under option to, Project Sponsor or its affiliates, as authorized by 16 NYCRR § 1001.9(a).

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

As indicated in subdivision (a), alternative locations that include areas beyond what is leased by, owned by, or under option to, the Project Sponsor are unavailable. Further, it is not practicable to procure land contracts, perform

environmental and engineering studies, enter into and progress through multiple interconnection permit processes, and conduct community outreach for alternative Project locations. Therefore, the Application will not include a fully developed evaluation of comparative advantages and disadvantages of alternate locations. However, the general site selection process and relevant information/analyses associated with the Facility will be provided in relation to Exhibit 9(b)(1) through (11) of the Application.

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

The Project Sponsor's private landowner agreements limit the use of land to a wind power project, and as such, do not allow the Project Sponsor to site other alternative energy production facilities (e.g., solar). Accordingly, other power generation technologies are not reasonable alternatives and will not be considered in the Application. Rather, 1001.9(c) of the Application will provide information on the Facility design and technology including:

- (1) The general arrangement and design of the Facility (detailed information regarding the arrangement and design of the Facility will be provided in Exhibit 3 of the Application as described above and required by 16 NYCRR § 1001.3);
- (2) Wind turbine technology and alternate turbine models;
- (3) Alternate scale and magnitude of the facilities in the context of the interconnection position (i.e., maximum generating capacity of up to 100.8 MW) and information on the economic benefits to local communities related to Facility scale and magnitude; and
- (4) A discussion of the final, maximum number of turbines that could be constructed based on siting factors (including setbacks) and identification of the position of all potential turbine locations. The discussion will include examples of the number of turbines to be constructed depending on the turbine model selected.

This section of the Application will also identify the position of potential turbine locations in an alternate layout within the 5-mile Study Area and compare the impacts of the alternative layout (i.e., impacts to vegetation, wetlands, etc.) to the proposed Facility layout, to the extent practicable.

- (5) The Project Sponsor agrees to provide the information required by 1001.9(c)(5).

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

The Project Sponsor agrees to provide the information required by 1001.9(d).

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

The Project Sponsor agrees to provide the information required by 1001.9(e).

(f) No Action Alternative

The Project Sponsor agrees to provide the information required by 1001.9(f). The “no action/no build” alternative refers to not building the Facility.

(g) Energy Supply Source Alternatives

The Project Sponsor agrees to provide the information required by 1001.9(g).

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

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

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

The Project Sponsor agrees to provide the information required by 1001.9(i).

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

### **2.10.1. Discussion**

#### **Consistency with State Energy Plan**

The Application will demonstrate that the Facility advances the State's achievement of goals outlined in the most recent State Energy Plan SEP (See NY State Energy Law 6-104), which was issued on June 25, 2015. The SEP contains a series of policy objectives to increase the use of energy systems that enable the State to significantly reduce greenhouse gas (GHG) emissions, and increase renewable energy generation, while stabilizing energy costs and stimulating the green economy. Through the SEP, 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 SEP calls for 50% generation of electricity from renewable energy sources by 2030—approximately 33.7 million megawatt hours of new generation, which is projected to include between 4,000 and 5,900 megawatts of new land-based wind energy.

The SEP states that “[r]enewable energy sources, such as wind, will play a vital role in reducing electricity price volatility and curbing carbon emissions” (NYSEPB, 2015). In furtherance of these objectives, on August 1, 2016, the Public Service Commission (PSC) issued approval of the State’s Clean Energy Standard (CES), which represents the most comprehensive and ambitious clean energy mandate in the state’s history, to fight climate change, reduce harmful air pollution and ensure a diverse and reliable energy supply. The CES will require 50% of New York’s electricity to come from renewable energy sources like wind and solar by 2030, with an aggressive phase in scheduled over the next several years.

As will be demonstrated in the Application, the proposed Facility advances the objectives of the SEP by bringing the State closer to achieving the 50% renewable energy generation objective, reducing greenhouse gas emissions from New York’s energy sector, offsetting fossil fuel generation, contributing to the growth of New York’s green economy, and infusing millions of dollars of private investment into New York State and the host communities. The Application will provide a detailed analysis of the ways in which the High Bridge Wind Project advances the many objectives of the SEP and the CES and assists the State in achieving the renewable energy generation objective set forth therein. The Application will also provide a statement demonstrating the Facility’s degree of consistency with the SEP.

Specifically, the Application will highlight how the Facility supports the five “Guiding Principles” of the SEP, the seven goals listed in the “Initiatives and Goals” Section of the SEP, Reforming the Energy Vision (REV) initiative short- and long-term goals, and New York’s 2030 Targets identified in the CES and the SEP. All the planning documents and principles articulated above are interrelated and interdependent; collectively, they aim to spur progress across sectors and throughout the State’s many regions, to push the State toward a cleaner, greener, cheaper, more diverse, more flexible, market-based energy future. As will be demonstrated in the Application, projects such as the High Bridge Wind Project play a key role in advancing this market transformation and signify the responsiveness of the private sector to the State’s articulated goals and promised reforms.

#### Five Guiding Principles of the State Energy Plan

The Reforming Energy Vision is a core initiative of the SEP and is guided by a set of principles that will drive the shift in the State’s approach to energy policy. These principles are described on pages 49-54 of the 2015 State Energy Plan, and are summarized below:

- *Market Transformation* – REV, and other state regulatory reforms, initiatives, and programs will focus on market transformation, allowing for a new, integrated, and self-sustaining private sector-driven clean energy market.
- *Community Engagement* – A fundamental REV strategy is for the State to engage with communities.
- *Private Sector Investment* – By removing market obstacles, REV will facilitate development of competitive markets, and will look to increase the leverage of private sector capital investment per ratepayer dollar.
- *Innovation and Technology* – REV will align energy innovation with market demand. New York State Energy and Research Development Authority (NYSERDA) and New York Power Authority (NYPA) will partner with New York’s academic research institutions and the private sector to support the development of clean energy technology and innovative business and financing models, along with training the next generation to support the growth of the clean energy economy.
- *Customer Value and Choice* – REV aims to empower customers and enable the private sector to provide the services and energy options that customers value. Residential, commercial, and industrial customers will have the tools to easily and efficiently manage when and how much power they will consume.

Projects like the High Bridge Project fully advance the principles of the SEP. The Facility is a clean energy project, which provides services and energy options that customers value. Wind generated energy is sustainable and encourages competitive energy markets. Large-scale renewables, such as wind power, are part of a cost effective and clean energy system.

#### Seven Initiatives and Goals of the State Energy Plan

The Initiatives and Goals section of the 2015 State Energy Plan identifies the following distinct goals and initiatives:

- Renewable Energy
- Buildings and Energy Efficiency
- Clean Energy Financing
- Sustainable and Resilient Communities
- Energy Infrastructure Modernization
- Innovation and R&D
- Transportation

The Facility will advance the Renewable Energy initiative through providing a source of clean renewable energy to the New York power grid for the operating life of the Facility. Within the Renewable Energy section of the SEP,

there are eight recommended actions and programs that are or will be implemented, including the large-scale renewables (LSR) strategy.

As a commercial scale wind energy project, development of the Facility is consistent with the LSR strategy outlined by in the Renewable Energy section of the SEP. Immediate benefits of LSRs like the Facility include economic development and jobs for communities, greater electricity bill stability for customers, cleaner air, a healthier environment, and in the long run, the potential for below-market electricity prices. Wind projects like the Facility help New York's economy over the lifetime of the facility, creating statewide benefits.

### Short- and Long-Term REV Goals

To turn the broad principles of the SEP into concrete action, the State's REV has articulated specific short- and long-term goals, which will be discussed in the Application. These include:

- Making energy more affordable for all New Yorkers
- Building a more resilient energy system
- Empowering New Yorkers to make more informed energy choices
- Creating new jobs and business opportunities
- Improving our existing initiatives and infrastructure
- Supporting cleaner transportation
- Cutting greenhouse gas emissions 80% by 2050
- Protecting New York's natural resources
- Helping clean energy innovation grow

### 2030 Targets in the State Energy Plan, and the CES

The 2015 State Energy Plan establishes statewide clean energy targets to be met by 2030; The CES is intended to be the framework through which these goals may be achieved. The 2030 goals are described on page 112 of the SEP, and include:

- 40% reduction in GHG emissions from 1990 levels
- 50% of electricity generation from renewable energy sources
- 600 trillion British thermal unit (BTU) increase in statewide energy efficiency.

The Facility advances the first of these two initiatives by providing a reliable source of electricity from clean, renewable energy sources with zero GHG emissions.

In June 2018, Governor Cuomo announced the New York Energy Storage Roadmap, which builds upon policies and initiatives set forth in the SEP, REV and CES as it relates to increasing energy storage infrastructure and thereby improving grid resiliency in New York.<sup>20</sup> The Energy Storage Roadmap sets a target of 1,500 MW of energy storage by 2025 and, as stated in the Draft Generic Environmental Impact Statement prepared for NYSERDA and the PSC in Case 18-E-0130, In the Matter of Energy Storage Deployment Program, is expected to result in positive environmental impacts including “reductions in peak load demand during critical periods, increases in the overall efficiency of the grid, and/or displacement (or accelerated displacement) of fossil fuel-based generation (e.g., by allowing greater integration of renewable energy resources).”

The High Bridge Wind Energy Project will also advance the New York Energy Storage Roadmap by providing both renewable generation and significant energy storage and will contribute up to 20 MW toward the State’s 1,500 MW energy storage goals. The Application will discuss these issues in detail.

### **Impact on Reliability**

A System Reliability Impact Study (SRIS) will be prepared for the generating Facility, on behalf of the New York Independent System Operator (NYISO). A separate SRIS will be prepared for the battery storage component. The generating Facility’s SRIS is scheduled to be completed in Q2 2019 and will be included in Exhibit 8 of the Application, with certain issues such as reliability addressed in greater detail in Exhibit 10 of the Application. The Application will describe the impact of the proposed Facility on electrical reliability in the State in greater detail using analyses conducted as part of the SRISs.

### **Impact on Fuel Diversity**

The proposed Facility will improve fuel diversity within the State by increasing the amount of electricity produced by wind power, and the amount of available energy storage. Maintaining and improving fuel diversity in New York will lead to less volatile electric prices, improved reliability, and positive environmental impacts (NYISO, 2008). The Application will include discussion of the current electric generation capacity by fuel type to demonstrate that the addition of the

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<sup>20</sup> This is also listed as Case 18-E-0130 before the Public Service Commission. Available at: <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterSeq=55960>.

Facility will increase fuel diversity. Current fuel mix data will be obtained from NYISO.

### **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 in New York City, Long Island, and 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 resources. The Application will identify how NYISO Zone E, where the Facility will be located, relates to regional electricity demands, and reliable and viable electricity generation.

### **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 transfer 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 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.

### **Impact on Fuel Delivery Constraints**

The proposed Facility will generate electricity without the use of fuel. Therefore, the Facility will contribute to reducing overall demand for fuel, easing fuel delivery constraints and advancing the SEP's goal of 50% generation from renewables by 2030.

### **Impact on Energy Policy**

The Application will include a discussion of the Facility's broader impact on State energy policy and long-range planning objectives. The immediate benefits of utility scale renewable energy projects, such as the proposed Facility, include

economic development and jobs for the community, greater electricity bill stability for customers, 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 in the SEP, the long-term benefits of new renewable energy projects are likely to be similar to those New York currently enjoys from the State's hydroelectricity facilities: below-market electricity prices and a healthier environment. Through the SEP, New York has committed to achieving a 40% reduction in greenhouse gases (GHG) emissions from 1990 levels by 2030 and reducing total carbon emissions 80% by 2050. In addition, the SEP calls for 50% of generation of electricity from renewable energy sources by 2030 (NYSEP, 2015).

To encourage and incentivize the shift of New York State's energy sector from reliance on GHG-emitting fuel sources to renewable energy sources, the State previously established a Renewable Portfolio Standard (RPS) which initially called for an increase in state-wide renewable energy generation to 25% by the year 2013 (PSC, 2004). In an Order issued in January 2010, the PSC expanded the RPS target from 25% to 30% and extended the target date from 2013 to 2015. The RPS was expected to reduce CO2 emissions by 50 million tons over the life of the projects (NYSERDA, 2015). The CES replaces the expired RPS and shifts the State's strategy for encouraging development of LSR from a State-run procurement model under the RPS, to the CES's market-based solutions, such as clean energy buying requirements for utilities and a system of tradable renewable energy credits designed to recognize and monetize the value to society that renewable energy provides.

The REV Order outlines the steps that must be taken to resolve technical, marketplace, and regulatory challenges and achieve REV goals. The REV recognizes that large-scale renewables, like the High Bridge Wind Project, require more capital and take more planning than other facilities, but are critically important to meeting greenhouse gas emission reduction goals. As stated in the REV Order, "A significant increase in the penetration of renewable resources is essential to meeting our objectives, state goals and proposed federal requirements" (PSC, 2015).

In May 2016, the Department of Public Service (DPS) released the Final Supplemental Environmental Impact Statement for the Clean Energy Standard ("CES FSEIS"). In the CES FSEIS the DPS recognizes the vital role that renewable resources such as wind play in helping the state meet its goals under the SEP. Projects such as the High Bridge Wind Project are instrumental to the State in reaching its energy goals.

### **Comparison of Advantages and Disadvantages of Proposed and Alternative Locations**

Reasonable and available alternative locations identified for the construction of the proposed Facility will be discussed in Exhibit 9 of the Application. As possible, comparative analyses will be conducted to identify the advantages and disadvantages of any alternative locations identified as reasonable and available to the Project Sponsor.

### **Why the Proposed Location and Source Best Promotes Public Health and Welfare**

Exhibit 9 of the Application will explain why the proposed location and source is best suited to promote public health and welfare.

### **2.10.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.10 of the Article 10 Regulations, Exhibit 10 of the Application will contain the following information.*

The Project Sponsor agrees to provide the information required by 1001.10, including reference to the 2015 State Energy Plan and an explanation on consistency with the adopted New York State Clean Energy Standard.

## **2.11. PRELIMINARY DESIGN DRAWINGS**

### **2.11.1. Discussion**

Preliminary Design Drawings will be prepared in support of the Article 10 Application. The drawings will depict the location of all proposed Facility components (e.g., wind turbines, access roads, the electric collection system, the O&M facility), approximate limits of disturbance and clearing, delineated wetlands, and all anticipated construction staging/material laydown areas, which is where contractor trailers/offices and parking areas will be located during construction.

The footprint of a wind power project is relatively small compared to a conventional energy generating facility and can be designed to fit within the existing landform. Publicly available contour data and AutoCAD software will be used to create a three-dimensional (3D) surface from which 2-foot contour intervals will be interpolated. Existing and proposed contours and permanent stormwater retention areas (if needed and known at the time of Application submittal) will be shown on the Preliminary Design Drawings.

The Project Sponsor is proposing to build a new O&M building, which will be shown in the Preliminary Design Drawings. Typical architectural drawings of the O&M building, indicating height above grade, will be provided. These architectural drawings of the O&M building will be based on the Project Sponsor's standard O&M building design, layout, and

specifications, and current industry standards, along with state building code requirements and 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. If the Project Sponsor opts to purchase an existing building to utilize for O&M purposes, the layout and architecture of the building will comply with all requisite building standards, provisions, and specifications. The O&M building is the only stand-alone building, aside from the collection and POI substations, the Project Sponsor anticipates constructing as part of the Facility.

### **2.11.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.11 of the Article 10 Regulations, Exhibit 11 of the Application will contain the following information.*

All drawings prepared in support of Exhibit 11 of the Application will be prepared using computer software (e.g., AutoCAD, MicroStation), will be labeled “preliminary” and/or “not for construction purposes,” and will be prepared under the direction of a professional engineer, landscape architect, or architect 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 Division of Environmental Permits and NYSDEC Region 7 Fish and Wildlife Staff (total of two full sized sets). A single, full size drawing set will be provided to the Town upon request. All other printed copies (to be included with the Application) will be at a legible and reduced size (i.e., 11” x 17”), also utilizing a common engineering scale (for example: 1” = 60’, 1” = 100, or 1” = 200’). Appendix G contains a list of typical wind farm drawings and includes entries of extent limits, engineering scales, and proposed drawing paper sizes for each listed corresponding drawing. Additionally, a CD-ROM containing electronic PDF files will be submitted to DPS Staff.

#### (a) Site Plan

The Preliminary Design Drawings, which will depict all features listed in 1001.11(a), will constitute the Site Plan for the Facility and will be prepared at a common engineering scale (e.g. 1” = 100’). The drawings will also depict adjoining property<sup>21</sup> and all delineated wetlands (including NYS-regulated wetlands and 100-foot adjacent areas) and streams. In addition, preliminary turbine foundation drawings, collection and transmission line drawings, and substation plans and details (“Preliminary Electrical Detail Drawings”) will be prepared in support of the Application. Collectively, the Preliminary Design Drawings and the Preliminary Electrical Detail Drawings will include the following features, as applicable:

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<sup>21</sup> Based on publicly available data.

- (1) Access roads (temporary and permanent);
- (2) Turbine foundations, tower outline, and crane pads;
- (3) An illustration of the ~~various-proposed minimum turbine setbacks from each turbine to other features based on established by the Applicant and the Town of Guilford, as applicable proposed setbacks and local laws and ordinances~~ (a stand-alone turbine setback layout plan may be submitted instead to improve clarity of information).
- (4) Turn-around areas (if needed) to be used during turbine deliveries;
- (5) Proposed grading (temporary grading for construction purposes and approximate final contours);
- (6) Electric collection lines, including the required number of circuits for each collection line route;<sup>22</sup>
- (7) Limits of disturbance for all Facility components (turbines, access roads, buildings, electric collection lines, the collection substation, etc.);
- (8) Limits of clearing for all project components (turbines, access roads, buildings, collection lines, etc.) and the vegetation type of the potentially cleared areas;
- (9) Permanent rights-of-way (ROW) for electric cable installations;
- (10) Locations where trenchless technologies (e.g., horizontal directional drilling, jack and bore) will be implemented, including laydown area and approximate lengths of trenchless installations;
- (11) Collection and point of interconnection (POI) substation outlines, including access driveways, property setbacks, battery storage,<sup>23</sup> and fence lines;
- (12) On-site concrete batch plant outline, including access way(s), property setbacks, and parking areas;
- (13) Existing utility equipment locations and easement lines of those existing utilities including electric and gas transmission or distribution lines, cable and telecommunication lines, and any other utilities in relation to proposed Facility component locations;
- (14) Operation and maintenance (O&M) building, including access way(s), property setbacks, and the parking area;<sup>24</sup>
- (15) Temporary and permanent meteorological (met) towers; including property setbacks, as applicable;
- (16) Laydown, staging and equipment storage areas, including associated access way(s) and parking areas;
- (17) Back-up generators and fuel storage areas (if needed); including property setbacks, as applicable; and
- (18) Municipal and other boundary lines, property lines, existing easements for public roadways, and other structures or uses.<sup>25</sup>

<sup>22</sup> It is anticipated that collection lines will be buried except where precluded by site conditions (e.g., adverse subsurface conditions, wetlands, cultural resources, etc.).

<sup>23</sup> Located within the collection substation.

<sup>24</sup> Specifics regarding installation of septic and water supply systems will be provided when the details regarding the O&M building are finalized.

<sup>25</sup> Depicted using publicly available data and based on stakeholder consultation.

(b) Construction Operations Plan

The Project Sponsor agrees to provide the information required by 1001.11(b).

(c) Grading and Erosion Control Plans

Soil type and depth to bedrock information will be provided, based on publicly available data. Preliminary cut and fill calculations will be included along with a general description of typical cut and fill scenarios. Existing and proposed contours and permanent stormwater retention areas (if needed and known at the time of Application submittal) will be shown on the Preliminary Design Drawings.

(d) Landscaping Plan

Based on the proposed Facility layout and the results of various analyses, the Application will discuss the need for landscaping in the form of visual screening and prepare conceptual screening plans, if needed, in consultation with the Town. Tree and vegetation clearing will be limited to the minimum necessary for Facility construction. To determine those areas where trees may be removed, the Facility footprint will be depicted on recent aerial imagery, and the acreage of tree removal will be discussed in the Application. However, an on-site inventory and survey of all trees to be removed will not be included in the Application.

(e) Lighting Plan

A Preliminary Lighting Plan for the O&M facility and the collection and POI substations will be provided in the Application, as required by 16 NYCRR 1001.11(e) and 1001.18(b)(3). Anticipated lighting specifications for FAA lights on turbines ~~and typical lights to be used at the substations and O&M facility~~ will be discussed in Exhibit 18 of the Application. ~~If Determinations of No Hazard (DNHs) are~~ if a hazard determination is received from the FAA prior to Application filing, the lighting specifications required by the FAA and detailed in such hazard determination for the Facility will be detailed in the Application. ~~Manufacturer cuts sheets for Facility lighting will be provided, as available to the Project Sponsor.~~

(f) Architectural Drawings or Typical Details

The Application will provide a typical drawing of an O&M building and typical foundation types to be used for the wind turbines. In addition, typical details of other structures or buildings, such as at the collection substation and battery storage will be included. Heights above grade will be indicated on appropriate drawings of all proposed structures (including buildings, substations, battery storage, etc.).

(g) Typical Design Detail Drawings

The Application, the Preliminary Design Drawings, or the Preliminary Electrical Detail Drawings will contain typical design details for Facility components including access roads, (including approximate proposed aggregate thickness), collection lines, wind turbines, wind turbine foundations, and turbine laydown areas. In addition, the Application, Preliminary Design Drawings, or Preliminary Electrical Detail Drawings will include the following:

- (1) Turbine Foundation Drawings – These drawings will include a typical preliminary plan, elevation, section, and details. The details will depict the typical type(s) of foundation(s), dimensions, reinforcement layout, and general details and arrangements of the flange assembly and embedment ring. Information regarding design codes will be included along with information pertaining to typical steel and concrete (compressive strength, volume, weight, etc.) to be used for turbine foundation construction will be provided.
- (2) Electric Collection System – It is anticipated that collection lines will be buried except where precluded by site conditions. Plans and sections of underground facilities will be provided for the proposed layout scheme, including single and multiple-circuit layouts with dimensions of proposed cable depth and level of cover, separation requirements between circuits, clearing width limits for construction and operation of the Facility, limits of disturbance, and required permanent ROWs.
- (3) Overhead Transmission Line – The Application will include elevation plans for the overhead transmission line, including height above grade, structure layouts, clearing width limits for construction and operation of the Facility, permanent ROW widths, average span lengths, and structure separation requirements (for installations containing more than one pole, etc.).
- (4) Trenchless Technologies – Typical details associated with trenchless technologies (e.g., horizontal directional drilling (HDD) and jack and bore), including staging areas and bore pits, will be provided, if the use of such technology is proposed.
- (5) On-Site Concrete Batch Plant – Information on the need for an on-site concrete batch plant will be provided. A typical plan layout and approximate location of the concrete batch plant will be included. If an on-site plant will not be utilized, then potential options for concrete will be discussed and an estimate of the number of concrete mixing transport trucks required per day will be provided.

(6) Turbine Technical and Safety Manuals – Technical and safety manuals associated with the range of turbine types anticipated to be used for the Facility will be provided, as available to the Project Sponsor. These manuals may not be available for all turbines presented in the Application. Descriptions and specifications of wind turbine towers and blades will also be provided to the extent they are included in these manuals.

(h) Interconnection Facility Drawings

A single line drawing of the POI substation will be included in the Facility's System Reliability Impact Study (SRIS), which will be appended to the Application. The Facilities Study will not be completed until after a Certificate is issued by the Siting Board.

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

The Application will provide a list of engineering codes, standards, guidelines and practices that the Project Sponsor intends to conform with when planning, designing, constructing, operating and maintaining the Facility. Code references and descriptions regarding installation of energy storage systems will be provided in this section of the Application. The Applicant will also consult local fire departments regarding the installation of any energy storage system and will provide site plans and details of the energy storage system prior to the start of construction, as such information becomes available.

(j) Flood Hazard Areas

Details and descriptions of any protective measures (if any) for Facility components within or adjacent to "Flood Hazard Areas" will be included in the Application. If this information is not available during Application filing, a description of potential measures to be utilized will be included.

## 2.12. CONSTRUCTION

### 2.12.1. Discussion

The methods that will be used to construct the Facility will be generally similar to those used in the U.S. to construct utility-scale wind energy facilities. Construction of the Facility is expected to occur between the fall of 2020 and the

winter of 2020/2021. Most construction is expected to occur between the hours of 7am and 7pm,<sup>26</sup> though some late-night activities may be required.

It is anticipated that, in order to minimize construction duration and impacts to the community, more than 5 acres of soil may be destabilized at some point during construction. As such, the SWPPP will most likely include a written request to disturb more than 5 acres under the SPDES General Permit. The Article 10 application will elaborate on any phasing of construction proposed as a part of the overall design.

Regular site inspections will be performed to ensure construction complies with engineering designs and regulatory requirements. The Project Sponsor will develop a preliminary construction-related Quality Assurance and Quality Control Plan (Preliminary QA/QC Plan) based on its work developing quality assurance and quality control plans developed in conjunction with other wind projects. The Plan will be designed to convey basic QA/QC procedures, guidelines, and instructions that must be followed by all employees, consultants, and contractors involved in construction of the Facility. The Preliminary QA/QC Plan will be provided to the Balance of Plant (BOP) contractor, who is responsible for the construction of the Facility and development of the Final Construction QA/QC Plan (Final QA/QC Plan). The Final QA/QC Plan will be developed when the BOP contractor has been selected and construction of the Facility is proceeding.

The Project Sponsor affirms its intent and obligation of its contractors to conform to the requirements of the New York State Public Service Commission's regulations regarding the protection of underground facilities contained in Public Service Law §119-b, as implemented by 16 NYCRR Part 753. In keeping with that obligation, the Project Sponsor will become a member of Dig Safely New York and require all contractors, excavators, and operators associated with its facilities to comply with these requirements. Post-construction, the Project Sponsor will register with One Call to ensure that its underground collection lines are registered so that they are not impacted by future utility work.

All Facility construction and maintenance work that requires excavation will follow the One Call process with Dig Safely New York. This process helps prevent damage by alerting the excavator to the locations of underground utilities, including electric, gas, oil, stream, water, sewer, and communication lines. The excavator flags the area to be excavated and provides information to Dig Safely New York about the company performing the excavation, the duration of the job, the locations of digging, the depth of excavation, and other information. Dig Safely New York members, who are utility operators, respond to the request either by noting that the area is clear, or by providing the locations of their facilities. These facilities are then marked above ground, and either avoided or protected during the excavation. If an

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<sup>26</sup> [Consistent with local ordinances.](#)

underground facility cannot be avoided and must be exposed, the excavator will provide proper support and protection so that the facility is not damaged. Upon completion of work, the excavator backfills around any exposed utilities.

The Facility is in a rural area and there are few public utility systems with which the Facility may interfere. The Project Sponsor has reviewed publicly available databases and will consult with local municipalities and other stakeholders to identify major utility systems within the Facility Site.<sup>27</sup>

In reviewing publicly available databases, the Project Sponsor has identified the following utility systems within the vicinity of the Facility Site: one 115 kV transmission line owned by New York State Electric and Gas (NYSEG) and multiple overhead electric distribution and telecommunications lines. NYSEG has been included in the stakeholder list for the Public Involvement Program Plan and will continue to receive updates and notifications on the Facility.

### **2.12.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.12 of the Article 10 Regulations, Exhibit 12 of the Application will contain the following information.*

#### **(a) Preliminary Quality Assurance and Control Plan**

The Project Sponsor agrees to provide the information required by 1001.12(a), which will include a discussion of how the Project Sponsor will ensure conformance with applicable design, engineering, and installation standards, including construction codes applicable to the wind turbine structures. The Project Sponsor will include a Preliminary Quality Assurance and Control Plan in the Application.

#### **(b) Conformance with Public Service Commission Requirements**

The Project Sponsor agrees to provide the information required by 1001.12(b).

#### **(c) Plans to Avoid Interference with Existing Utility Systems**

The Project Sponsor agrees to provide the information required by 1001.12(c). The Application will include results of consultations with utility owners and will include a list of any utility owner criteria regarding crossing of or installations nearby existing utilities; specific criteria will be presented including descriptions of potential studies to be performed (along with an indication of timing) (if needed), specific separation requirements or recommendations

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<sup>27</sup> It is not appropriate to do a comprehensive utility-locating effort at this time (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.

of utility owners (including electric and communications facilities) and descriptions and typical details of any protective separation criteria, design measures and features to be applied at crossings of or where co-located with existing utilities, etc., to the extent that information is made available to the Project Sponsor.

(d) Procedures for Addressing Public Complaints and Disputes

The Project Sponsor will prepare a formal complaint resolution plan that will include commitments for addressing public complaints, procedures for dispute resolution during Facility construction and operation, and reporting requirements. The Complaint Resolution Plan will include the following ~~construction-related~~ components:

- Steps for informing the public about the Complaint Resolution Plan and the process for filing a complaint (i.e. written, electronic, and oral).
- A description of the complaint response process, including complaint receipt and verification, resolution development and implementation, and complaint follow-up. Anticipated timeframes and actions the Project Sponsor will take if the complaint remains unresolved after these steps are taken will be provided.
- Procedures or protocols that may be unique to each phase of the project (e.g. construction and operation) or complaint type (e.g. noise, fugitive dust, blasting, shadow flicker, or communications interference).
- Procedures for documenting receipt and processing of complaints, including preparation of a complaint log and transmittal of complaints, updates, and resolutions to DPS Staff.

The Application will also include information detailing when the Applicant will notify stakeholders of construction activities and any applicable safety and security measures.

## 2.13. REAL PROPERTY

### 2.13.1. Discussion

The Application will provide a description of the agreements for parcels that are secured or under option for the Facility, including ingress/egress access to public roads and easements. A statement that the Project Sponsor has or will obtain the necessary real property rights for all parcels needed for the Facility will be included. The Project Sponsor will continue its internal due diligence to ensure that the Facility parcels are not encumbered in a manner that is inconsistent with future wind power use. Please also note that the Project Sponsor has been working with public and private landowners to obtain leasing or easement rights for the Facility since 2017 and will continue to work towards securing land necessary to construct and operate the Facility.

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

### **2.13.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.13 of the Article 10 Regulations, Exhibit 13 of the Application will contain the following information.*

(a) Real Property Map of Generating Site

The Application will include a tax parcel map of the Facility Site which depicts the proposed facilities arrangement in relation to the following:

- (1) The tax parcel IDs for land parcels that are part of the Facility;
- (2) Current land use for the parcels that are part of the Facility;
- (3) Necessary access and utility easements for the Facility;
- (4) Public roads planned for use as access to the Facility Site.

The data for this map will be obtained from Chenango County Real Property Tax Services, 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 in associated tables).

(b) Real Property Map of Interconnection Facilities

Maps showing all proposed interconnection facilities and associated access roads/laydown areas, including land owned by or under contract to the Project Sponsor.

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

The Project Sponsor agrees to provide the information required by 1001.13(c).

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

The Project Sponsor agrees to provide the information required by 1001.13(d).

(e) Improvement District Extensions

The Application will include an identification of any improvement district extensions necessary, if applicable.

## 2.14. COST OF FACILITIES

### 2.14.1. Discussion

The Application will contain an estimate of total Facility capital costs ~~of the Project including development costs, construction design and planning, equipment costs, and construction costs~~. Construction and turbine costs vary year to year based on, but not necessarily limited to, availability, competition, commodity pricing and turbine model specification changes. The turbine model cost will be an estimate of the ~~average~~ cost of one of the turbine models presented in the Application and will be based on ~~turbine model cost~~ information available to the Project Sponsor at the time of Application submission. Engineering and turbine related construction costs will vary depending on the turbine model ultimately selected due to foundation specifications, number of turbine locations constructed, access road specifications, etc. Development ~~and insurance~~ costs are not expected to change based on the turbine model selected.

### 2.14.2. Proposed Content of the Application

*Consistent with the requirements of 1001.14 of the Article 10 Regulations, Exhibit 14 of the Application will contain the following information.*

(a) Total Capital Costs

The Application will contain an estimate of the total capital costs of the Facility. Specific to turbine costs, the turbine model cost will be an indicative estimate of one of the ~~average cost of~~ turbine models presented in the Application, based on turbine model cost information available to the Project Sponsor at the time of Application submission. Capital costs include development costs, construction design and planning, equipment costs, and construction costs, and will be categorized as follows:

- i) Turbines
- ii) Other Major Equipment
- iii) Attachment Facility and System Upgrade Facilities
- iv) Engineering

- v) Construction (including contingency)
- vi) Development (including contingency and insurance)

(b) Source of Cost Estimates

The cost estimate presented in the Application will be in 2019 or 2020 dollars and will be based on the Project Sponsor's ~~historical~~ relevant experience, historical and current price quotes, and wind industry standards.

(c) Work Papers

~~If requested by DPS, the~~ The Project Sponsor will provide ~~internal work~~ DPS with working papers ~~that describes the assumptions in estimating the total~~ the form of a table detailing Facility capital costs ~~as described in 1001.14 (a).~~

## 2.15. PUBLIC HEALTH AND SAFETY

### 2.15.1. Discussion

#### Potential Health and Safety Risks

Wind energy can be produced with low public health and safety risks. Wind power facilities produce energy without contributing to climate change or negatively impacting air quality. This is a major public health benefit. Potential public health and safety impacts associated with wind power facilities are somewhat unique and include issues such as blade throw, tower collapse, and ice shedding/ice throw, which are extremely rare, as well as potential impacts from noise (audible frequency, low frequency, and infrasound) and shadow flicker.

The Article 10 regulations require the assessment of potential risks associated with the operation of the Facility. The Application will include a statement and evaluation that identifies, describes, and discusses all potential significant adverse impacts of the construction and operation of the facility, the interconnections, and related facilities on the environment, public health, and safety, at a level of detail that reflects the severity of the impacts and the reasonable likelihood of their occurrence. The Application will include a discussion of these risks and their likelihood of occurrence and will demonstrate that the Facility will be sited in such a manner that potential risks from these types of incidents will be avoided and mitigated. A summary of potential health and safety risks is provided below.

#### Gaseous, Liquid, and Solid Wastes

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

Facility construction will generate relatively minor amounts of solid waste, consisting primarily of plastic, wood, cardboard and metal packing/package 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 Application will provide additional information regarding construction-generated wastes, including wood waste generated during clearing.

#### Blade Throw and Tower Collapse

A potential public safety concern with wind power projects is the possibility of a wind turbine tower collapsing or a rotor blade dropping or detaching from the nacelle. While extremely rare, such incidents have occurred. However, to the best of the Project Sponsor's knowledge, no member of the public has ever been injured because of these incidents, and setbacks are generally sufficient to protect area homes and public roads. Exhibit 6 of the Application will include a discussion of applicable setbacks as they relate to protection of public health and safety.

The reasons for a turbine collapse or blade throw vary depending on conditions and tower type. The main causes of blade and tower failure are a control system failure leading to an over speed situation, a lightning strike, or a manufacturing defect in the blade (Garrad Hassan America, Inc., 2010). Technological improvements and mandatory safety standards during turbine design, manufacturing, and installation have significantly reduced the instances of blade throw (Garrad Hassan, 2007). The reduction in blade failures coincides with the widespread introduction of wind turbine design certification and type approval. The certification bodies perform both quality control audits of the blade manufacturing facilities and strength testing of construction materials. These audits typically involve a dynamic test that simulates the life loading and stress on the rotor blade (Garrad Hassan America, Inc., 2010).

## Audible Frequency and Low Frequency Noise

The 2015 Final Generic Environmental Impact Statement (FGEIS) for the Reforming the Energy Vision (REV) and the Clean Energy Fund (CEF) recognized data from multiple studies indicate that the sound levels created by wind turbines are not sufficient to damage hearing or cause other adverse health effects.

