TOWN OF VILLENOVA
STATEMENT OF FINDINGS

BALL HILL WIND ENERGY, LLC

This findings statement has been prepared in accordance with Article 8 of the N.Y. Environmental Conservation Law (also known as the State Environmental Quality Review Act ["SEQRA"]) and its implementing regulations at 6 NYCRR Part 617.

**Lead Agency:** Town Board of the Town of Villenova

**Address:** 1094 Butcher Road, South Dayton, NY 14138

**Name of Action:** Ball Hill Wind Farm

**Location:** The Project is located within the Towns of Villenova and Hanover, in Chautauqua County, New York, and will occur within a 9,715 - acre Project Area (approximately 7,055 acres in Villenova and 2,659 acres in Hanover). Within this Project Area 256.6 acres would be disturbed (defined as the Project Site) within the Project Area. The Project Site includes the maximum 36-foot ROW (less as required in wetland and stream crossing areas) for 13 miles of roads and electrical collection lines; the turbine sites;; the 80-foot wide transmission line ROW; approximately 20 acres of equipment laydown area; and up to 5 acres for the operations and maintenance building site.

**SEQRA Classification:** Type I Action

**Description of Action:** Ball Hill Wind Energy, LLC (hereinafter, "Applicant") applied for the necessary permits and approvals to construct and operate wind energy generating facilities and related electrical collection and road access infrastructure in the Towns of Villenova and Hanover, Chautauqua County (the "Project"). The Project will include 29 wind turbines (23 in the Town of Villenova and 6 in Town of Hanover) each with a nameplate generating capacity of 3.45 megawatts (MWs), with a project total nameplate generating capacity of 100.5 MWs. The wind turbines presently being considered for the project are the Vestas 3.45 MW class wind turbines, which have a total height of 150 meters (492 feet) with the blade at its highest point. In addition to the turbines, the project includes construction and operation of approximately 13 miles of gravel access roads, approximately 19.8 miles of underground (buried) electrical collection lines and/or communication cables, an operations and maintenance (O&M) facility, an overhead 115 kv

transmission line up to 5.7 miles long, and a southern substation and associated point of interconnection switchyard in the northern portion of the Project Area. In addition to the permanent components of the project, the project will require temporary laydown areas and construction work spaces. The project is located in portions of the Towns of Villenova and Hanover, New York.

In furtherance of this proposed project, the Applicant has requested, and the Lead Agency has reviewed the environmental implications of the following applications and proposed agreements as part of the proposed Project: 1) Creation of Wind Overlay (Zoning) District is defined by the Town of Villenova Local Law 1 of 2007; 2) Wind Energy Special Use Permit; 3) Host Community Benefit Agreement between the Town of Villenova and the Applicant; and 4) Amendment of Section 690.09(A)(13) of the Town of Villenova Zoning Law to allow for the construction of wind turbines up to 495 feet in total height.

**Date FEIS Filed**: November 22, 2016

**Public Availability of Findings Statement**:

A copy of the findings statement is available on the following website:

http://www.ballhillwind.com/

The Findings Statement may also be reviewed during regular business hours at:

Villenova Town Hall, 1094 Butcher Road, South Dayton, NY

Hanover Town Hall, 68 Hanover St., Silver Creek, NY

## INTRODUCTION

The Town Board of the Town of Villenova as the SEQRA Lead Agency has received an amended application from Ball Hill Wind Energy, LLC (hereinafter, "Applicant") for the necessary permits and approvals to construct and operate wind energy generating facilities and related electrical collection and road access infrastructure in the Town (the "Project"), as described herein. This document is the Statement of Findings by the Town Board, pursuant to its responsibility as the Lead Agency under SEQRA and its implementing regulations at 6 NYCRR Part 617.

## PROJECT PURPOSE AND NEED

The purpose of the proposed Project is to create a profitable, economically viable wind-powered energy facility that will provide a significant source of clean and renewable energy to the New York power grid.

The Project will help the State achieve the goals of the 2015 State Energy Plan. State Energy Law 6-104 requires the State Energy Planning Board to adopt a State Energy Plan. The latest iteration of the New York State Energy Plan was announced on June 25, 2015. The State Energy Plan contains a series of policy objectives and coordinates with the REV initiative and the objectives to increase the use of energy systems that enable the State to significantly reduce greenhouse gas ("GHG") emissions while stabilizing energy costs. According to the Plan, the Plan is a "comprehensive strategy to create economic opportunities for communities and individual customers throughout New York." Through the State Energy Plan, New York has committed to achieving a 40% reduction in GHG emissions from 1990 levels by 2030 and reducing total carbon emissions 80% by 2050. In addition, the State Energy Plan calls for 50% of generation of electricity from renewable energy sources by 2030. The Ball Hill Wind Farm fully

advances the objectives of the State Energy Plan and assists the State in achieving the 50% renewable energy generation objective.

It will also assist the State in fulfillment of President Obama's commitment under the 2013 Climate Action Plan. EPA proposed "Clean Power Plan" regulations in 2014 establishing a framework for states to regulate carbon dioxide emissions from existing fossil fuel-fired electric generating units. (See 79 Federal Register 34830; June 18, 2014). Once the guidelines are issued, states must develop plans that explain how they will achieve those guidelines. Nationwide, the proposal calls for reducing CO2 from the power sector by approximately 30% from 2005 emission levels by 2030. The proposal establishes emission rate-based CO2 goals for each state as well as guidelines for the development, submission and implementation of state plans to achieve those goals. The proposal relies on four basic building blocks: (1) reducing the carbon intensity of generation at individual units through heat rate improvements; (2) substituting less carbon-intensive generating units (e.g., replacing coal with natural gas); (3) increasing reliance on low or zero-carbon generation sources such as solar and wind; and (4) increasing reliance on demand-side energy efficiency programs.