The frequency range 20 to 20,000 Hertz (Hz) is commonly described as the range of audible noise. Low frequency sound is within the audible range of human hearing, generally from 20 Hz to 200 Hz. Infrasound refers to sound pressure fluctuations at frequencies below about 20 Hz. Sound below this frequency is only audible at very high magnitudes. 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 study and analysis to be provided in the Application.

Although concerns are often raised with respect to low frequency or infrasonic noise emissions from wind turbines, most of the research showing higher levels of low frequency sound and infrasound was performed on older wind turbine designs, such as NASA's MOD-0 and MOD-1, which placed the rotor behind the tower ("downwind" style). When the rotor passed through the wake of the tower, it would result in an infrasonic and low frequency impulse. Modern pitch-regulated upwind-tower wind turbines of the type proposed for this Facility produce lower levels of infrasound and low frequency sound than these early turbines. Research on modern turbines have shown that at typical receiver distances, infrasound levels are lower than some other environmental noise sources, such as vehicle traffic, and generally well below established hearing thresholds (RSG et al., 2016) and do not have negative health impacts on humans (McCunney et al., 2014; Leventhall, 2013). Although low frequency sound levels from modern turbines are lower than downwind turbines, they are frequently still audible, exceeding the human audibility threshold between 25 and 125 Hz (McCunney et al., 2014; RSG et al., 2016). However, at the sound pressure levels experienced at typical receiver distances, low frequency noise has not been shown to cause adverse health effects (McCunney et al., 2014).

Human response to audible wind turbine noise has been assessed by several studies (Pedersen et al 2008, Michaud 2015, and Yano et al 2013). These studies compared noise annoyance to modeled or measured wind turbine sound pressure levels. In all cases, a correlation was found between the level of wind turbine sound and noise annoyance. Annoyance is generally not a major concern at equivalent sound pressure levels of 45 dBA or less. The World Health Organization's guidelines to prevent nighttime sleep disturbance are 45 dBA (the  $L_{eq}$  sound pressure level averaged over the 8-hour night) (WHO, 1999).

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 noise contour maps described in Section 2.19 will be used to develop a general discussion of potential impacts to future public and private uses relative to sound thresholds.

### 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), and setbacks are generally sufficient to protect the public.

### Shadow Flicker

The Application will include a thorough literature review of peer reviewed scientific journals and publications prepared by and for government institutions of countries that are part of the World Health Organization, regarding the potential for adverse impacts of shadow flicker, including issues such as annoyance and other potential health impacts. The Application will also include a summary of potential shadow flicker impacts based on the analysis to be conducted and provided in detail in Exhibit 24 of the Application.

### Irreversible and Irretrievable Commitment of Resources

A major advantage of renewable energy is that power generation does not require the constant input of fuel (e.g., oil, coal, etc.) during operation. However, during construction, as with any type of land development, 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 Project Sponsor, the State of New York (i.e., various state agencies), Chenango County, and the Town of Guilford 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 these review-related costs to local stakeholders, including municipalities, intervenor funding will be made available during the pre-application and application phases.

Throughout its operational life,<sup>28</sup> the Facility also represents the commitment of the land associated with its footprint (e.g., the land to be developed for wind turbines, access roads, the O&M facility, meteorological towers, and the collection substation). However, following construction many of the lands used by the Project Sponsor (e.g., work areas around turbines, buried infrastructure locations, etc.) may be returned to productive use, and in many cases complimentary land uses can be established alongside Facility components. Further, as turbines and met towers may be removed at the end of their useful life, the commitment of this land to the Facility should not be considered irreversible or irretrievable (see Section 2.29 for a further discussion of site restoration and decommissioning).

### **Avoidance and Mitigation Measures**

Impact avoidance and minimization efforts begin early in the development of a wind power facility. The Project Sponsor will adhere to reasonable setbacks for the location of the wind turbines and other Facility components. Based on the Project Sponsor's experience developing and operating other power projects, such setbacks should adequately protect nearby residents and motorists in the unlikely event of falling/thrown ice or blade failure/tower collapse. In addition, unauthorized public access to the site will be limited by posting signs to alert the public (and maintenance workers) of potential ice shedding risks. Based upon the results of studies/field observations at other wind power projects, the siting criteria, and the proposed control of public access to the turbine sites, it is not anticipated that the Facility will result in any measurable risks to the health or safety of the general public due to ice shedding, ice throw, blade failure, or tower collapse.

In the Project Sponsor's experience, when a project, such as the Facility, is properly sited and designed, mitigation measures are generally not necessary because significant impacts to public health and safety typically do not occur. To the extent necessary, any mitigation measures that are warranted based on the Facility-specific studies associated with noise and shadow flicker will be identified in the Application. In addition, a Complaint Resolution Plan will be developed that will include a specific commitment for addressing public complaints, and procedures for dispute resolution during Facility construction and operation.

The Project Sponsor 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 Monitoring Plan will be implemented, and the Project Sponsor will provide funding for an independent, third party environmental monitor to oversee compliance with environmental commitments and permit requirements. The environmental

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<sup>28</sup> The operational life of the Facility is anticipated to be 20-25 years.

compliance program will focus on planning, effective training of contractors, preconstruction coordination, construction and restoration inspections, and agricultural monitoring. The Application will include detailed descriptions of each of these program components.

## **2.15.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.15 of the Article 10 Regulations, Exhibit 15 of the Application will contain the following information.*

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

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

The Project Sponsor agrees to provide the information required by 1001.15(a), including a description of potential wood waste resulting from clearing. If the Facility will have on-site wastewater treatment, the Project Sponsor will consult NYSDOH's with the Chenango County District Office Public Health Department's Division of Environmental Health, and/or the appropriate Town official(s), regarding any potential approvals required for any on-site treatment of wastewater or sanitary waters, and that information will be included in the Application.

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

The Project Sponsor agrees to provide the information required by 1001.15(b).

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

The Project Sponsor agrees to provide the information required by 1001.15(c).

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

The Project Sponsor agrees to provide the information required by 1001.15(d).

### (e) Wind Power Facility Impacts

With respect to short-term (construction) and long-term (O&M) worker safety, the Project Sponsor will coordinate with local emergency response providers and develop a comprehensive Emergency Action Plan (EAP) in accordance with the Project Sponsor's O&M Safety Policies and OSHA regulations. This information will be included in the Article 10 Application. With respect to uses of properties adjacent to the Facility Site, this will be addressed in the context of appropriate setbacks from non-participating properties/areas, and the likelihood of public health and safety impacts in relation to appropriate setbacks (see Section 2.6.2(a)). Based on this, Exhibit 15(e) of the Application will include an analysis of wind power facility impacts that reflects the severity of the impacts and the reasonable likelihood of their occurrence. To the extent possible, this analysis will be relevant and specific to the type, size and dimensions of the Facility. This analysis will include:

- (1) A literature review of peer reviewed articles, technical journals, and papers prepared by government agencies to identify potential public health and safety impacts including those associated with potential blade throw and tower collapse, along with a discussion of manufacturer recommendations.
- (2) A literature review of peer reviewed scientific journals and publications prepared by and for government institutions of countries that are part of the World Health Organization of the potential for adverse impacts and health effects from noise, including audible noise, low frequency noise and infrasound, and shadow flicker, including issues such as sleep disturbance, annoyance, hearing damage, interference with speech, and other potential health impacts. This review will include a discussion of the results of potential sound impacts on sound sensitive receptors identified in Section 2.19.2(a).
- (3) A literature review of peer reviewed articles, technical journals, and papers prepared by government agencies to identify potential adverse public health effects of shadow flicker.
- (4) A summary of potential shadow flicker impacts based on a Shadow Flicker Assessment to be appended to the Application. This summary will provide a discussion of shadow flicker impacts, typical wind turbine frequencies, and photosensitive epilepsy. Potential long-term and short-term shadow flicker ~~impacts on flicker sensitive receptors~~ data will be discussed provided at a level of detail that reflects the magnitude, severity and reasonable likelihood of impact occurrence. <sup>29</sup>
- (5) For identifying potential impacts on future public and private uses, noise contour maps will be prepared as detailed in Section 2.19.2(d)(7) and Section 2.19.2(d)(8). A general discussion of potential effects to future uses will be included in the Application.
- (6) A summary of literature review to identify potential public health and safety concerns associated with ice throw.

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<sup>29</sup> Please note, multiple inline turbines would not produce a multiplier shadow flicker effect. This is discussed further in the Application.

The Application will include, among others, a review of the following references: [in Exhibit 15 and/or Exhibit 19:](#)

- (1) Guidelines for Community Noise WHO (1999);
- (2) Night Noise Guidelines for Europe, WHO (2009);
- (3) Environmental Noise Guidelines for the European Region, WHO (2018);
- (4) 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;
- (5) "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);
- (6) 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;
- (7) Annex D of ANSI standard S12.9 -2005/Part 4 (Sounds with strong low-frequency content) for minimization of annoyance from low frequency sound;
- (8) ANSI/ASA S2.71-1983 (R August 6, 2012) Guide to Evaluation of Human Exposure to Vibration in Buildings; and
- (9) OSHA Standards for Hearing loss for Facility workers during work shifts.

(f) Public Health and Safety Maps

Public health and safety-related maps as described in 1001.15(f) will be prepared using data from the NYS GIS Clearinghouse, FEMA, local municipalities, NYSDEC, NYSDOH, and the USGS, as well as local sources, as applicable.

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

The Project Sponsor agrees to provide the information required by 1001.15(g).

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

The Project Sponsor agrees to provide the information required by 1001.15(h).

(i) Irreversible and Irretrievable Commitment of Resources

The Project Sponsor agrees to provide the information required by 1001.15(i).

(j) Impact Minimization Measures

The Project Sponsor agrees to provide the information required by 1001.15(j).

(k) Mitigation Measures

The Project Sponsor agrees to provide the information required by 1001.15(k).

(l) Proposed Monitoring

The Project Sponsor agrees to provide the information required by 1001.15(l), including a description of the Project Sponsor's proposed compliance monitoring programs.

## **2.16. POLLUTION CONTROL FACILITIES**

### **2.16.1. Discussion**

The proposed Facility's operation will not result in pollution to air or water, or the generation of hazardous wastes covered by the Resource Conservation and Recovery Act. Section 2.17 provides information on potential temporary emissions during construction (e.g., from the concrete batch plant) and Section 2.23 provides details on the Facility's anticipated State Pollution Discharge Elimination System (SPDES) General Permit for construction. Matters related to the incidental generation of other waste materials during construction and operations, such as construction debris or wind turbine lubricants, are addressed in Section 2.15.

### **2.16.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.16 of the Article 10 Regulations, Exhibit 16 of the Application will contain the following information.*

Exhibit 16 is not applicable to the Facility and therefore will not be included in the Application. To the extent temporary emissions sources are needed during construction, this will be addressed in Exhibit 17 of the Application. Please see Section 2.23.2(c)(1) for information on the SPDES General Permit for construction.

## **2.17. AIR EMISSIONS**

### **2.17.1. Discussion**

Global climate change has been recognized as one of the most important environmental challenges of our time (NYSCAC, 2010; NYSDEC, 2009, 2010). The Project Sponsor will provide a discussion of the anticipated air-related benefits from the Facility in the Application.

Facility operations will not generate air emissions. Activities related to the construction of the Facility (e.g., the operation of a concrete batch plant and fuel-fired generators) may result in air emissions in the short-term. However, the overall impact of the Facility on air quality will be positive, as described below.

#### **Compliance with Applicable Federal, State, and Local Regulatory Requirements**

Several air emission sources will likely be on-site during construction of the Facility. One or more fossil fuel-fired generators may be used during Facility construction to power general construction activities (e.g., batch plant, lighting). Assuming the generators: (1) are liquid- or gas-fueled with a maximum mechanical power rating less than 400 brake horsepower (bhp); (2) are gasoline powered with a maximum mechanical power rating less than 50 bhp; and/or (3) will not be on-site for longer than 90 days, these generators will not require an air registration or other permit from the New York State Department of Environmental Conservation (NYSDEC). See 6 NYCRR §§ 201-3.2(c)(3) (exempt stationary or portable internal combustion engines); 201-1.11 (exemption for temporary emission sources); 201-2.1(b)(29) (definition of temporary emission source). If one or more of the above-referenced thresholds are exceeded, the Project Sponsor will submit an application to NYSDEC for an air registration or State facility permit, as appropriate.

Because the generator(s) discussed above are considered non-road engines and will not be located at the Facility for more than 12 months, they are not regulated under the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Reciprocating Internal Combustion Engines (RICE) (40 CFR Part 63, subpart ZZZZ) or the New Source Performance Standards (NSPS) for Stationary Compression or Spark Ignition Internal Combustion Engines (40 CFR Part 60, subparts IIII and JJJJ). See 40 CFR §§ 63.6585(a) (RICE NESHAP applicability); 63.6675 (definition of stationary RICE); 60.4200(a) (NSPS applicability); 60.4219 (definition of stationary internal combustion engine); 1068.30 (definition of non-road engine).

Construction of the Facility may require use of a concrete batch plant. No air registration or permit is required for concrete batch plants “where the cement weigh hopper and all bulk storage silos are exhausted through fabric

filters, and the batch drop point is controlled by a shroud or other emission control device.” 6 NYCRR § 201-3.2(c)(37). Any concrete batch plant used by the Project Sponsor to construct the Facility will be equipped as specified in the exemption and so will not require a permit or registration.

The 1984 State Acid Deposition Control Act requires 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 not applicable as the Facility will generate electricity without releasing SO<sub>2</sub> or NO<sub>x</sub>.

### **Assessment of Existing Ambient Air Quality Levels and Trends in the Region**

The NYSDEC Division of Air Resources publishes air quality data for New York State annually. The most recent summary of air quality data available for the State is the *New York State Ambient Air Quality Report for 2017* (NYSDEC, 2017c). Included in this report are the most recent ambient air quality data, as well as long-term air quality trends derived from data that have been collected and compiled from numerous State and private (e.g., industrial, utility) monitoring stations across the State. These trends are assessed and reported by NYSDEC regions. The proposed facility is located in NYSDEC Region 7, which encompasses Oswego, Onondaga, Cayuga, Cortland, Madison, Tompkins, Chenango, Broome, and Tioga Counties. There are three monitoring stations in Region 7, one in Oswego County (Fulton), one in Onondaga County (East Syracuse), and one in Tompkins County (Cayuga East). The Fulton Station measures ozone (O<sub>3</sub>), the East Syracuse Station measures O<sub>3</sub>, fine particulate matter (known as PM<sub>2.5</sub>), and sulfur dioxide (SO<sub>2</sub>), and the Cayuga East Station measures SO<sub>2</sub> emissions associated with the Cayuga Operating Company Power Plant.

The Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS)—thresholds that define acceptable air quality for various air pollutants based on health and environmental impacts. The Facility will not generate any air emissions during operation so will not negatively affect any attainment of the NAAQS.

### **Potential Impacts to Ambient Air Quality**

The operation of the 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 energy generating

facilities. The 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. The Application will include a characterization of emissions from emergency generators that may be sited in association with the O&M facility, collection substation, or POI substation, if emergency generators are proposed.

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

### **2.17.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.17 of the Article 10 Regulations, Exhibit 17 of the Application will contain the following information.*

The Application will provide a discussion of the anticipated air related benefits from the Facility. The Application will also discuss impacts to air quality expected to result from the proposed Facility's construction and operation, including fugitive dust and emissions from construction vehicles, the on-site concrete batch plant, and fuel-fired generators, and identify appropriate control and mitigation measures to minimize adverse impacts. The Application will identify any air permitting and registration requirements, if applicable.

## **2.18. SAFETY AND SECURITY**

### **2.18.1. Discussion**

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

#### **Preliminary Plans for Site Security**

The Project Sponsor will prepare a Preliminary Site Security Plan with measures to be implemented during Facility construction and operation to ensure safety and security. Preparation of the Final Site Security Plan will begin immediately following selection of the balance of plant (BOP) contractor, and the Final Plan will be provided to the Siting Board upon completion.

It is anticipated that the Project Sponsor will own and operate the Facility, except for the new point of interconnection (POI) substation, which will be owned and operated by New York State Electric and Gas (NYSEG). The Project Sponsor will be responsible for site safety and security during operation of the Facility, excluding the POI substation.

The Preliminary Site Security Plan, will likely include the following site security measures:

#### Access Controls

To reduce safety and security concerns, the general public will not be allowed on the Project Site during construction. Access will be restricted using locked gates, other barriers, and/or signage as appropriate. After hours, vehicular access to active portions of the Site will be blocked by parked equipment or temporary fencing. Temporary construction fencing or other visible barriers will be placed around excavations that remain open during off hours. A log of all personnel visiting, entering, or working on the Site during construction will be maintained. Visitors will be required to attend the site orientation/safety training provided.

Following construction, all access roads that are not public will be posted with "No Trespassing" signs to limit and deter public access to the Site and wind turbine locations. The Project Sponsor will install gates with locks at the entrances to access roads if requested by the landowner under their Lease Agreement. All contractors will inform the Project Sponsor or its on-site representative of the portion of the Site they intend to visit and the approximate date and time.

Wind turbine access doors will be closed and locked except when Facility personnel are inside. Signs will be posted at every wind turbine stating that it is a federal offense to damage a wind turbine and that no trespassing is allowed on the Facility Site.

The collection substation, which will be owned and maintained by the Project Sponsor and would include any battery storage facility, will be fenced. Signs will be posted along the fence stating high voltage hazard and no trespassing. The access gate will be locked, and access will be granted only to authorized personnel. The Operations and Maintenance (O&M) building will be locked when not in use to deter intruders and no trespassing

signs will be posted. If unauthorized access and/or vandalism is found to be a problem, additional gates and/or signage will be installed, as necessary.

The point of interconnection (POI) substation, which will be owned and maintained by NYSEG, will be fenced. Signs will be installed along the fence stating high voltage hazard and no trespassing. Except for installing the above security features at the time of construction, POI substation security will be the sole responsibility of NYSEG.

#### Electronic Security and Surveillance Facilities

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

The Project Sponsor anticipates installing an alarm system at the collection substation and O&M building. In addition, a surveillance camera will be installed at the collection substation; the camera will be remotely monitored to detect unauthorized access to the substation. Emergency responders will be notified in the event of unauthorized access. If unauthorized access and/or vandalism is found to be a problem, additional intrusion detection devices (e.g., security cameras) will be installed, as necessary.

#### Security Lighting

Security lighting activities associated with Facility construction will include lighting of the staging areas and areas immediately around the office trailers. Lighting will be directed downward where possible to minimize the effects of light pollution and will be reduced to the extent practicable to minimize potential wildlife attraction. Security lighting that fails will be promptly repaired or replaced. Construction that takes place outside of daylight hours will include the lighting necessary to allow for safe construction activities while at the same time reducing off-site light pollution to the maximum extent practicable.

~~A detailed Facility Exterior~~As discussed in Section 2.11.2(e), the Application will include a Preliminary Lighting Plan for the O&M facility and the collection and POI substations. A Final Facility Lighting Plan will be submitted to the Siting Board prior to the commencement of construction. The elements to be addressed in the Preliminary Lighting Plan (e.g., the use of task lighting and full cut-off fixtures) will be outlined in the Preliminary Site Security Plan appended to the Application.

#### Aircraft Safety Lighting

The Project Sponsor will submit a Notice of Proposed Construction along with the proposed Facility layout to the Federal Aviation Administration (FAA) for hazard determination. Lighting on turbines and meteorological towers will comply with FAA regulations and will follow specific design guidelines to reduce collision risk.<sup>30</sup> The final lighting plan will ultimately be approved by the FAA and will ensure aircraft safety.

It is the standard procedure of the FAA to stipulate that warning lights be installed on all turbines until the final Facility layout has been established. It is anticipated that the final lighting plan will reduce the number of turbines requiring lighting to approximately one-third of the total number of Facility turbines, which is typical for a wind energy project. The Project Sponsor anticipates that the Facility will not be required by the FAA to install radar-activated FAA marking lights because the Facility covers a comparatively large area and would require several radar locations to provide the necessary coverage. However, the Project Sponsor will install radar-activated lights at the Facility if required to do so by the FAA.

#### Setback Considerations

Facility setbacks will be discussed in Exhibit 6 of the Application. Facility setbacks, in association with access controls, security lighting, and periodic security measure inspections, should ensure adequate safety and security during construction and operation of the Facility.

#### Cyber Security Program

The Project Sponsor will comply with all North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection (CIP) standards. These mandatory Reliability Standards include CIP Standards 002 through 011, which address the security of cyber assets essential to the reliable operation of the electric grid. Physical access to critical cyber infrastructure areas will be restricted to those individuals who must have access. Where feasible, access into cyber secured restricted areas will be monitored by personnel or video surveillance. Periodic validation of compliance with the applicable standards by an independent auditor will be carried out as required by 16 NYCRR § 1001.18(b)(6).

In addition, the Project Sponsor has implemented several corporate policies that address strong password encryption, two-factor authentication, an incident response plan and playbook, as well as off-site storage of log files and backup of critical assets.

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<sup>30</sup> For example, wind turbine lights must conform to the FAA's December 4, 2015 Advisory Circular 70/7460-1L or as updated, specifically Chapter 13 (Marking and Lighting Wind Turbines), which requires the use of FAA L-864 aviation lights (Chapter 13 of the FAA Circular will be included as an appendix to the Application). The Facility will comply with these and all other requirements imposed by the FAA. The Site Security Plan and this Exhibit will be revised, as necessary, to conform to any terms and conditions imposed by the FAA.

## Preliminary Safety Response Plan

The regulations require the Project Sponsor to prepare a preliminary safety response plan to ensure the safety and security of the local community. In fulfillment of that requirement, a Preliminary Emergency Action Plan (EAP) governing operation of the Facility will be developed by the Project Sponsor and will be appended to the Application. The EAP will specify the procedures to follow in the event of an emergency as well as the contingencies related to Facility operation that would constitute a safety or security emergency. The plan will include the following basic components:

- Emergency contact list.
- Plan overview.
- Emergency notification procedures (communication equipment; emergency notification procedures, including calling 911; and other immediate notification requirements).
- Evacuation plan (including general evacuation procedures and special requirements for turbine evacuations).
- Medical procedure (immediate response to injury/illness generally and special requirements for injuries/illnesses at turbine heights).
- Procedures for specific contingencies, including protocols for notifying emergency responders and the public (e.g., host and adjacent landowners, utilities, and State agencies), as appropriate.
- Overview of responsibilities of various personnel for emergency response.
- Procedures for rescue from turbine heights.
- Emergency equipment and locations.
- Training guidelines for site personnel.

An EAP addressing emergency response during construction will be developed by the BOP contractor, in consultation with the Project Sponsor and local emergency responders. The construction-related plan will cover the same basic subjects as the EAP appended to the Application with a focus on construction-related concerns. Local emergency responders will be expected to assist only with emergencies for which they are trained and equipped. Specialized emergency response services/equipment will be provided by the Project Sponsor/BOP contractor.

The Application will include documentation of submittal of the Preliminary Site Security Plan and the Preliminary EAP to the New York State Division of Homeland Security and Emergency Services. As the Facility Site is not located within any part of a city that has a population over one million, and a review by the local office of emergency management is not required. However, the Project Sponsor will coordinate with provide a Draft EAP to the Chenango County Fire and Emergency Services; and provide a copy for comment. The Application will identify

the local emergency responders with whom the Applicant consulted during the development of the Preliminary EAP to these entities EAP, identify any changes made as result of these consultations (if applicable), and list the local emergency responders that will receive final copies of the EAP.

The EAP will include a list of equipment available for responding to fire emergencies or hazardous substance incidents. The Project Sponsor anticipates that onsite equipment to respond to fire emergencies or hazardous substance incidents will be in the O&M building.

First responders (i.e., individuals designated or trained to respond to an emergency) are not expected to fight fires in the turbine nacelle. Current best practice is to let such fires burn out unless they can be immediately extinguished by Facility personnel who are working in the nacelle at the time the fire starts. Generally, emergency responders may not have direct access to turbines or the collection substation through access roads due to security concerns and landowner preferences. However, any time that Facility operators and maintenance personnel are at a turbine site or substation, the access road gates will remain unlocked, so medical personnel can access the location should an emergency arise.

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 Preliminary Spill Prevention, Control, and Countermeasure (SPCC) plan will be prepared, and implemented, for both the construction and operation phases of the Facility. The Preliminary SPCC plans will provide a detailed assessment of potential hazardous substances that could be on-site during the construction, operation and maintenance of the Facility. Typically, potential hazardous substances would consist of petroleum products such as diesel fuel, hydraulic oil, mineral oil, and lubricating oil. In addition, certain batteries under consideration for the battery storage component contain a corrosive electrolyte solution. The appropriate contingency measures for spills of such solutions will be included in the final SPCC plan if these batteries are selected.

## **2.18.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.18 of the Article 10 Regulations, Exhibit 18 of the Application will contain the following information.*

The Project Sponsor agrees to provide the information required by 1001.18, including a description of any consultation with relevant stakeholders and local communities, first responders, and emergency service providers regarding construction start dates and the safety plans (i.e., Emergency Action Plan, Site Security Plan). The Application will include a summary of safety procedures related to the proposed battery storage at the collection substation based on

available materials from the potential battery manufacturer. The Project Sponsor will identify any signage necessary to help prevent unauthorized access or warn of potential hazards.

## **2.19. NOISE AND VIBRATION**

### **2.19.1. Discussion**

#### **Preconstruction Noise Impact Assessment**

A Preconstruction Noise Impact Assessment (“PNIA”) detailing the potential noise impacts of the Facility during construction and operation will be prepared by qualified individuals with experience in the areas of community noise impacts and meteorological data collection and analyses. The Application will include detailed Curricula Vitae that demonstrate the individuals that prepare the PNIA are qualified in this field.

In assessing the potential noise impacts of the Facility, potential sensitive sound receptors will be identified. The sensitive sound receptor dataset will be developed using aerial imagery and field verification. For sensitive sound receptors outside the Facility Site boundary, aerial imagery and limited field verification will be used to identify receptors within one mile of the nearest turbine or collection substation. If access for field verification is not possible, and aerial imagery cannot provide an obvious classification of a structure, then the structure will be classified as a sensitive sound receptor. For publicly owned open spaces, the Project Sponsor will identify the location of the potential receptor within the property boundaries, (e.g., a defined gathering space) and will not consider the property boundary or lot line as the location of the sensitive receptor in assessing sound.

Background sound monitoring will be conducted in both the summer (leaf on) and the winter (leaf off). Summer (leaf on) background sound level monitoring was conducted for 18 consecutive days at seven (7) representative locations in and around the Facility Site in August/September 2018 (see Figure 11). Representative locations were chosen to capture a variety of existing sound level conditions. The various representative areas include rural residential, farming, town, low and high traffic roads, and remote areas. Winter (leaf off) background sound level monitoring will be conducted for a minimum of 14 consecutive days at representative locations in the same manner as the summer ambient period.

#### **Future Noise Levels**

Construction of wind power projects requires the operation of heavy equipment and construction vehicles for various activities including construction of access roads, excavation and pouring of foundations, the installation of buried and

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

Adverse noise impacts during operations will be avoided or minimized through carefully siting Facility components based on the results of the sound model that will be developed for the Facility. The Application will include a discussion of different mitigation options that are available for wind turbines and ancillary equipment to avoid or minimize environmental noise and vibration impacts, if necessary. The studies will analyze all potential impacts and the necessity of abatement measures.

The Project Sponsor takes seriously any reasonable complaints that it receives from members of the public. Therefore, a Complaint Resolution Plan will be developed that includes specific commitments for addressing noise-related complaints and procedures for dispute resolution, during Facility construction and operation.

### **2.19.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.19 of the Article 10 Regulations, Exhibit 19 of the Application will contain the following information. The Project Sponsor anticipates that this section will need to be refined in consultation with DPS Staff during stipulations discussions.*

#### **(a) Sensitive Sound Receptor Map**

The Application will include a map of the Noise Study Area in digital format showing the location of sensitive receptors within 1 mile of proposed turbine locations and substations. Sensitive receptors identified will include residences (including participating, non-participating, full-time, and seasonal), outdoor public facilities and areas, schools, hospitals, care centers, libraries, places of worship, cemeteries, public parks, public campgrounds, summer camps, any historic resources listed or eligible for listing on the State or National Register of Historic Places, and Federal and New York State lands, if any. Seasonal receptors will include, at a minimum, cabins and hunting camps, identified by property tax codes and any other seasonal residences with septic systems/running water.

(b) Ambient Pre-Construction Baseline Noise Conditions

An evaluation of ambient pre-construction baseline noise conditions will be included in the Article 10 Application. The methods and results to be included in this evaluation and the Application are detailed below.

- (1) The evaluation will include A weighted/dBA sound levels and prominent discrete (pure) tones, as a function of time and frequency (1/3 octave bands from 20 Hz. up to 10,000 Hz.), at representative potentially impacted noise receptors, based on actual measurement data recorded in winter and summer and during day and night using a suitable and suitably calibrated sound level meter (SLM) and octave band frequency spectrum analyzer or similar equipment.
- (2) The ambient pre-construction baseline sound level will be filtered to exclude seasonal and intermittent noise. Seasonal noise will be filtered by using the process specified in ANSI/ASA S12.100-2014; intermittent noise will be filtered by reporting the L90.
- (3) The pre-construction ambient sound levels at the Facility site and potentially impacted receptors will be evaluated in accordance with the requirements outlined in this section of the FSS and applicable portions of ANSI Standards S12.100-2014 and S12.9 Part 2-1992 R-2013. These methods and standards will be described in the Preconstruction Noise Impact Assessment (PNIA) and summarized in Exhibit 19 of the Application.
- (4) Graphical timelines for the A-weighted Leq and the L90 broadband noise levels for each pre-construction sound measurement location will be included in the Application.
- (5) Figures of the un-weighted Leq and the L90 full-octave band noise and one-third octave band sound levels (after exclusions) for each pre-construction measurement location will also be included.
- (6) Figures of the L90-10-minute noise levels recorded at the pre-construction location as a function of wind speeds at 10 meters as extrapolated from the meteorological tower(s) will also be included.
- (7) The Application will describe how the pre-construction ambient surveys were conducted, including specifications for sound instrumentation (type, sound floor, wind screens, temperature and humidity ranges), weather meters, calibration, settings, positions that were tested, noise descriptors collected, range of sound frequencies evaluated, weather conditions, testing conditions to be excluded, schedules and time frames, testing methodologies and procedures, provisions for evaluation of existing tones and sounds with strong low frequency noise content, if any.
- (8) Measurement locations will include GPS coordinates of the sound microphones and AADT information of the nearest road, to the extent the data is available from the County and/or New York State Department

- of Transportation (NYSDOT). The Application will include a justification for location selection and specify whether selected locations are representative of potentially impacted receptors.
- (9) Each sound collection will be conducted for a minimum of 14 consecutive days.
  - (10) Temporal accuracy of the ambient data will be calculated to a 95% confidence interval using the technique in Section 9 of ANSI S12.9-1992/Part 2 (R2013) or any other applicable statistical procedure as appropriate, for the Leq and the L90 noise descriptors.
  - (11) Infrasound data, down to 0.5 Hz, will be collected at one location during the ambient measurement programs (summer and winter). Results will be reported in the Application.
  - (12) Sound instrumentation for ambient sound surveys will comply with the following standards:
    - i) ANSI S1.43-1997 (R March 16, 2007). Specifications for Integrating- Averaging Sound Level Meters;
    - ii) ANSI S1.11-2004 (R June 15, 2009) Specification for Octave-Band Analog and Digital Filters, and
    - iii) ANSI S1.40-2006 (R October 27, 2011) (Revision of ANSI 1.40-1984) Specifications and Verification Procedures for Sound Calibrators.
  - (13) Data collected out of the range of operation of the sound instrumentation will be excluded. Sound data collected at wind speed exceeding 5 meters per second (11 miles-per-hour) at the sound microphone or portable weather station heights will also be excluded. Pre-construction sound level data collected during periods of rain, thunderstorms and snowstorms will also be excluded from the calculation of background sound levels. These periods of exclusions will be indicated on the graphs specified in Section 2.19.2(b)(4).

(c) Future Noise Levels at Receptors During Facility Construction

Future sound levels from the Facility construction will be modeled based on predicted construction equipment and construction activity sound emissions in the Federal Highway Administration (FHWA) Roadway Construction Noise Handbook. (FHWA-HEP-06-015. Final report, August 2006.). The modeling will be done at the most potentially impacted and representative locations using a 3-D computer propagation model. This will provide construction sound contours for the main phases of construction (e.g., excavation, foundation, erection of turbines) at residences, the collection and POI substation areas, and at any proposed batch plant/laydown area. Representative measured ambient data will be assigned to the most potentially representative receptors modeled for construction noise impacts. The results will be presented in the Article 10 Application. This section will also include either a cross reference to the appropriate exhibit regarding construction hours or, if no such exhibit contains this information, a discussion of time frames for construction activities indicating seasons of the year, days of the week, hours of the day, and whether construction activities will be performed during evening time (6:00 p.m. to 10 p.m.), nighttime (after 10:00 p.m. or before 7:00 a.m.), Saturdays, weekends, or national holidays.

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

Future sound levels from the Facility operations will be calculated with the Cadna/A computer software or similar software that uses the ISO 9613-2 standard.

- (1) For the purposes of this document, the term “ISO-9613-2” will refer to the ISO 9613-2:1996 Standard or equivalently the ANSI/ASA S12.62-2012/ISO 9613-2:1996 (Modified) Standard with no meteorological correction (Cmet) or equivalently with the meteorological correction Cmet equaled to a value of zero. CONCAWE meteorological corrections will not be used.
- (2) The Cadna/A model performs calculations for full octave bands from 31.5 Hertz (Hz) to 8000 Hz.
- (3) Computer noise modelling will be performed at a minimum for the turbine model with the highest Broadband A-weighted sound power level (the turbine that has the highest sound operational levels at the highest wind condition (Maximum dBA sound power level)). If other turbines have lower broadband A-weighted sound power levels but greater maximum un-weighted sound power levels at the 31.5 Hz, or 63 Hz full-octave bands, the discussion of low frequency noise impacts at these bands can be based on the use of the highest sound power levels at those bands, on an additional modelling scenario(s) with the maximum sound power levels at these low frequency bands, or by applying corrections to the low-frequency band results of the computer modelling for the turbine with the highest A-weighted broadband sound power level, as appropriate.
- (4) Sound power information from the turbines’ manufacturer will be reported as associated with wind speed magnitudes, angular speed of the rotor, and rated power for the basic configuration, and for any noise reduction operations for the turbine model used in the Application, if available. Sound information from the manufacturers documenting the sound power levels at the 16, 31.5 and 63 Hz full-octave bands used in the Application, will also be reported.
- (5) The Application will include a discussion and justification for ground absorption “G” values that will be used for sound propagation over land.
- (6) For the purposes of evaluation of community complaint potential, noise modeling with the ISO 9613-2 standard will be conducted by following the recommendations included in the following reference: “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. (Designated as NARUC-2011 in this section).
- (7) The predicted sound levels from ISO 9613-2 will be reported for all sensitive receptors in tabular format. Sound levels at sensitive receptors and external property boundaries will be presented through graphical

isolines (noise contours) of A-weighted decibels for the Leq-89-hour and the Leq-1-year noise descriptors rendered on the map defined in Section 2.19.2(a). Contours will be at 1-dBA increments starting at a minimum from the 30-dBA noise contour. Noise contours representing sound levels in multiples of 5 dB will be differentiated. Contour drawings will be presented in the Application in digital format. Full-size single digital drawings with noise contours rendered on the map defined in Section 2.19.2(a) will be delivered to DPS and DOH in electronic media as well as full-size hardcopies (22" x 34" size drawings and 1:12,000 scale or similar).