Although the change in Administration may result in changes or withdrawal of the federal Clean Power Plan, the New York State Public Service Commission ("PSC") has enacted similar renewable energy goals for the entire State electric distribution system. On August 1, 2016, the PSC issued its Order Adopting a Clean Energy Standard,[1] which adopted the "goal of the State Energy Plan that 50% of New York's electricity is to be generated by renewable sources by 2030, as part of a strategy to reduce statewide greenhouse gas emissions 40% by 2030, is adopted as a foundational basis and essential component of the Clean Energy Standard.

[1] NYSPSC Case 15-E-0302, Order Adopting a Clean Energy Standard, August 1, 2016

Additionally, the Governor, by Executive Order, has established a goal to reduce current greenhouse gas emissions from all sources within the State 80% below levels emitted in the year 1990 by the year 2050.[2]

The Clean Energy Standard continues the goal New York previously pursued for renewable energy through its Renewable Portfolio Standard ("RPS"), under which the New York State Energy Research and Development Authority ("NYSERDA") is responsible for obtaining the targets established in the RPS through competitive bidding and contract procurements. To date, NYSERDA has conducted 10 Main Tier (larger, utility scale resources) solicitations in pursuit of the RPS target. From the nine completed solicitations, NYSERDA currently has contracts with electricity generators for 65 large-scale projects, including the Ball Hill Wind Farm Project (NYSERDA, 2015)[3]. These projects will add more than 2,035 MWs of new renewable capacity to the State's energy mix. However, as of December 2014, the State, through NYSERDA, has only procured enough renewable energy to meet 56% of the RPS targets. (NYSERDA, 2015). NYSERDA has the responsibility under the Clean Energy Standard.

Additional benefits include positive impacts on socioeconomic (e.g., increased employment, increased revenues to local municipalities and lease revenues to participating landowners and neighbors), air quality (through reduction of emissions from fossil-fuel-burning power plants), and climate (reduction of greenhouse gases that contribute to global warming).

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[2] Executive Order No. 24 (2009) [9 N.Y.C.R.R. 7.24; continued, Executive Order No. 2 (2011) 9 N.Y.C.R.R. 8.2]

[3] New York State Energy Research and Development Authority (NYSERDA). 2015. *The New York State Renewable Portfolio Standard, Annual Performance Report through December 31, 2014*. Final Report. March 2015.

**SEQRA HISTORY**

In May 2008 Noble Ball Hill Windpark, LLC (now Ball Hill Wind Energy, LLC, or "the Applicant") submitted a Joint Application for the Wind Overlay Zone and Special Use Permit to the Villenova Town Board. The Joint Application included a Full Environmental Assessment Form ("EAF") Part 1 that addressed the proposed Project (then known as the Noble Ball Hill Wind Farm Project). On May 20, 2008, the Villenova Town Board declared its intent to act as Lead Agency and forwarded notice and a copy of the EAF document, to potentially interested/involved SEQRA agencies. No agency objected to the Villenova Town Board assuming the role of Lead Agency. On June 23, 2008 the Villenova Town Board adopted Lead Agency status and issued a Positive Declaration requiring the preparation of an Environmental Impact Statement ("EIS"). A Draft Environmental Impact Statement ("DEIS") was accepted as complete on October 27, 2008.

Upon acceptance of the DEIS, the 30-day public comment period began. Public and agency comments were collected by mail, e-mail, and at the Villenova Public Hearing. Following submission of the DEIS, revisions to the Project layout resulted in changes considered to be a material change by the Lead Agency, necessitating the preparation of a Supplemental Draft Environmental Impact Statement ("SDEIS"). The SDEIS was accepted as complete by the Lead Agency on January 27, 2016. The subsequent public comment period for the SDEIS concluded on March 14, 2016. Public and agency comments on the DEIS and SDEIS were reviewed by the Lead Agency and the Applicant and various follow-up investigations were conducted to address those comments. As a result, the Project was modified as set forth in the amended applications submitted to and accepted by the Towns of Villenova and Hanover on September 28, 2016, and October 24, 2016, respectively. Public hearings were held in Villenova

October 13, 2016 and in Hanover on November 9, 2016 on the amended applications where Ball Hill, and its supporting staff, presented the updated Project and solicited and answered questions from the interested public.

As a result of those investigations and subsequent changes to the Project layout, including proposed use of different wind turbine technology, increase in proposed turbine height, the Applicant prepared a draft Final Environmental Impact Statement. On November 22, 2016, the Lead Agency issued the Final Environmental Impact Statement ("FEIS") and notice of completion of the FEIS was published in the DEC Environmental Notice Bulletin on November 30, 2016. The FEIS and its supporting documents are incorporated by reference into this Findings Statement. The FEIS is on file at the Office of the Villenova Town Clerk at 1094 Butcher Road, South Dayton, NY, and Hanover Town Hall, 68 Hanover St., Silver Creek, NY, and is also available on the Applicant's website at http://www.ballhillwind.com/.

## PROJECT DESCRIPTION

One of the mandates of SEQRA is to prepare an EIS as early as possible in the review process. As a result, it is common for projects to change after an EIS is submitted, and particularly in response to comments on the EIS. Since its inception, the Project design has advanced in response to address feedback from participating landowners and involved agencies, and to further reduce the potential for environmental impacts. Most importantly, changes in wind turbine generating technology mean the same size output can be achieved with fewer turbines, resulting in significantly reduced environmental impacts from the Project.