- (8) Participating and non-participating (developed and undeveloped) property boundaries will be shown and differentiated in sound contour drawings with property identification information. Only properties that have a signed contract with the Project Sponsor as of the date of filing the Application will be identified as "participating".
- (9) A temperature of 10 degrees Celsius and 70% relative humidity will be used to calculate atmospheric absorption for the ISO 9613-2 model. These conditions result in the smallest reduction in sound levels caused by air absorption at the key frequencies for A-weighted sound levels.
- (10) Additional modeling scenarios for evaluation of mitigation options for impact avoidance or minimization will be included, if needed. In this case, results will be differentiated. (e.g.: "mitigated" vs. "un-mitigated").

Annual, seasonal, and Lnight 89-hour Sound Level Noise Modelling:

- (11) A full year of meteorological data will be used to calculate the hub height, wind speed, and related sound power levels for each hour of the year (8760 hours). For information purposes this information will be aggregated into "bins" for each sound power level provided by the wind turbine manufacturer under consideration and presented in the Application. 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 Application will report worst case (L10) and typical (L50) operational sound levels for all sensitive receptors. The sound levels will be driven by the hourly wind speed which drives the resultant sound power level of the wind turbines. These calculations will be done for two scenarios: all hours in a year (including hours below cut-in speed and above cut-out wind speed), and only those hours in a year above cut-in speed and below cut-out wind speed. Details of data and calculations will be delivered to DPS in spreadsheet compatible or tabular format and will be filed with the Hearing Examiner(s) and treated by the Records Access Officer or other presiding officer.

- (12) An equivalent sound level for all nighttime hours in one year (Leq, night, 1-year) will be calculated from the same hub height wind speed data set as item 19(d)(11) above. This will be done using the percent time matched to sound power level at a given wind speed and will be calculated on an energy basis. This Leq, night, 1-year sound power level will be input to ISO 9613-2 to calculate the “Lnight, outside” sound level at all sensitive receptors. These calculations will be done and reported for two scenarios: all hours in a year (including hours below cut-in speed and above cut-out wind speed), and only those hours in a year above cut-in speed and below cut-out wind speed. The application will also report the maximum Leq-~~89~~-hour- nighttime and the maximum Leq-~~1615~~-hour-daytime in a year at each sensitive receptor.
- (13) 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 documented cases as compared to other alternatives, as available. This will also include a description and general discussion of the site topography between turbines and receptor locations as applicable to the site, and its effects on accuracy of modeling results. (E.g. flat, steady or concave slopes) and other factors such as sound power level determination, uncertainties, and height of sound receptors above the ground. This will be a general discussion and is not intended to be an analysis of topography between each turbine and each receptor location. However, the discussion will be expanded and be more detailed for those areas with concave terrain between turbines and receptors where forecasted sound levels approach by five dB (or are equal to or greater than) any sound goals identified in Table 3.
- (14) The highest 1-hour sound level will be modeled using the highest sound power level of the proposed wind turbine(s). Since ~~an 89~~ 9-hour nighttime sound level cannot be any higher than ~~eightnine~~ consecutive 1-hour sound levels under the highest sound power level condition, the highest 1-hour result at each receptor will be assumed to be equivalent to the Leq, night, ~~89~~-hour sound level. The same is true for the highest 1-hour daytime sound level. The highest 1-hour sound level will be assumed to be equivalent to the Leq, day, ~~1615~~-hour sound level. The Project Sponsor will not perform 365 ~~89~~-hour nighttime model runs using one year of hourly on-site wind speed data. Likewise, the Project Sponsor will not perform 365 ~~1615~~-hour daytime model runs using one year of hourly on-site wind speed data. The same conservative modeling assumptions outlined in Section 2.19.2(d)(1) through Section 2.19.2(d)(10) will be input to ISO 9613-2 to calculate the highest 1-hour Leq sound level at all sensitive receptors.
- (15) The model will also include relevant noise sources from substations, and proposed ancillary equipment, if any.
- (16) A ground absorption factor, G, of zero (G=0) will be used to represent ~~significant~~relevant water bodies within the Noise Study Area, as related to the ISO 9613-2. Water bodies that meet these qualifications are anticipated to include North Pond and Guilford Lake.

(e) Future Noise Levels at Receptors During Facility Operation

The Application will provide an evaluation of future noise levels predicted during operation of the facility, related facilities and ancillary equipment including:

- (1) Modeled A- weighted/dBA sound levels at all sensitive receptors;
- (2) A tonal evaluation, based on the reported sound power of each wind turbine model and substation transformers under consideration, will be performed. This will be done as part of the pre-construction evaluation. The “prominent discrete tone” constant level differences (Kt) in ANSI S12.9-2013/Part 3 Annex B, section B.1, will be used to evaluate tones at the nearest ten (10) potentially impacted and representative noise receptors using spreadsheet calculations. One-third octave band data will be used for the turbine models where information from the manufacturers is available and included in a spreadsheet to determine if a tonal (prominent tone) condition is possible. Information from the IEC 61400-11 documentation on tonality will be provided for the wind turbine model(s) under consideration, if available. Tonality values for a batch of turbines as specified in IEC 61400-14 Part 14, if available, will also be included in the Application. The Application will include a brief discussion about the effects of tonality on adverse community noise reaction (annoyance/complaints).
- (3) An Amplitude Modulation Evaluation
  - i) The Application will include a literature review of amplitude modulation from wind turbine operations with a summary of findings including, but not limited to, a description of the phenomena, whether amplitude modulation can be predicted, post-construction methods of measurement and evaluation and post-construction operational mitigation options to avoid, minimize, and mitigate amplitude modulation effects on receptors. The review will also include an analysis of the effects of amplitude modulation in adverse community noise reaction including annoyance and complaints. The literature will be either peer-reviewed or government sponsored. At a minimum, the following reference will be included in the literature review: 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.
  - ii) A detailed discussion of the met tower data will be included in the Application.
  - iii) Reporting of wind shear and turbulence data will be based on one year of on-site met tower data. A summary of minimum, mean, and maximum measured values of wind shear and turbulence will be

reported. Additional standards and guidance documents, (i.e., Annexes B and D the IEC 61400-11) will be utilized as applicable and appropriate.

iv) A summary of formulae, procedures and assumptions will be described in the Application.

(4) An Evaluation of the Potential for Low Frequency and Infrasound

- i) Low frequency sounds for the full octave bands equal to and greater than 31.5 Hertz will be evaluated at all sensitive receptors listed in Section 2.19.2(a).
- ii) Infrasound for the full-octave band of 16 Hertz will be evaluated as indicated in Section 2.19.2(k)(6). A list of sound sensitive receptors with sound pressure levels (SPLs) equal to and greater than 65 dB at 16, 31.5 or 63 Hz, if any, will be reported along with their estimated SPLs. The number of receptors with SPLs equal to and greater than 65 dB will also be reported.
- iii) Infrasound and low frequency sound for the full octave bands lower than 31.5 Hz but equal to or greater than 0.5 Hz will be evaluated for the most potentially impacted and representative sensitive receptors listed in Section 2.19.2(a).
- iv) The Application will include a list of available sound data, detailed discussion and appropriate literature references for proposed turbine models or from similar projects with similar wind turbine models. The literature will be either peer-reviewed, or government sponsored. Should a model be selected that has available infrasound data, then this information will be used as the basis for infrasound evaluation. If calculations are performed to estimate infrasound levels at infrasound frequencies lower than the 20 Hz full-octave band, a discussion of decay rate as a function of frequency and distance (e.g. 3 dB vs 6 dB per doubling distance) will be included.

(f) Predicted Sound Levels Table

The Application will provide A-weighted/dBA sound levels in tabular form for each sensitive [receptor](#) location. These sound levels will be calculated both with and without periods when the turbines will not be operating (rotating) for the yearly and seasonal sound levels. Future sound levels, as required by Section 2.19.2(f), will be calculated using the 8760 hours of modeled results and assigning them to the corresponding hours defining “winter nighttime”, etc. The tables 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 at each of the monitoring locations. Daytime will be 15 hours (7 AM – 10 PM).

- (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, during the summer at each of the monitoring locations. Nighttime will be 9 hours (10 PM – 7 AM).
- (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, during the winter at each of the monitoring locations. Nighttime will be 9 hours (10 PM – 7 AM).
- (4) The worst-case future noise level during the daytime period<sup>31</sup> will be determined for each sensitive receptor listed in Section 2.19.2(a) of by logarithmically adding the most representative daytime ambient sound level (L90),<sup>32</sup> 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 for each sensitive receptor ~~listed, as defined~~ in Section 2.19.2(a)) by logarithmically adding the most representative summer nighttime ambient sound level (L90),<sup>33</sup> to the modeled upper tenth percentile sound level (L10) of the Facility at each evaluated receptor. The L10 statistical noise descriptor is proposed to be estimated for the summer nighttime period within 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 for each sensitive receptor listed in Section 2.19.2(a) by logarithmically adding the most representative winter nighttime ambient sound level (L90),<sup>34</sup> to the modeled upper tenth percentile sound level (L10) the Facility at each evaluated receptor. The L10 statistical noise descriptor is proposed to be estimated for the winter nighttime period within 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. Daytime will be 15 hours (7 AM – 10 PM).
- (8) Typical facility noise levels for each sensitive receptor listed in Section 2.19.2(a) 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 (i.e., L50) from one year (8760 hours) of site-specific

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<sup>31</sup> For both summer and winter.

<sup>32</sup> As related to the use and soundscape of the location being evaluated and calculated from the background sound level monitoring described in Section 2.19.2(f)(1).

<sup>33</sup> As related to the use and soundscape of the location being evaluated and calculated from the background sound level monitoring described in Section 2.19.2(f)(2).

<sup>34</sup> As related to the use and soundscape of the location being evaluated and calculated from the background sound level monitoring described in Section 2.19.2(f)(3).

wind speeds which correlate with sound power level. The L50 statistical noise descriptor will correspond to the median daytime sound level in a year.

- (9) Typical facility daytime noise levels for each sensitive receptor listed in Section 2.19.2(a) will be calculated as the most representative daytime equivalent average sound level (Leq) that was calculated from background sound level monitoring in Section 2.19.2(f)(7), as related to the use and soundscape of the location being evaluated, logarithmically added to the median Facility sound pressure level (L50) at each evaluated receptor as calculated in Section 2.19.2(f)(8).

(g) Applicable Noise Standards

The Application will provide a complete description of regulations, ordinances, noise standards, guidelines and goals applicable to the Facility Site<sup>35</sup> at sound receptors and boundary lines, and a discussion of the Facility's level of compliance with them. [The review of guidelines will include the 2018 WHO "Environmental Noise Guidelines for the European Region", among others.](#) Table 3 lists the standards and design goals for this project with respect to sound.

**Table 3. Summary of High Bridge Wind Design Goals and Sound Standards<sup>36</sup>**

#	Design Goal	Assessment Location	Noise descriptor	Period of Time	Participant Status	Design Goals and basis
1	45 dBA	At residence, Outdoor	Leq	9-hour nighttime	Non-participant	Design Goal; Certificate Condition 80(a) Case 14-F-0490 and WHO-1999
1A	50 dBA	At residence, Outdoors	Leq	15-hour daytime	Non-participant	Design Goal; WHO 1999
2	55 dBA	At residence, Outdoor	Leq	9-hour nighttime	Participant	Design Goal; Certificate Condition 80(a) Case 14-F-0490
2A	55 dBA	At residence, Outdoors	Leq	15-hour daytime	Participant	Design Goal; Certificate Condition 80(a) Case 14-F-0490
3	40 dBA	At residence, Outdoor	Lnight-outside (Leq)	Annual; nighttime. (2009-WHO)	Non-participant	Design Goal; Certificate Condition 80(b) Case 14-F-0490 and WHO-2009
4	50 dBA	At residence, Outdoor	Lnight-outside (Leq)	Annual; nighttime. (2009-WHO)	Participant	Design Goal; Certificate Condition 80(b) Case 14-F-0490 and WHO-2009

<sup>35</sup> For the purposes of comparing predicted sound levels from the Facility with regulations, ordinances, noise standards, guidelines and goals applicable to the Facility, the Application will discuss the input parameters, assumptions, associated data and standards that were used for purposes of predicting sound pressure levels from the Facility's turbines, (e.g. sound power level, noise descriptors, time frames of determination, ground absorption factors, any corrections, receptor heights used (e.g. 1.5 meters, 4.0 meters) along with its justification) and the criteria that were used in the development of these design goals.

<sup>36</sup> The Town of Guilford has enacted a general ordinance related to sound, which will be addressed in the Application. However, no numerical sound design goals or standards are established by that ordinance. Hence, it is not included in this Table.

#	Design Goal	Assessment Location	Noise descriptor	Period of Time	Participant Status	Design Goals and basis
5	No audible prominent tones or 5 dBA penalty if they occur.	At residence, Outdoor	Leq	1-hour	Non-participant	Design Goal; Certificate Condition 80(c) Case 14-F-0490
6	65 dB at 16, 31.5, and 63 Hz full-octave bands.	At residence, Outdoor	Leq	1-hour; daytime and nighttime	Non-Participant	Design Goal; Certificate Condition 80(d) Case 14-F-0490
7	No perceptible vibrations	At residence, Indoor	See ANSI S 2.71-1983 (R August 6/2012).	See ANSI S 2.71-1983 (R August 6/2012).	Non-participant	Design Goal; Certificate Condition 80(e) Case 14-F-0490
8	55 dBA	Property line	Leq	1-hour; daytime and nighttime	Non-participant	Design Goal; Boundary lines and Lands Except Wetlands (WHO 1999)
9	40-45 dBA. Ideal and Maximum Design Goals, respectively	At residence, Outdoor	L90 (See NARUC-2011 for details)	Long-term mean as obtained with computer modeling.	Non-participant. (Daytime and nighttime)	Ideal and Maximum Design Goals; National Association of Regulatory Utility Commissioners. NARUC-2011

(h) Noise Standards Comparison

A table outlining regulations, ordinances, noise standards, guidelines and goals applicable to the Facility. The Project Sponsor will review applicable local codes and will provide a summary of applicable noise standards from these codes. In addition, the Project Sponsor will include a summary of noise-modelling results from the Preconstruction Noise Impact Assessment for all sensitive receptors as listed in Section 2.19.2(a) in relation to applicable noise ordinances, standards, guidelines, goals and identified criteria by using the specific requirements as related to noise descriptors (e.g. Leq, L10, Leq1-year night, L(89-hour night) etc.), weighting scales, and time frame of determination (e.g.: minutes/hour, 1-hour, 89-hour, 1615-hour, 1-year, etc.). The number of receptors exceeding any identified limit, threshold, goal, guideline or recommendation will be included in the Application (In terms of absolute and relative numbers). For ease of identification and comparison, both the shadow flicker report prepared for Exhibit 24 of the Application and the Preconstruction Noise Impact Assessment prepared for Exhibit 19 of the Application will use the same definition of “sensitive receptor” and will employ a common receptor labelling system. Noise levels for Participant and non-Participant lot boundary lines will be represented as specified in Section 2.19.2(d).

(i) Noise Abatement Measures for Construction Activities

Identification and evaluation of reasonable noise abatement measures for construction activities will be provided, including a description of the Complaint Resolution Plan (see Section 2.12.2(d)). The Application will include an

assessment of reasonable noise abatement measures during construction (e.g., implementing BMPs).

(j) Noise Abatement Measures for Facility Design and Operation

The Application will include an identification and evaluation of reasonable noise abatement measures for the final design and operation of the Facility including the use of alternative technologies, alternative designs, and alternative Facility arrangements.

(k) Community Noise Impacts

This section of the Application will include an evaluation of the following potential community noise impacts:

- (1) Potential for Hearing Damage – The potential for the Facility to result in hearing damage will be addressed based on OSHA standards, and guidelines from the United States Environmental Protection Agency (US EPA) “Levels” document (US EPA, 1974) and the World Health Organization (WHO, 1999).
- (2) Potential for Speech Interference – The potential for the Facility to result in indoor and outdoor speech interference will be addressed based on guidelines from the US EPA “Levels” document (US EPA, 1974) and the World Health Organization (WHO, 1999).
- (3) Potential for Interference in the Use of Outdoor Public Facilities – A summary of thresholds and guidelines included in the NYSDEC Program Policy for Assessing and Mitigating Noise Impacts, as well a description of compliance with these guidelines for NYSDEC lands, will be provided in the noise report to be included with the Article 10 Application.
- (4) Potential for Annoyance/Complaints – The potential for annoyance ~~and complaints will be evaluated by conducting a review of peer reviewed studies, technical and scientific publications, and government sponsored 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 will be evaluated by using WHO-2018 and base references in Exhibit 15. The potential for complaints will be evaluated by using NARUC-2011 guidelines.~~ The number of sensitive receptors exposed to noise levels equal to and greater than 35 dBA Leg-1-hour and 35 dBA Lnight will be grouped by use and by participation status and will be reported in 1 dBA intervals with sound levels rounded to the nearest integer.

- (5) Potential for Structural Damage – Information regarding construction activities will be included in the Construction Operations Plan, the Preliminary Blasting Plan (if any blasting is determined to be necessary), and the Preliminary Geotechnical Report. The potential for some construction activities (such as blasting, pile driving, excavation, HDD, or rock hammering, if any) to produce any cracks, settlements or structural damage on any existing proximal buildings, including any residences, historical buildings or infrastructure will be analyzed and included in the Application.
  
- (6) Potential for Ground-borne Vibration – The potential for ground-borne transmitted vibrations from the operation of the Facility to reach a sensitive receptor and cause vibrations on the floors or on building envelope elements that may be perceived at the receptor will be evaluated through a review of peer-review literature or government sponsored studies. The discussion will 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) for residential use and ISO 2631-2-2003 sensitive equipment use, if any. Description of the validity and applicability of findings will include technical considerations such as distances between turbines and evaluated receptors, and turbine specifications (such as turbine masses and frequencies of rotation, if available).
  
- (7) 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 receptors will be analyzed by applying the outdoor criteria established in section D.2.1 of 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 a more restricting criterion, 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. Maximum sound levels at the 31.5 and 63 Hz bands as predicted with computer noise modeling (ISO 9613-2) will be reported for all sound sensitive receptors specified in Section 2.19.2(a). Discussion of the 16 Hz full-octave band will be based on extrapolated sound pressure data down to the 16 Hz based on the 31.5 Hz model results. The extrapolation will be the difference between the highest manufacturer's sound power data at 16 Hz. and the 31.5 Hz sound power data used for computer modeling if the information is available for all turbine models considered for the project. If no information from the manufacturer is available for the 16 Hz. full-octave band for any turbine models considered for the project, a minimum increase of 4 dB will be applied to the 31.5 Hz sound pressure results to obtain the 16 Hz SPL results unless sound power information for the 16 Hz. frequency band for any other turbines considered for the project are greater than the one

obtained by applying a minimum 4 dB increase to the sound power level used for modeling at 31.5 Hz. In this latter case the correction will be the difference between the maximum sound power level at 16 Hz for any turbines considered for the project and the sound power levels for the 31.5 frequency band used for computer modeling. The correction will be applied to the 31.5 SPL results to obtain the 16 Hz. SPL results.

- (8) Potential for Structural Damage and Interference Technological, Industrial, or Medical Activities that are Sensitive to Sound – The Application will include a map and a discussion about the potential of low-frequency noise including infrasound and vibration from operation of the facility to interfere with USGS seismological stations within 50 miles, as well as with stations that are part of the Comprehensive Nuclear Test Ban Treaty Organization (CTBTO) International Monitoring System. If the distances from the project site are more than 50 miles, a discussion may be substituted for a map.

(l) Post-construction Noise Evaluation Studies

The Application will include a description of the proposed post-construction evaluation studies and a plan for post-construction evaluations to determine conformance with operational noise and vibration design goals. These will be included in a protocol that will contain, among other items, sound instrumentation specifications and calibration requirements; equipment settings; criteria for selection of testing locations, noise and vibration goals and descriptors to be evaluated; weather conditions to be tested and to be excluded; seasons and time frames for testing; testing procedures for proposed design goals, and provisions for processing test results, reporting, and documentation.

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

The 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 the Complaint Resolution Plan detailed in Section 2.12.2(d).

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

Specific modeling input parameters, assumptions, and any associated data used in sound propagation modeling and calculations will be included as an appendix to the PNIA and will fairly match the unique operational noise characteristics of the models and configurations proposed for the Facility. Turbine dimensions, hub height, and rotor diameter will be reported in the Application. [Computer Aided Noise Abatement \(CADNA/A\) files, technical sheets with sound power levels from the turbine manufacturers, wind speed data as collected and extrapolated](#)

from the meteorological tower(s), and GIS files with a) turbine and other noise source locations, ground elevations, and heights; b) evaluated participating and non-participating receptor locations, elevations, and heights; c) Participant and non-Participant boundary lines; d) proposed grading; and e) topography, will be delivered directly to DPS Staff by electronic means.

#### Additional Content to be Included in the Application

- A glossary of terminology, definitions, and abbreviations, and citations for all references used in Exhibit 19 of the Application will be provided in the Application.
- To the extent possible, the findings and results in Exhibit 19 of the Application will be reported and presented in the same order as listed in this section. Some contents can be appended to the Application (e.g., Pre-construction Ambient Sound Level survey data).

## 2.20. CULTURAL RESOURCES

### 2.20.1. Discussion

Generally, the Facility is located between the Susquehanna and Unadilla River corridors and, based on a recent review of SHPO's Cultural Resources Information System (CRIS) database, there are 12 historic properties and/or districts listed on or eligible for listing on the National Register of Historic Places (NRHP) in the immediate vicinity of the Facility Site (see Figure 9). Ongoing consultations and outreach with stakeholders (e.g., host communities, local municipal officials, DPS, NYOPRHP, etc.) will aid in identifying listed sites and/or districts and/or other historic properties within the 5-mile Study Area. Exhibit 20 and other relevant portions of the Application, such as Exhibits 19 and 24, will aid in the assessment of potential visual and auditory impacts to aboveground historic resources, as applicable.

The Project Sponsor will coordinate with SHPO and representatives of the Oneida Indian Nation regarding the potential for "stone landscapes" may features" to be located within the Area of Potential Effects (APE) for Direct Effects (i.e., the area containing all proposed soil disturbance potentially associated with Facility construction and operation). Generally, these sites are unusual arrangements of stone features – sometimes stacked stones, sometimes boulders arranged in a certain way – often of indeterminate origins, that are, nonetheless, culturally sensitive. The Project Sponsor continues to work with tribal representatives to identify any potential stone landscapes features of cultural significance within the APE for Direct Effects and will include an analysis of potential impacts in the Application. The Project Sponsor will continue to coordinate with SHPO and Oneida Indian Nation regarding available stone landscape feature identification protocols and/or studies.

The Project Sponsor intends to avoid impacts to archeological impactsites, to the extent practicable, by shifting the project components. However, if avoidance is impracticable, and mitigation is necessary, the Application will address proposed mitigation measures.

## Archaeological Resources

### Archaeological Resources Impacts

The Application will contain a fullan analysis of the potential impacts of the construction and operation of the Facility on archaeological resources, as well as potential impact avoidance and minimization measures. As noted above, the Project Sponsor believes that many culturalpotential impacts to archaeological sites can be avoided or minimized, by locating project components in areas determined to be free of cultural resources. However, to the extent that impacts cannot be avoided or minimized, the Application will so indicate, and will include a discussion of proposed mitigation strategies.

### Phase 1A Cultural Resources Study

The Project Sponsor will prepare a Phase 1A Archaeological Resources Survey and, Phase 1B Archaeological Survey Fieldwork Plan for the High Bridge 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 project, and to evaluate the potential for previously unidentified cultural resources to be located in the project's APE for Direct Effects. This will include:

- A 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;
- A review of historical research materials, with an 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
- Site reconnaissance to document (photograph) representative existing conditions in the APE for Direct Effects.

The Phase 1A report work plan will provide a detailed methodology and scope for the Phase 1B archaeological survey and report that 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. 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.

### Phase 1B Archaeological Survey

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). This report will be summarized in the Application and appended to Exhibit 20 of the Application.

~~As indicated above, the scope and methodology for the Phase 1B Archaeological Survey will be outlined in the Phase 1A Archaeological Resources Survey & Phase 1B Fieldwork Plan, to be submitted to NYSOPRHP prior to commencement of field work in the spring of 2019. The SHPO Wind Guidelines suggest following the approach detailed in *Archeological Investigations in the Upper Susquehanna Valley, New York State* (Funk, 1993a, 1993b) in the design of archaeological surveys for wind projects. The approach involves identification of broad environmental zones with local habitat (or landscape class) subdivisions. The archaeological survey subsequently includes intensive sampling of selected areas within each of the identified landscape classes which are more likely to contain sensitive resources, rather than undertaking an even distribution of sampling throughout the APE for Direct Effects. Following this approach, the Project will identify landscape classes within the Facility Site and proposed an archaeological sampling strategy. The Phase 1A Archaeological Resources Survey & Phase 1B Fieldwork Plan summarizes the methodology used for the GIS analysis and presents the landscape classification analysis in tabular and graphical formats.~~

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

~~wetlands. Due to the potential for the APE for Direct Effects to contain stone landscape features, the entire APE for Direct Effects will be subjected to pedestrian reconnaissance (in addition to any pedestrian surface survey or shovel testing) in order to identify these features.~~

~~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.~~

### Phase 2 Study

If recommended avoidance measures (e.g., 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 [SHPO/NYSOPRHP](#), [DPS](#), and [DPS](#) ~~other appropriate consulting parties~~, upon completion and review of the Phase 1B survey report.

### Recovered Archaeological Material

If any artifacts are recovered during cultural resource studies for the Facility, archaeologists will record standard provenience information in the field and collect each artifact in sealed plastic bags per standard archeological field practices. All recovered materials will be washed, dried, and cataloged per standard archeological laboratory procedures. Recovered artifacts will be described to a level of detail sufficient to prepare an artifact inventory for inclusion in Phase 1B and/or Phase 2 archaeological reports, which will include descriptions of each artifact's material, temporal or cultural/chronological associations, style and function. In addition, it is anticipated that a selection of representative artifacts will be photographed for inclusion in the reports, but complete photo documentation of all recovered materials is not anticipated. The Project Sponsor understands that all artifacts recovered during this contract will be the property of the ~~land owner~~[landowner](#) from which the artifacts were recovered. The Project Sponsor also anticipates that the Facility's cultural resources consultant will identify appropriate local repositories (such as local historical societies or archeological museums) for disposition of

recovered artifacts so that artifact assemblages remain available and accessible to local and regional researchers and interested members of the public. It is anticipated that all artifacts will be processed in a manner consistent with professional standards, such as the New York Archaeological Council's (NYAC) *Standards for Cultural Resource Investigations and Curation of Archaeological Collections in New York State* (NYAC, 1994; the NYAC *Standards*), and suitable for accessioning to the New York State Museum (Albany), in the event that appropriate local repositories cannot be identified.

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

#### Unanticipated Discovery Plan

The 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*.

### **Historic Resources**

#### Historic Resources Impacts

Construction of the Facility will not require the demolition or physical alteration of any buildings or other potential historic resources. The Project Sponsor anticipates that no direct physical impacts to aboveground historic resources will occur as a result of the Facility.

The Facility's potential effect on aboveground 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. The potential effect of the Facility on the visual setting associated with historic resources is highly variable and is dependent on a number of factors including the distance to the project, the number of visible turbines, the extent to which the Facility is screened or partially screened by buildings, trees, or other objects, and the amount of existing visual clutter and/or modern intrusions in the view. It is also worth noting that visual setting may or may not be an important factor contributing to a given property's historical significance. [See](#)

~~views and/or association with the landscape are not specifically identified as contributing to the significance of the historic resources in the 5-mile Study Area.~~

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

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

#### Historic ~~Architectural~~ Resources Survey

The Project Sponsor will provide a *Phase 1A Historic Resources Survey* to NYSOPRHP staff prior to completing this activity. The purpose of the *Phase 1A Historic Resources Survey* is to define the Facility's APE for Indirect Effects relative to aboveground historic resources (including buildings, cemeteries, monuments and other historic sites); determine whether previously identified aboveground historic resources are located in the APE for Indirect Effects; and propose a methodology to identify aboveground historic resources within the APE for Indirect Effects, evaluate their eligibility for the National Register of Historic Places (NRHP), and assess the potential effect of the Facility on those resources.

#### *~~Historic Resources Area of Potential Effect~~*

~~The Facility will have no physical impacts to aboveground historic resources (i.e., no historic properties will be damaged or removed). The Facility's potential effect on a given historic property within the 5-mile Study Area would be a change (resulting from the introduction of wind turbines) in the property's visual setting and potential noise/vibration impacts (see below). Therefore, the APE for Indirect Effects on aboveground historic resources must include those areas where Facility components (including wind turbines) will be visible and where there is a potential for a significant visual effect. Per the requirements set forth in 16 NYCRR § 1000.2(ar), the study area to be used for analysis of major electric generating facilities is defined as:~~

*“[T]he 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.”*

The 5-mile Study Area for the Facility includes parts of the Towns of Guilford, Norwich, New Berlin, Preston, Oxford, Bainbridge, part of the Village of Oxford, and parts of the City of Norwich in Chenango County. It also includes parts of the Towns of Morris, Butternuts, and Unadilla, and part of the Village of Gilbertsville in Otsego County (see Figure 2).

Per the *SHPO Wind Guidelines*, the area of potential effect for visual impacts on historic properties for wind projects is defined as the area within a 5-mile radius of proposed turbines and within the potential viewshed (based on topography) of a given project (NYSOPRHP, 2006). The Facility's APE for Indirect Effects will be defined based on the parameters of the *SHPO Wind Guidelines* outlined above. This area represents a conservative, “worst case” assessment of potential Facility visibility.

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

Per a review of CRIS website maintained by NYSOPRHP, there are no NRHP listed or eligible properties located within the Facility Site. Within the 5-mile Study Area there are 13 NRHP listed individual properties (United States Post Office Oxford (90 NR00165), Theodore Burr House (90NR00166), Andrew Mann Inn (90NR02179), Tianderath (90NR02195), Major's Inn and Gilbert Block (90NR02193), White Store Church and Evergreen Cemetery (94NR00742), United States Post Office Norwich (90NR00156), Guilford Center Presbyterian Church (04NR05223), Rockdale Community Church (05NR05452), Guilford Center Cemetery (05NR05453), Eaton Family Home/Jewish Center of Norwich (09NR05979), Gilbertsville Water Works (10NR06184), and 120 Furnace Hill Road (16NR000094)) and five NRHP listed historic districts (Rockwell Mills Historic District (10NR06110), Oxford Village Historic District, Gilbertsville Historic District (90NR02194), Gilbertsville Historic District Boundary Increase (90NR02196), and the Chenango County Courthouse District (90NR00157)). In addition, there are 25 properties eligible for listing on the NRHP and 180 properties for which NRHP eligibility has not been determined within the 5-mile Study Area, four of which are within the Facility Site.

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

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

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

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

The NRHP-listed and NRHP-eligible properties within the ~~5-mile Study~~Historic Resources Survey Area include residences, bridges, churches, cemeteries, and commercial structures. Numerous nineteenth- and early-twentieth-century structures (primarily residences and farmsteads) are located within the ~~5-mile Study~~AreaHistoric Resources Survey that have not been previously evaluated by NYSOPRHP to determine if they are NRHP-eligible. These types of resources are typically determined NRHP-eligible under NRHP Criterion C (i.e., they “embody the distinctive characteristics of a type, period, or method of construction” [CFR, 2004]), and often derive their significance from being representative examples of vernacular nineteenth-century architectural styles that retain their overall integrity of design and materials. The architectural integrity of historic resources throughout the ~~5-mile Study~~Historic Resources Survey Area is highly variable, with many showing noticeable alteration, or deterioration due to the elements.

The ~~Project Sponsor~~Historic Resources Survey included in the Article 10 Application will ~~prepare a Historic Resources Effects Analysis~~provide the basis for the 5-mile Study Area to assess the ongoing consultation with NYSOPRHP/SHPO (and other applicable consulting parties) regarding potential visual and auditory impacts of the Facility on aboveground historic resources ~~identified~~. The Applicant anticipates that this consultation

will continue through the Article 10 process and that NYSOPRHP's/SHPO's evaluation regarding potential effects and/or identification of any required mitigation will be determined as part of the Historic Resources Survey conducted for the Facility. The Historic Resources Effects Analysis will be conducted by a qualified architectural historian who meets the Secretary of Interior's Standards for U.S. Army Corps of Engineer's review of the Project under Section 106 of the National Historic Preservation Projects (36 CFR Part 61) and will Act. Section 106 review would be summarized in the Application and appended to Exhibit 20 of the triggered by submission of a Joint Application for Permit, which is anticipated to occur following the submission of the Article 10 Application. Therefore, SHPO's determination of potential effects and any subsequent discussion of proposed mitigation measures, if necessary, is not anticipated to be included in the Article 10 Application.

## **2.20.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.20 of the Article 10 regulations, Exhibit 20 of the Application will contain the following information.*

On October 10, 2018, the Project Sponsor met with NYSOPRHP staff for a preliminary discussion of the scope of historic resources and archaeological studies for the Facility. 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 Project Sponsor will initiate consultation with the NYSOPRHP through the Cultural Resources Information System (CRIS) website, and submit technical reports/work plans outlining the scope and methodology for cultural resources studies for the Facility in early 2019. The results of these studies will be presented in the Article 10 Application. The Project Sponsor will continue to track its outreach and stakeholder engagement efforts and will include a summary of those efforts in the Application.

In relation to these on-going discussions, the Project Sponsor agrees to provide the information required by 1001.20. In addition, Exhibit 20 of the Application will also include a proposed draft Cultural Resources Mitigation Plan. This Exhibit will also discuss the reasonable avoidance, minimization and mitigation options available to address potential impacts from the Facility on cultural resources.

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

### **2.21.1. Discussion**

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

## Location of the Facility Site

The Facility Site is located within the Allegheny Plateau physiographic province. This physiographic province was formed as a result of uplift and erosion. Surficial deposits consist mainly of glacial till, diamicton, outwash sand and gravel and kame features. The topography of Chenango County is characterized by deeply eroded, steep-sided, flat-bottomed valleys, and flat to generally rolling plateaus varying in relief from a low of 880 feet at the point near where the Chenango River enters Broome County to a high of 1,960 feet at three locations: Berry Hills, Skinner Hill, and an unnamed hill 3 miles east of Norwich. The elevation in the county is high for New York State. The elevations in the major river valleys in the county are in the range of 900 to 1,000 feet, and about half of the county is above 1,500 feet in elevations, and about a quarter of that is above 1,800 feet. Chenango County lies within two major drainage basins, the Chenango River Basin and the Upper Susquehanna River Basin. The major streams are the Unadilla River, the Genegantslet Creek, the Chenango River, and the Otselic River. Most of the smaller tributaries are high-gradient, straight streams. The larger streams and rivers have low gradients, which result in some meandering.

Chenango County was covered and uncovered by several advances and retreats of glacial age. The most common deposit in the county is glacial till, which is a heterogenous mixture of particles carried and deposited directly by the glacier. Mardin and Wellsboro soils are examples of soils that formed in glacial till. Meltwater from the glacial ice deposited sand, gravel, and cobbles as the velocity of the water slowed. Howard and Chenango soils formed in these outwash deposits. The stream valleys contain deep deposits of glacial valley fill materials and are predominantly deep and well drained (sand and gravel deposits) or poorly drained (finely textured deposits). The underlain bedrock in Chenango County is of the Upper and Middle Devonian periods, and generally consists of sedimentary interbedded sandstone, siltstone, and shale.