**DEIS Project Layout and Components**

At the time the DEIS was prepared, the Applicant proposed installation and operation of 60 1.5-MW wind turbines (49 turbines will be located in the Town of Villenova and 11 in the Town of Hanover) within an approximately 13,658-acre Project Area; construction and use of approximately 16 miles of new access roads (13 in the Town of Villenova and three in the Town of Hanover) that will connect each wind turbine to a Town or County roadway; construction and use of an electrical collection system consisting of approximately 23.8 miles of underground lines (18.7 miles in the Town of Villenova and 5.1 in the Town of Hanover) and 174 feet of overhead lines (Town of Villenova). Where possible, lines were to be installed along the new access roads and existing roads. Approximately 8.5 miles were to be installed within new right-of-way (ROW) over private lands (7.3 miles in the Town of Villenova and 1.2 miles in the Town of Hanover); construction and use of a new substation (Hanover substation) within the Project Area in the Town of Hanover that would tie into a new 115-kilovolt (kV) transmission line. The substation footprint will be approximately 200 by 300 feet, and the substation would be located on and have direct access to Hurlbert Road; and finally, construction and use of a switchyard within the Project Area in the Town of Hanover. The switchyard footprint would be approximately 300 by 500 feet, and would be located on and have direct access to Bennett State Road (County Route 85).

Various plans and support studies were prepared and included in the DEIS, which provided detailed information on discrete topical areas in furtherance of the SEQRA evaluation. Specific measures designed to mitigate or avoid adverse potential environmental impacts during Project construction or operations include the following:

- Siting the Project away from population centers and areas of residential development.

- Locating access roads and turbines along field edges and in field corners where practical to avoid or minimize disturbance of agricultural land.
- Keeping turbines a minimum of 1,000 feet from off-site (non-participating) residences to minimize noise and visual impacts.
- Utilizing multiple-megawatt scale turbines to reduce the length of interconnect and access roads per megawatt of capacity.
- Burying electrical interconnection lines between turbines except where unavoidable due to sensitive environmental/cultural resources or construction constraints, in order to minimize agricultural impacts.
- Using existing roads for turbine access whenever possible to minimize disturbance to agricultural land, wildlife habitat, wetlands, and streams.
- Utilizing construction techniques that minimize disturbance to vegetation, streams, and wetlands.
- Siting the interconnection substation facilities in an area screened by existing mature vegetation.
- Painting the turbines with a matte non-specular finish.
- Developing and implementing a sedimentation and erosion control plan.
- Proposing a compensatory stream/wetland mitigation program.
- Siting select turbines to avoid or minimize wetland, wildlife, or visual impacts.
- Performing post-construction monitoring to improve understanding of possible avian impacts.
- Siting turbines to avoid interference with microwave and AM/FM communication systems.

- Siting turbines to avoid interference with exiting gas wells and infrastructure.
- Implementing agricultural protection measures to avoid, minimize, or mitigate impacts on agricultural land and farm operations.
- Completion of pre and post-construction condition surveys of public roads, upgrading public roads to be utilized during construction, and restoring roads following construction to the upgraded conditions.
- Finalizing a component delivery plan that minimizes impacts on residential areas.
- Developing and implementing a historic resource protection plan in concert with the New York State Historic Preservation Office.
- Developing and implementing a Complaint Resolution Procedure and a procedure for investigating compliance with applicable noise setbacks.

**SDEIS Project Layout and Components**

As the Project advanced, the Applicant revised the Project layout. The revised Project consisted of up to 36 wind turbines with a maximum capacity between 79 and 100 megawatts. As then proposed, 28 wind turbines would be installed in the Town of Villenova and eight (8) wind turbines would be installed in the Town of Hanover. The Project Area was the same as was originally identified in the 2008 DEIS but utilized different technology and a revised layout. The revised Project proposed to utilize either the Vestas V110-2.2, General Electric (GE) 2.3-116 or similar turbine with a maximum total height of 499 ± feet. These turbines are three-bladed, upwind, horizontal axis wind turbines. The V110-2.2 has a rotor diameter of 360.9 feet, a hub height of 312 feet and a total height with a blade in the vertical position of 492 feet. The GE 2.3-116 has a rotor diameter of 380.6 feet, a hub height of 308.4 feet and a total height of 499 feet. In addition to the wind turbines, the proposed SDEIS Project layout included the construction of

a system of gravel access roads, both buried and overhead electrical collection lines, an operation and maintenance building, an electrical switchgear facility, and an interconnection substation facility. The temporary construction staging area was still planned for the construction phase of the Project.

**The FEIS and Final Project Layout and Components**

The Applicant continued to refine the proposed Project design and presented a revised, reduced Project layout in the FEIS. The FEIS Project layout was determined in accordance with the same criteria that were described in the DEIS and SDEIS. These included wind resource assessment, setbacks, presence of sensitive environmental resources (such as wetlands and cultural resources), landowner preferences, and other issues raised during the public comment period. Equivalent studies and or analyses were performed for the FEIS in locations that were not previously reviewed during preparation of the DEIS and SDEIS.

The FEIS Project layout further reduced the number of proposed wind turbines to up to 29 turbines (23 in Villenova, 9 in Hanover), The FEIS Project layout incorporated a taller wind turbine with a larger rotor diameter (relative to what was considered in the DEIS and SDEIS) to maximize energy production based on the site-specific wind resource analyses. By increasing the nameplate capacities of the larger wind turbine, the Applicant was able to propose fewer turbines in the FEIS Project layout. The potential adverse environmental impacts associated with a larger turbine were identified and analyzed in the DEIS and SDEIS.

In general, the FEIS Project Site was very similar to the Project Site previously identified in the DEIS and SDEIS. Relative to the DEIS and SDEIS Project layouts, the FEIS Project layout minimized potential environmental impacts by reducing the overall scale of the Project. The number of proposed turbines was reduced from 60 (DEIS), to 36 (SDEIS), to 29 (FEIS).

This process continued in the modifications from the SDEIS layout to the FEIS layout as demonstrated by the following table Tablw 1.3-1 in the FEIS:

**Comparison of Project Layouts Proposed in the SDEIS and FEIS**

| Project Component | SDEIS Layout | FEIS Layout |
|---|---|---|
| Wind Turbines | 36 | 29 |
| Access Roads | 14.9 miles | 13.0 miles |
| Buried Electrical Collection Lines | 21.3 miles | 19.8 miles |
| Overhead Transmission Lines | 6 miles | 5.7 miles |
| O&M Building Site | 2.8 acres (5 acres leased) | 5 acres leased[2] |
| Collection Substation | 175 x 290 feet | Similar footprint on 1.3 acres |
| Interconnection Substation | 225 x 611 feet | Similar footprint on 4.0 acres |
| Temporary Construction Laydown Areas (acres) | 26.1 acres | 15.0 acres |
| Potential Impact to wetlands (acres) (Temporary/Permanent)[1] | 24.5 acres/ 4.6 acres | 24.96 acres[3]/ 0.87 acres |

Notes:

[1] Total wetland impact is the permanent and temporary impacts combined.

[2] The O&M Building site would be utilized as a temporary laydown area during construction.

[3] The total temporary impact to wetlands under the FEIS (24.96 acres) includes impacts to forested wetlands by clearing vegetation with no additional fill. Impacts to wetlands are further characterized and explained below in Section 1.4.4 and Appendix E, Water Quality and Wetlands, of the FEIS.

The total distance of proposed access roads was also reduced from 16 miles (DEIS), to 14.9 miles (SDEIS), to 13 miles (FEIS). The FEIS Project layout is sited on many of the same parcels that were previously included in the DEIS and SDEIS. The Project Site as presented in the DEIS included 13,658 acres, which has been scaled down in the FEIS to 9,715 acres.

The total project impacts, summarized in FEIS Table 1.3-3, are shown below:

**FEIS: Summary of Project Impacts, Entire Project Site**[1, 2, 3]

| Project Component | Construction Impacts (Permanent and Temporary Impacts) [acres] | | | Project Operational Impacts (Permanent Impacts) [acres] |
|---|---|---|---|---|
| | Total | Town of Hanover | Town of Villenova | Total[1] |
| Total FEIS | 256.6 | 109.0 | 147.6 | 55.5 |
| **Change from SDEIS to FEIS** | **(-73.5)** | **(-15.0)** | **(-58.5)** | **(-172.8)** |

Notes:

[1] Table totals may not sum due to rounding.

[2] Construction impacts are defined as areas where grading (temporary and permanent) would occur for the construction of Project facilities with the exception of the Transmission Line for which construction impacts are considered to be the entire 80-foot ROW.

[3] As noted in Section 1.3.3 and represented in the drawings presented in Appendix C of this FEIS, Project Drawings, there are an additional 62.3 acres within the proposed limits of disturbance (LOD) where grading is not expected to occur, but additional disturbance may include limited tree clearing and/or other minimal temporary disturbance required for construction of the Project facilities.

The current Project layout and Components are summarized in more detail below. For purposes of this Findings Statement, "Project Site" is defined to include the 3,883 acres included in the current Project layout. The term "Project Area" is defined to include the Project Site and its immediate vicinity.

Individual Turbine Sites

The Project layout now includes 29 proposed wind turbines. As outlined in the FEIS, locations of multiple turbines have been slightly moved to reduce impacts (such those turbines that have been shifted slightly to avoid wetlands. See FEIS Table 1.3-2.

As described in the FEIS, the turbine selected for the Project is a Vestas 3.45 MW class turbine, such as Model V126-3.45MW IEC IIA/IIB. The change to the Vestas 3.45 MW class turbines which are a more powerful models, allows the use of fewer turbines than originally proposed in the DEIS (60) or the SDEIS (36).

Each wind turbine consists of three major mechanical components: the tower, nacelle, and rotor. The Vestas 3.45 MW class turbine is a three-bladed, upwind, horizontal-axis wind

turbine with a rotor diameter of approximately 413 feet. The nacelle is located at the top of the tower and contains the electrical generating equipment. The turbine rotor and the nacelle are mounted on top of a tubular tower giving a rotor hub height of approximately 285 feet. The maximum height for the turbine is below 500 feet when a rotor blade is at the top of its rotation. Once installed, the wind turbine would occupy a round foundation approximately 60 feet in diameter.

*Tower*: The tubular towers used for this Project are anticipated to be conical steel structures manufactured in multiple sections. The towers have a base diameter of approximately 13.5 feet and a top diameter of approximately 10.4 feet. Each tower will have an access door, internal lighting, and an internal ladder to access the nacelle. The towers will be painted off-white to make the structure visible to aircraft (viewing against the ground) but decrease visibility against the sky.

*Nacelle:* The main mechanical components of the wind turbine are housed in the nacelle. These components include the drive train, gearbox, and generator. The nacelle is housed in a steel reinforced fiberglass shell that protects internal machinery from the environment and dampens noise emissions. The housing is designed to allow for adequate ventilation to cool internal machinery. The nacelle is equipped with an external anemometer and a wind vane that signals wind speed and direction information to an electronic controller. The applicant has submitted an application to the Federal Aviation Administration (FAA) to install a single, medium intensity aviation warning light on approximately one-half of the turbines. These lights would be attached to the top of the nacelle and are anticipated to be flashing red strobes (L-864) that would operate only at night. The nacelle is mounted on a bearing that allows it to rotate ("yaw") into the wind to maximize energy capture.

*Rotor*: A rotor assembly is mounted to the nacelle to operate upwind of the tower. Each rotor consists of three composite blades with a rotor diameter of approximately 413 feet. The maximum height for the selected turbine is 492 feet when a rotor blade is at the top of its rotation. The rotor attaches to the drive train at the front of the nacelle. Hydraulic motors within the rotor hub feather each blade according to wind conditions, which enables the turbine to operate efficiently at varying wind speeds. Also, the rotor can spin at varying speeds to operate more efficiently at lower wind speeds.