The dominant soil types underlying the Facility Site consist of members of the Bath-Valois-Chenango, Volusia-Mardin-Lordstown, Wellsboro-Oquaga-Morris, Chenango-Hamlin-Wayland, and Mardin-Lordstown-Volusia units (USDA, 1985). The Facility Site contains one permitted mine (see Figure 4). The Application will detail the effect of the Facility on this mine and the contextual geologic character. The surficial geology underlying the Facility Site and vicinity is dominated by glacial till, which exhibits a wide range of particle and rock fragment size. The surficial geology of the river valleys located within the Facility Site such as the Kent Brook valley, are characterized by alluvial gravelly loam soils varying thickness as well as proglacial fluvial outwash. The Geologic Map of New York, Hudson-Mohawk Sheet classify the bedrock underlying the Facility Site as interbedded sandstone, siltstone, and shale of the Enfield & Kattel and/or Moscow Formations (Upper and Middle Devonian periods).

New York is largely tectonically inactive. Although portions of the State have moderate tectonic activity, these moderately active locations are not found proximal to the Facility Site. Based on the 2014 New York State Hazard Map, the Facility is in an area of very low seismic hazard, with a peak ground acceleration<sup>37</sup> value less than 3% of the acceleration force of gravity (g), with a 10% probability of exceedance in 50 years (DHSES, 2014). Chenango County has no recorded earthquakes (DHSES, 2014). The USGS Earthquake Hazards Program does not list any young faults or faults that have had displacement in the Holocene epoch within the vicinity of the Facility Site.

### **Preliminary Geotechnical Investigation**

The Application will summarize the results of a Preliminary Geotechnical Investigation, which will be appended to the Application. The data and information contained in the Preliminary Geotechnical Investigation will be based on a Facility-specific site visit conducted by a geotechnical expert, a review of publicly available data, test borings completed at a subset of turbine/substation locations (dependent on seasonal restrictions), and physical and chemical laboratory testing on soil and rock samples recovered from the test borings. The results of the Preliminary Geotechnical Investigation allow the Project Sponsor to identify subsurface soil and rock types and the strength and chemical properties (e.g. pH, redox potential, sulfate and chloride content) of the soil and rock types, measure the soil's electrical resistivity to allow proper grounding as well as the soil thermal resistivity, and document the presence and depth of groundwater.

The exact location of proposed Facility components will be surveyed prior to Facility construction. A more detailed geotechnical investigation will be performed to verify subsurface conditions and inform the development of final foundation and electrical designs

### **Construction Activities**

Prior to commencing construction, the Project Sponsor will carry out additional subsurface investigation activities, consisting of soil boring and rock coring, as determined necessary by a professional engineer. Test pits, geophysical seismic testing, and additional laboratory testing may also be performed to further evaluate the subsurface soil, bedrock, and groundwater conditions. These additional investigations will inform the final Facility design (including the turbine foundation designs) and determine if additional analyses are needed. 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

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<sup>37</sup> Peak ground acceleration (PGA) is the largest increase in velocity recorded by a station during an earthquake. %PGA is a common earthquake measurement that indicate the probability of an earthquake of each given level of severity (10% chance in 50 years) and the strength of ground movement (severity) expressed in terms of percent of the acceleration force of gravity (%g)

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 Project Sponsor may employ specialized foundation designs that utilize micro piles or other techniques to assure the foundation's buoyancy and stability.

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 Project Sponsor's experience and available site conditions data. Most excavation activities will be associated with turbine and substation foundation construction and collection line installation. Excavation may also be required in constructing other Facility construction components.

Excavation will be completed using conventional construction equipment, including, but not limited to, bulldozers, track hoes, pan excavators, cable plows, rock saws, rock wheels, and trenchers. As necessary bedrock will be excavated using backhoes, rock rippers, chipping hammers, pneumatic jacking, hydraulic fracturing, or blasting.<sup>38</sup> It is anticipated that buried collection line will be installed using a cable plow or blade; however, in select locations subsurface conditions may require trenching.

Facility construction is not anticipated to result in any significant impacts to regional geology. Depth to bedrock in the Facility Site is expected to be variable and it is possible that some turbine foundations may be set into bedrock. Where bedrock is encountered it will be removed as described above. Based on the Project Sponsor's experience, only temporary, minor impacts to regional geology are expected as a result of construction activities. Specific to Facility-related excavation, adverse impacts to geology or soils are not anticipated.

### **Cut and Fill**

The construction of the access roads, crane pads, and other Facility features will require cutting and/or filling. The Project Sponsor will aim to minimize significant areas of cut or fill. However, various scenarios would create areas of cut and fill (e.g., constructing an access road that traverses an existing grade that exceeds the maximum design slope, constructing on a side slope, or needing to flatten the top of an existing high point).

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<sup>38</sup> Based upon review of publicly available data, a general constructability review conducted by the Project Sponsor's construction manager, and the Project Sponsor's experience with wind facility construction, it is anticipated that blasting will be required.

Proper methods for segregating stockpiled topsoil and soil material will be implemented. To limit the proliferation of non-native flora and other invasive species, excavated soil will be reused on the site from which it was excavated, wherever practicable. Topsoil and subsoil spoils will be placed in locations best suited to their storage adjacent to the turbine, access road, and trench sites where they are excavated. Final cut and fill storage areas will be determined following Certification, and included in the final construction drawings

Cut material or spoil generally will not be removed from the Facility Site during construction. 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. The final footprint of the Facility will not be known until post-Certification and after a turbine model has been determined and may include less than 30 turbines (and correspondingly less infrastructure, e.g., access roads). Once the final footprint of the Facility is determined, the Project Sponsor will finalize engineering with the objective of balancing cut and fill requirements to eliminate the need to import/export material to/from the Facility Site.

### **Wind Turbine Foundations**

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 and preconstruction site-specific studies.

The information collected in developing the Facility-specific Preliminary Geotechnical Investigation will be used to assess the suitability of the turbine sites to support turbine foundations. It is anticipated that pile driving will not be needed for this Facility. However, if required, an assessment will be provided, and mitigation measures will be identified.

Following Facility certification, additional geotechnical borings will be performed as determined necessary by a professional engineer to finalize turbine foundation designs and support the final structural design of the Facility.

#### **2.21.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.21 of the Article 10 regulations, Exhibit 21 of the Application will contain the following information.*

(a) Existing Slopes Map

The Application will provide the information required by 1001.21(a). If the Applicant proposes construction on extremely steep slopes (i.e., slopes with a grade greater than 25%), the Application will identify sensitive environmental, agricultural, and human health and safety receptors, and will assess the risk of potential impacts (e.g., erosion hazards, water quality impacts) to these receptors. The Application will include details of proposed erosion controls where electric collection lines will be installed by trenching along and across steep slopes, including measures to address temporary and permanent erosion risks. Mitigation measures for identified potential impacts will be discussed in the Application, as needed.

(b) Proposed Site Plan

A proposed site plan (i.e., the Preliminary Design Drawings discussed in Section 2.11.2(a)) showing existing and proposed contours at 2-foot intervals will be appended to the Application. The Project Sponsor will use publicly available 2-foot contour elevation data in preparing the proposed site plan.

(c) Cut and Fill

The Application will include preliminary cut and fill calculations based on the above-described contour data. Separate calculations for topsoil, sub-soil and rock will be roughly approximated based on publicly available data from the Chenango County Soil Survey and the results of the Preliminary Geotechnical Investigation. In addition, 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, will be provided. Information regarding invasive species will be addressed in Exhibit 22(b) of the Application

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

The Application will include a preliminary calculation of the amount of fill, gravel, etc. needed to construct the Facility based on the proposed layout and typical details of Facility components. For example, typical access road details would include the typical road width, average gravel depth, and total linear feet of road.

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

The Application will provide the information required by 1001.21(e).

(f) Excavation Techniques to be Employed

The Application will provide the information required by 1001.21(f). A preliminary Inadvertent Return Plan will be included in the Application if trenchless technologies (e.g., HDD or jack and bore) are proposed. If HDD is proposed, an Inadvertent Return Plan will be prepared and the Application will include an evaluation of the suitability of this technology, including an assessment of inadvertent return risk, based on the results of the preliminary geotechnical investigation and publicly available soil and bedrock data. The Inadvertent Return Plan will identify potential receptors and establish inadvertent return monitoring, mitigation, and response measures.

(g) Temporary Cut and Fill Storage Areas

The Application will provide the information required by 1001.21(g).

(h) Suitability for Construction

The Application will summarize the results of a Preliminary Geotechnical Investigation. The Preliminary Geotechnical Investigation will include:

- i) A literature review of publicly available data regarding surface and subsurface soil, bedrock, and groundwater conditions, including: *Surficial Geologic Map of New York, Geologic (Bedrock) Map of New York, Deep Wells in New York State, Glacial Geology of the Chenango River Valley, Soil Survey of Chenango 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 Department of Transportation (NYSDOT) Geotechnical Design Manual (GDM), United States Geological Survey (USGS) Landslide Overview Map of the Conterminous United States and Landslide Hazard Program, and New York State Building Code.*
- ii) A detailed summary of preliminary geotechnical investigations performed, including a description of the rationale for the selection of boring locations.
- iii) An evaluation of the suitability of existing soils for re-use as backfill, including an assessment of the risk for turbine foundation corrosion and degradation. Soils within the Facility Site that are identified as having a moderate or high risk of corrosion of steel or concrete, as defined by the National Resources Conservation Service (NRCS) Web Soil Survey, will be identified.
- iv) A description of estimated and known conditions within the Facility Site and related analyses, including:
  - Surface soils;
  - Subsurface soils;
  - Bedrock conditions;
  - Hydrogeologic conditions;

- Results of test borings advanced within the Facility Site, including copies of field logs for each boring;
- Results of laboratory tests of soil samples collected during the advancement of test borings within the Facility Site, including analysis of the chemical and engineering properties;
- Seismic considerations
- Frost action and soil shrink/swell potential; and
- Construction suitability analysis and recommendations.

(i) Preliminary Blasting Plan

The Application will provide the information required by 1001.21(i). The Preliminary Blasting Plan will include procedures and timeframes for notifying host communities and property owners within a 0.5-mile radius of blasting locations.

(j) Potential Blasting Impacts

The Application will provide the information required by 1001.21(j), including a description of potential impacts to local water wells. No known oil or gas wells or pipelines are located within a 0.5-mile radius of the Facility Site. The Application will also include a rationale for any proposed setbacks of blasting operations from existing infrastructure.

(k) Mitigation Measures for Blasting Impacts

The Application will provide the information required by 1001.21(k). Methods for determining the potential for impacts to water wells located within a 500-foot radius of proposed blasting locations and mitigation measures for wells impacted during blasting operations will be described.

(l) Regional Geology, Tectonic Setting, and Seismology

The Application will provide the information required by 1001.21(l).

(m) Facility Impacts on Regional Geology

The Application will provide the information required by 1001.21(m).

(n) Impacts of Seismic Activity on Facility Operation

The USGS Earthquakes Hazards Program does not identify any young faults within the vicinity of the Facility Site. ~~Therefore, this topic will not be further addressed in this Application.~~ See Section 2.21.2(s) for a discussion of how the Facility will comply with the Building and Fire Code of New York State or American Society of Civil Engineers (ASCE).

(o) Soil Types Map

The Application will include a map delineating soil types within the Facility Site in relation to the proposed Facility layout. Data from the Soil Survey Geographic Database (SSURGO) will be used to indicate the locations of Prime Farmland, Prime Farmland if drained, and Farmland of Statewide Importance. According to the Natural Resources Conservation Service (NRCS), these three farmland classes are the only farmland classes recognized in New York. Accordingly, Unique Farmland and Farmland of Local Importance will not be mapped.

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

The Application will provide the information required by 1001.21(p). The Preliminary Geotechnical Investigation 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 discussions will be supported by published soil type information. 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 of the Application (e.g., Exhibit 23), an appropriate reference to that information will be provided.

(q) Bedrock Analyses and Maps

Maps, figures, and analyses on depth to bedrock, underlying bedrock types, and vertical profiles of soils, bedrock, water table, seasonal high groundwater, and typical foundation depths will be prepared using USFWS Online Spatial Geology Data, the USDA NRCS Web Soil Survey, and the Preliminary Geotechnical Investigation. Vertical profiles will be associated with test boring locations only, and the locations of borings advanced during the Preliminary Geotechnical Investigation will also be identified on maps included with the report.

(r) Foundation Evaluation

The Application will provide the information required by 1001.21(r).

(s) Vulnerability to Earthquake and Tsunami Events

The Application will provide an assessment of historical seismic activity, potential impacts associated with future seismic activity, and any proposed mitigation measures will be included in the Application. Components of this Facility will be evaluated, designed, and constructed to resist the effects of earthquake motions in accordance with the American Society of Civil Engineers (ASCE) 7. The seismic design category for Project structures will be determined in accordance with Section 1613 of the New York State Building Code or ASCE 7.

The Facility is located approximately 85 miles from the nearest large water body (Lake Ontario). Therefore, vulnerability associated with tsunami events will not be discussed in this Application.

## **2.22. TERRESTRIAL ECOLOGY AND WETLANDS**

### **2.22.1. Discussion**

The Application will evaluate the Facility's potential impact on terrestrial ecology and wetlands. This evaluation will be based on the results of multiple targeted studies of existing ecological conditions within the Facility Site including wildlife surveys, wildlife habitat studies, plant surveys, invasive species surveys, and wetland and stream delineations. Results from these studies will be supplemented by data gathered from existing databases, review of existing relevant conservation and planning documents, and consultation with local experts and conservation groups.

The Application will also include detailed descriptions of measures undertaken by the Project Sponsor to avoid, minimize, and mitigate identified significant impacts to ecological resources.

### **Land Cover**

Land cover types in the Facility Site will be identified based on the results of reconnaissance-level field verification conducted in 2018 and 2019, recent aerial imagery, and a review of USGS National Land Cover Database (NLCD) land cover data, which is compiled by the United States Geological Survey (USGS) (Homer et. al, 2015).

A preliminary review of NLCD data indicates that the Facility Site is primarily forested and contains ecological community types common to New York State (see Table 4).

**Table 4. Land Cover Classes Found within the Facility Site**

Cover	Acres	Percent Cover (%)
Deciduous Forest	11,332	40.4
Pasture/Hay	8,524	30.4
Mixed Forest	2,488	8.9
Cultivated Crops	1,823	6.5
Coniferous Forest	1,466	5.2
Woody Wetlands	879	3.1
Developed, Open Space	649	2.3
Open Water	270	1.0
Grassland/Herbaceous	248	0.9
Emergent Herbaceous Wetlands	171	0.6
Developed, Low Intensity	96	0.3
Shrub/Scrub	72	0.3
Developed, Medium Intensity	11	0.0
Developed, High Intensity	2	0.0
<b>Total</b>	<b>28,031</b>	<b>100</b>

Source: NLCD 2011

## Plant Communities

### Description

Descriptions of the major ecological community types identified in Table 4 are provided below.

*Deciduous/Coniferous Forestland* – Deciduous and mixed forestland constitute two of the largest ecological community types within the Facility Site and resemble the beech-maple mesic forest and the hemlock-northern hardwood forest communities described in the *Ecological Communities of New York State* (Edinger *et. al.*, 2014). These forests occur throughout the Facility Site and make up the major community type. Tree species vary based on topography and hydrology, but dominant or co-dominant species in most locations could include sugar maple, red maple, and American beech. Other tree species typically found in these community types include eastern hemlock, white oak, northern red oak, yellow birch, gray birch, eastern hornbeam, red spruce, white pine and quaking aspen. Understory trees and shrubs frequently observed in these communities include striped maple, dogwoods, witch hazel and numerous saplings. Characteristic herbaceous plants include

woodland ferns (common wood fern, New York fern, Christmas fern, interrupted fern), Canada mayflower, white wood aster and a variety of flowering plants.

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

*Disturbed/Developed* - Disturbed/developed land consists of a combination of several "cultural communities" as defined in the *Ecological Communities of New York State* (Edinger *et. al.*, 2014). Disturbed/developed lands occur throughout the Facility Site, and are characterized by the presence of buildings, parking lots, paved and unpaved roads, lawns, gravel mines, and gas/oil infrastructure. Vegetation in these areas is generally either lacking or highly managed (i.e., mowed lawns or plants seeded along roadsides for erosion control). Volunteer vegetation in these areas is generally sparse, and typically comprised of old-field, often non-native, herbaceous species such as pokeweed, bull thistle, ragweed, curly dock, and various upland grasses.

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

A site-specific request for data on rare species and significant natural communities was submitted to New York Natural Heritage Program (NYNHP)<sup>39</sup> on December 27, 2018. No response has yet been received from the NYNHP. A response letter was received on January 23, 2019 (see Appendix J) and a map of known bald eagle nest locations was received in March 2019.

### Potential Impacts

Construction and operation of the Facility will result in impacts to plant communities. These impacts include temporary disturbance due to vegetation clearing for construction, as well as permanent loss of vegetated habitats by conversion to built facilities. Permanent built facilities will likely include wind turbines foundations and workspaces, access roads, an O&M facility, meteorological tower foundations, the collection substation, and the POI substation.

Proposed temporary and permanent impacts to plant communities will be calculated and discussed in the Application. Facility-related impacts to affected ecological communities will be calculated in ArcGIS based on the Preliminary Design Drawings and disturbance area assumptions for each Facility component type (summarized in tabular format). Preliminary disturbance area assumptions are detailed in Table 5.

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<sup>39</sup> The New York Natural Heritage Program (NYNHP) is an agency that maintains data on rare, threatened, and endangered plant and animal species, as well as significant ecological communities in New York State.

**Table 5. Preliminary Disturbance Area Assumptions.**

<b>Facility Component</b>	<b>Vegetation Clearing</b>	<b>Soil Disturbance</b>	<b>Permanent Vegetation Loss (i.e., Impervious Surface)</b>
Wind Turbines and Workspaces	Up to 265' radius per turbine	Up to 225' radius per turbine	0.25 acre per turbine
Access Roads	Up to 75' wide per linear foot of road	Up to 60' wide per linear foot of road	16' wide per linear foot of road
Buried Electrical Collection Lines	Up to 60' wide per linear foot of line per collection line circuit	Up to 60' wide per linear foot of line per collection line circuit	None
O&M Facility	3 acres	3 acres	3 acres
POI Substation	1.7 acres	1.7 acres	1.7 acres
Collection substation	1.5 acres	1.5 acres	1.5 acres
Permanent Meteorological Towers	1 acre per tower	1 acre per tower	0.02 acres per tower
Laydown/ Staging Area	10 acres	10 acres	None

The method used to calculate impacts typically results in a very conservative estimate, as it does not account for instances where Facility components overlap existing disturbed areas such as farm lanes or logging roads.

**Wildlife and Wildlife Habitat**

Description

*Birds*

The occurrence of birds in the Facility Site will be determined using a variety of data collection methods and publicly available resources, including the results of on-site avian surveys and observations made during on-site wetland and plant surveys. All avian species identified during will be included in the Wildlife Species List appended to the Application. The methods and data that will likely be provided are summarized below.

The Project Sponsor will conduct on-site eagle, raptor, and breeding bird surveys for the High Bridge Wind Project. The protocols for the on-site avian studies were developed by WEST in accordance with the NYSDEC *Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects* (NYSDEC, 2016a), USFWS *Land-based Wind Energy Guidelines* (USFWS, 2012), and USFWS *Eagle Conservation Plan Guidance – Version 2* (USFWS, 2013) and the USFWS *Bald and Golden Eagles – Population Demographics and Estimates of Sustainable Take in the United States, 2016 update* (USFWS, 2016a). These Agency guidelines will be appended to the Application. The following Facility work plans were submitted to, reviewed, and approved by the NYSDEC, USFWS, and the Delaware-Otsego Audubon Society (DOAS).

- Eagle Use Survey Protocol dated February 2018
- Raptor Migration Survey Protocol dated February 2018
- Breeding Bird Survey Protocol dated May 2018
- [Raptor Nest Aerial Surveys Protocol dated March 2019.](#)

These work plans are included in Appendix H and will be included in the Application.<sup>40</sup>

Surveys for breeding birds were conducted from May 21 to July 22, 2018. Surveys for migrating raptors were conducted during the spring and fall migration periods from March 1 – May 31, 2018 and August 15 to December 31, 2018. Surveys for eagles began in March 2018.<sup>41</sup> In addition, Eagle Nest Aerial Surveys will be completed in [March and April](#) 2019. The results of on-site avian surveys will be included as supplemental studies in the Application and will be used to determine the occurrence ([i.e., numbers and seasonal status](#)) of avian species within the Facility.

In addition to information from on-site surveys, the Application will include a characterization of avian species, which will be completed using data from NYNHP, NYSDEC, USFWS, New York Breeding Bird Atlas (BBA), US Geological Survey (USGS) Breeding Bird Survey (BBS) data (USGS, 2018), Hawk Migration Association of North America (HMANA), Christmas Bird Count (CBC), eBird, [Nature Conservancy surveys/reports, the Kingbird Publication](#), local experts (i.e., DOAS), and on-site U.S. Fish and Wildlife Service (USFWS) and New York Natural Heritage Program (NHP) surveys.

#### 1. New York State Breeding Bird Atlas

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<sup>40</sup> Note, Eagle Use Survey Protocol

<sup>41</sup> Note, although two years of eagle use survey data will be collected by the Project Sponsor to fulfill the requirements of the USFWS in preparing an Eagle Conservation Plan (see Appendix H), it is anticipated that one full year of eagle use survey data will be sufficient to assess the occurrence of and impacts to eagles in the Application.

The BBA is a comprehensive, statewide survey that was conducted from 1980–1985 and 2000–2005 to document the distribution of breeding birds in the State. Surveys for breeding birds were conducted by volunteers within 5-km by 5-km survey blocks across the state and supplemented by surveys by paid staff to ensure coverage of the entire state (NYSDEC 2007a). The Facility Site is located within or immediately adjacent to eight survey blocks, including 4570C, 4570D, 4670C, 4669A, 4569A, 4569D, 4669C, and 4569B. Species recorded within these survey blocks during the most recent BBA will be included in the Application.

## 2. North American Breeding Bird Survey

The North American Breeding Bird Survey (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 Facility Site intersects one active BBS route (Coventryville) in the northeast and a second active BBS route (Oneota) runs just east of the Facility Site. The Facility Site also intersects the Oxford BBS route which has been inactive since 1976.

The Coventryville route has been monitored 41 times between 1967 and 2014 and 119 species have been observed, including five raptor species (red-tailed hawk [*Buteo jamaicensis*], Cooper's hawk [*Accipiter cooperii*], sharp-shinned hawk [*Accipiter striatus*], American kestrel [*Falco sparverius*], and broad-winged hawk [*Buteo platypterus*]) and one owl species (great horned owl [*Bubo virginianus*]; Pardieck 2015). The most common species recorded were red-winged blackbird (*Agelaius phoeniceus*), European starling (*Sturnus vulgaris*), and American robin (*Turdus migratorius*). Eight species designated by the USFWS as BCC within the BCR 28 have been observed along the route. Henslow's sparrow (*Ammodramus henslowii*; state threatened; six observations) has also been observed along the Coventryville BBS Route.

The Oneonta BBS route is also located just east of the Project and has been monitored 39 times between 1968 and 2015 (Pardieck et al., 2015). A total of 120 species have been observed, including eight raptor species (red-tailed hawk, Cooper's hawk, sharp-shinned hawk, American kestrel, broad-winged hawk, northern harrier [*Circus hudsonius*], osprey [*Pandion haliaetus*], and bald eagle) and two owl species (great horned owl and long-eared owl [*Asio otus*]). The most common species recorded were European starling, and red-winged blackbird. Eight species designated by the USFWS as BCC within the BCR 28 have been observed along the route. Three state threatened

species (bald eagle [two observations], Cooper's hawk [two], and northern harrier [one]) have also been observed along the Oneonta BBS Route.

### 3. Audubon Christmas Bird Count

The Christmas Bird Count (CBC), which was created by the National Audubon Society in 1900, is the longest-running citizen science project in the country. 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 within a 15-mile (24 km) diameter count circle, and all bird species and individuals observed are recorded by volunteers. Since the edge of the closest count circle to the Facility Site (the CBC 117 circle) is approximately 8 miles north/northwest of the Facility Site, data from CBC 117 (Sherburne) is not applicable to the Facility Site and will therefore not be included in the Application.

### 4. eBird Database

The eBird database, managed by Cornell University's Lab of Ornithology, is an on-line database of bird observations collected by citizen scientists around the world, and vetted by regional experts. The eBird data is used to document bird distribution, abundance, habitat use, and trends within a simple, scientific framework to help inform bird research worldwide (eBird, 2018). The main limitation of eBird data is the concentration of data on publicly accessible lands such as state and national parks, national forest lands, and known birding hotspots. Although there are no such areas located within or near the proposed Facility, a review of the eBird online database will be conducted to determine whether there are any eBird records of bird species within or near the Facility Site.

### 5. Hawk Migration Association of North America

HMANA is a nonprofit organization that collects hawk migration data from almost 200 affiliated raptor monitoring sites throughout the U.S., Canada and Mexico, including the Franklin Mountain Hawkwatch, located approximately 15 miles east of the Facility near Oneonta. The Franklin Mountain Hawkwatch is operated by DOAS and fall raptor migration data is collected from late August through December. The site has operated since 1989 and has recorded an average of 4,346 raptors each year. Broad-winged hawk and red-tailed hawk are the species most frequently observed, with over 1,000 observations of each species in most years. Bald eagle and golden eagle (*Aquila chrysaetos*) are both recorded annually at the Hawkwatch site. In 2016, the most recent year for which data summaries are available, a total of 197 bald eagles and 231 golden eagles were recorded. During

the month of November, the peak month for golden eagle migration, an average of 0.91 golden eagles were recorded per hour. A total of 301 sharp-shinned hawks, and smaller numbers (<100) of Cooper's hawk, northern harrier, red-shouldered hawk, American kestrel, merlin (*Falco columbaris*), northern goshawk, and peregrine falcon (*Falco peregrinus*) were recorded during the 2016 migration (DOAS, 2017).

### *Wildlife Habitat*

The plant communities that occur within the Facility Site, as described above, provide habitat for various wildlife species. A discussion of wildlife habitat within the context of ecological communities and the species that they support will be provided in the Application.

Wildlife species that are reasonably likely to occur near Facility Site will be identified in a Wildlife Species List that will be included in the Application. This list will be based on publicly available data, data collected during on-site surveys, and data provided by government agencies.

As stated above, ~~ne the NYNHP provided a response from the NYNHP has yet been received. However~~ letter on January 23, 2019 (see Appendix J). In addition, the USFWS's Information for Planning and Consultation (IPaC) database was accessed on ~~August 16, 2016~~ January 31, 2019 for information relative to the proposed Facility. Results from the IPAC database indicate that there are no critical habitats, wildlife refuges, or fish hatcheries within or nearby the Facility Site (see Appendix E).

### *Mammals*

Publicly available information regarding the occurrence of mammalian species in the Facility Site is generally not available. Therefore, the occurrence of mammals will be determined through observations of species, habitat, and signs made during on-site field surveys for other studies such as wetland and stream delineations. Most common mammal species widespread in New York State are likely to occur in the Facility Site and will be included in any wildlife species lists developed as part of the Application.

Although no site-specific surveys for bats will be conducted, a number of common bat species are likely to be found in the Facility Site, including big brown bat (*Eptesicus fuscus*), hoary bat (*Lasiurus cinereus*), eastern red bat (*Lasiurus borealis*), silver-haired bat (*Lasionycteris noctivagans*), little brown bat (*Myotis lucifugus*),

and eastern pipistrelle tri-colored bat (*Perimyotis subflavus*). According to NYSDEC, it is possible that northern long-eared bat (*Myotis septentrionalis*) may occur within the Facility Site during fall migration.

### *Amphibians and Reptiles*

The Application will present information on amphibians and reptiles, based the New York State Amphibians & Reptile Atlas Project (Herp Atlas), database records obtained from NHP, NYSDEC, and USFWS, and field observations and assessments of habitat suitability within the Facility Site.

The New York State Amphibian & Reptile Atlas (Herp Atlas) is based on a survey conducted over ten years (1990–1999), that was designed to document the geographic distribution of New York State’s herpetofauna (NYSDEC 2007b). The USGS 7.5-minute topographic quadrangle is the unit of measurement for data collection for the Herp Atlas. Data from this survey will be queried for the Oxford and Guilford USGS 7.5-minute quadrangles, which encompass the Facility Site.

Vernal pools identified during wetland delineation that will be disturbed by construction or operation of the Facility will be identified in the Application. The Application will evaluate of the potential use of the identified vernal pools by amphibians and potential impacts.

### *Invertebrates*

Publicly available data on terrestrial invertebrate species are generally not available for upstate New York. However, the Application will provide a list of typical terrestrial invertebrates found in the region and likely to occur within the Facility Site based upon available habitat, and observations made during on-site surveys.<sup>42</sup> The Project Sponsor will also consult with NYSDEC and USFWS to identify any potential T&E species, Species of Special Concern (SSC), or Species of Greatest Conservation Need (SGCN).

As stated above, a site-specific request was made to the NYNHP, which tracks several invertebrate groups. However, no response from the NYNHP has yet been received.

### *Special Status Species*

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<sup>42</sup> Terrestrial invertebrate data will be provided at the taxonomic group level, invertebrates will not be identified at the species or genus level.

The Application will include a list of ecological requirements for all threatened and endangered (T&E) species, SCC, SGCN, and High Priority Species of Greatest Conservation Need (HPSGCN) that could potentially occur within the Facility Site (NYSDEC, 2017a and 2017b).

### Potential Impacts

Construction-related impacts to wildlife and wildlife habitat are anticipated to be limited to incidental injury and mortality due to construction activity and vehicular movement, construction-related sedimentation impacts on aquatic organisms, habitat disturbance/loss associated with clearing and earth-moving activities, and displacement of wildlife due to increased noise and human activities.

Direct impacts from construction may include incidental injury or mortalities due to construction equipment. Potential mortality is expected to be low as equipment used in wind energy facility construction generally moves at slow rates or is stationary for long periods (e.g., cranes). Incidental injury and mortality should be limited to sedentary/slow-moving species such as small mammals, reptiles, amphibians, and invertebrates that are unable to move out of the area being disturbed by construction. More mobile species (i.e., birds, bats, and large bodied animals) should be able to vacate areas that are being disturbed by construction. Vehicle-related mortality may increase temporarily due to the increased traffic during construction; however, as traffic decreases upon the completion of construction, so will wildlife-vehicle collisions. In addition, the Project Sponsor is committed to following best management practices (e.g., speed limits) that will reduce the possibility of vehicle-wildlife collisions.

The highest risk of direct mortality to birds from construction is the potential destruction of a nest during initial tree clearing. Significant adverse impacts to birds during construction of the Facility are not expected, as the Project Sponsor will conduct tree clearing outside the breeding season to the extent possible and will implement best management practices to avoid or minimize potential impacts to birds that could result from tree clearing activities during the breeding season.

Changes in vegetation could influence the behavior of wildlife species by changing the quality of habitat for foraging, nesting, or roosting. It is anticipated that the majority of wildlife present in the Facility Site would return to areas that were temporarily disturbed following the completion of construction activity. Significant adverse impacts on bat and bird populations are not expected during construction of the Facility. To the extent possible, tree clearing will be conducted between November 1 and March 31, when bats and other mammals are in hibernation and many birds have migrated south. The Project Sponsor will develop a Habitat Fragmentation Report

and a Net Conservation Benefit Plan that will outline measures that will be implemented to avoid, minimize, and mitigate potential impacts to wildlife that could result from tree clearing.

Some wildlife displacement will also occur due to increased noise and human activity as an indirect impact of Facility construction. The significance of this impact will vary by species and the seasonal timing of construction activities. However, the species most likely to be disturbed/displaced by Facility construction include forest-interior and edge species of birds and mammals. Within New York State, peak breeding time for birds common to agricultural, grassland, and forest habitat occurs in late spring and early summer. If construction begins before the initiation of breeding activities, then most breeding birds would likely avoid nesting in active construction areas. If construction begins during the breeding season, the breeding birds that are accustomed to similar disturbances such as farming and logging, are expected to remain in the area while others will likely relocate to adjacent suitable habitat. These impacts are not expected to be significant because of a sizeable amount of suitable habitat will remain undisturbed within and adjacent to the Facility Site. Outside of localized displacement due to construction disturbance in the immediate vicinity of turbines, access roads, etc., no significant displacement impacts on wildlife species are anticipated during construction.

Operation-related impacts to wildlife include direct habitat loss, habitat degradation through forest fragmentation, disturbance/displacement due to presence of wind turbines, and avian and bat mortality as a result of collisions with operating turbines.

Forest fragmentation may affect the movement, breeding, roosting, or nesting behavior of birds and bats across the landscape, which could degrade overall habitat suitability and result in reduced reproductive success. Fragmentation can occur at a variety of scales and patterns and may affect species differently depending on their habitat requirements. The potential effects of habitat fragmentation depend in part on previous land use, the original extent of intact forested habitat, how much habitat will be impacted during and after construction, and the behavioral sensitivity of potentially affected species or species group. The relative impacts of habitat removal or conversion also depend on the configuration of impacted areas, the current level of habitat degradation or disturbance, and types and levels of activity (e.g., traffic volume, noise levels, visual disturbances) to occur in the affected areas. In order to assess forest fragmentation impacts to songbird and bat populations as a result of construction and operation of the Facility, The Project Sponsor will perform a habitat fragmentation analysis that provides an overview of habitat fragmentation effects, quantifies the acreage of forest anticipated to result in edge effects, and assesses potential impacts of fragmentation to state-listed species. The fragmentation analysis will be appended to Application.

Habitat alteration and disturbance resulting from the operation of turbines and other wind farm infrastructure can make a site unsuitable or less suitable for nesting, foraging, roosting, or other wildlife use. The footprint of turbine pads, roads, and other Facility infrastructure represents a very small percentage of the Site following construction. Therefore, overall land use is relatively unchanged by wind power development. However, the true amount of wildlife habitat altered by a wind power facility can extend beyond the functional footprint, due to the presence of tall structures and increased human activity. An analysis of potential impacts to avian wildlife that may result from Facility construction will be conducted by the Project Sponsor and presented in an Avian Risk Assessment, which will be appended to the Application.

Turbines pose a collision risk for birds and every wind energy facility in the U.S. likely results in some bird mortality. Avian fatality rates have been fairly consistent across the U.S. at most wind energy facilities that have been studied with appropriate methods. The Application will include an evaluation of applicable avian collision risk studies that have been conducted across the northeastern U.S.

Wind energy development has shown to result in higher direct impacts to bats than birds, with an estimated 50,000 bats killed annually by wind turbines. Fatality estimates across the U.S. range from less than 1 bat/MW/year to 70 bats/MW/year. Collision risk is highest for migratory, tree-roosting species of bats (hoary, silver-haired, and eastern red bat), which account for an estimated 75.72% of all bat fatalities. However, impacts to bats will be reduced by the implementation of avoidance, minimization, and mitigation measures, which will be detailed in the Net Conservation Benefit Plan appended to the Application. The Application will include an estimate of migratory bat and Northern Long Eared bat mortality that will result from the project based on per MW estimates consistent with previous Article 10 cases.

The Project Sponsor will conduct research to determine the presence of documented wildlife travel corridors within or adjacent to the proposed Facility. Smaller scale travel corridors that are used for local movement between resource patches likely exist within the Facility Site. These include deer trails, areas between wetlands and uplands that reptiles and amphibians cross in order to access breeding grounds, and patches of forest that mammals may travel through while foraging.

While no wildlife concentration areas have been identified within the Facility Site, potential wildlife concentration areas are in proximity to the Facility, including three Audubon Important Bird Areas (IBA's) within 10 miles of the Facility Site; the Catskills Peaks IBA, Long Pond State Forest IBA, and Pharsalia Woods IBA. The Catskills Peaks global IBA is approximately 5 miles (8 km) from the Facility Site and contains one of the largest contiguous forest tracts in New York, with forests covering approximately 97% of the IBA (Audubon 2013a). Numerous species of

birds are known to occur within the IBA including the state threatened bald eagle, and state species of special concern cerulean warbler (*Setophaga cerulea*), Cooper’s hawk, northern goshawk (*Accipiter gentilis*), osprey, red-shouldered hawk (*Buteo lineatus*), and sharp-shinned hawk, which have all been recorded during the breeding season. The Long Pond State Forest IBA is approximately 8 miles (13 km) from the Facility Site and is breeding habitat for grassland birds, including the grasshopper sparrow (*Ammodramus savannarum*; state species of special concern) and Henslow’s sparrow (state threatened; Audubon 2013b). Pharsalia Woods IBA is approximately 5 miles (8 km) from the Facility Site and is composed of high elevation forests surrounded by open farmland and contains some of the largest unfragmented stands of hardwood and mixed forest in New York (Audubon 2013c). The IBA supports a variety of breeding forest birds including the state threatened northern harrier, and four raptor species of special concern (sharp-shinned hawk, Cooper’s hawk, northern goshawk, and red-shouldered hawk).

Based on the AWWI LAT (AWWI 2011), USGS Protected Areas of the US Database (PAD; USGS 2014), the NYSDEC Environmental Resource Mapper (NYSDEC, 2019), and Conservation Biology Institute’s (CBI) National Conservation Easement Database (CBI 2012) there are no federally owned lands within the Facility Site or within 10 miles (16.1 km) (Figure 10). There are five state-owned lands and two privately-owned wetland reserve program lands within 10 miles of the Facility Site (12 km<sup>2</sup>; Table 6; Figure 10).

**Table 6. Protected and Sensitive Areas within 10 Miles of the Facility Site.**

Name	Size (acres)	Location (Relative to Facility)	Owner
Basswood State Forest	540	Southwest	State Department of Natural Resources
South Hill State Forest	1,370	South	State Department of Natural Resources
Lyon Brook State Forest	324	West	State Department of Natural Resources
Wiley Brook State Forest	619	Southwest	State Parks and Recreation
NY State Veterans and Dependents Home	14	North	State Land Board
Wetland Reserve Program easement	56	North	Private Easement – managed by the NRCS
Wetlands Reserve Program easement	7	North	Private Easement – Managed by the NRCS

The Chenango Highlands, a Priority Conservation Area for The Nature Conservancy (TNC; TNC, 2016) is located west of the Facility Site. The Unadilla River Rockdale and Butternut Creek Flat Iron Road TNC Priority Conservation Areas are located immediately east of the Facility Site. Priority Conservation Areas are selected to promote conservation of the native plants, animals, and natural communities found within each region. The Nature Conservancy does not own the property associated with the Priority Conservation Areas.

The NYSDEC maps Significant Natural Communities within the state that are locations of rare or high-quality wetlands, forests, grasslands, ponds, streams, and other types of habitats, ecosystems, and ecological areas (NYSDEC, 2019). No Significant Natural Communities were identified within 10 miles of the Facility Site.

Special status bat species that may occur in the Facility Site based on their known range include the federal and State-threatened northern long-eared bat and eastern small-footed myotis (*Myotis leibii*), which is listed as a state species of special concern. Both species hibernate during winter. During summer, both the northern long-eared bat and eastern small-footed bat use forested areas throughout the northeast during spring, summer, and fall for roosting; eastern small-footed bats also use rocky areas/outcrops that have good solar exposure. Forested habitats within the Facility Site could provide roosting and foraging habitat for northern long-eared and eastern small-footed bats, although roosting habitat for the eastern small-footed bat (rocky outcrops and talus slopes) is limited. Potential impacts to these bat species could include loss of foraging/roosting habitat associated with tree removal, direct mortality due to tree clearing, if tree clearing is conducted outside the hibernation season, and turbine-related mortality during Facility operation.

Turbine-related mortality of northern long-eared bats has been documented at low levels at wind projects in the northeast, with 43 mortalities (less than 1% of bat mortality) documented at 19 facilities. The USFWS has concluded that, despite some monitoring limitations, northern long-eared bats were rarely detected as mortalities, even when they were known to be common on the landscape around wind energy facilities (USFWS, 2016).

#### Avoidance, Minimization, and Mitigation

Avoidance, minimization and mitigation of impacts to terrestrial ecology will be accomplished primarily through careful site planning. Large areas of forest and wetland will be avoided to the extent practicable. These ecologically valuable communities within the Facility Site will be largely protected from disturbance. Facility access roads will be sited on existing roads, farm lanes, logging roads, utility rights-of-way (ROWs), and the edges of farm fields wherever possible. Areas of disturbance will be confined to the smallest feasible area, and access restrictions to be implemented during construction and operation. Cleared forest land along Facility access roads and at the periphery of turbine sites will be allowed to regenerate in areas that are not required for Facility maintenance, which will provide habitat for early successional species over the short term and will eventually support forest species in the long term. The Application will provide a full description of the measures that will be implemented to avoid or minimize impacts to plant communities within the Facility Site.

The Facility will be designed to minimize bird and bat collision mortality. To reduce avian and bat impacts, electrical collection lines between the turbines will generally be buried; and any overhead collection or transmission lines will follow Avian Power Line Interaction Committee standards. Lighting of the turbines (and other infrastructure) will be minimized to the extent allowed by the Federal Aviation Administration (FAA), and will follow specific design guidelines to reduce collision risk (e.g., using motion-detection and blinking lights with the longest permissible off cycle). The use of guy wires will be minimized, and all guy wires will be marked to reduce collisions. In addition to Facility design features, an adaptive management plan to reduce northern long-eared bat fatalities will be included as part of the Net Conservation Benefit Plan, which will be appended to the Application.

Construction and operation of the Facility may result in some level of impact to special status species. An estimate of take for each species will be calculated as part of the Net Conservation Benefit Plan for the Facility. The methods and materials used to estimate take will be provided in the Application.

The Project Sponsor will extensively evaluate the potential impacts of Facility construction and operation on avian and bat species through the development of an Avian Risk Assessment and Cumulative Impacts Analysis, which will be appended to the Application. The Avian Risk Assessment analysis will include the results of all avian surveys completed, aforementioned literature sources, and publicly available resources about direct and indirect impacts on avian species due to wind energy development. The Project Sponsor will commit to a number of measures to avoid, minimize, and mitigate impacts to avian and bat species. Many of these measures will be included in the Net Conservation Benefit Plan mentioned previously. The Net Conservation Benefit Plan will outline avoidance measures that will be implemented through Facility siting and design, and minimization measures to reduce estimated take of any T&E species.

## **Wetlands**

### Description

A review of the NYSDEC wetland database indicates that two freshwater wetlands occur within the Facility Site (see Figure 6). These wetlands are primarily associated with mapped streams, including Kent Brook and an unnamed tributary to Guilford Creek. Table 7 provides a summary of State-regulated wetlands in the Facility Site.

**Table 7. NYSDEC-Mapped Wetlands**

<b>Wetland</b>	<b>Class<sup>1</sup></b>	<b>Total Size (acres)</b>	<b>Size Within Facility Site (acres)</b>
GL-2	IV	22.0	22.0
GL-3	III	12.1	12.1

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

NWI mapping indicates 172 wetland communities exist within the Facility Site, which cumulatively total 462.5 acres. Freshwater Forested/ Shrub Wetlands are the most common wetland community type within the Facility Site, totaling approximately 201.5 acres. Other NWI-mapped wetland communities on-site include Riverine Wetlands (158.4 acres), Freshwater Emergent Wetlands (75.3 acres) and Freshwater Ponds (27.3 acres).

### Potential Impacts

The Project Sponsor will conduct field-based wetland delineations and use the results of these delineation efforts to avoid wetland impacts to the greatest extent practicable. However, during Facility construction, potential direct or indirect impacts to wetlands and surface waters may occur. Direct impacts, including clearing of vegetation, earthwork (excavating and grading activities), and the direct placement of fill in wetlands and surface waters, are typically associated with the development of access roads and workspaces around turbines. The construction of access roads is anticipated to result in permanent impacts (i.e., loss of wetland/surface water acreage through filling), permanent forest conversion (i.e., clearing of forested wetlands), and temporary impacts to wetlands. The development and use of temporary turbine workspaces will result in only temporary impacts to wetlands/streams. The installation of buried collection lines is anticipated to result in permanent forest conversion (i.e., clearing of forested wetlands), and temporary impacts. Indirect impacts to wetlands and surface waters may result from sedimentation and erosion caused by adjacent construction activities (e.g., removal of vegetation and soil disturbance). This indirect impact may occur at wetlands adjacent to work areas where no direct wetland impacts are anticipated, including areas adjacent to proposed access road upgrade/construction, electrical collection and transmission routes, turbine sites, staging area(s), wind measurement towers, or the substations.

### **2.22.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.22 of the Article 10 regulations, Exhibit 22 of the Application will contain the following information.*

(a) 1001.22(a), Identification and Description of Plant Communities

- (1) The Application will provide information on plant communities within the Facility Site based on the results of reconnaissance-level field verification<sup>43</sup> conducted in 2018 and 2019, a review of USGS National Land Cover Database (NLCD) data, and recent aerial imagery. The Application will also identify areas of invasive species concentrations.
- (2) The Application will provide specific information on, and a detailed description of, all ecological communities identified within the Facility Site, as classified according to *Ecological Communities of New York State* (Edinger et al., 2014).
- (3) Maps, based on aerial photography and at a scale of 1:2000 or finer, showing approximate locations and extent of identified plant communities<sup>44</sup> within ~~a 500-foot radius of areas to be disturbed by Facility construction activities~~the Facility Site and within adjacent parcels, will be included.
- (4) The Application will provide a plant species list, which will include all species identified during various field surveys and incidentally while at the Facility Site and identify the month and year observed, to the extent available.

(b) 1001.22(b), Analysis of Impacts to Vegetation from Construction and Operation

- (1) Proposed Temporary and Permanent Impacts to Plant Communities
  - i) Specific vegetation clearing assumptions for each Facility component type, as identified in the Preliminary Design Drawings associated with Exhibit 11 of the Application, will be discussed.
  - ii) A table of disturbance area assumptions for each Facility component type identified in Exhibit 11 of the Application, addressed in "I" above, will be provided.
  - iii) The number of acres impacted will be calculated using GIS software, and the results will be presented in a summary impact table. ~~Impact calculations~~This impact table will include the following impact categories: permanent conversions of one cover type to another, impact (i.e., areas that will be clearedconverted to built facilities), permanent conversion (i.e., areas disturbed during construction and maintained by the Applicant in a successional state), and temporary impact (i.e., areas disturbed by the Applicant during Facility construction and maintained during Facility operation (e.g., collection line rights-of-way)-that will be allowed to revegetate following soil stabilization).

<sup>43</sup> Encompassing both on-site surveys and roadside surveys from adjacent parcels.

<sup>44</sup> As classified according to *Ecological Communities of New York State* (Edinger et al., 2014).

iv) Plant community mapping referenced in Section 2.22.2(a)(3) will depict limits of vegetation disturbance- (i.e., clearing) and the limits of soil disturbance. GIS shapefiles of all areas of disturbance will be provided to NYSDEC and NYSDPS.

(2) Invasive Species Identification

- i) A list of all non-native invasive plant observed during site-specific field investigations and known to occur within areas to be disturbed by the construction and operations of the Facility will be provided in the Application. This list will be based on a qualitative survey. For the purposes of Exhibit 22 of the Application, “invasive species” is defined as all terrestrial and aquatic species listed at: [http://www.dec.ny.gov/docs/lands\\_forests\\_pdf/islist.pdf](http://www.dec.ny.gov/docs/lands_forests_pdf/islist.pdf) (NYSDEC, 2014). Additional invasive species not included on this list (e.g. reed canary grass and wild parsnip) may also warrant specific management and control measures, depending on current populations of such species within and nearby the Facility. The findings of the qualitative survey of invasive species will be verified by the Project Sponsor within 6 months prior to construction. If changes in invasive plant communities are observed during this verification, updates to the Invasive Species Control Plan (see Section 2.22.2(b)) will be filed as a compliance filing.
- ii) An area and concentration threshold that requires mapping and an individual treatment plan will be identified for each invasive species.
- iii) Maps of identified concentrations of non-native invasive plant species in areas of proposed disturbance, at a scale of 1:2000, will be included.
- iv) A list of invasive insect species, if any, limited to incidental observations concentrations of insects during field observations in support of Exhibits 22 and 23 of the Application, will be included.

(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 Application. The Invasive Species Control Plan will include:

- i) A summary of the survey methods to be used to identify non-native invasive species;
- ii) Specific methods the Project Sponsor proposes to use to ensure that packing materials, imported fill, and fill leaving the Facility site will be free of non-native invasive species, including materials, seeds and parts, to the extent practicable;

- iii) A specification on how imported fill material, if needed, will be free of non-native invasive species, material, seeds and parts and a description of how fill brought to the Facility will not be used in areas free of invasive species;
- iv) A description of Facility-specific grading, erosion, and sediment control measures that will be used to prevent the introduction, spread, or proliferation of non-native invasive species, to the extent practicable;
- v) Details of procedures for preventing the spread of invasive invertebrates and diseases (e.g., the emerald ash borer, hemlock woody adelgid, and oak wilt), based on specific protocols and/or guidance by the NYSDEC and NYSDAM, and a discussion of how the Project Sponsor will comply with State quarantine and protective zones, where applicable;
- vi) Implementation plans for ensuring that equipment and personnel arrive at and depart from the Facility Site clean and free of all non-native invasive plant and insect species, including a description of options for cleaning equipment and personnel, and properly disposing of materials known to be infested;
- vii) 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;
- viii) A plan for post-construction monitoring and survey measures and procedures for revising the Invasive Species Control Plan if the established goals are not met;
- ix) Anticipated methods and procedures used to treat non-native invasive plant and insect species that have been introduced or spread as a result of the construction or operation of the Facility; and
- x) Landscape revegetation plans, including specification of native seed mixes to be used, as appropriate. This section may also include a cross reference to Exhibit 23(c)(1) of the Application, which will describe site stabilization measures.

(c) 1001.22(c), Measures to Avoid or Mitigate Plant Community Impacts

A detailed description of the proposed measures that will be implemented to avoid, minimize, and potentially mitigate<sup>45</sup> for any temporary and permanent impacts to existing, non-invasive plant communities, particularly grasslands, wetlands, interior forests, and shrublands, as a result of the construction and operation of the Facility will be provided.

(d) 1001.22(d), Vegetation, Wildlife, and Wildlife Habitats

<sup>45</sup> Including mitigation measures that will be used to recreate or enhance wildlife habitat, as applicable.

1001.22(d) of the Application will contain information on and a characterization of aquatic and terrestrial vegetation, wildlife, and wildlife habitats that occur throughout the Facility Site, encompassing all areas that may be disturbed during Facility construction activities, including:

- (1) Identification and description of plant communities, species, and wildlife habitat.
  - i. Such descriptions will include field identification of aquatic habitats, plant communities, and wildlife habitat that could potentially support federally or state-listed threatened and endangered (T&E) species, state species of special concern (SSC), and state species of greatest conservation need (SGCN) as documented during on-site field investigations (e.g., ecological cover type assessments, habitat assessments, and wetland delineations).
  - ii. Ecological cover type assessments and habitat assessments will be classified according to *Ecological Communities of New York State* (Edinger et al., 2014).
  - iii. Designated unusual habitats or significant natural communities that could support federally or state-listed T&E species, Species of Special Concern (SSC), or Species of Greatest Conservation Need (SGCN) will be identified and depicted.
  - iv. A table of state and federally listed species occurring or likely to occur within the Facility Site will be provided and will include the following columns:
    - a. Species name
    - b. Federal status
    - c. NYS status
    - d. SGCN status
    - e. Ecological habitat requirements and on-site observation notes
    - f. Source of information indicating potential presence of species
    - g. Indicate if the species was observed onsite
  - v. A characterization of avian species will be completed using data from NYNHP, NYSDEC ~~staff~~, USFWS, local [bird/wildlife](#) experts (e.g. DOAS), New York Breeding Bird Atlas (BBA), US Geological Survey (USGS), Breeding Bird Survey (BBS) data, Hawk Migration Association of North America (HMANA), Christmas Bird Count (CBC), eBird, and on-site U.S. Fish and Wildlife Service (USFWS) and New York Natural Heritage Program (NHP) surveys.
  - vi. Publicly available database information will be used to determine if any bat hibernacula are located within the 5-mile Study Area. If hibernacula are identified within the 5-mile Study Area, the location

and distance to the nearest identified hibernacula will be provided separately to NYSDEC and NYSDPS.

- vii. Information on amphibians and reptiles will be provided based the New York State Amphibian & Reptile Atlas Project (Herp Atlas), database records obtained from NHP, NYSDEC, and USFWS, and observations and assessments of habitat suitability in the Facility Site.
- viii. Vernal pools will be identified during field delineation efforts that will be disturbed by construction or operation and delineated, regardless of their relationship to wetlands, within the Facility will be identified. The potential use of the identified Wetland Study Area and verified under appropriate seasonal conditions. If vernal pools by amphibians and there are identified, they will be documented and potential impacts to those that may occur to vernal pools and the species that utilize them will be evaluated.
- ix. A list of typical terrestrial invertebrates found in the region and likely to occur within the Facility Site will be prepared based upon available habitat and observations made during on-site surveys. The Project Sponsor will contact/consult with NHP, NYSDEC and USFWS to identify any potential T&E species, Species of Special Concern (SSC), or Species of Greatest Conservation Need (SGCN).
- x. A discussion of the extent, methodology and results of all avian, bat, and other wildlife surveys conducted by the Project Sponsor or its agents within or in the vicinity of the Facility will be provided in Exhibit 22(h) of the Application. Shapefiles (labeled by year) will be provided to DPS and DEC of all avian surveys completed on-site that include spring/fall raptor migration surveys, breeding bird surveys, eagle use surveys, and eagle nest aerial surveys.

(e) 1001.22(e), Species List

The Application will provide the information required by 1001.22(e), based on the information obtained in support of Section 2.22.2(d) and 2.22.2(h). A plant and wildlife species inventory will also be included based on existing data available from the NHP, NYSDEC staff, USFWS, local experts (e.g. Delaware-Otsego Audubon Society (DOAS), New York Breeding Bird Atlas (BBA), US Geological Survey (USGS), Breeding Bird Survey (BBS) data, Hawk Migration Association of North America (HMANA), Christmas Bird Count (CBC), eBird, and on-site surveys Nature Conservancy surveys/reports, the Kingbird publication, and on-site surveys. The species list

included in the Application will specify whether each species was observed or is known or predicted to occur within the Facility Site.

The Species List will note the occurrence of each species (e.g., whether it was observed on-site, will provide the source of information indicating the potential or documented species presence, and will detail conservation status.

(f) 1001.22(f), Analysis of Construction and Operation Impacts

1001.22(f) of the Application will contain:

- (1) A summary narrative and associated mapping to explain and illustrate:
  - ii) Potential and expected construction and operational impacts to forest and grassland cover types;
  - iii) Wildlife habitats and the species that they support (including a discussion of impacts from habitat fragmentation);
  - iv) Wildlife concentration areas, if identified;
  - v) Travel corridors, if identified; and
  - vi) Terrestrial organisms identified during pre-construction field studies in relation to the proposed limits of disturbance.
- (2) A discussion of any direct and indirect construction-related impacts that may occur to wildlife and wildlife habitat, including:
  - i) Incidental injury and mortality due to construction activity vehicular movement;
  - ii) Habitat disturbance and loss associated with clearing and earth-moving activities; and
  - iii) The indirect impacts of displacement of wildlife.
- (3) A discussion of potential direct and indirect operational impacts including:
  - i) Loss of habitat;
  - ii) Forest and grassland fragmentation, as applicable;
  - iii) Wildlife displacement;
  - iv) Avian collisions;
  - v) Bat collisions; and
  - vi) Direct and indirect impacts to wildlife travel corridors or winter concentration areas within or adjacent to the Facility Site, as applicable.

- (4) 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) 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 by the NYSDEC), and vegetation cover types classified according to *Ecological Communities of New York State* (Edinger et al, 2014), particularly grasslands and interior forests, if affected.
- (6) Information regarding the presence of federally and state-listed T&E species, SSC, and SGCN, including:
  - i) A discussion of the Facility's potential to impact such species or their habitats;
  - ii) Documented T&E species, SSC, and SGCN, based on database records obtained from the NHP, other known records documented by NYSDEC and USFWS, and on-site wildlife, ecological, and wetland surveys; and
  - iii) A summary impact table containing information on all species within these categories.

If it is determined by the NYSDEC that construction or operation of the Facility is likely to result in estimated take of federally- or state-listed species, including the adverse modification of habitat on which a federally- or state-listed species depends, the Project Sponsor will submit with the Article 10 Application an avoidance, minimization, and mitigation plan that demonstrates a net conservation benefit to each 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, including proposed actions to avoid or minimize direct impacts to listed species. If estimated direct impacts are unavoidable, the Application will discuss proposed minimization and mitigation measures, including how the proposed minimization actions will minimize impacts to the maximum extent practicable, and proposed mitigation actions to provide net conservation benefit for each affected state-listed species.

In developing the information presented in this section of the Application, the Project Sponsor will consult with the NYSDEC Regional Wildlife Office, USFWS Field Office in Cortland, New York, and, more generally, with the USFWS and the NYSDEC.

- (g) 1001.22(g), Avoidance and Mitigation measures

A description of the impact avoidance and minimization efforts used in developing the Facility, as they pertain to vegetation, wildlife, and wildlife habitat will be provided. The Facility design, construction controls, and operational measures that can be reasonably implemented to avoid or minimize direct and indirect impacts to wildlife and wildlife habitat within the Facility Site will also be described. Measures to avoid or mitigate direct and indirect impacts to vegetation will be addressed in Exhibit 22(c) of the Application. This will include a discussion of measures to avoid or minimize direct impacts and indirect impacts (i.e., habitat loss, fragmentation, and displacement) to federal and state-listed and protected species, through appropriate and effective turbine siting and operational curtailment regimes. A proposal to mitigate, in an appropriate and timely manner, for unavoidable estimated direct impacts to federal or state-listed T&E species will also be discussed. Measures to avoid, minimize, and mitigate impacts to vegetation will be addressed in Exhibit 22(c) of the Application. In addition, Exhibit 9 of the Application will compare known, estimated, and expected impacts to wildlife and habitat between the proposed Facility and any identified alternatives.

(h) 1001.22(h), For Proposed Wind-powered Facilities

1001.22(h) of the Application will contain a description of the avian and bat impact analysis and monitoring program for the Facility.

- (1) Pre-construction avian studies will be conducted to support the Application. Based on the results of these studies and standard industry practice, the Application will discuss potential impacts to avian and bat species. In addition, the Application will include a cumulative impacts analysis for avian and bat species (particularly northern long-eared bat, migratory tree bats, golden eagle, and bald eagle) that could be impacted by the operation of the Facility. This will include a discussion of the potential cumulative impacts of the Facility on bird and bat species and the habitats that support them with respect to other wind-powered facilities proposed to be constructed or currently operating near the Facility and in the state. For the purposes of Exhibit 22(h) of the Application, “proposed facility” or “proposed turbines” are defined as any facility or turbines that are associated with a project for which a PSS has been submitted to NYSDPS and posted on the docket, and a case number assigned under Article 10 of the PSL; or are part of a project that has completed or is currently undergoing the State Environmental Quality Review (SEQR) process, for which there is a publicly available DEIS or FEIS document, as of the date of submission of the Application. The cumulative impacts analysis will include:

- i) Wildlife and habitat impact analysis descriptions, including an identification, evaluation, and assessment of direct and indirect Facility-related impacts to avian and bat species; federal and state-listed T&E species, SSC, and SGCN and their habitats; wildlife concentration areas; migration corridors; and forest and grassland habitats. The NYSDEC Region 7 Wildlife Office will be contacted to obtain the most recent breeding, wintering, and habitat data for state T&E species. The USFWS will be contacted to obtain the most recent breeding, wintering, and habitat data for federal T&E species.
  - a. Avian and bat occupancy and usage of the Facility site will be compared to other proposed and operating wind-powered facilities located in New York and operating wind-powered facilities throughout the northeastern US (Pennsylvania, New Hampshire, Vermont, and Maine), where data are publicly available. Analyses will be based on a discussion and comparative analysis of the extent, methodology, and results of the pre-and/or post-construction wildlife studies conducted for the Facility, and other wind energy projects for which data are publicly available, as well as any additional information provided by NYSDEC and USFWS.
  - b. A discussion and calculations describing current installed wind capacity in New York as well as the estimated increase in installed New York wind capacity during the life of the Facility (30 years) will be included.
- ii) Cumulative Avian Impacts
  - a. The Application will use the results of its eagle use surveys completed at the Facility to assess potential risk to bald and golden eagles, as compared with the Local Area Population (LAP).
  - b. A description of estimated bird mortality (birds/turbine/year and birds/MW/year) documented in New York state, in the past 20 years will be provided.
  - c. A description of estimated bird mortality (birds/turbine/year and birds/MW/year) annually and over the life of the Facility will be provided.
  - d. A description of estimated bird mortality across the northeastern US (Pennsylvania, New York, New Hampshire, Vermont, and Maine), based on publicly available post-construction avian data will be provided.
- iii) Cumulative Bat Impacts
  - a. A description of bat mortality (bats/turbine/year and bats/MW/year) documented in New

York state, in the past 20 years will be provided.

- b. A description of estimated bat mortality (bats/turbine/year and bats/MW/year) annually and over the life of the Facility will be provided.
- c. A description of estimated bat mortality (bats/turbine/year and bats/MW/year) across the northeastern US (Pennsylvania, New York, New Hampshire, Vermont, and Maine), based on publicly available post-construction bat data will be provided.
- d. Potential population effects of wind turbine-caused mortality to migratory tree bats (eastern red bat, hoary bat and silver-haired bat) will be provided.

iv) Habitat Fragmentation

- a. Acres of forest and grassland habitat lost directly through clearing and cover type conversion will be provided.
- b. Acres of forest and grassland habitat lost indirectly through functional loss/degradation will be provided. For the purposes of the forest fragmentation analyses, it is assumed that indirect effects will extend up to 300 feet beyond the limits of disturbance.

(2) The Application will provide information associated with a proposed post-construction monitoring program to be implemented to assess direct and indirect Facility impacts 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 be determined on a site-specific basis through discussions between the Project Sponsor, NYSDEC, NYSDPS and USFWS. At a minimum, the post-construction monitoring program presented in the Application will specify the estimated take of each target species during operations; survey monitoring methods, effort, scope, and duration; data reporting and compliance documentation; construction parameters; and mitigation measures sufficient to ensure the Project Sponsor complies with the substantive requirements of 6 NYCRR Part 182. The post-construction monitoring program will be in place prior to the start of Facility operation.

(3) The Application will include:

- i) An outline of the bird and bat avoidance and minimization techniques;
- ii) Mitigation options for unavoidable bird and bat impacts;
- iii) A mitigation proposal with qualified and quantified expected benefits;

- iv) Potential monitoring and adaptive management responses and operational adjustments (i.e. appropriate curtailment regimes) to be implemented at the Facility; and
- v) Support studies and reports (e.g., Avian Risk Assessment, Net Conservation Benefit Plan) that will describe compliance with the substantive requirements of 6 NYCRR Part 182, as well as measures to avoid, minimize, mitigate impacts to avian and bat species. This will include a discussion of a curtailment regime including operational details of cut in speed, seasonal dates, temperature and time, as well as data and discussion regarding the issues of the economic impact of any required curtailment.

(i) 1001.22(i), Wetland Maps

1001.22(i) of the Application will include:

- (1) Maps at a scale of 1:24,000. In addition, the Preliminary Design Drawings, which will be prepared at a common engineering scale (e.g., 1:60, 1:100, etc.), will depict field-delineated wetlands.
- (2) A determination of wetland boundaries based on on-site field investigationsdelineations conducted by a qualified individual within the ~~500-foot~~ Wetland Study Area (i.e., all areas in the Facility Site within 500 feet of areas to be disturbed by construction). ~~Hydrology, vegetation, and soil characteristics within the 500-foot Study Area will be used to define wetland boundaries, which will be mapped using GPS technology with reported sub meter accuracy. In addition, due to the proximity of actual disturbance, wetland boundaries within the 100-foot Wetland Study Area (i.e., all areas in the Facility Site within 100 feet of linear Facility components and within 265 feet of non-linear Facility components) will be further~~Vernal pool boundaries will also be determined within the Wetland Study Area. Wetland boundaries within the Wetland Study Area will be defined based on on-site field investigations conducted in accordance with the three-parameter methodology described in the U.S. Army USACECorps of Engineers (USACE) *Wetland Delineation Manual*, and the appropriate *Regional Supplement to the USACE of Engineers Wetland Delineation Manual*, and freshwater wetlands regulated under Article 24 of the New York Environmental Conservation Law (ECL) will be determined according to methods described in the *NYSDEC Freshwater Wetlands Delineation Manual* (1995). All wetland boundaries within the ~~100-foot~~ Wetland Study Area will be defined in the field by sequentially numbered pink surveyor's flagging marked "wetland delineation," and will be mapped using GPS technology with reported sub-meter accuracy. Wetlands identified within the Facility Site, as described in this section, will be referred to as "delineated wetlands." Wetland Delineation Data Forms (or comparable forms) will be

completed as necessary to fulfill USACE requirements. Such information will be necessary to obtain USACE approval outside of the Article 10 process.

- (3) Predicted presence and extent of wetlands within 500 feet of areas to be disturbed by construction but outside of the Facility Site (e.g., wetlands within adjacent properties without accessibility) will be approximated based on remote-sensing data, interpretation of published wetland and soil mapping, and aerial photography. Wetlands identified by these methods will be referred to as “approximate wetlands.”
- (4) The results of the on-site delineation (including shapefiles) will be provided to a NYSDEC Regional wetland biologist to facilitate a site visit and ultimately a jurisdictional determination. Wetlands that are verified by the USACE and NYSDEC will be referred to as “jurisdictional wetlands”.
- (5) All delineated wetland boundaries will be keyed to the Preliminary Design Drawings identified in Section 2.11.2(a).
- (6) Information will be provided indicating which delineated wetlands are likely state-regulated, including those that are part of wetland complexes that meet state-criteria for jurisdiction (e.g. 12.4 acres or larger, and/or support listed species) but are not currently mapped. All state-regulated wetlands will be identified by NYSDEC’s alphanumeric code in addition to the code assigned by the Project Sponsor during delineation. Investigation areas for wetland delineations may need to be extended to make these determinations. At a minimum, the desktop mapping approach described in Section 2.22.2(i)(3) will identify all wetlands that potentially meet state-criteria for jurisdiction.
- (7) Maps at a scale of 1:50, depicting delineated wetlands and wetland impacts, differentiated by impact type (i.e., temporary, permanent, or permanent forest conversion), within areas to be disturbed by construction. Facility components, proposed grade changes, limits of ground disturbance, limits of vegetation clearing, and approximated wetlands will also be included on these maps, as applicable. Shapefiles depicting the same will be provided to NYSDEC. Following field visits by NYSDEC and USACE, the Application will be updated, as needed, with final wetland delineations, determinations, and the resulting impact calculations. The delineation report that will be provided to the District USACE Office and the Regional NYSDEC Office and included with the Application will include the results of the field delineation (i.e., describe the location, size, community type, and likely jurisdictional status of all delineated streams and wetlands).

(j) 1001.22(j), Description of Wetlands

A Wetland and Stream Delineation Report will be developed by the Project Sponsor and appended to the Application. This report will include a description of the characteristics and Cowardin classification of all federal, state and local-regulated wetland communities. This description will include the State-assigned alpha-numeric

code of all State-protected Article 24 wetlands identified within the Facility Site. The Wetland and Stream Delineation Report will also include a summary table of the field data collected regarding to satisfy the USACE's requirements. This summary table will include vegetation, ~~soil~~soil, and hydrology data, and copies of all Wetland Determination Data Forms.

(k) 1001.22(k), Wetland Assessment

The Wetland and Stream Delineation Report will include a qualitative and descriptive assessment of each delineated wetland to assess functions and values based on a methodology similar to *The Highway Methodology Workbook Supplement, Wetlands Functions and Values: A Descriptive Approach* published by the U.S. Army USACE of Engineers New England District in 1995 (USACE, 1995). The functions/values evaluated using this method will include:

- (1) Groundwater recharge/discharge.
- (2) Flood-flow alteration.
- (3) Fish and shellfish habitat.
- (4) Sediment/toxicant/pathogen retention.
- (5) Nutrient removal/retention/transformation.
- (6) Production export.
- (7) Sediment/shoreline stabilization.
- (8) Wildlife habitat.
- (9) Recreation.
- (10) Education/scientific value.
- (11) Uniqueness/heritage.
- (12) Visual quality/aesthetics.
- (13) Protected threatened or endangered species habitat.

(l) 1001.22(l), Offsite Wetlands

- (1) The Application will provide an analysis of hydrological connections to offsite wetlands, supported by the mapping described in Section 2.22.2(i)(2).
- (2) A description of the hydrologic connectivity of all wetlands within the Facility will be included in the Application, including a summary of those wetlands anticipated to fall under NYSDEC jurisdiction (under Article 24 of the ECL) and USACE jurisdiction (under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act). Assessments of potential state wetland jurisdiction will include both

“mapped” and “unmapped wetlands” that meet NYSDEC’s 12.4-acre size threshold (including any wetlands of any size separated by less than 50 meters which function as a unit in providing wetland benefits, pursuant to 6 NYCRR Part 664, or otherwise meet state criteria for jurisdiction (e.g. wetlands or vernal pools determined to be of Unusual Local Importance, pursuant to 6 NYCRR 664.7(c)).

- (3) A summary will be provided of off-site wetlands adjacent to the Facility and any disturbed areas that may be hydrologically or ecologically influenced or impacted by development of the Facility, to determine their general characteristics and relationship, if any, to the delineated wetlands within the Facility. Based on the evaluation of onsite wetland benefit impacts, implications to offsite wetlands hydrologically or ecologically connected will be considered.

(m) 1001.22(m), Identification of Temporary and Permanent Impacts to Wetlands and Regulated Adjacent Areas

- (1) Temporary and permanent impacts to delineated wetlands (and any State-regulated 100-foot adjacent areas) will be quantified based on the proposed footprint of all Facility components and associated impact assumptions. Final impact calculations will be based on delineated wetland boundaries, as described in Section 2.22.2(i)(2). This assessment will also include a description of applicable permanent wetland forest conversion, if any, which would occur as a result of the construction, operation, or maintenance of the Facility.

- (2) Such impacts will be calculated, summarized, and presented in a table that will:

- i) Identify the name and type of each impacted wetland, the type and area of impact (i.e., temporary, permanent, or permanent forest conversion), and the Facility component impacting the wetland;
- ii) Clearly discern between federal and state wetland impacts and impacts to 100-foot State-regulated adjacent areas;
- iii) Include the NYSDEC code assigned to the wetland at the time the Application is filed, as applicable;
- iv) For each wetland, explain why impacts could not reasonably be avoided;
- v) Propose site specific actions to minimize impacts to resources that are not bypassed;
- vi) Propose site specific actions to mitigate impacts to resources that are not bypassed; and
- vii) Identify the corresponding page number in the Preliminary Design Drawings depicting the resource.

(3) Impacts to wetlands will be mapped as outlined in Section 2.22.2(i)(7).