Turbine Tower Foundations

It is generally anticipated that turbine tower foundations will be constructed as described in the DEIS. If bedrock is encountered it is anticipated to be ripable, and will be excavated with a backhoe. If the bedrock is not ripable, it will be excavated by pneumatic jacking, hydraulic fracturing, or blasting. Ball Hill does not expect that blasting would be necessary for the excavation of the foundations. In the event that blasting becomes necessary, a detailed blasting plan would be prepared and submitted to the Towns of Villenova and Hanover, Chautauqua County Emergency Services Coordinator, and Chautauqua County Department of Health for their review.

Delivery and Storage Areas (On-Site and Off-Site)

The construction laydown yard/staging area will be developed as a temporary use area as described in the DEIS, except that one of the original laydown area was moved from a culturally sensitive area in order to avoid potential archeological deposits. During construction, a total of 20 acres of temporary laydown areas within the Project Area would also provide storage for

materials, such as overhead poles, rods, ring forms, and other construction materials (5 of the 20 acres are the site for the future O & M Building) Six laydown areas are currently proposed for the Project and range in size from 2 to 5 acres each. Construction of each laydown area would include stripping and stockpiling the topsoil, reinforcing the site with geotextile fabric, and installing gravel. The laydown areas would also provide space for Ball Hill and its contractors' construction trailers and parking for construction crews who would be trans-ported to the work sites. Others, including dedicated support staff, quality inspectors, and field engineers, would park off the public roads with landowner permission in designated areas, such as access roads and turbine sites, as needed. Construction trailers would be utilized during the construction phase of this Project and are anticipated to be placed within the O&M building site/laydown area. This would be a centralized location for work trailers and Project coordination. Laydown areas will be restored upon completion of construction.

Access Roads

Approximately 13 miles of access roads will be constructed and/or improved to access the turbines, as compared with the 14.9 and 16 miles proposed in the SDEIS and DEIS layouts. Project constructability has been evaluated through numerous on-site investigations, including in-field review and analysis of each turbine and access road location conducted by Project engineers and ecologists.

The proposed access roads for the Project are gravel roads designed to bear the weight of construction vehicle and truck traffic transporting concrete, gravel, and turbine components to the wind turbines over the life of the Project. These access roads would also support any emergency or fire service equipment that may need access to and egress from to the Project Site. The required gravel road base section would be constructed using site-specific geotechnical

information considering the load-bearing requirements of construction traffic and equipment delivery. The gravel roads would then be constructed accordingly for the soil conditions and base section, including stripping of topsoil in most areas. Geotextile fabric, or a comparable product, may be used to separate the native soil/fill from the gravel base material to prevent fine soil particles from migrating into the gravel base material and to preserve road base integrity. Cement stabilization may be used in place of geotextiles in some areas as well.

Roads would be constructed with stream culverts as needed to prevent washout of the base material during storm events and to ensure roadbed stability. Road-side ditches would be constructed as dictated by the terrain to convey storm water runoff away from the roadways. To prevent access by the general public, construction/access roads may be gated where they intersect public roads..

The typical temporary impact width for new and existing roads during construction will be 36 feet. Typical permanent impact width for these roads will be 34 feet. Within agricultural areas, it is anticipated that permanent road widths will be reduced to 18 feet. Site-specific site conditions may result in either narrower or wider impact widths, based on the need to provide cut and fill of side slopes or to minimize impacts where sensitive resources occur. Except for the 18-foot permanent access road, the remainder of the construction ROW would be allowed to naturally revegetate, subject to elimination of dangerous trees. Natural revegetation of the construction ROW is likely to result in the establishment of native plants, due to existing seed banks and adjacent plant communities. An annual rye seed and mulch would be used to temporarily stabilize the soil.

Electrical Collection Lines

The network of buried electrical interconnects for the Project will generally be co-located with Project access roads. Approximately 19.8 miles of underground power collection lines will be installed. In areas where underground collection lines could not be installed adjacent to an access road, they would be installed within a maximum 36-foot wide ROW. Underground collection lines would be installed via direct burial using either a trenching machine or a track hoe. The cables would generally be buried in 48-inch-deep trenches, with a final depth to the top of the cable of 42 inches. Where multiple circuits are installed parallel to each other, a separation of approximately 12 feet is required. In the unlikely event that bedrock is encountered within the trench depth during installation, alternatives, such as ripping or blasting, would be evaluated. Blasting would not proceed until a blasting plan has been prepared and approved by the appropriate town in which the blasting would occur and Chautauqua County..

Overhead Electrical Transmission Line

The Project will require an approximately 5.7-mile long overhead transmission line. A new maximum 120-foot ROW would be required; all forested areas within a central 80-foot ROW would be cleared to avoid interference with transmission lines. The additional 20 feet of ROW on either side of the clearing would be utilized for selective tree removal. During construction, equipment travel would generally be limited to a 20-foot travel corridor, where practicable, and temporary 80-foot by 80-foot workspaces at pole locations. If wetland areas and streams are encountered along the transmission ROW, wetland mats would be used within a 12-foot corridor immediately adjacent to the trans-mission line to accommodate equipment travel.

Construction of the proposed transmission line would occur in four general phases: 1) ROW clearing and preparation; 2) installation of single-pole structures; 3) stringing of the conductors; and 4) cleanup and restoration.

The entire cleared ROW width would be cleared of trees during construction and maintained in an herbaceous or scrub-shrub state during operation to provide necessary transmission system clearance and maintain reliability of the transmission line. Within wetlands, trees would be cut by hand and equipment used for removal would be positioned outside of the wetland boundary or on mats located within a construction corridor immediately adjacent to the transmission line. Tree stumps would be left intact except where removal is necessary for pole installation or where they pose a safety related construction constraint (such as within travel paths). In these areas, stumps would be removed and disposed of in approved upland, non-active agricultural locations.

Single wood or wood look-alike poles would be installed to support the conductors. A crew would transport the poles, along with insulators and insulator hard-ware, to each pole location on the ROW. A drill rig or auger would be used to drill holes for the transmission poles to the required depth, based on final engineering design. The poles would be lifted individually and set in place by a crane or large forklift. Braces and davit arms would be individually hoisted and framed to the poles. The insulators, clamps, travelers, and other associated hardware would be installed on the pole.

Substations

There are two substations planned. The interconnection substation will include a three-breaker-ring bus arrangement. The interconnection substation will be designed in accordance with National Grid standards and with the Northeast Power Coordinating Council Criteria for

Bulk Power Stations and criteria set for by the U.S. Department of Homeland Security (DHS). The collection substation will be designed in accordance with Institute of Electrical and Electronics Engineers and National Electrical Safety Code standards. Both substations will be located in steel fenced areas with appropriate warning signs

The collection substation includes circuit breakers in combination with open-air type isolation switches to connect the collection system feeders to the main 34.5-kV substation bus, a 34.5-kV main bus open-air isolation/grounding switch, a 34.5- to 115-kV, wye delta wye generation step-up (GSU). An automatic transfer switch is to be included if a backup station service power source from the local distribution utility or a backup diesel generator is included in the final design of the substation.

The construction of these facilities involves grading, construction of a foundation for the transformer, steel work, breakers, control house, and other outdoor equipment; the erection and placement of the steel work and all outdoor equipment; and electrical work for all the required terminations. The GSU transformer will be equipped with mineral oil and adequate oil containment will be provided. All excavation, trenching, and electrical system construction work would be done in accordance with the SWPPPs. Prior to construction, site-specific SWPPPs would be submitted to the NYSDEC, as required. Construction work would require the use of bulldozers, a drill rig and concrete trucks, a trencher, a back-hoe, front end loaders, dump trucks, transportation trucks for the materials, boom trucks and cranes, and man-lift bucket trucks.

The footprint for the collection substation would be up to 266 feet by 239 feet and up to 1.3 acres of disturbance, and the footprint for the interconnection would be approximately 265 feet by 651 feet, and up to 4.0 acres of disturbance. These footprints may be larger during

construction; additional temporary impacts for these facilities are captured under total impact calculations

Operations and Maintenance Facility

Ball Hill plans to operate the Project with a staff of up to six full-time employees who would perform routine, preventive maintenance and unplanned work on the wind turbines under an O&M contract. A facility manager and an administrative assistant would be responsible for all O&M of the site, including administration and direction of turbine maintenance, technical oversight as required by the manufacturer, and operational coordination with both the utility grid system and local landowners. If needed, large repair tasks would be accomplished using both Project employees and third-party contractors.

Ball Hill will construct an O&M facility within the Project Area, which would house these activities. The O&M building footprint would be approximately 140 feet by 50 feet constructed as a single story with amenities including a maintenance shop, offices, and a conference room. The O&M facility area will be leveled and graded and will serve as a central base for Project operation. The main O&M building will house the command center of the Project's SCADA system. The building will be linked by fiber optic cables to each of the WTGs through the SCADA system, which allows an operator to control critical functions and the overall performance of each WTG. In general, the operations and maintenance of the proposed facility is as described in the DEIS.

Project Construction

In general, Project construction information is as described in the DEIS, and where necessary additional detail is provided below. Construction of the Project is expected to begin in 2017 and

be complete in 2018, although weather and other factors may increase or decrease the length of the anticipated 12-month construction schedule. Ball Hill will obtain all necessary permits and approvals prior to the start of construction. As noted in the SDEIS:

- Construction would be monitored by Ball Hill personnel, Ball Hill's environmental supervisor, and the Towns' environmental inspectors to ensure that all construction is conducted in accordance with applicable federal, state, and local permits and conditions, agreements, and regulations.
- All stream and wetland crossings would be executed in accordance with the requirements of permits issued by NYSDEC and the USACE.

  Activities within active agricultural fields would be conducted in accordance with applicable NYSDAM guidelines to the greatest extent practicable, and in accordance with Town approvals and landowner input.
- Site-specific Storm Water Pollution Prevention Plans (SWPPPs) will be prepared and implemented prior to construction and operation, and individual Notices of Intent for construction will be filed in accordance with the NYSDEC New York State Pollutant Discharge Elimination System General Permit for Stormwater Discharges from Construction Activity requirements. A description of stormwater pollution prevention measures that will serve as a basis for creation of a site-specific SWPPP was provided in the SDEIS as Appendix E, and remains valid for the FEIS. The SWPPPs will be submitted to the Towns prior to the issuance of building permits.
- Ball Hill will enter into agreements with the Towns of Villenova and Hanover and Chautauqua County as appropriate, and obtain permits from the New York State Department of Transportation (NYSDOT) as needed to allow improvements and modifications to existing roads and ROWs prior to the start of construction.
- Ball Hill will obtain building permits, as required, and submit entranceway, roadway, and gate details as a component of the permit application process. Final engineering plans that include parcel boundaries and road and utility ROWs verified by licensed surveyors will be provided prior to issuance of building permits.
- Ball Hill, or its contractors, will coordinate with "Dig Safely New York" and the respective gas utility companies to determine the locations of all active gas lines and wells within the Project Site. Appropriate setbacks and crossing procedures will effectively minimize risks of interference. Where encroachments are determined to be necessary during Project engineering, Ball Hill will coordinate with the applicable company to be consistent with its encroachment polices.