(n) 1001.22(n), Avoid and Mitigate Wetland Impacts

A general discussion of measures considered, and methods implemented to avoid wetland impacts, including stream crossing methodology, and a description of Facility construction and operation in relation to the standards established by ECL Articles 15 and 24 will be included in the Application. It is anticipated that direct impacts to wetlands and streams will be minimized by utilizing existing or narrow crossing locations whenever possible. Additional measures may include consideration of alternate siting or routing options, trenchless crossings (e.g., HDD or jack and bore), equipment restrictions, herbicide use restrictions, and erosion and sedimentation control measures. Exhibit 23 of the Application will contain a further discussion of how potential impacts to streams will be evaluated, avoided, minimized and mitigated. Where impacts are unavoidable, and have been minimized to the greatest extent possible, the anticipated mitigation measures to be implemented to offset impacts to wetlands (and state-regulated 100-foot adjacent areas) will be discussed, including the use of reasonable alternative stream and wetland crossing methods. Pursuant to 6 NYCRR 663.5(g), a conceptual mitigation plan for impacts to state-regulated wetlands and adjacent areas will be provided in the Application

An Environmental Compliance and Monitoring Program (ECMP) Plan will be provided that identifies the use of an Environmental Monitor(s) during construction and restoration activities and describes the duties of the Environmental Monitor(s).

(o) 1001.22(o), State and Federal Endangered or Threatened Species

Federal and ~~state~~State-listed T&E species, and State-regulated species documented within or adjacent to the Facility Site, along with a discussion of potential direct and indirect impacts to these species and their conservation status and occurrence, will be identified in the Application- (see Sections 2.22.2(f)-(h)). All federal and State-listed T&E species, and State-regulated species will also be identified in the Species List appended to the Application (see Section 2.22.2(e)). In addition, a Net Conservation Benefit Plan, ~~if needed~~ which would include a discussion of impact avoidance measures for federal and State-listed T&E species, will be provided, if needed, as described in Section 2.22.2(f).

This section of the Application will also include:

- A discussion of impacts to federal and State-listed T&E species, SSC, and SGCN and their habitats and a summary impact table containing information on listed and protected species in these categories. Such a table

should include, at a minimum, the following: species name; federal status; State status; if species was observed on site or potentially occurring in the Facility; source of information indicating potential or documented presence of species; discussion of the type of impact (direct and/or indirect) that may occur to each species; estimated take of each listed species, and; evaluation of all impact avoidance measures considered.

- A Threatened and Endangered Species Avoidance, Minimization and Mitigation Plan that meets the requirements of Part 182 and demonstrates net conservation benefit to the affected listed species.
- The Incidental Take Permit application components pursuant to 6 NYCRR Part 182, if applicable.

(p) 1001.22(p), Invasive Species Control Plan

An Invasive Species Control Plan, (ISCP), as described in Section 2.22(b)(3), will be provided in Exhibit 22(b) of the Application. This ISCP will include implementation plans for ensuring that equipment and personnel are free of invasive species, a description of cleaning procedures for removing invasive species, and a description of the Applicant's post-construction monitoring plan.

(q) 1001.22(q), Impacts on Agricultural Resources

The Application will quantify and analyze the temporary and permanent impacts of the Facility construction and operation on agricultural land, based on the proposed footprint of all Facility components and associated impact assumptions. To minimize impacts to active agricultural land, the Project Sponsor plans to coordinate with the New York State Department of Agriculture and Markets (NYSDAM) and generally adhere to comply with the Guidelines for Agricultural Mitigation for ~~Windpower~~Wind Power Projects to the maximum extent practicable. If NYSDAM guidelines cannot be met, the Applicant will consult with NYSDAM. A discussion of potential mitigation, following the most recent edition of guidelines established by the NYSDAM will also be included. Exhibit 21 of the Application will include a map of the Facility Site showing locations of Prime Farmland, Prime Farmland if drained, and Farmland of Statewide Importance, discuss methods for identifying drainage tile lines prior to construction, and discuss the restoration of any drainage tile lines impacted by Facility construction activities. This information will also be referenced in Exhibit 4 of the Application.

## 2.23. WATER RESOURCES AND AQUATIC ECOLOGY

### 2.23.1. Discussion

Exhibit 23 of the Application will include a study of the groundwater, surface water, stormwater, and aquatic ecology impacts of the Facility, as described below.

#### Groundwater

Based on preliminary evaluations conducted in support of this FSS, depth to groundwater ranges from the ground surface to greater than 78 inches throughout the Facility Site, with high water tables most common in low-lying areas in and adjacent to wetlands. Depth to bedrock ranges from 16 inches to greater than 79 inches, the majority of the Facility Site having soils greater than 78 inches (Soil Survey Staff, 2018).

A Freedom of Information Law request letter will be sent to the NYSDEC and to Chenango County to identify existing water well locations. This letter will request any information pertaining to groundwater wells (including location, construction logs, depths, and descriptions of encountered bedrock) within the Facility Site. Additional requests for information will be submitted to NYSDOH through its established confidentiality agreement process for Article 10 projects seeking confidential water intake information. The Application will include information received from the NYSDEC, NYSDOH, and Chenango County on water wells, including location, depth, yield, and use, if such data are available. The Application will include an evaluation of potential impacts on public water supplies identified through such consultation.

In addition, private wells will be identified by sending a well survey to all residences/businesses located within a 500-foot radius of the Facility Site and within a 0.5-mile radius of proposed blasting locations. A summary of responses received from the well survey will be included in the Application, along with a corresponding GIS-based parcel map. However, the Project Sponsor cannot guarantee that a response to all (or even a majority of the) surveys will be received.

Preliminary evaluations conducted in support of this FSS also indicate that the Facility Site does not contain any primary aquifers, a designation applied by US Geological Survey (USGS) and New York State Department of Environmental Conservation (NYSDEC) to aquifers that are highly productive and utilized by major municipal water supply systems (NYSDEC, 2011). There are also no sole source aquifers within the Facility Site (see Figure 5). The Facility Site overlays part of an unconsolidated aquifer mapped by NYSDEC Division of Water, Bureau of

Water Resources Management. This mid yield, unconfined aquifer runs north-south underneath the Unadilla River valley and yields 10-100 gallons per minute (NYSDEC, 2008).

The Facility is not anticipated to result in any significant impacts to groundwater quality or quantity, drinking water supplies, aquifer protection zones, or groundwater aquifers in the Facility Area. Most of the proposed turbines will be located on hilltops, generally above and outside of the aquifer footprints located in the valleys. 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 Application, including results of the preliminary geotechnical evaluation, as well as specific avoidance, minimization, and mitigation measures that will be implemented to protect groundwater resources during construction of the Facility.

### **Surface Water**

The Facility Site is located in a high elevation area at the boundary between two major watersheds. The majority (approximately 88%) of the Facility Site lies within the Upper Susquehanna drainage basin (USGS Hydrologic Unit 02050101), while the northwest portion (approximately 12%) of the Facility Site lies within the Chenango drainage basin (USGS Hydrologic Unit 02050102). The Chenango and Upper Susquehanna basins drain portions of Broome, Tioga, Chenango, Madison, Onondaga, Schoharie, Herkimer, Oneida, Cortland, Delaware, and Otsego counties. These two watersheds, and their rivers and streams supply clean drinking water in the Mid-Atlantic region. However, these drainage basins are highly susceptible to flooding. For example, widespread flooding events in 2005, 2006, and 2011 caused property damage throughout eastern Chenango County (Chenango County, 2015). Mitigation efforts resulting from construction and operation of the Facility will likely have positive effects on the local watershed.

One NYSDEC-protected stream is located within the Facility Site: Kent Brook, a Class C(t) stream that runs north to south through most of the Facility Site (see Figure 6). The Application will identify the classification and characteristics of all NYSDEC mapped streams within the Facility Site, based on publicly available data, field data collected during any on-site wetland and stream delineations, and information provided by NYSDEC. With respect to fish species, a letter will be sent to the NYSDEC inquiring about fish communities in streams associated with the Facility Site. These data provide information on fish species that have been caught or identified in the streams of interest. The resulting data will be included in the Article 10 Application.

A FOIL request on the location of downstream surface drinking water intake sites will be submitted to the Chenango County Department of Public Health and the NYSDOH, as appropriate. 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 Site. The Application will identify the surface drinking water intake sites identified through this correspondence, and discuss the type, nature, and extent of services provided by each source based on the information received.

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

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

An on-site wetland and stream delineation will be conducted, and a Wetland and Stream Delineation Report will be prepared and included with the Application. Based on the Facility layout (i.e., proposed footprint of all Facility components) and the delineated stream and wetland boundaries, GIS calculations will be performed to determine the approximate acreage of surface waters that may be temporarily and permanently impacted. The Article 10 Application will also address potential Facility-related impacts to drinking water supplies. No dredging is proposed as part of this Facility.

The Application will also address potential Facility-related impacts to drinking water supplies, to ensure that drinking water sourced at surface intake sites are not degraded by Facility construction or operation. A map of all anticipated trenchless excavations (e.g., HDD or jack and bore) in relation to surface water resources will also be

included. A statement that BMPs and guidelines for crossing streams regulated under Article 15 will be developed in consultation with NYSDEC and NYSDPS.

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

Where crossings of surface waters are required, Best Management Practices will be utilized, as required by the NYSDEC and the USACE. Specific mitigation measures for protecting surface water resources will be described in the 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 zones traverse streams, wetlands and other bodies of water.

Restrictions will include:

- No deposition of slash;
  - No accumulation of construction debris;
  - No herbicide use within the 100 feet of waterbodies (or as otherwise required per manufacturer’s instructions);
  - No degradation of stream banks;
  - No equipment washing or refueling;
  - No storage of any petroleum or chemical material; and
  - No disposal of excess concrete or concrete wash water.
- *Sediment and Siltation Control:* A soil erosion and sedimentation control plan will be developed and implemented as part of the SPDES General Permit for the Facility. Silt fences, hay bales, and temporary siltation basins will be installed and maintained throughout Facility construction. Exposed soil will be seeded and/or mulched to assure that erosion and siltation is kept to a minimum along wetland boundaries. Specific control measures will be identified in the Facility Stormwater Pollution Prevention

Plan (SWPPP), and the location of these features will be indicated on construction drawings and reviewed by the contractor and other appropriate parties prior to construction. These features will be inspected on a regular basis to assure that they function properly throughout the period of construction, and until completion of all restoration work.

## **Stormwater**

Prior to construction, the Project Sponsor will seek coverage under the NYSDEC State Pollution Discharge Elimination System (SPDES) General Permit with a Notice of Intent for Stormwater Discharges from Construction Activity issued in January 2015 and effective on January 29, 2015 (modified July 15, 2015) (please see [http://www.dec.ny.gov/docs/water\\_pdf/gp015002.pdf](http://www.dec.ny.gov/docs/water_pdf/gp015002.pdf)). This authorization is subject to review by NYSDEC and is independent of the Article 10 process. The 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.

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 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.

## **Chemical and Petroleum Bulk Storage**

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

### 2.23.2. Proposed Content of the Application

Consistent with the requirements of 1001.23 of the Article 10 regulations, Exhibit 23 of the Application will contain the following information.

(a) Information on Groundwater

- (1) The Application will include map(s), at a scale that supports legibility, showing depth to bedrock, depth to water table, and karst features (if applicable) throughout the Facility Site using the *Soil Survey of Chenango County*, New York and the results of the preliminary geotechnical investigation. A preliminary identification of anticipated areas that may require dewatering will be provided and proposed method(s) of dewatering will be described, as applicable. Proposed methods of dewatering will address concerns and requirements related to runoff and sediment transport as well as any other applicable requirements of the State Pollutant Discharge Elimination System (SPDES) General Permit (GP) 0-15-002. In addition, a Preliminary Stormwater Pollution Prevention Plan (SWPPP) addressing construction related to best management practices (BMPs) will be prepared and appended to the Application.
- (2) The Application will include map(s) based on publicly available water well information from the US Geological Service (USGS) Office of Groundwater, US Department of Agriculture (USDA) Soil Conservation Service, USDA Natural Resources Conservation Service (NRCS) Web Soil Survey, New York State Department of Health (NYSDOH) Records Access Officer, the NYSDEC, the Chenango County District Office, and other local municipalities, as well as from data collected during subsurface investigations in the Facility Site and a groundwater wells survey.
  - i) The Water Well Study Area will be defined as the area within a 1-mile radius of the Facility Site, for all publicly available groundwater well data; and the area within a 500-foot radius of the Facility Site and within a 0.5-mile radius of proposed blasting locations, for all groundwater well data not publicly available (e.g., groundwater wells identified through water well surveys, non-public data received directly from government agencies).
  - ii) Groundwater well surveys will be sent to all residents and businesses within a 500-foot radius of the Facility Site and within a 0.5-mile radius of proposed blasting locations. A summary of The survey will solicit well construction details, usage patterns, and water quality data, as well as include educational information describing the Facility and the Article 10 process, ways to contact information for Facility personnel and, a description of where link to the respondent Co-Applicant's website, and methods by which survey recipients can get more obtain additional

information ~~about~~regarding the Facility ~~(e.g., the Facility website, local document repositories, etc.) will be included in the survey.~~<sup>46</sup>

~~iii)~~ iii) The locations of private water wells within the Facility Site will be verified through field observations, where possible.

~~iii)~~iv) This map will identify:

- a. The Facility Site and Facility components;
- b. Boundaries of known aquifers and recharge areas;
- c. Boundaries of the Mount Upton Water District (if such information is publicly available)
- ~~e.~~d. General groundwater flow direction;
- ~~d.~~e. Groundwater quality, if available;
- ~~e.~~f. Well-head and aquifer protection zones;
- f.g. The locations of all known public groundwater and private groundwater wells or other known points of groundwater extraction within the Water Well Study Area. The map will indicate whether the locations of known public and private groundwater wells are approximate or confirmed.

~~iv)~~v) A table summarizing public and private water wells locations, and available well design and production information (including depth, yield, water quality and usage rates), to the extent publicly available and as provided in response to well surveys, will be included with the Application.

~~v)~~vi) GIS data included in this map will be provided to the DPS and DEC.

- (3) The Application will provide an evaluation of potential groundwater impacts, including potential impacts to known public and private water supply wells, aquifer protection zones, and groundwater aquifers within the Facility Site. If the Facility Site presented in the Application intersects the Mount Upton Water District, the Application will evaluate any impacts the Facility may have on the community water system. If impacts are determined, the water district will be included on the Stakeholder Lists. Plans for avoiding and minimizing impacts to wells and water supply resources will be discussed.

Anticipated areas of dewatering during construction and operation of the Facility will be identified based on publicly available databases and geotechnical borings conducted at a sub-set of turbine locations. However, exact areas of dewatering cannot be known at the time of Application. The determination of

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<sup>46</sup> Note, as detailed in Section 2.2.2(d)(2), for the purposes of the Stakeholder List, all landowners owning parcels within 500 feet of the Facility Site and/or within 0.5 miles of a wind turbine or substation (i.e., within the private water well survey area), will be considered "adjacent" landowners and will be included on the Stakeholder List.

long-term dewatering (if necessary) will be addressed during final geotechnical investigations to be conducted at each turbine location following Certification.

- (4) A preliminary identification of the source(s) of and collection system for water for construction period uses, including the concrete batch plant, invasive species wash station(s), fire control, and other uses will be described. Final details associated with the design and layout of facilities for withdrawal and transport of source water may be provided post-Certification once the Project Sponsor engages a BOP contractor.

(b) Information on Surface Waters

- (1) The Application will include map(s), at a scale that supports legibility, identifying all surface waters, including intermittent and ephemeral streams and wetlands within the ~~500-foot~~ Wetland Study Area using data from the NYSDEC, ESRI, U.S. Geological Survey (“USGS”), National Wetlands Inventory (NWI), and data collected during on-site wetland delineations. Surface water mapping outside of ~~within the 500 foot of proposed areas~~ the Wetland Study Area will be based on NYSDEC mapping and stream classifications and other publicly available mapping sources, as applicable. These data will also be provided in tabular format able to be easily cross-referenced to maps. Shapefiles identifying the foregoing will be submitted to NYSDEC and DPS Staff.
- (2) For all surface waters within the 500-foot Study Area, including intermittent streams, the Application will include a description of New York State listed Water Classification and Standards pursuant to 6 NYCRR Parts 800-941 and including Part Item Numbers, Water Index Numbers (WIN), physical water quality parameters, flow rate, biological aquatic resource characteristic (including species of vertebrates and invertebrates, habitat and presence of aquatic invasive aquatic species), and other characteristics based on publicly available data and, when available, supplemented by field data collected during wetland and stream delineations and information provided by NYSDEC.

Common aquatic invasive species<sup>47</sup> that are observed while conducting wetland and stream delineations, will be documented and identified in the Application. Invasive species are further addressed in Exhibit 22 of the Application.

- (3) The Application will identify all surface water drinking water supply intakes location both within 1 mile of the Facility Site and within the drainage basin in which the Facility is located, or, if none are located within

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<sup>47</sup> As identified by the NYSDEC: <http://www.dec.ny.gov/animals/50272.html>.

one mile, the nearest downstream surface water drinking supply intake. Location(s) of the intakes will be given by longitude and latitude. A discussion of potential impacts to surface drinking water supplies due to construction and operation of the Facility will include a characterization of the type, nature, and extent of service provided from the identified source.

- (4) The Application will provide a narrative discussion that describes all potential impacts to surface water resources, including wetlands, streams and lakes. The approximate acreage and linear distance of surface waters that will be temporarily or permanently impacted by the construction and operation of the Facility will be calculated, based on the proposed Facility footprint, associated impact assumptions, and field delineated stream boundaries. Such impacts will be presented in a table that:
- i) Identifies the stream name and classification;
  - ii) Identifies the type of impact and associated crossing methodology (e.g., buried collection, crossing in the dry, HDD, access road); and
  - iii) Describes the proposed avoidance and impact minimization measures.

A map of all anticipated trenchless excavations (e.g., HDD or jack and bore) in relation to surface water resources will also be included. This map will indicate the length of each crossing, and the Application will include a narrative description of HDD operations and a diagram showing typical HDD equipment layout. A statement that BMPs and guidelines for crossing streams regulated under Article 15 will be developed in consultation with NYSDEC and NYSDPS will also be provided.

- (5) The Application will identify reasonable avoidance, and where impacts are unavoidable, mitigation measures for groundwater and surface water impacts. Any work prohibition dates associated with crossings of State-protected streams under ECL Article 15 will be established in consultation with the NYSDEC. Proposed crossing methods will take into consideration the NYSDEC stream crossing guidelines. The Project Sponsor will provide NYSDEC and NYSDPS with final engineering plans for all stream crossings prior to the Siting Board's determination on whether to issue a certification pursuant to Article 10.

This section will also include a description of proposed measures to avoid and minimize local flooding, including a description of potential impacts to wetlands, surface water, and drinking water resources that could result from a major storm event during Facility construction. The Project Sponsor will include a flood-mitigation strategy in the Application, which will address the following measures:

- i) Locating lay down areas or access road out of floodplains;

- ii) Removing construction equipment from floodplains prior to storm events, when feasible; and
- iii) Reinforcing erosion controls in advance of storm events, when feasible.

(c) Information on Stormwater

- (1) Prior to commencement of construction activities, the Project Sponsor will submit a NYSDEC Notice of Intent for Stormwater Discharges from Construction Activity and will seek coverage under the SPDES General Permit process established in January 2015 and effective on January 29, 2015 (modified July 15, 2015). This authorization is subject to review by NYSDEC and is independent of the Article 10 process. However, the Article 10 Application will include a preliminary stormwater pollution prevention plan (SWPPP), which will be prepared consistent with the SPDES General permit and will describe in general terms the sediment control practices that will likely be implemented during construction activities, and the stormwater management practices that will be used to reduce pollutants in stormwater discharges after Facility construction has been completed. The Preliminary SWPPP will include:
  - i) An introduction and overview of the proposed Facility, and the purpose and need and appropriate contents of a complete SWPPP;
  - ii) A description of anticipated stormwater management practices, including temporary and permanent erosion and sediment control measures (vegetative and structural);
  - iii) Anticipated construction activities, include a preliminary construction phasing and disturbance areas;
  - iv) Site waste management and spill control measures;
  - v) Proposed site inspection and maintenance, including construction site inspections and record keeping; and
  - vi) Conditions that will allow for the termination of permit coverage.
- (2) The Preliminary SWPPP, identified in Section 2.23.2(c)(1), will be prepared in accordance with New York State Standards and Specifications for Erosion and Sediment Control ("NYS Standards"), and the New York State Stormwater Management Design Manual, and include typical information on permanent, post-construction erosion and sediment control measures (vegetative and structural), along with the anticipated stormwater management practices that will be used to reduce the rate and volume of stormwater runoff after construction has been completed. However, the Preliminary SWPPP will not include pre- or post-construction stormwater runoff calculations.

(d) Information on Chemical and Petroleum Bulk Storage

- (1) The Application will provide a preliminary Spill Prevention, Containment and Counter Measures (SPCC)

Plan that will be developed for the small volumes of chemical, petroleum or hazardous substances that may be stored at the Facility. Spill containment requirements for electric transformers at the substations and turbines sites will be provided.

- (2) The Application will provide the information required by 1001.23(d)(2). It is not anticipated that the Facility will require 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.). If construction, operation, or maintenance activities at the Facility require petroleum or other hazardous chemicals be stored at the Facility, the Application will identify such substances and demonstrate compliance with State laws, regulations, and guidelines.

(e) Information on Aquatic Species and Invasive Species

- (1) The Application will include a discussion and an analysis of the impact the construction and operation of the Facility is likely to have on critical and sensitive biological aquatic resources that are known or suspected of being present within the Facility, particularly species listed as endangered, threatened, species of special concern,<sup>48</sup> or species of greatest conservation need (SGCN). The analysis will include a discussion of the potential for introducing and/or spreading invasive species.

The presence of invasive species within the Facility site will be documented during wetland and stream delineations and other on-site investigations, as described Section 2.22.2(b)(2). Maps and shapefiles of the locations of aquatic invasive species will be provided to NYSDEC before the Application is submitted.

- (2) The Application will provide the information required by 1001.23(e)(2). This will include a discussion of measures to avoid or minimize direct impacts to federally and state-listed and protected aquatic species (e.g., through appropriate and effective Facility component siting). A proposal to mitigate, in an appropriate and timely manner, for unavoidable estimated direct impacts to federal or state T&E listed species will also be discussed and cross referenced with Exhibit 22(g) of the Application, if applicable. Construction activities and the presence of Facility components in occupied habitat of listed T&E aquatic species may constitute take of individuals or the habitat they depend on, or both. A proposal to mitigate, in an appropriate and timely manner, for unavoidable estimated direct impacts to federal or state T&E listed aquatic species will also be discussed. Measures to avoid or, minimize and mitigate impacts to vegetation will be addressed. In addition, the alternatives analysis in Exhibit 9 of the Application will

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<sup>48</sup> As listed in 6 NYCRR Part 182.

include discussion and comparison of known, estimated, and expected impacts to listed aquatic species at all alternative sites and the proposed Facility location.

- (f) The Facility will not require cooling water, and therefore cooling water withdrawals will not be addressed in the Application.

## **2.24. VISUAL IMPACTS**

### **2.24.1. Discussion**

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

Although a Visual Study Area with a radius of 5 miles is the minimum standard, the Project Sponsor will apply a 10-mile radius in defining the Visual Study Area for the Facility. A preliminary map of the Visual Study Area is presented in Figure 7. Within the Visual Study Area, the Project Sponsor will identify visual resources and assess potential impacts, conduct viewshed analyses, and use visual simulations, developed at various viewpoints, to assess overall changes to visual character as a result of Facility construction and operation.

#### **Visually Sensitive Resources**

Visually sensitive resources within the Visual Study Area will be identified by consulting various public data sources and conducting public outreach. Initial outreach letters to visual stakeholders regarding locally sensitive sites will be sent following 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 Application.

Following standard visual impact assessment practices in New York State, visually sensitive resources of statewide significance will be identified within the Visual Study Area in accordance with the New York State Department of Environmental Conservation (NYSDEC) Program Policy DEP-00-2, Assessing and Mitigating Visual Impacts (NYSDEC, 2000), which define specific types of properties as visually sensitive resources of statewide significance. The types of resources identified by NYSDEC in Program Policy DEP-00-2 are consistent with the

types of resources identified in 16 NYCRR § 1000.24(b)(4) and include landmark landscapes; wild, scenic or recreational rivers administered respectively by either the DEC or the APA pursuant to ECL Article 15 or Department of Interior pursuant to 16 USC Section 1271; forest preserve lands, scenic vistas specifically identified in the 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.

In addition, resources of local significance will be identified within the Visual Study Area. 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.

Preliminary research has identified some of the visually sensitive resources of statewide significance that occur within the Visual Study Area (see also Figure 10). These resources include (but are not limited to):

- State Parks
  - Bowman Lake State Park
- NYSDEC land
  - 17 State Forests
  - Unadilla River Fishing Access
- Resources listed on the National Register of Historic Places (NRHP)
  - 11 NRHP-listed Historic Districts
  - 27 individually listed NRHP properties

### **Viewshed Analysis**

Viewshed maps define the maximum area from which any turbine within the completed Facility could potentially be seen within the Visual Study Area. As part of the viewshed analysis, topographic viewshed maps for the Facility will be prepared using ESRI ArcGIS® software to illustrate “worst case” daytime visibility (based on a maximum blade tip height above existing grade) and the 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 Visual 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 Visual 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 be visible. Trees and buildings can limit or eliminate visibility in areas indicated as having potential Facility visibility in the topographic viewshed analysis.

To supplement the topographic viewshed analysis, a vegetation viewshed will also be prepared to illustrate the potential screening provided by forest vegetation. 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 assumes that in most forested areas, outward views will be well screened by the overhead tree canopy. 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. However, because there are no operating or proposed wind energy projects within 15 miles of the proposed High Bridge Wind Project, cumulative impacts are not anticipated.

## **Viewpoint Selection**

16 NYCRR § 1000.24(b)(4) includes the requirement that “*the Project Sponsor shall confer with municipal planning representatives, DPS, DEC, OPRHP . . . in its selection of important or representative viewpoints*”. The Project Sponsor will conduct outreach to agency staff and stakeholder groups to determine an appropriate set of viewpoints for the development of visual simulations.

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

## **Visual Impact Assessment**

Based on the information described above, the Application will include a comprehensive Visual Impact Assessment (VIA). The VIA will discuss physiographic and vegetative community characteristics within the Visual Study Area, and various Landscape Similarity Zones (LSZs) will be defined within the Visual Study Area. The definition of discrete landscape types (i.e., LSZs) within the Visual Study Area will provide a useful framework for the analysis of a project’s potential visual effects. Landscape Similarity Zones 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.

The VIA will include an analysis of potential Facility visibility and identify locations within the Visual Study Area where it may be possible to view proposed Facility turbines, the collection substation, or the point of interconnection (POI) substation. This analysis will include identifying potentially visible areas on viewshed maps and verifying line-of-sight conditions in the field.

To show anticipated visual changes associated with the proposed Facility, high-resolution computer-enhanced image processing will be used to create realistic photographic simulations of the proposed Facility from selected viewpoints. The photographic simulations will be developed by using appropriate software to create a three-dimensional computer model of the landscape in each selected photograph. The use of a three-dimensional landscape model ensures that simulated elements (e.g., the proposed turbines) are 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 Project Sponsor. All turbine rotors will be modeled facing into the prevailing wind (e.g., oriented to the west). Using the camera view as guidance, the visible portions of the modeled turbines will be imported to the landscape model space described above and set at the proper coordinates.

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

In addition, for some views, “wireframe renderings” may be prepared to illustrate the potential screening effect of vegetation or other features in the photograph from a given viewpoint on potential 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.

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— and any relevant changes to land cover or development (e.g., structure removals)—will be provided as 11 x 17-inch color prints to five members of a rating panel (the “Project Rating Panel”). At a minimum, three of the individuals on the Project Rating Panel will be registered landscape architects or experienced visual professionals. This rating panel 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 F to this FSS. 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 many viewpoints to be evaluated in a reasonable amount of time. Landscape, viewer, and Facility-related factors to be considered by the Project Rating Panel in their evaluation will include the following:

- Landscape Composition
- Form, Line, Color, and Texture
- Focal Point
- Order
- Scenic or Recreational Value
- Duration of View
- Atmospheric Conditions
- Lighting Direction
- Scale
- Spatial Dominance
- Visual Clutter
- Movement

Results of the rating process for the proposed Facility will be presented in the Application, along with an explanation of the factors contributing to visual impact and the significance of that impact.

Visual impacts during construction are anticipated to be relatively minor and temporary in nature. Representative photographs of construction activities will be included in the VIA and summarized in the Application. Anticipated visual effects during construction will also be described. Construction and operation of the Facility will likely result in impacts to soils and on-site plant communities.

## Shadow Flicker

Shadow flicker refers to the moving shadows that an operating wind turbine casts over an identified receptor (i.e., participating or non-participating residence) at times of the day when the turbine rotor is between the sun and a receptor's position. Based on the current design and operation of typical modern wind turbines, shadow flicker impacts are generally an annoyance issue and not a health effects concern. Often the public is concerned about the possibility of epileptic seizures being caused by shadow flicker (i.e., photosensitive epilepsy). However, the maximum rotational speed of wind turbines results in a shadow flicker frequency that is well below the frequency identified by the Epilepsy Foundation as a possible epilepsy trigger.<sup>49</sup> Therefore, the triggering of epileptic seizures is not a concern with this Facility.<sup>50</sup>

Shadow flicker is most pronounced in northern latitudes during winter months because of the lower angle of the sun in the winter sky. However, it is possible to encounter shadow flicker anywhere for brief periods before sunset and after sunrise (U.S. Department of the Interior, 2005). The distance between a wind turbine and a potential shadow-flicker receptor affects the intensity of the shadows cast by the blades, and therefore the intensity of flickering. Shadows cast close to a turbine will be more intense, distinct, and focused. This is because a greater proportion of the sun's disc is intermittently blocked by the turbine (BERR, 2009). At distances beyond roughly 10 rotor diameters, shadow-flicker effects are generally considered negligible (BERR, 2009; DECC, 2011).

The Application will include a Facility-specific shadow flicker analysis. The maximum area of potential effect, i.e., the area within a 10-rotor-diameter radius of proposed turbine locations ("Shadow Flicker Study Area") will be used for this analysis to ensure that all potentially impacted receptors will be assessed. Specifically, a study of potential shadow flicker impacts on nearby sensitive receptors will be conducted. Sensitive receptors will include any known residential structures with a certificate of occupancy (both participating and non-participating), schools, office buildings, store fronts, or high-use public recreation areas that are located within the Shadow Flicker Study Area. Potential shadow flicker impacts will be expressed in hours per year.<sup>51</sup>

Shadow flicker effects on receptors are expressed in terms of predicted frequency (hours per year). Shadow isolines (i.e., contours indicating total number of hours of shadowing per average year) are calculated based on the data and assumptions outlined above. These isolines define the theoretical number of hours per year that shadow flicker would occur at any given location within the Shadow Flicker Study Area. The model calculations

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<sup>49</sup> Epilepsy Foundation, <http://www.epilepsy.com/learn/triggers-seizures/photosensitivity-and-seizures>. Accessed in January 2019.

<sup>50</sup> [Please note, multiple inline turbines would not produce a multiplier shadow flicker effect. This is discussed further in the Application.](#)

<sup>51</sup> [Data indicating the minutes of shadow flicker per day will also be provided in the Shadow Flicker Report.](#)

will include the cumulative sum of shadow hours at each receptor (as needed).<sup>52</sup> This omni-directional approach reports total shadow flicker results at a receptor regardless of the presence or orientation of windows at that receptor (i.e., it assumes shadows from all directions can be perceived at a receptor, which may or may not be true). A receptor<sup>53</sup> in the model will be defined as a one square meter area located one meter above ground; consistent with industry standards, actual house dimensions are not taken into consideration. In addition, shadow flicker contours that are generated by the WindPRO software will be overlain on mapping of known public recreational areas (e.g., trails, state forest land).

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

### **2.24.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.24 of the Article 10 regulations, Exhibit 24 of the Application will contain the following information.*

(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

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<sup>52</sup> Please note, multiple inline turbines would not produce a multiplier shadow flicker effect. This is discussed further in the Application.

<sup>53</sup> The Project Sponsor will utilize a uniform receptor identification system, to the extent practicable, across various exhibits in the Application.

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 (1981), 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. Elements to be included in the VIA are described below.

- (1) A Visual Study Area will be established for the purpose of identifying visually sensitive resources and assessing potential visual impacts. The Visual Study Area will be defined as the area within a 10-mile radius of Facility components. Although a study area with a 5-mile radius is typical in some instances, a study area with a 10-mile radius will be used in order to identify any potential “significant resource concerns” beyond 5 miles that would warrant the use of a larger study area. Resources of regional and/or statewide significance will be identified and assessed within 10 miles of Facility components, whereas resources of local importance will be identified and assessed within 5 miles of Facility components. Distinct Landscape Similarity Zones (LSZs) within the Visual Study Area will be identified, defined, and the approximate location of these LSZs will be illustrated in the Application.
  
- (2) Topographic and vegetation viewshed maps will be created to identify the potential visibility of wind turbines. The methodology for these analyses is described in Section 2.24(b)(2). In addition, visual field reviews will be conducted in the Visual Study Area. During these visual field reviews, public roads and public vantage points will be visited to document locations where turbines or substations would likely be visible, partially screened, or fully screened. This determination will be made based on the visibility of distinctive ridges/landforms and existing tall structures (e.g., silos and temporary meteorological towers) within the Facility Site, which will serve as location and scale references. Photographs from representative viewpoints throughout the Visual Study Area will be captured in the course of the visual field review (likely in excess of 100). The viewpoints will document potential visibility of the Facility from the various LSZs, distance zones, directions, visually sensitive resources, and areas of high public use throughout the Visual Study Area.

During the visual field reviews, 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) The viewshed analysis, detailed in Section 2.24.2(b), will illustrate the visibility of overhead transmission and collection lines. Access roads will not be included in the viewshed analysis as the visibility of these features is generally superseded by Facility components with greater relief (e.g., wind turbines). Access roads and overhead transmission and collection lines will be included in all visual simulations in which they would be visible.<sup>54</sup>
  - (4) Photographic simulations will be developed by constructing a three-dimensional computer model of the proposed turbine and turbine layout based on specifications and coordinates provided by the manufactures. Along with the turbines, proposed clearing limits and the location and appearance of other visible Facility components (e.g., met towers, overhead transmission lines, substation facilities, and the O&M facility), will also be incorporated into the photographic simulations. If design information is not available for certain Facility components (i.e., substation facilities or the O&M facility) at the time of Application filing, representative photographs from built facilities will be included in the Application.
  - (5) The potential visibility of FAA warning lights for the proposed turbines will be provided, as outlined in Section 2.24(b)(1). The exterior lighting of Facility components (e.g., O&M facility, collection substation, etc.) will also be described in the Application.
  - (6) Photographic simulations will be developed using Autodesk 3ds Max Design® (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® (or similar). A three dimensional (“3-D”) topographic mesh of the landform (based on DEM data, or lidar data, if available) 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.

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<sup>54</sup> Note, it is unlikely that access roads or surface grading will be visible from many viewpoint locations within the Visual Study Area due to intervening vegetation and structures and the potential for long viewing distances.

- (7) 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 activities.
- (8) An evaluation of impacts to visual resources from Facility operation by a panel of five individuals using a standardized rating form. The methodology utilized in this evaluation will be a simplified version of the U.S. Department of the Interior, Bureau of Land Management (BLM) contrast rating methodology. Completed rating forming and the rating form instructions will be included with the Application.
- (9) A shadow flicker analysis for the proposed Facility will be developed using WindPRO software and the associated shadow module. The results of the shadow flicker analysis will be presented in a stand-alone Shadow Flicker Assessment to be appended to the Application. Input variables and assumptions used for shadow flicker modeling calculations for the proposed Facility will include:
  - i) Latitude and longitude coordinates of all proposed wind turbine sites.
  - ii) The rotor diameter and hub height of the largest proposed turbine model under consideration.
  - iii) Latitude and longitude coordinates for residential structures (both participating and non-participating), schools, office buildings, storefronts, or known public recreation areas (e.g., campgrounds, trailheads within State Forest land) located within the Shadow Flicker Study Area defined in Section 2.3(a)(5).
  - iv) USGS 1:24,000 topographic mapping and USGS digital elevation model (DEM) data (10-meter resolution).
  - v) Annual wind rose data.
  - vi) The average monthly percent of available sunshine for the nearest National Oceanic and Atmospheric Administration weather station.
  - vii) The Project Sponsor will work with the Town to identify, within the Shadow Flicker Study Area, any officially-announced planned land use developments (e.g., residential sites or community buildings) under review or already approved for site plan development or building permit issuance at the time of filing the Application. All data obtained will be used in the shadow flicker assessment.
  - viii) The analysis shall report exposure in number of days per year, hours per year, and maximum minutes per day.
  - ix) Shadow flicker contours that are generated by the WindPRO software will be overlain on mapping of known public recreational areas (e.g., trails, state forest land).