Decommissioning

In general, decommissioning and site restoration activities for the Project will be as described in the DEIS. However, the anticipated costs of decommissioning were updated in the FEIS due to the amount of time that has passed since the DEIS was published. The Town of Villenova Wind Law (Local Law No 1 of 2007), requires that this decommissioning estimate be reevaluated periodically for changes in costs of decommissioning and restoration as well as adjusted for inflation. The expected useful life of the Project components is 25 to 30 years, although it is reasonable to expect that this life can and would be extended by proper maintenance (the SDEIS only predicted 20 years). Decommissioning work would be performed in accordance with all federal, state, and local requirements and the appropriate permits will be obtained prior to conducting any decommissioning activities. The decommissioning plan for the Project includes detailed descriptions and cost estimates for the removal of all turbine components. The decommissioning plan provides that the site would be restored, including removal of above-ground structures (i.e., wind turbine removal, pad mount removal, and overhead collection line removal) and underground features to a depth of 3 to 4 feet

Detailed costs of decommissioning Project components, average salvage values for various components, and a net decommissioning cost per turbine are presented in the updated decommissioning plan. The total cost of decommissioning is estimated at $17,600 per turbine, or $509,000 for the 29 turbines, which includes blades/hub removal, nacelle removal, tower dismantling, foundation removal, and backfill/restoration. Additionally, the plan estimates decommissioning of the col-lection line, substations, and roads to cost $149,000. In total, decommissioning is estimated to cost $658,000, an average of $22,700 per WECS.

In accordance with the Town of Villenova Wind Law, Ball Hill will establish financial security in a form and amount acceptable to the Town. Ball Hill will review and revise all estimated decommissioning costs on or before each five-year anniversary of the Project's first date of commercial operations, and notify the Town of Villenova of any changes. The details of the timing and nature of the updated calculations will be included in the Host Community Agreement between Ball Hill and the Town.

## PERMITS AND APPROVALS REQUIRED

The permits and approvals described in Table 1.5-1 of the DEIS will still be required for the current Project. In addition, the Project also anticipates requiring the following approvals:

- An Amendment of Section 690.09(A)(13) of the Town of Villenova Zoning Law to allow for the construction of wind turbines up to 495 feet in total height.
- Adoption of a Local Law creating a Wind Overly District as required by Section 690.04(B) of the Town of Villenova Zoning Law.
- Similar approvals are required from the Town of Hanover.

## ENVIRONMENTAL IMPACTS OF THE PROJECT

### Community Character and Land Use

The Project is located in Chautauqua County in the Towns of Villenova and Hanover on approximately 9,715 acres of leased, privately owned land (the "Project Area"). The Project Area is shown in Figure 1 of the FEIS. The Towns of Villenova and Hanover are generally rural and characterized by agricultural uses, forested land, and rural-residential uses. The Town of Hanover includes the more developed villages of Forestville and Silver Creek as well as the

hamlets of Balltown, Hanford Bay, Hanover Center, Irving, Keaches Corners, Nashville, Parcells Corner, Smith Mills, and Sunset Bay. The Town of Villenova contains the hamlets of Balcom, Balcom Corners, Hamlet, Skunks Corners, and Wango. Built features in both Towns typically include low-density single-family residential structures and farmsteads. The more concentrated areas of residential and commercial development are along major roadways such as NYS Route 39, NYS Route 83, NYS Route 93, and NYS Route 322.

Land uses within the Project Area are predominantly a mixture of forested and agricultural land. Additional acreage within the Project Area consists of wetlands, roads, and other paved surfaces, scattered residences, buildings, and open water features, such as farm ponds. The principal agricultural enterprise is dairy farming. Corn and hay are the main crops, but some other crops are also grown. The northern portion of the Project Area in the Town of Hanover includes vineyards and orchards. Most of the natural stands are represented by mixed hardwoods dominated by sugar maple, red oak, white ash, and American beech.

The project site consists of 256.6 acres (147.6 acres in the Town of Villenova and 109.0 acres in the Town of Hanover) (the "Project Site") within the approximately 9,715-acre Project Area. The Project Site includes grading and selective tree clearing for temporary and permanent construction rights of way ("ROW") for access roads, the turbine sites (permanent impacts include a crane pad and turbine apron/foundation); the collection system ROW; the transmission line ROW; 20.0 acres for equipment laydown areas and the O&M building site; 1.3 acres for the collection substation; and 4.0 acres for the interconnection substation.

The reduction of the Project to 29 turbines has reduced the Project Area from approximately 13,659 acres to 9,715 acres for the current layout.

Other than land that is directly developed for the proposed Project, future land use patterns in the area are anticipated to remain largely unchanged for the foreseeable future. Existing agricultural and rural land uses will be able to coexist with the operating wind energy facility. Both the Town of Villenova and Town of Hanover control development through zoning ordinances. The Towns have adopted Local Laws regulating wind farm development, which supplement the zoning regulations. The Villenova Town Board adopted a local law in 2007 regulating wind farm development and the Hanover Town Board adopted a similar local law in 2008 to update its existing zoning law. The Towns' wind laws are similar to those being adopted by other towns throughout NYS. Each law requires submittal of an application for a special use permit and for creation of a Wind Overlay Zone to the Town Boards for review and approval and requires full compliance with the NYS Environmental Quality Review Act (SEQRA). Additionally, the laws establish design requirements including setbacks, spacing and density, structure, clearance, access and safety, lightning, access roads, electrical wires, lighting, buildings and outdoor storage, aesthetics and visual assessment, signs, agricultural mitigation, noise, insurance, shadow flicker, ice and blade throw, catastrophic tower failure, electromagnetic interference (EMI), and height limitation.