For ease of identification and comparison, the Shadow Flicker Assessment prepared for Exhibits 15 and 24 and the Preconstruction Noise Impact Assessment prepared for Exhibit 19 will use the same definition

of “sensitive receptor” and will employ a common receptor labelling system. Impact analysis will include a table showing those non-participating sensitive receptors anticipated to receive shadow flicker and/or noise in excess of applicable standards, if any. Shadow flicker mapping will indicate receptor identification number.

- (10) An assessment of various visual impact mitigation strategies including screening (landscaping), architectural design, visual offsets, relocating or rearranging Facility components, reduction of Facility component profiles, alternative technologies, Facility color and design, and lighting options. Mitigation will also be assessed in relation to NYSDEC Program Policy DEP-00-2 (NYSDEC, 2000).
- (11) An identification and description of all visually sensitive resources within the Visual Study Area (see Section 2.24.2(b)(4) for additional information), and an assessment of the probable impacts of the Facility on these resources. Visually sensitive resources will include specific locations identified by municipal planning representatives, DPS, DEC, and OPRHP.

(b) Viewshed Analysis

A viewshed analysis will be included in the VIA that identifies locations within the Visual Study Area where it may be possible to view the proposed wind turbines and other proposed aboveground facilities from ground-level vantage points. Potentially visible areas will be identified on viewshed maps. The viewshed analysis methodology is described below.

- (1) Maps showing the results of viewshed analysis will be prepared based on the screening effect of topography alone, and the screening effect of mapped forest vegetation and topography. Viewshed analysis will be based on maximum blade tip height, FAA warning light height, and the height and location of proposed overhead transmission structures, if any. These maps will be presented on both USGS DEM Hillshade and the most recent edition of the USGS's 1:24,000 scale topographic base maps. In addition, visually sensitive sites, viewpoint locations, foreground, mid-ground, and background distances, and LSZs will be shown on these maps. The viewshed analyses will serve to document the line-of-sight visibility for resources of national and statewide significance.
- (2) Topographic viewshed maps will be prepared using 10m USGS DEM data (7.5-minute series), coordinates/dimensions of all proposed turbines, an assumed viewer height of 1.7 meters, and ESRI ArcGIS® software with the Spatial Analyst extension. The viewshed analyses will be based upon the

largest turbine model contemplated for this Facility, to present a worst-case scenario, and the location of all proposed turbines. The topographic viewshed maps will define the maximum area within the Visual Study Area from which any proposed turbine could potentially be seen (ignoring the screening effects of existing vegetation and structures). Viewshed analyses run at the maximum blade tip height will illustrate the maximum potential daytime visibility of the proposed turbines. Viewshed analyses run at the FAA warning light height will illustrate the maximum potential nighttime visibility (based on the anticipated FAA lighting plan).

Vegetation viewshed maps will also be prepared to illustrate the potential screening provided by forest vegetation. The vegetation viewshed will be prepared in the same manner as the topographic viewshed, except that a base vegetation layer will be created using the 2011 USGS National Land Cover Dataset (NLCD) to identify the mapped location of forest land (including the Deciduous Forest, Evergreen Forest, and Mixed Forest NLCD classifications) within the Visual Study Area. Based on standard visual assessment practices, mapped locations of forest land will be assigned an assumed height of 40 feet, and these heights added to the DEM used to prepare the vegetation viewshed maps.

- (3) Visually sensitive resources will be identified within the Visual Study Area using a variety of data sources, including digital geospatial data (shapefiles) obtained from the NYS GIS Clearinghouse, the Environmental Systems Research Institute (ESRI), national, state, county, and local agency/program websites, and websites specific to identified resources; the DeLorme Atlas and Gazetteer for New York State; USGS 7.5-minute topographical maps; web mapping services such as Google Maps; and input from municipal planning representatives, DPS, DEC, and OPRHP. Visually sensitive resources of statewide or national significance within 10 miles of Facility components, and visually sensitive resources of local importance and areas of intensive land use within 5 miles of Facility components will be included with the Application. Visually sensitive resources will also include any specific location identified by municipal planning representatives, DPS, DEC and OPRHP.
- (4) The Project Sponsor will conduct outreach to visual stakeholders (e.g., municipal planning representative, DPS, DEC, and OPRHP) to identify visually sensitive resources and establish an appropriate set of representative viewpoints to be used in the development of visual simulations.<sup>55</sup> This outreach is expected to include:

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<sup>55</sup> Note: all visual stakeholders will be added to the Stakeholder List.

- i) Distributing requests to visual stakeholders, seeking feedback regarding the identification of important visually sensitive resources and representative viewpoints in the Visual Study Area. Feedback from visual stakeholders will be used to inform field review efforts and guide the eventual selection of representative viewpoints.
- ii) Distributing a memorandum to the visual stakeholders, following the visual fieldwork and associated data processing, that details the Project Sponsor's recommended representative viewpoints.
- iii) Soliciting comments from the visual stakeholders on the viewpoints selected.

The Project Sponsor will make final viewpoint selections based on consultation with, and feedback provided by, municipal planning representatives, DPS, DEC and OPRHP (per 1001.24(b)(4)(vi)); while also balanced by the following criteria to ensure that a variety of views are represented:

- i) Illustrate open, representative views from the various "Landscape Similarity Zones" within the visual study area, which are defined based on the similarity of features such as landform, vegetation, water, and land use patterns.
- ii) Provide open views toward the Facility Site from different directions throughout the visual study area (as determined through field verification).
- iii) Illustrate the most open views available from potentially significant public resources within the Visual Study Area.
- iv) Illustrate open views of the proposed Facility that may be available to representative viewer/user groups within the Visual Study Area.
- v) Illustrate views of different numbers of turbines and other Facility components, from a variety of viewer distances and directions, and under different lighting/sky conditions, to illustrate the range of visual change that could occur with the Facility in place.

The Application will include a list of the visual stakeholders and copies of the viewpoint selection correspondence. In addition, the Application will include the visual stakeholders on the Stakeholder List for notification of project milestones and outreach activities.

- (5) Photo-realistic simulations of completed turbines and other visible Facility components (e.g., overhead transmission or collection lines, if any, and substations) from each selected viewpoint. Viewpoints will be selected, in part, for their open views and as such there will be no significant vegetation screening of the proposed Facility in the photographic simulations. Therefore, it is not anticipated that both leaf-on and leaf-off simulations will be prepared.

- (6) Due to the height of turbines and the geographic extent of major electric generating wind facilities, mitigation measures (e.g., 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 of turbine visibility will not be prepared. Simulations of the collection substation (inclusive of battery storage), the POI substation, and/or the O&M facility will include proposed screening and/or proposed plantings.
- (7) A composite contrast rating for each viewpoint will be prepared and provided in the Application. All rating forms will be included in the Application along with a narrative description of the existing view and overall visual effect representing the nature and degree of visual change resulting from construction and operation of the Facility on scenic resources and viewers represented by each of the selected viewpoints using comments provided by member of the rating panel. [See Appendix K for a draft copy of the methodology and instructions that will be provided to the rating panel.](#)
- (8) The shadow flicker analysis will be conducted as described in Section 2.24.2(a)(9).

## **2.25. EFFECT ON TRANSPORTATION**

### **2.25.1. Discussion**

Exhibit 25 of the Application will evaluate the suitability of and potential impacts to the transportation networks to be used in the construction of the Facility. The Application will include an evaluation of existing conditions including typical traffic volumes and accidents, school district and emergency service provider routes, and current road conditions/limitations and the potential impacts to these resources. A Route Evaluation Study will be prepared to identify public road constraints, potential haul routes, and impacts to transportation systems and will be included in the Application.

Based on the experience of the Project Sponsor and analysis on traffic volumes from other wind projects, it is anticipated that the typical Facility operations will result in a negligible increase in existing traffic volumes. 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.

During Facility construction, all trucks carrying water, fuels, or other materials will utilize the same haul routes used by other construction vehicles/component delivery haulers, as identified in the Route Evaluation Study. Any workers and

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

The Article 10 Application will summarize consultations that have occurred or will occur between the Project Sponsor and local emergency service providers, including local fire departments, police, and ambulance services. The following emergency service providers are located within or in the vicinity of the Facility Site: NYS Police, Chenango County Bureau of Fire and Emergency Management, Chenango County Sheriff's Office, Guilford Fire Department, Norwich Fire Department, Oxford Fire Department, Sidney Fire Department, [LifeNet of New York](#), UHS Chenango Memorial Hospital, and Basset Healthcare Network A. O. Fox Hospital. If specific routes are currently used by emergency service providers in the vicinity of the Facility Site, these routes will be detailed in the Application, based on consultation with emergency service providers.

In addition, the Project Sponsor will consult with local fire departments, informing them of the Article 10 process, and how the Project Sponsor typically interacts with fire and emergency service providers during Facility construction and operation. The Project Sponsor will notify the fire departments that there will be a Preliminary Emergency Action Plan developed as part of the Application process. The Application will detail the meetings and consultations that the Project Sponsor has had with the Town of Guilford Highway Supervisor. During these meetings, the Project Sponsor will discuss the proposed Facility, Article 10 process, Road Use Agreements, and the general construction and transportation process when constructing a wind farm.

The Project Sponsor anticipates entering into Road Use Agreements with the Town of Guilford and Chenango County. These agreements will establish the measures that the Project Sponsor 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 Town, the County, and the Project Sponsor. The road use agreements will also include mitigation measures for impacts that local roads may incur 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 Project Sponsor's expense prior to the arrival of oversized/overweight vehicles. Final transportation routing will be designed in consultation with the County and Town Highway Superintendents to avoid and/or minimize, to the extent practicable, safety issues associated with the use of the approved haul routes, which will confine the heavy truck travel to a few select roads. These and other commitments

anticipated to be included in the Road Use Agreement as a means of mitigating traffic and transportation impacts will be included in the Application.

Once the Facility is commissioned and construction activities are officially concluded, traffic will be negligible and likely concentrated around the O&M facility as a result of Facility employees traveling to and from the Facility. Some of these personnel will also need to visit various turbine locations from time to time. 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. Such service visits typically involve one to two pick-up trucks. However, because all turbines and associated access road are located on (and accessed from) private land, public road use will not be required for routine maintenance activities. If major repairs or maintenance is needed, such as maintenance involving a crane, the Road Use Agreement between the Project Sponsor and the host communities will dictate the procedures followed by the Project Sponsor to ensure that any impacts to public roads are avoided or mitigated. Anticipated terms of this agreement will be presented in Exhibit 25(d)(5) of the Application.

No rail mass transit systems are expected to be impacted by the proposed Facility. First Transit, a public transportation provider in Chenango County, runs a bus route that passes through the Facility Site on County Road 37. The Application will provide an analysis of the potential impact of Facility construction and operation on this bus route. The Lt. Warren Eaton and Sidney Municipal Airports are both located approximately 7 miles from the Facility Site. The Application will provide in-depth description of the Facility tower locations and heights in relation to these local airports.

As will be summarized in the Application, the Project Sponsor will submit the proposed Facility layout to the FAA so that aeronautical studies of the location of each proposed turbine, and permanent meteorological towers, can be conducted under the provisions of Title 49 of the U.S. Code, Section 44718. The FAA can issue two types of determinations, one that identifies a potential hazard and another that identifies no hazard. If the proposed structure is over 499 feet or if a potential hazard to air navigation is identified based on the structure's location and/or height, then a letter is issued called a Notice of Presumed Hazard (NPH). Structures over 499 feet automatically receive an NPH and must be publicly circulated prior to a final FAA determination. This notification identifies a potential hazard that must be further studied and/or mitigated in some manner. Mitigation could include changes by the Project Sponsor (e.g., relocating a turbine, reducing turbine height, or upgrading a radar system) or by the government (e.g., changing flight procedures or cancelling underutilized approaches).

The Application will detail the Project Sponsor's correspondence with the Lt. Warren Eaton Memorial Airport and the Sidney Municipal Airport. Following submission of the PSS, the Project Sponsor plans to consult with the managers of these airports. The Application will discuss the results of those consultations.

## 2.25.2. Proposed Content of the Application

*Consistent with the requirements of 1001.25 of the Article 10 regulations, Exhibit 25 of the Application will contain the following information.*

### (a) Conceptual Site Plan

For the purposes of the Application, the Preliminary Design Drawings prepared in association with Exhibit 11 of the Application will serve as the conceptual site plan. The Preliminary Design Drawings will identify access road locations and widths, and other access roads associated with staging yards, O&M site, possible batch plant, and substation/switchyard locations.

In addition, a Route Evaluation Study will be prepared for the Facility and included in the Application, which will identify public road constraints (e.g., inadequate turning radii/intersections and road widths), the approximate number of turbines to be accessed per road, and potential haul routes within the Route Evaluation Study Area (as defined in Section 2.3.2(a)(5)).

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

- (1) Data obtained from the New York State Department of Transportation (NYSDOT) Traffic Data Online Viewer will be used to review existing traffic volumes along proposed approach and departure routes for the Facility. Accident information for those portions of routes within the Route Evaluation Study Area contained in the Accident Location Information System (ALIS) will be requested from the local police agencies and/or the NYSDOT regional office. However, the final haul routes ultimately will be defined in coordination with the BOP contractor and turbine manufacturer. Final haul routes will be reviewed in consultation with the Town and County in accordance with any Road Use Agreement.
- (2) The 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 for the Norwich City School District, the Bainbridge-Guilford Central School District, and the Gilbertsville-Mt. Upton Central School District.
- (3) The Application will include a review of locations of emergency service provider stations (police, fire, ambulance, and hospitals) that serve the Facility Site and specific routes currently used within the vicinity

of the Facility Site, if any, based on consultation with local emergency service providers. A map of all emergency service provider locations and routes will be provided in the Application and, following construction, will be posted in the Facility's O&M building and provided to emergency service providers. All turbines will have a unique 911 ID/address.

- (4) The Project Sponsor's transportation consultant will drive all potential haul routes to identify load restricted bridges and/or roadways along the proposed approach and departure routes for the Facility. Existing culverts will also be assessed during this exercise and any culvert data will be reviewed prior to construction. 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 above noted information and consultations with local highway supervisors will be summarized in the Application.
- (5) The Facility is not within a congested urbanized area, therefore twenty-four-hour traffic counts are not applicable and will not be included in the Application.

(c) Facility Trip Generation Characteristics

- (1) The Application will provide an estimate of the number, frequency, and timing of construction vehicle trips. This estimate will be based on the haul routes, site plan, and location of turbines, as presented in the Application, and the estimated quantities of materials needed to construct Facility. Exact scheduling of construction work and required vehicles will be determined by the Project Sponsor's contractor. Therefore, the Route Evaluation Study will only provide estimates based on typical volume of materials and number of vehicles per turbine installation. Estimates will include anticipated truck weights. The Application will tabulate construction vehicle volumes for the Facility, broken down by Facility component and truck type.
- (2) The Application will provide information on and the routes of trucks carrying water, fuels, or chemicals.
- (3) The Application will provide an estimate of the anticipated earthwork and materials needed to construct the Facility and an estimate of the typical volume of materials and number of vehicle trips per turbine installation, based on the Preliminary Design Drawings.
- (4) Final haul routes cannot be determined until the turbine manufacturer and BOP contractor have been selected and have reviewed and approved, or amended, the haul routes. The final haul routes will be

provided prior to Facility construction. However, conceptual haul routes will be identified by an experienced transportation engineer, the details of which will be included in the Application. Approach and departure routes will be based on the anticipated type of delivery vehicle to be used; such routes will be identified to and from the Facility Site (or parking areas) for construction workers and Facility employees.

(d) Traffic and Transportation Impacts

- (1) The Application will provide the information required by 1001.25(d)(1). The Facility is located in a rural area with limited transportation data. A sensitivity analysis will be prepared based on current road capacities and anticipated peak construction impacts to develop projected future traffic conditions with and without the proposed Facility. A full level of service analysis will be prepared if the sensitivity analysis indicates such an analysis is necessary. The anticipated extent and duration of traffic interferences/delays during construction will be described.
- (2) A Route Evaluation Study, which will include anticipated delivery routes and an analysis of the adequacy of these routes (including information associated with roadway conditions, width, bridges, and culverts) to accommodate construction and operation of the Facility. This section of the Application will also include an identification of the possible extent and duration of traffic interferences resulting from construction of the Facility.
- (3) An assessment of over-size load deliveries and the adequacy of existing roads to accommodate such deliveries will be included in the Application. A turning template 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 (widths, turning radius, overhead clearance). An identification of required temporary improvements and a location map will be provided and potential impacts at each temporary improvement location will be summarized. However, all improvements identified in the Application will require verification and/or update following Certification when the final turbine supplier is identified.
- (4) The Application will identify measures to mitigate traffic and transportation impacts, which will be presented in the Route Evaluation Study. This analysis will include any time restrictions regarding delivery of facility components.

(5) This section of the Application will identify and tabulate all anticipated Town, County, and State permits 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 Project Sponsor will consult with the Town of Guilford and Chenango County to formalize Road Use Agreements (RUAs). A draft RUA will be appended to the Application. This section of the Application will also generally discuss use agreements with private landowners that may be required for construction and post-construction use of private property along public roads. The Application will provide a description of all use and restoration agreements, per 1001.25(d)(5).

(e) Impact of the Facility on Mass Transit Systems

The Application will provide a description of the Facility components and potential aviation impacts in relation to the local airports and bus systems.

(f) Federal Aviation Administration Review

The Application will provide a discussion of the aeronautical studies for the proposed Facility along with a discussion of potential impacts to air traffic control and air navigation. The Application will also include:

- (1) A statement that the Project Sponsor has submitted a Notice of Proposed Construction to the administrator of the FAA;
- (2) Copies of this correspondence and responses received at the time of filing and a statement noting that the Project Sponsor will provide updated correspondence and future determination(s) of any on-going aeronautical studies to DPS;
- (3) The Project Sponsor's correspondence with airports and heliports (and any other requirements of 1001.25(f)(2)), if applicable; and
- (4) All information required by 1001.25(f)(3), including descriptions of the responses received in reviews and consultations detailed in 1001.25(f)(1) and (2).

## **2.26. EFFECT ON COMMUNICATIONS**

### **2.26.1. Discussion**

#### **Existing Communication Sources**

The Application will identify existing broadcast communication sources within the Communications Study Area (i.e., the area within a 2-mile radius of Facility components, unless otherwise required by the regulations). This baseline study area will be extended as necessary for some communication types as detailed in this section.

AM Radio – The Application will list all AM radio stations within at least 2 miles of the proposed Facility and provide a review of the license data for all identified stations.

FM Radio – The Application will list all FM radio stations within at least 2 miles of the proposed Facility and provide a review of the license data for all identified stations.

Television – Although cable and satellite television reception are unaffected by the presence of wind turbines, off-air television reception can be impacted. Off-air television stations broadcast signals from terrestrially based facilities directly to television receivers. The Application will evaluate off-air television stations within at least 2 miles of the Facility to determine if off-air television reception within a two-mile radius around the Facility could be degraded as a result of Facility operation.

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 Chenango and Otsego Counties will be provided in the Application.

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

Emergency Services – An assessment of the emergency services communication sources in the Communications Study Area will be conducted to identify potential Facility impacts. Registered frequencies for the following types of first responder entities will be evaluated: police, fire, emergency medical services, emergency management, hospitals, public works, local school districts, transportation and other state, county, and municipal agencies. It is currently anticipated that this would include, at minimum, the New York State Police, Chenango County Sheriff's Office, and Fire Departments/EMS services, and town-owned, for-profit, and volunteer emergency services in the Town of Guilford. Land mobile and emergency services incumbent data will be derived from the FCC's Universal Licensing System and the FCC's Public Safety & Homeland Security bureau.

The Project Sponsor will work with the public safety entities described above to remedy any interference related to the wind farm. If potential impacts to coverage are identified, 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. The Project Sponsor will work with the above entities to address any potential impacts to this essential coverage and will discuss these issues in the Application.

Municipal/School District Services – Municipal and school district communication sources will be included in the Application's assessment of emergency services communication sources described above in Section 2.26(a)(6). School districts within the Communications Study Area include the Gilbertsville-Mount Upton Central School District, Norwich City School District, Bainbridge-Guilford Central School District, Unadilla Valley Central School District, and Oxford Academy and Central School District.

Public Utility Services – The Application will identify public utility communication sources within 2 miles of proposed Facility components, to the extent known by the Project Sponsor.

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

The nearest NEXRAD Doppler facility is in Binghamton, NY approximately 32 miles from the Facility Site. Potential impacts associated with the Facility will be addressed in the Application.

Air Traffic Control – The FAA is the organization in the United States government responsible for air traffic control and for evaluating and issuing determinations on petitions for objects that penetrate the nation’s airspace. The Project Sponsor 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. See Section 25(f) for more detail on correspondence and potential effects. These issues will be discussed in the Application.

Armed Forces – As discussed above, the FAA and NTIA processes result in the provision of plans for the proposed Facility to the federal agencies potentially interested in communications impacts, including the Department of Homeland Security, U.S. Air Force, U.S. Army, U.S. Navy, and the U.S. Coast Guard. The Department of Defense (DoD), through its Siting Clearinghouse, can either respond informally or formally to a project. Informal consultations may be initiated by a project proponent. Formal consultations may be initiated either by the FAA or project proponent. The Project Sponsor will initiate FAA review of turbine locations and the DoD will formally be consulted with by the FAA through its review process. The Project Sponsor will use these consultations to aid in the identification of Armed Forces communications facilities which should be mapped in the Application as required by 16 NYCRR 1001.26, to the extent possible.

GPS – Global Positioning System (GPS) is a U.S.-owned utility that provides users with positioning, navigation, and timing services. This system consists of three segments: the space segment, the control segment, and the user segment. The GPS ground facility located closest to the proposed Facility is the Air Force Satellite Control Network remote tracking station located in New Hampshire. The National Executive Committee coordinates GPS-related matters across multiple federal agencies to ensure the system addresses national priorities as well as military requirements. The National Executive Committee is chaired jointly by the Deputy Secretaries of Defense and Transportation, and membership includes top leaders from the Departments of State, the Interior, Agriculture, Commerce, and Homeland Security, the Joint Chiefs of Staff, and NASA (National Coordination Office for Space-Based Positioning, Navigation, and Timing, 2018). Each of the agencies represented in the National Executive Committee are also represented in the IRAC.

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 discussion of LORAN will be provided in the Application.

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, 2018) and via RadioQTH's database of call signs (Lewis, 2019).

NYS Mesonet System – The New York State Mesonet System is a statewide network of weather stations developed and run by the State University of New York at Albany. This system collects data on mesoscale meteorological phenomena and is used to supplement data gathered by traditional automated surface observing systems (ASOS), supporting decision-making in agriculture, emergency management, energy, ground transportation, and aviation. Based on recent consultation with Comsearch, each station in the New York State Mesonet must be located at least 300 feet from any tall obstacles, such as wind turbines, to ensure the highest quality of data. The closest Mesonet station to the Facility Site will be identified in the Application. It should be noted that the data from each station is transmitted via the Internet to a central ingest system located at the University of Albany and is therefore not subject to telecommunications interference from the proposed Facility.

Existing Underground Cable and Fiberoptic Lines – Locations of underground fiber optic cable within two miles of the Facility Site will be identified in the Application, to the extent known. This information will be obtained from a private firm that maintains a database of this information.

## **Potential Impacts**

Exhibit 26(a) of the Application will provide a description of the communication systems in and around the Facility and any expected impacts to those systems. A more general discussion of the anticipated effects of the proposed Facility and the electric interconnection on the communication systems identified in 1001.26(a) and 1001.26(b), will be provided in Exhibit 26(c) of the Application, generally organized as follows:

- Potential Structure Interference with Broadcast Patterns
- Potential for Structures to Block Lines-of-sight
- Physical Disturbance by Construction Activities
- Adverse Impacts to co-located Lines due to Unintended Bonding
- Other Potential for Interference

As described above, the Project Sponsor will send a written notification of the proposed Facility to the NTIA. The Application will include a discussion on the potential effects to radar and Radar Operations Centers.

The Project Sponsor takes seriously any complaints that it receives from members of the public. In accordance with 1001.12(d), the Project Sponsor will develop a Complaint Resolution Plan through which residents and members of the public can submit complaints should any issues, such as degraded television service, arise as a result of construction or operation of the Facility. The Complaint Resolution Plan will be appended to the Application.

## **2.26.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.26 of the Article 10 regulations, Exhibit 26 of the Application will contain the following information.*

The Application will provide the information required by 1001.26(a-f). Exhibit 26 of the Application will also include an evaluation of potential impacts to data communication for the NYS Mesonet System. Further, this Exhibit will include information on the potential impacts of the Facility on local emergency communications systems.

The Project Sponsor will consult with and submit Facility specifications for evaluation to the Department of Commerce's National Telecommunications Information Administration (NTIA). The Application will include any government telecommunications concerns about the proposed Facility and will identify any potential impacts that will have to be addressed in coordination with relevant federal agencies. A summary of coordination to date between the Project Sponsor, NTIA, or any other agencies will be provided in the Application. This summary will include information such as determinations(s) made, Facility components eliminated, mitigation requirements, and recommendations provided through the notification process to NTIA.

The Application will include a description of the National Weather Service Radar Operations Center (ROC) impact zones in the vicinity of weather surveillance radars. Figures will be included depicting locations of Facility components within any of the impact zones, if applicable. Project Sponsor will include a description of Facility changes made or required mitigation actions resulting from tower proposals within ROC impact zones, if applicable. If applicable, details regarding weather radar stations impacted near the Facility Site will be included. This description will include existing ground elevations and line of site from the radar to the turbine locations. The Application will also identify any specific Facility turbines that are located within any of the impact zones.

## **2.27. SOCIOECONOMIC EFFECTS**

### **2.27.1. Discussion**

The Application will include a Socioeconomic Report that quantifies the potential countywide and statewide socioeconomic impacts of the Facility based on current socioeconomic conditions of the area. The Facility is in rural

Chenango County in the Town of Guilford. Information regarding population, educational attainment and race within the Town of Guilford is summarized in Table 8.

**Table 8. Demographic Information for the Town of Guilford**

<i>Population</i>	
2010 Total Population [1]	2,922
2016 ACS 5-Year Population Estimate	2,868
Median Age	50.7 years
<i>Educational attainment</i>	
% high school graduate or higher	85.8%
Total housing units	1,632
Median household income	\$39,055
Foreign born population	38
Individuals below poverty level	18.2%
Veterans	256
<i>Race and Hispanic Origin</i>	
White alone	2,849
Black or African American alone	9
American Indian and Alaska Native alone	6
Asian alone	7
Native Hawaiian & Other Pacific Islander	1
Some Other Race alone	20
Two or More Races	29
Hispanic or Latino (of any race)	66
White alone, Not Hispanic or Latino	24

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

Quantifying the economic impacts of the Facility is essential to understanding the benefits for the local economy. Wind power development, like other commercial development facilities, expands the local economy by direct and indirect means. Income generated from direct employment during the construction and operation phases drives additional community investments by workers and consultants, who purchase local goods and services, creating a ripple effect throughout the local economy. The Application will analyze three levels of impact that the proposed Facility will have on the economy:

**On-site labor impacts:** These are the direct impacts experienced by the companies/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 on-site, 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 JEDI's focus on the local impacts of a project, only the labor associated with the on-site location of the Facility (Construction, Construction-Related Services and On-site Labor during Operational Years) is counted at this level.

**Turbine, 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 on-site or the concrete used on-site. However, 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 turbine, local revenue, and supply chain impact.

**Induced impacts:** Induced impacts measure the estimated effect of increased household income resulting from the project. Induced impacts reflect the reinvestment of earned wages, as measured throughout the first two levels of economic impact. This reinvestment can occur anywhere throughout the local, regional, or state 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:** Jobs refers to the increase in employment demand because of project 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 an 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 Project Sponsor.

Calculating the number of jobs, earnings, and output generated estimated to be generated by a proposed facility using the JEDI model is a two-step process. The first step requires facility-specific data inputs (e.g., year of construction, size of facility, turbine size, and location). These facility-specific data are used to provide a baseline set of assumptions to produce a conservative estimate of the total positive jobs and economic impacts likely to be produced by the facility.

For purposes of the JEDI model, the Project Sponsor anticipates using following inputs:

- Location: Chenango County and New York State
- Year of Construction: 2021
- Total Project Nameplate Capacity: up to 100.8 MW
- Number of Projects: 1
- Number of Turbines: 22<sup>56</sup>

Using the facility-specific data provided, the JEDI model creates a list of default values, which include facility 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 research on large-scale wind facilities by NREL and stem from various sources, including interviews and surveys of 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 facility cost values and financial parameter values to reflect the most accurate estimates. The Project Sponsor will review the default facility cost values to determine whether they are on par with the real costs as experienced by the

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<sup>56</sup> Note that although the Project Sponsor will present a turbine layout of up to 30 turbines for Article 10 permitting purposes, the economic analysis for the socioeconomic report will assume a 22-turbine layout. This is to both to be consistent with the economic benefit information presented in the Project Sponsor's NYSERDA Application and to avoid overestimating the Facility's economic benefits in the Article 10 Application.

Project Sponsor's team of development and financial experts. The Project Sponsor's team will then make specific adjustments to improve accuracy.

### **Workforce, Payroll, and Expenditures During Facility Construction**

It is expected that Facility construction will generate a substantial number of full-time equivalent (FTE) construction and construction-related positions for New York State residents. Local, regional, and statewide employment during the construction phase will primarily benefit those in the construction trades, including equipment operators, truck drivers, laborers, and electricians. Facility construction will also require workers with specialized skills, such as crane operators, turbine assemblers, specialized excavators, and high voltage electrical workers. It is anticipated that many of the highly specialized workers will come from outside the area and will remain only for the duration of construction.

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

The Application will also identify the estimated annual construction payroll and non-payroll expenditures associated with the positions detailed in this section. The results of the JEDI model output will be evaluated by the Project Sponsor's construction management team to provide an estimate of the annual construction payroll by trade.

In addition to jobs and earnings, the construction of the Facility is expected to have a positive impact on statewide economic output, a measurement of the value of goods and services produced and sold by backward-linked industries. Between workers' additional household income and industries' increased production, the impacts associated with the Facility are likely to be experienced throughout many different sectors and regions of the statewide economy.

The Application will identify the estimated secondary employment and economic activity associated with Facility construction. The results of the JEDI model output will be included in the Application, along with a description of the economic multiplier factors or other assumption(s) used will be described in the analysis.

### **Workforce, Payroll, and Expenditures During Facility Operation**

It is expected that Facility operation will generate a several long-term full-time positions for New York State residents. The Application will identify the estimated number of jobs associated with Facility operation. The Application will also provide an estimate of other expenditures likely to be made in the vicinity of the Facility during its operation.

In addition, Facility operation will also result in payments to local landowners. These payments would be made in association with lease and easement agreements executed to host Facility components and good neighbor agreements (GNAs) executed with certain adjacent properties. These annual lease, easement, and GNA payments would offer direct benefits annually to participating landowners. Further, as the construction and operation of the Facility is not anticipated to result in any substantive changes to land use, this income would be in addition to any income generated from the current use of the land (e.g., agricultural or timber production), and significant portions would likely be reinvested in the community, as landowners shop for goods and services, or make improvements to their properties, using the monies received from the Facility. The Application will provide additional information regarding the economic benefit associated with these expenditures.

Operation and maintenance should also generate new jobs in other sectors of the statewide economy through secondary employment, consisting of turbine, local revenue, and supply chain impacts and the expenditure of new and/or increased household earnings. The Application will identify the estimated secondary employment and economic activity associated with Facility operation, as indicated above.

### **Incremental Costs**

The Facility is not expected to result in any additional operating or infrastructure costs to the local school districts, which include the Norwich City School District, the Bainbridge-Guilford and Gilbertsville-Mt. Upton Central School Districts. Although it's possible that some of the long-term Facility operation employees may have school-aged children, increases in school district services and expenditures would likely be recovered through those employees' property tax payments and the respective district's state aid. The Application will provide additional details regarding incremental school district operating and infrastructure costs.

The Facility is not expected to result in any additional operating or infrastructure costs to local municipalities, authorities, or utilities. However, potential road damage associated with the transportation of materials could occur during the construction of the Facility. As such, the Project Sponsor will work with the host communities and Chenango County to establish road use agreements. As a result of these road use agreements, adverse impacts to operation/infrastructure costs are anticipated to be avoided.

### **Incremental Benefits**

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

- Chenango County

- Town of Guilford
- Bainbridge-Guilford Central School District
- Gilbertsville-Mt. Upton Central School District
- Norwich City School District

The Project Sponsor intends to negotiate a PILOT agreement with local tax jurisdictions, but the specific terms of the PILOT agreement have not yet been negotiated. The PILOT payments will increase the revenues of the local taxing jurisdictions and will represent a significant portion of their total tax levy. The Project Sponsor also intends to enter into a Host Community Agreement (HCA). The Application will provide more detail regarding the anticipated PILOT agreement with local tax jurisdictions, including estimated annual payments to each of these jurisdictions.

### **Comparison of Incremental Costs and Incremental Benefits**

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

### **Equipment or Training Deficiencies in Local Emergency Response Capacity**

The local emergency responders are not expected to have specialized equipment to respond to a fire, hazardous substance, or medical emergency beyond the typical first aid, medical emergency and fire vehicles and equipment that would be at a local fire department. Exhibit 18 of the Application, and the Preliminary Emergency Action Plan (EAP) appended thereto, will provide specific detail on emergency equipment that the Project Sponsor will keep on site to respond to a fire or medical emergency. These documents also contain fire and emergency responder training and communication plans that will address any training deficiencies.

Local first responders (i.e. Town fire departments, Chenango County Fire and Emergency Services Department) will be provided with a copy of the preliminary EAP for review and comment. These agencies will also be provided with copies of the final EAP. The final EAP will include a list of all fire and emergency medical equipment that will be maintained at the Facility and describe the emergency response training provided to Facility personnel. Local emergency responders are not expected to have the equipment or training to climb the turbine tower and assist in lowering injured/ill individuals to the ground. Responsibility for this task rests solely with the Project Sponsor and/or affiliated workers. Once the Facility is operational, the nacelle of each turbine will likely be equipped with an emergency descent for use in lowering sick or injured employees to the ground.

## **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. Per the New York State Smart Growth Public Infrastructure Policy Act State infrastructure agencies, such as the NYSDOT, shall not approve, undertake, or finance a public infrastructure project, unless, to the extent practicable, the project is consistent with the smart growth criteria set forth in ECL § 6-0107. Although the Project Sponsor does not intend to install infrastructure that will promote or facilitate secondary growth covered by this law, the Application will address the Facility's consistency with the criteria provided in ECL 6-0107(2).

### **2.27.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.27 of the Article 10 regulations, Exhibit 27 of the Application will contain the following information.*

The Project Sponsor agrees to provide the information required by 1001.27. The Application will include estimates of the impact that the proposed Facility may have on the economy, including:

- On-site labor impacts (including peak construction employment level and an estimate of the number of jobs and payroll, by discipline, during a typical year of operation);
- Local revenue and supply chain impacts; and
- Induced impacts associated with the construction and operation of the Facility.

## **2.28. ENVIRONMENTAL JUSTICE**

### **2.28.1. Discussion**

Exhibit 28 of the Application requires the Project Sponsor to provide enough 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. 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 energy generating facility that will not result in emissions or air quality impacts (see Section 2.15).

Consistent with the criteria set forth in 6 NYCRR § 487.4, the potential impact of the Facility on environmental justice (EJ) communities will be assessed in the area within a 0.5-mile radius of Facility components (i.e., the Environmental

Justice Study Area). 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)), and as reported in the Project's PIP plan, no Potential Environmental Justice Areas are located within the Environmental Justice Study Area (see Figure 8).

The nearest Potential Environmental Justice Area is approximately 4.5 miles from the Facility Site and features two adjacent census block groups within the City of Norwich.<sup>57</sup> Both block groups are designated because significant portions of the population have household incomes below the federal poverty level (American Fact Finder, 2010). Accordingly, no impacts to Potential Environmental Justice Areas are anticipated and the full Environmental Justice Analysis outlined in 6 NYCRR 487.6 is not required and will not be provided in the Application.

## **2.28.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.28 of the Article 10 regulations, Exhibit 28 of the Application will contain the following information.*

Exhibit 28 will contain a statement that the Facility and Off-site Ancillary Facilities are not expected to have any impacts on Environmental Justice areas. This exhibit will also contain a map showing the Facility and Off-site Ancillary Facilities relative to the nearest Potential Environmental Justice Area.

## **2.29. SITE RESTORATION AND DECOMMISSIONING**

### **2.29.1. Discussion**

The Project Sponsor anticipates the project lifespan for the Facility is 25 or more years, at least. In the event the Facility reaches end of life and ceases operations without expectation of repowering or otherwise returning to operation, or if the initial construction cannot be fully completed, the Facility will be decommissioned per a Decommissioning Plan and Decommissioning Obligation Cost Evaluation (Decommissioning Plan), a draft of which will be appended to the Application. The Decommissioning Plan that will be included with the Application will address the decommissioning process, schedule, and funding, and provide a detailed cost estimate.

The Application will also detail in tabular format the performance standards and criteria that will be applied should decommissioning be required. The current trend in the wind energy industry has been to replace or "re-power" older wind energy projects by upgrading existing equipment with newer, more efficient turbines. Performance criteria applicable to decommissioning would also be applicable to re-powering.

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<sup>57</sup> Block groups 360179903003 and 360179904002.

If the turbines are not upgraded or are not expected to return to operation, they will be decommissioned in accordance with a Decommissioning Plan. A summary of decommissioning activities, procedures, and timeframes will be provided in the Application. The Project Sponsor anticipates that decommissioning will consist of the following activities:

- Decommissioning will be triggered if a wind turbine is non-operational for a continuous 18-month period, unless a longer period is otherwise agreed to by the Town and New York State Department of Public Service (DPS) staff or unless the Project Sponsor demonstrates that it has been making good faith efforts to restore the turbine to an operable condition.
- All aboveground structures, including turbines, blades, nacelles, towers, transformers, aboveground collection cables and poles, permanent meteorological towers, the collection substation, including the storage batteries, will be disassembled and transported off-site for reuse, recycling, reclamation, or sale. The point of interconnection (POI) substation will remain in place and will be owned and operated by NYSEG following construction. Foundations buried above a depth of 36 inches will be removed, whereas foundations and other Facility components buried below a depth of 36 inches will remain in place,<sup>58</sup> provided the decision does not violate any permits, legal requirements, or contract terms with landowners. Access roads may remain in place if written approval from the landowner is received. The Project Sponsor will own the property on which the O&M facility will be located and may elect to retain the building or sell it with the land. Batteries, transformers, and other equipment and materials will be removed and disposed of in accordance with applicable federal, State and local requirements. Final removal of all machinery, equipment, and all other materials related to decommissioning activities will be completed within 12 months of decommissioning initiation, unless otherwise agreed to by the Town and DPS staff.
- 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. Soils stockpiled during site restoration will be used in the restoration and will not be transported off site. Vegetation will be re-established using a native seed mix, prepared for planting of agricultural crops, or otherwise addressed pursuant to specific requests by underlying landowners pursuant to a lease agreement with High Bridge Wind.

In addition to providing detailed information concerning the site decommissioning process, the Decommissioning Plan will include:

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<sup>58</sup> Except for foundations and other Facility components sited on active agricultural land, which will be removed to a depth of 48 inches.

- A detailed estimate to support proposed decommissioning site restoration and funding upon cessation of operation of the Facility based on the expected turbine model(s) to be used and actual decommissioning costs from other similar projects, to the extent available;
- A procedure and timeframe for notifying the Town of Guilford and potentially impacted landowners concerning site decommissioning and restoration activities; and
- A schedule for completion of site decommissioning and restoration activities.

The Application will provide additional detail regarding decommissioning, including estimated decommissioning costs and anticipated financial assurance provisions. The Project Sponsor anticipates proposing appropriate financial assurance that will cover decommissioning and site restoration costs, minus the salvage value of Facility components, plus a contingency of 10%.

All Facility components will be located on private land under lease agreement with the landowners, and all leases with private landowners will contain a provision on decommissioning. Although the specific terms of these lease agreements, including the decommissioning provisions, are confidential, decommissioning will involve the removal of all above and below ground Facility components, consistent with the discussion above. A description of site decommissioning and restoration activities, projected costs and financial assurance commitments between the Project Sponsor and the Town Guilford will be contained in the draft Decommissioning Plan appended to the Application.

The Facility's draft Decommissioning Plan will be consistent with the New York State Department of Agriculture and Markets (NYSDAM) Guidelines for Agricultural Mitigation for Wind Power Projects, to the extent practicable and as allowed in landowner lease agreements. If NYSDAM guidelines cannot be met, the Applicant will consult with NYSDAM.

## **2.29.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.29 of the Article 10 regulations, Exhibit 29 of the Application will contain the following information.*

- (a) The Application will provide the information required by 1001.29(a).
- (b) The Application will provide the information required by 1001.29(b) and will include:
  - (1) A detailed estimate to support the proposed decommissioning and site restoration funding upon the cessation of operation of the Facility, based on the expected turbine model(s) to be used and actual decommissioning costs from other similar projects, if available.

- (2) A section describing that financial assurance in the full amount of the decommissioning and site restoration estimate will be provided. The Project Sponsor, Town, and DPS will work together towards finding an acceptable form of financial assurance and an acceptable agreement regarding the submittal of decommissioning and site restoration estimates.
- (3) A discussion on notifying the Town, landowners, and the public prior to decommissioning and site restoration activities in the Decommissioning Plan.
- (4) A description of proposed decommissioning activities and schedule for completion of these activities.
- (c) The Application will provide the information required by 1001.29(c).
- (d) Information related to nuclear power facilities will not be included in the 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 Application.

## **2.31. LOCAL LAWS AND ORDINANCES**

### **2.31.1. Discussion**

The Facility will be located in Chenango County in the Town of Guilford. Throughout the pre-application process, the Project Sponsor will consult with the host municipalities on a range of issues, including identifying relevant local laws and ordinances that could impact the Facility as described further below. The Project Sponsor will continue to consult with the municipalities during the Article 10 Application process to ensure that all applicable laws and ordinances, among other local concerns, are addressed in the Article 10 Application.

### **2.31.2. Proposed Content of the Application**

During preparation of the Application, the Project Sponsor 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 Project Sponsor that the Board elect not to apply any such local requirement could be obviated by design changes to the proposed Facility.

*Consistent with the requirements of 1001.31 of the Article 10 regulations, Exhibit 31 of the Application will contain the following information.*

The Application will include information on only those Local Laws and Ordinances applicable in the municipalities in which the Facility is proposed to be located at the time of Application. At this time, the Facility is proposed in the Town of Guilford, which is in Chenango County. Therefore, this section includes potentially applicable Local Laws and Ordinances from the Town of Guilford and Chenango County. Exhibit 31 of the Application will contain those Local Laws and Ordinances for the Town of Guilford and Chenango County, i.e., the municipalities in which the Project Sponsor proposes to locate the Facility, which have been adopted prior to the Application submission date.

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

An updated list of applicable local ordinances, laws, resolutions, regulations, standards, and other requirements of a procedural nature required for the construction (including maintenance of construction equipment) or operation of the proposed Facility will be provided in the Application. A copy of all local laws obtained by the Project Sponsor and/or provided by the host municipalities, including maps, figures, tables and other attachments to local laws (assuming such information is readily available), will be appended to the Application.

The procedural local laws and ordinances potentially applicable to the Facility as currently proposed include<sup>59</sup> the following:

Town of Guilford

- 1979 Local Law 1, Environmental Review of Actions
  - Section 03 – SEQR and Part 617 Compliance
  - Section 04 – EAF Preparation
  - Section 05 – EIS Preparation
  - Section 08 – Environmental Review
- 1992 Local Law 2, Prevention of Unnecessary Noise
- 1995 Local Law 1, Disposal of Sewage [applicable to septic systems]
  - Section 4 – Sewage Disposal Permits
  - Section 5 – Distances
  - Section 6 – Standards
- 2010 Local Law 1, Flood Damage Prevention<sup>60</sup>

<sup>59</sup> This section will include all procedural local ordinances enacted up to the time of Application.

<sup>60</sup> ~~It is not known at this time whether any~~ Facility components ~~will be~~ not proposed in any designated special flood hazard zones in the Town of Guilford, ~~which would trigger these regulations. They are included here as potentially applicable, will not be addressed further in order to provide a comprehensive overview of potentially applicable local laws~~ the Application.

- Section 4.2 – Floodplain Development Permit
- Section 4.3 – Application for a Permit
- Section 5.1 – General Standards
- Driveway Permits

Chenango County

- 2010 Local Law 2, Administration and Enforcement of the New York State Uniform Fire Prevention and Building Code
  - Section 04 – Building Permits
  - Section 05 – Construction Inspections
  - Section 07 – Certificates of Occupancy

(b) Local Procedural Requirements Requiring Board Authorization

To the extent that the County or Town require permits or other approvals for work performed on County or Town roads or within the municipalities' rights-of-way, (e.g., the Town's required Driveway Permits), the Project Sponsor intends to request that the Board expressly authorize the County or Town to issue such permits or alternatively enter into RUAs with the Project Sponsor. The Project Sponsor will work with the County and 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 Project Sponsor meets the applicable standards.

To the extent that the Town requires permits or other approvals related to septic systems or water connections, the Project Sponsor's intends to request that the Board expressly authorize the County to issue such permits or approvals as such approvals are primarily an issue of local concern, are routine matters and ministerial in nature provided the Project Sponsor meets the applicable standards.

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

The Project Sponsor agrees to provide the information required by 1001.31(c). Due to the complex and specialized nature of the Facility, the Project Sponsor will work with the County to determine how best to ensure compliance with the New York State Uniform Fire Prevention and Building Code, and the Energy Conservation Code of New York State. For a wind powered electric generating facility, this work typically is limited to turbine foundations and operation and maintenance buildings. The County will engage the services of a qualified independent engineer or

engineering firm (the “On-Site Monitor”) who will be responsible for: (a) review of the Company’s building plans, (b) recommending approval of building plans to the Project Sponsor, (c) assisting the County Code Enforcement Officer or any of the representatives of the County with inspecting the Project Sponsor’s compliance with the New York State Uniform Fire Prevention and Building Code, and (d) certifying such compliance, which will be evidenced by the issuance of Certificates of Completion and Temporary Certificates of Completion.

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

The Application will include an updated list of applicable local ordinances, laws, resolutions, regulations, standards, and other requirements of a substantive nature required (at the time of Application submittal) for the construction or operation of the proposed Facility. Copies of special flood hazard area maps and other similar maps, tables, and/or documents related to local substantive requirements will be included in the Article 10 Application.

The substantive local laws and ordinances potentially applicable to the Facility as currently proposed include the following:

Town of Guilford<sup>61</sup>

- 1992 Local Law 2 – Prevention of Unnecessary Noise
- 1995 Local Law 1 – Disposal of Sewage
  - Section 4 – Sewage Disposal
  - Section 5 – Distances
  - Section 6 – Standards
- 2010 Local Law 1, Flood Damage Prevention
  - Section 5.1 – General Standards
- Driveway Permits

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

The Application will provide the information required by 1001.31(e).

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

The Application will provide the information required by 1001.31(f).

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<sup>61</sup> This section will include substantive provisions enacted prior to the Application submission date.

(g) List of Substantive Local Ordinances/Laws Related to Use of Water, Sewer, or Telecommunication Lines

The Application will provide the information required by 1001.31(g).

(h) Local Ordinances/Laws Related to Use of Water/Sewer that the Project Sponsor Requests the Board Not Apply

The Application will provide the information required by 1001.31(h).

(i) Summary Table of Substantive Local Requirements

The 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 Project Sponsor plans to adhere to those requirements.

(j) Zoning Designation

This section is not applicable as no local laws or ordinances establishing zoning designations or classifications have been passed in the Town of Guilford or in Chenango County.

## **2.32. STATE LAWS AND REGULATIONS**

### **2.32.1. Discussion**

During preparation of the Application, the Project Sponsor will consult with the state agencies and authorities whose requirements are the subject of Exhibit 32, to determine whether all such requirements have been correctly identified. To the extent that the requirements identified in this section are applicable, the Project Sponsor intends to comply with such requirements, unless the Project Sponsor specifically requests relief from the Siting Board.

### **2.32.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.32 of the Article 10 regulations, Exhibit 32 of the Application will contain the following information.*

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

State approvals, consents, permits, or other conditions of a procedural nature which may be required for the construction or operation of the proposed Facility are summarized in Table 9.

**Table 9. List of All State Approvals for the Construction and Operation of the Facility that are Procedural in Nature and Whether supplanted by PSL Article 10.**

State Agency	Requirement	Discussion
New York State Department of Environmental Conservation	Water Quality Certification (WQC), Section 401 of the Clean Water Act	The request for a 401 WQC will not be filed until a federal U.S. Army USACE 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 Project Sponsor 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 portions of streams designated by the NYSDEC with one of the following classifications: AA, AA(t), A, A(t), B, B(t) or C(t). The permit is required for any change, modification, or disturbance of any protected streams, streambeds, or stream banks. If this permit is required, the procedural requirements are supplanted by Article 10.
New York State Department of Environmental Conservation	Permit for Freshwater Wetlands Article 24, 6 NYCRR Part 663	This permit would be required for the crossing of regulated freshwater wetlands or adjacent areas by Facility components. Regulated freshwater wetlands are designated and mapped by the NYSDEC and are generally 12.4 acres or larger. Around every state-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.
New York State Department of Transportation (NYSDOT)	Special Use Permit for Oversize/Overweight Vehicles (OS/OW), New York State Vehicle and Traffic Law § 385	Special hauling permits from the NYSDOT are required for loads that exceed legal dimensions or weights. Although these ministerial permits are supplanted by Article 10, the Project Sponsor will request that the Siting Board authorize the NYSDOT to issue these permits.
New York State Department of Transportation	Highway Work Permit, New York State Highway Law, Article 3, § 52	The use of New York State highway rights-of-way (ROW) must be carried out in accordance with terms and conditions of a highway work permit issued by NYSDOT. The proposed Facility may need such a permit for any temporary road improvements in the New York State highway ROW. Per the discussion below, these permits are not supplanted by Article 10 to the extent they relate to State property rights.

State Agency	Requirement	Discussion
New York State Department of Transportation	Highway Use and Occupancy Permit, 17 NYCRR Part 131	The installation of utility facilities, including transmission lines, in highway rights-of-way must be carried out in accordance with the terms and conditions of a highway use and occupancy permit issued by NYSDOT. The proposed Facility may need such a permit to construct improvements in the New York State highway ROW. Per the discussion below, these permits are not supplanted by Article 10 to the extent they relate to State property rights.

As indicated in Table 9, most state procedural requirements are supplanted by PSL Article 10, except for permits to be issued by the 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 (as implemented by the State Pollutant Discharge Elimination System), 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. In addition, certain grants of authority for property rights are not supplanted by Article 10.

In this case, authority to issue the SPDES General Permit for Stormwater Discharges from Industrial Activity has been delegated to NYSDEC under the Clean Water Act. As a result, the Project Sponsor must comply with both the procedural and substantive requirements of the permit in conjunction with constructing the Facility. The decision whether to authorize coverage under the General Permit will be made by NYSDEC under its delegated SPDES program.

Consistent with the Siting Board's order granting the Certificate of Environmental Compatibility and Public Need issued to Cassadaga Wind LLC (Case No. 14-F-0490), highway use and occupancy permits (17 NYCRR Part 131) and highway work permits (NYS Highway Law Article 3, § 52) issued by the New York State Department of Transportation (NYSDOT) represent the issuance of property rights that are not superseded by Article 10. As a result, to the extent such permits are required to construct the Facility, the Project Sponsor must comply with both the procedural and substantive requirements of these permits. The decision whether to authorize issuance of these permits will be made by NYSDOT.

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

The Application will provide the information required by 1001.32(b).

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

The Application will provide a list of all state approvals, consents, permits, or other conditions of a substantive nature which may be required for the construction or operation of the proposed Facility, including:

- (1) 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)
- (2) Consultation Pursuant to Section 14.09 of the New York State Historic Preservation Act
- (3) Endangered and Threatened Incidental Take Permit Standards Article 11, 6 NYCRR Part 182.12
- (4) Permit for Protection of Waters, Article 15, 6 NYCRR Part 608.7b (Permit Application Review) and 608.8 (Standards)
- (5) Permit for Freshwater Wetlands, Article 24, 6 NYCRR Part 663.5 (Standards for Issuance of Permits and Letters of Permission)
- (6) SPDES General Permit for Construction Activity, Article 3, 6 NYCRR Part 750-1.11 (Application of Standards, Limitations, and other Requirements)
- (7) NYS PSL Section 68 Certificate of Public Convenience and Necessity for Construction of Electric Plant
- (8) Special Use Permit for OS/OW Vehicles, NYS Vehicle and Traffic Law § 385
- (9) Highway Work Permit, New York State Highway Law, Article 3, § 52
- (10) Highway Use and Occupancy Permit, 17 NYCRR Part 131

(d) Summary Table of Substantive State Requirements

The Application will provide the information required by 1001.32(d).

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

To the extent that off-site 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 and operation of said offsite ancillary features will be listed in the Application.

## **2.33. OTHER APPLICATIONS AND FILINGS**

### **2.33.1. Discussion**

Aside from the list of approvals identified in Section 2.32, the Project Sponsor does not have, and is not aware of, any other applications or filings before any governmental agency, department or court, which concerns the subject matter of this proceeding (i.e., the High Bridge Wind Project).

Table 10 summarizes any anticipated federal permit, consent, approval, or license needed for the proposed Facility. This information will be confirmed and/or updated in the Application.

**Table 10. Federal Permits and Approvals for the Facility**

Agency	Anticipated Application Date <sup>1</sup>	Description of Permit or Approval Required
U.S. Army Corps of Engineers (USACE)	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. Compliance with Section 106 of the NHPA Compliance with Section 7 of the Endangered Species Act
Federal Aviation Administration	TBD	Lighting Plan and Clearances for Potential Aviation Hazard (includes formal consultation with Department of Defense).
U.S. Fish & Wildlife Service	TBD	Consultation Pursuant to Section 7 of the Endangered Species Act (associated with the USACE Section 404 Permit).

<sup>1</sup> The anticipated application submittal date will be identified in the Application.

### 2.33.2. Proposed Content of the Application

*Consistent with the requirements of 1001.33 of the Article 10 regulations, Exhibit 33 of the Application will contain the following information.*

The Application will provide the information required by 1001.33, along with any current participation by the Project Sponsor in renewable energy markets or requests for proposal (RFPs) that is in the public domain.

Upon specific written request, the Project Sponsor will provide the Town with copies of any other public applications or filings that are related to the Application.

## 2.34. ELECTRIC INTERCONNECTION

### 2.34.1. Discussion

Interconnection of the Facility to the electric transmission system will be achieved using multiple systems, as will be discussed in detail in the Application. Generally, the wind turbines themselves produce power at a low voltage, which is stepped up to a medium voltage (e.g. 34.5 kV) at the output of each turbine. A medium voltage collection system comprised of primarily underground wires transmits the power to a collection substation. The collection substation steps the voltage up to a high voltage (e.g. 115kV) and a high voltage transmission line carries the power to a POI substation. The POI substation will connect the Facility to the NYSEG's existing Jennison to East Norwich 115 kV transmission line.

The plans for the overhead transmission line are still being developed. The transmission line will likely run a short distance between the collector substation and the POI substation. Further information will be included in the Application.

The types, design standards, and descriptions of the electric interconnection components will be included in the Article 10 Application. Direct burial methods, through use of a cable plow, rock saw, rock wheel trencher and/or similar equipment, will be used during the installation of underground electrical collection systems whenever possible. If a rock saw is used, water or other nonhazardous compounds would be used as a lubricant. Direct burial will involve the installation of bundled cable (electrical and fiber optic bundles) directly into the “rip” in the ground created by the plow, saw blade, or rock wheel. The rip will disturb an area approximately 24 inches wide. The bundled cable will be installed to a minimum depth of 42 inches in most areas, and 48 inches in active agriculture and pasture lands. Side cast material will be replaced with a small excavator or bulldozer. All direct burial areas will be returned to approximate pre-construction grades and restored with a native seed mix or agricultural crops, where appropriate.

Trenchless excavation technologies (e.g., HDD or jack and bore) may be utilized to install underground collection lines in or near areas of sensitive areas (i.e., wetlands, streams, etc.) or as needed (i.e., to cross roadways, etc.). This method involves having a surface-launched carrier pipe that is pushed/drilled into the ground to go underneath obstructions. It can be “steered” to guide the drill head down and then to arc back up to the surface on the other side of the crossed facility. Small pits are required at either end of the bore to send and receive the drill head, as well as to hold drilling fluid. The cable is then pulled through the installed carrier pipe and direct burial using the “rip” method can resume. Additional information regarding trenchless technologies will be provided in the Application.

### **2.34.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.34 of the Article 10 regulations, Exhibit 34 of the Application will contain the following information.*

- (a) The Application will provide the information required by 1001.34(a).
- (b) The Application will provide the information required by 1001.34(b).
- (c) The Application will provide the information required by 1001.34(c).
- (d) The Application will provide the information required by 1001.34(d).
- (e) The Application will provide the information required by 1001.34(e).
- (f) The Application will provide the information required by 1001.34(f).
- (g) The Application will provide the information required by 1001.34(g).
- (h) The Application will provide the information required by 1001.34(h).

- (i) The Application will provide the information required by 1001.34(i).
- (j) 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 this Exhibit.

## **2.35. ELECTRIC AND MAGNETIC FIELDS**

### **2.35.1. Discussion**

The information presented in Exhibit 35 of the Application will be derived from an electric and magnetic field (EMF) study to be prepared for the High Bridge Wind Project and will be addressed by the requirements of 16NYCRR 1001.35. The EMF Study will identify segments of electrical lines that will have unique electric and magnetic field characteristics, will identify these segments on aerial photos or drawings, and will indicate the distance to the nearest residence or occupied building in each ROW segment. The EMF Study will also model the strength and locations of electric and magnetic fields that will be generated by the Facility.

### **2.35.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.35 of the Article 10 regulations, Exhibit 35 of the Application will contain the following information.*

#### **(a) Right-of-way Segments Having Unique Electric and Magnetic Field Characteristics**

The Application will identify each ROW segment with unique EMF characteristics, which will be evaluated in the EMF study.

#### **(b) Base Case and Proposed Cross Sections**

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 show:

- 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;
- Any known underground gas transmission 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.

(c) Enhanced Aerial Photos/Drawings Showing Exact Locations

The Application will provide 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

The Application will include an EMF study with calculation tables and field strength graphs calculated at one meter above ground level with five-foot measurement intervals depicting the width of the entire ROW and out to 500 feet from the edge of the ROW on both sides for each unique ROW cross section. In addition, the EMF Study will include the information required by 1001.35(d), as described below.

- (1) A signature and stamp/seal by a licensed professional engineer registered and in good standing in the State of New York.
- (2) The name of the computer software program used to model the facilities and make the calculations.
- (3) The EMF Study will model the strength and locations of electric fields to be generated by the Facility. Modeling will be conducted at rated voltage, and the measurement location and interval will be described in the Application. Electric field strength graphs depicting electric fields along the width of the entire ROW, and out to 500 feet from the edge of the ROW on both sides, will be included in the EMF study. Digital copies of all input assumptions and outputs for the calculations will be provided.
- (4) The EMF Study will model the strength and locations of magnetic fields to be generated by the Facility. Modeling will be conducted at rated voltage, and the measurement location and interval will be described in the Application. There is no expected change in amperage under any of the following conditions: summer normal, summer short term emergency, winter normal, winter short term emergency. Therefore, the magnetic field modeling to be performed will be applicable to any of these conditions. Magnetic field strength graphs depicting magnetic fields along the width of the entire ROW and out to the property boundary of the Facility will be included in the EMF study. Digital copies of all input assumptions and outputs for the calculations will be provided. The generator lead line will be constructed within a new ROW created specifically for the proposed Facility; there are no existing power lines within this ROW.

Consequently, this requirement does not apply to the proposed Facility and will not be addressed in the EMF study or the Application.

~~(4)(5)~~ 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 Section 2.35.2(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.

Moreover, the Application will provide information and analysis for locations where the maximum current flow will result from co-located collection lines during peak load conditions.

~~(5)(1) The generator load line will be constructed within a new ROW created specifically for the proposed Facility; there are no existing power lines within this ROW. Consequently, this requirement does not apply to the proposed Facility and will not be addressed in the EMF study or the 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 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 Application.

## **2.38. WATER INTERCONNECTION**

The proposed Facility is not expected to require water interconnection facilities, and as such, the requirements of this exhibit are not applicable. The Project Sponsor anticipates that water supply needs for the proposed O&M facility will be satisfied through use of a private water well, which would be drilled by a NYSDEC-approved water well driller. The Project Sponsor will work with the Chenango County Department of Public Health during this process.

## **2.39. WASTEWATER INTERCONNECTION**

The proposed Facility is not expected to require interconnection to a municipal wastewater system, and as such, the requirements of this exhibit are not applicable. Wastewater needs for the proposed O&M facility will be satisfied through use of an individual on-site wastewater treatment system (e.g., septic system). The Town of Guilford imposes a

ministerial septic system permit for such installations, which will be discussed in the Application. The Project Sponsor will work with the Town and the Chenango County Department of Health throughout this process.

## **2.40. TELECOMMUNICATIONS INTERCONNECTION**

### **2.40.1. Discussion**

Generally, it is not anticipated that the Facility will require telecommunication interconnections as defined by Article 10, 16 NYCRR 1000.40, in that new off-site telecommunication lines are not anticipated at this time. It is likely that data will be transmitted to NYSEG and others using existing telecommunications facilities, as the area is generally served by existing cellular and/or broadband services. In addition, Facility communications will be installed on-site as part of substation and O&M facility construction.

### **2.40.2. Proposed Content of the Application**

*Consistent with the requirements of 1001.40 of the Article 10 regulations, Exhibit 40 of the Application will contain the following information.*

(a) Operational Data Transmitted to NYISO

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 will be provided in the Application.

(b) Facility Operations Communications Methods

The Application will provide information regarding a high-speed internet connection (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.

(c) Status of Negotiations

The Application will provide the information required by 1001.40(c).

## **2.41. APPLICATIONS TO MODIFY OR BUILD ADJACENT**

The Project Sponsor 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 Application.

### 3.0 SUMMARY AND CONCLUSIONS

This Preliminary Scoping Statement has been prepared for High Bridge Wind, LLC in effort to construct a major electric generating facility. The proposed facility includes up to 30 turbines and generate up to 100.8 MW of renewable energy with no emissions of pollutants or greenhouse gases to the atmosphere and without the need for significant water use. Additional components will include access roads, collection lines, a collection substation, which will include battery storage, a point of interconnection substation, meteorological (met) towers, staging/laydown yards, and an operations and maintenance (O&M) building. This document has been prepared to facilitate an understanding of the proposed Facility, to further solicit input from the various stakeholders, and to satisfy the requirements of 1000.5(l) of the New York Public Service Law.

The proposed Facility is a utility scale wind project located in Chenango County, New York in the town of Guilford. The proposed Facility Site (see Figure 2) consists of approximately 28,000 acres of private land, and the general landscape is a mix of agricultural and forest land. The footprint of the Facility will be substantially smaller than the Facility Site displayed in this FSS.

The Application will provide a range of turbine models that may ultimately be selected. In no case will the Facility consist of more than 30 turbines or be greater than 100.8 MW.

The Project Sponsor prepared a PIP Plan in accordance with 16 NYCRR § 1000.4. The initial draft was filed with the Siting Board on April 27, 2018, and the Facility was assigned a case number (Case No. 18-F-0262). Comments on the PIP Plan were received from the New York State Department of Public Service (DPS) on May 29, 2018, and the PIP Plan was updated, finalized, and filed by the Project Sponsor on June 28, 2018.

The PIP Plan 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 Project Sponsor:

- <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterSeq=56497&MNO=18-F-0262>
- [www.calpine.com/highbridgewind](http://www.calpine.com/highbridgewind)

In addition to the websites identified above, the Project Sponsor has established a toll-free number (1-866-896-0508) to call with any questions and comments on the Facility. Outreach efforts completed to date are summarized in Section 2.2 of this FSS.

During the time before the submission of the Application, the Project Sponsor intends to continue stakeholder outreach. The Project Sponsor will provide notices to the members of the Stakeholder List identified in Appendix D, to provide updates on the Facility, invite comments, and remind the stakeholders of the comment period timeframe. Finally, the Project Sponsor will also attempt to identify additional community events in which it would participate.

Section 2.0 (Content of Application) of this FSS 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 FSS identify numerous Facility-specific support studies that will be conducted and included in the Application, including:

- Preliminary Emergency Action Plan
- Complaint Resolution Plan
- Preconstruction Noise Impact Assessment
- Phase 1B Archeological Survey
- Historic Architectural Resources Survey
- Preliminary Geotechnical Investigation
- Invasive Species Control Plan
- Preliminary Stormwater Pollution Prevention Plan
- Preliminary Spill Prevention Containment and Countermeasure Plan
- Plant and Wildlife Species Inventory
- Wetland and Stream Delineation Report
- Visual Impact Assessment
- Shadow Flicker Assessment
- Route Evaluation Study
- Draft Decommissioning Plan
- AM and FM Radio Analysis
- Off-Air Television Analysis
- Microwave Analysis
- Electric and Magnetic Field Study

Finally, as previously indicated, the Project Sponsor has prepared a content matrix to allow for a comparison of the content of this document with the requirements of 1000.5(l), which is provided below as Table 11.

**Table 11. FSS Content Matrix**

PSL 1000.5(l) Section	Requirement	Corresponding Section of the High Bridge Wind FSS	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 FSS 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, based on 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;	Sections 1.1, 2.21.1, 2.22.1, and 2.23.1	Section 1.1 provides a brief description of the Project, while Sections 2.21.1, 2.22.1, and 2.23.1, 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 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 Project Sponsor as to those issues identified in consultations;	Sections 1.3, 2.15.1, 2.17.1, 2.21.1, 2.22.1, 2.23.1, 2.24.1, 2.25.1	Section 1.3 includes general information regarding Project-related impacts, Sections 2.15.1, 2.17.1, and 2.24.1 provide information regarding potential health impacts, and Sections 2.21.1, 2.22.1, 2.23.1, 2.24.1, and 2.25.1 provide information regarding potential environmental impacts. As of the date of the filing of this FSS, no material impacts have been identified during any consultations.

PSL 1000.5(l) Section	Requirement	Corresponding Section of the High Bridge Wind FSS	Notes
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 Application, including numerous stand-alone support studies.
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 2.22.2(d), 2.22.2(h)(1), and 2.22.2(h)(2)	Sections 2.22.2(d) and 2.22.2(h)(1) discuss the methodology by which the Project Sponsor proposed and implemented pre-construction avian and bat surveys, while Section 2.22.2(h)(2) discusses post-construction monitoring.
PSL 1000.5 (l)(2)(v)	a description of how the Project Sponsor proposes to avoid adverse impacts to the environment and health;	Sections 1.3, 2.15.1, 2.17.1, 2.22.1, 2.23.1, 2.24.1, and 2.25.1	Section 1.3 includes general information regarding Project-related avoidance, minimization and mitigation measures, Sections 2.15.1 and 2.17.1 describe avoidance, minimization and mitigation measures associated with health impacts, and Sections 2.22.1, 2.23.1, 2.24.1, and 2.25.1 describe avoidance, minimization and mitigation measures associated with environmental impacts.

PSL 1000.5(l) Section	Requirement	Corresponding Section of the High Bridge Wind FSS	Notes
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)(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 Project Sponsor may limit its description and evaluation of alternative locations to parcels owned by, or under option to, such private facility Project Sponsor or its affiliates;	Section 2.9	This Section of the FSS 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 Project Sponsor and therefore the description and evaluation of alternative locations will be limited to parcels owned by, or under option to, such private facility Project Sponsor 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	Not applicable to this Project	

PSL 1000.5(l) Section	Requirement	Corresponding Section of the High Bridge Wind FSS	Notes
	<p>program or, where the action is in an approved local waterfront revitalization program area, with the local program;</p>		
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 Project Sponsor may limit its description and evaluation of alternative locations to parcels owned by, or under option to, such private facility Project Sponsor 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 FSS specifically addresses alternatives, including a "no action" alternative and a statement of the reasons why the primary proposed location and source, considering 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 Project Sponsor and therefore the description and evaluation of alternative locations will be limited to parcels owned by, or under option to, such private facility Project Sponsor or its affiliates.</p>

PSL 1000.5(l) Section	Requirement	Corresponding Section of the High Bridge Wind FSS	Notes
PSL 1000.5 (l)(2)(xi)	a preliminary identification of the demographic, economic and physical attributes of the community in which the facility is proposed to be located and in which any alternative location identified is located, and a preliminary environmental justice evaluation of significant and adverse disproportionate environmental impacts of the proposed facility and any alternative facility identified that would result from construction and operation considering, among other things, the cumulative impact of existing sources of emissions of air pollutants and the projected emission of air pollutants from the proposed or alternative facility in a manner that is in accordance with any requirements for the contents of an Article 10 preliminary scoping statement contained in 6 NYCRR Part 487 promulgated by the DEC for the analysis of environmental justice issues; and	Sections 2.27 and 2.28	Section 2.27 provides demographic information for the host town, while Section 2.28 specifically address Environmental Justice, including identification of the nearest Potential Environmental Justice Area
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 Project Sponsor to those issues.	Appendix B	As of the date of filing this FSS, no material issues have been raised by the public or affected agencies. However, Appendix B of the FSS includes the most recently filed Tracking Log, which outlines all consultation activities conducted by the Project Sponsor since 2017.
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) Section	Requirement	Corresponding Section of the High Bridge Wind FSS	Notes
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 Project Sponsor will be requesting the Board to elect not to apply, in whole or in part, and a preliminary explanation as to why the Board should elect not to apply the specific provisions as unreasonably burdensome in view of the existing technology or the needs of or costs to ratepayers whether located inside or outside of such municipality;	Section 2.31	Section 2.21 addresses local laws and ordinances.
PSL 1000.5 (l)(6)	a description of the Project Sponsor, 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 Project Sponsor, including the type of business and its formation. The Project Sponsor does not plan to seek to obtain the power of eminent domain.

PSL 1000.5(l) Section	Requirement	Corresponding Section of the High Bridge Wind FSS	Notes
PSL 1000.5 (l)(7)	a description of the Project Sponsor'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 Project Sponsor's property rights and interests.
PSL 1000.5 (l)(8)	any other information that the Project Sponsor may deem to be relevant.	Entire FSS	Any other information deemed relevant by the Project Sponsor has been included in the FSS.

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