*Town of Villenova*

Development in the Town of Villenova is controlled through existing zoning regulations. The zoning regulations and zoning districts were developed in accordance with a comprehensive plan for the municipality. The Zoning Law of the Town of Villenova (1997) divides the Town into the following districts: Agricultural/Residential (ARI), Transition (T) and Industrial Park "Floating" (IP). Portions of the Project Area are classified as Transitional (T) district. On April 11, 2007, the Town Board approved Local Law No. 1 of 2007: Wind Energy Facilities Law of

the Town of Villenova, with final adoption on June 13, 2007. The purpose of this local law is to promote the effective and efficient use of the Town's wind energy resource through WECS and to regulate the placement of such systems so that the public health, safety, and welfare will not be jeopardized. The law states that a WECS shall be setback from site boundaries, measured from the center of the WECS, as follows:

■ 500 feet from the nearest site boundary property line, except the setback shall be 500 feet where the boundary is state, county, town, or village-owned property (§ 690.12.E.1);

■ 500 feet from the nearest public road (§ 690.12.E.2);

■ 1,000 feet from the nearest off-site residence existing at the time of application, measured from the exterior of such residence (§ 690.12.E.3);

■ 100 feet from state-identified wetlands. This distance may be adjusted to be greater or lesser at the discretion of the reviewing body, based on topography, land cover, land uses, and other factors that influence flight patterns of resident birds (§ 690.12.E.4); and

■ 500 feet from gas wells, unless waived in writing by the property owner (§ 690.12.E.1).

Additionally, applicants must provide a shadow flicker study, visual impact assessment, fire protection and emergency response plan, created in consultation with the fire department(s) having jurisdiction over the proposed Wind Overlay District, noise analysis, property value analysis, and electromagnetic interference assessment. The Villenova local law also states that the statistical sound pressure level generated by a WECS shall not exceed L10-50 A-weighted decibels (dBA) measured at the closest exterior wall of any residence existing at the time of completing the SEQRA review of the application (§ 690.12.A). In the event the noise levels resulting from a WECS exceed the criteria, or a setback requirement is not met, a waiver may be granted from such requirement by the Town Board if written consent from the affected property

owners has been obtained stating that they are aware of the WECS and the noise and/or setback limitations and that they wish to be part of the site and that consent is granted to: (1) allow noise levels to exceed the maximum limits otherwise allowed or (2) allow setbacks less than required (§ 690.13.A.1). If consent is given, a waiver is not necessary. To advise all subsequent owners of the burdened property, the consent, in the form required for an easement, has been recorded in the County Clerk's Office describing the benefited and burdened properties. Such easements shall be permanent and may not be revoked without the consent of the Town Board, which consent shall be granted upon either the completion of the decommissioning of the benefited WECS in accordance with Article II, or the acquisition of the burdened parcel by the owner of the benefited parcel or the WECS (§ 690.13.2).

*Town of Hanover*

In 1998, the Town of Hanover adopted the "Town of Hanover Zoning Laws." The ordinance divides the Town into six zoning districts: A-1 Agricultural and Residential District; R-1 Residential District (Hanford Bay); R-2 Residential and Recreational District (Sunset Bay); R-3 Residential and Recreational District (Hamlet of Irving); B-1 Business District; and I Light Industry District. The portion of the Project Area located in the Town of Hanover is located within an A-1 Agricultural and Residential District. The Hanover Town Board passed a local law in July 2008 to update its regulations for WECSs in the town. The intent of the law is to accommodate the necessary infrastructure for the provision of utility scale and small wind-powered electricity generation so that they may be developed in a manner compatible with the general health, welfare, and safety of the public. It is also intended to address the visual, aesthetic, and land use compatibility aspects of WECS. According to the law, WECS would be permitted in the Wind Overlay/District Zone, which may be created in the Agricultural

Residential (A-1) District, upon issuance by the Town Board of a Special Use Permit. Each WECS in the Town of Hanover shall be set back (as measured from the center of the WECS) a minimum distance of:

■ 500 feet from the nearest Site boundary property line, right-of-way, easements, and power lines and 500 feet where the boundary is with state, county, town, or village-owned property (Section 1606.2.a);

■ 500 feet from the nearest public road (Section 1606.2.b);

■ 1,000 feet from the nearest off site residence, school, church, or historic structure existing at the time of application, as measured to the exterior of such structure (Section 1606.2.c.);

■ 100 feet from state identified wetlands. This distance may be adjusted to be greater at the discretion of the reviewing body, based on topography, land cover, land uses, and other factors that influence flight patterns of resident birds (Section 1606.2.d.);

■ 500 feet from gas wells, electric or gas distribution lines unless waived in writing by the property owner and well owner or applicable utility owner (Section 1606.2.e.).

The Hanover local law also states that the statistical sound pressure level generated by a WECS in Hanover shall not exceed L10 - 50 dBA measured at any offsite residence existing at the time the application. If the ambient sound pressure level exceeds 48 dBA, the standard shall be ambient dBA plus 5 dBA. Independent certification shall be provided before and after construction demonstrating compliance with this requirement. In addition, the Town of Hanover law requires specific emergency shutdown and safety procedures.

The Project will introduce new, highly visible elements (*i.e.*, wind turbines) into the existing landscape, which could be considered a change in community character for the primarily

rural residential areas that surround the project site. The visibility and visual impact of the wind turbines will be highly variable based upon distance, number of turbines in the view, weather conditions, sun angle, the extent of visual screening, scenic quality, viewer sensitivity and/or existing land uses.

Despite the possibility of a change to the visual character of the Project Site, the Project is compatible with existing agricultural land use and community character. The Project is likely to help keep land within agricultural use, which is considered a long term positive impact of the proposed Project on the Towns. There are several reasons that wind energy helps preserve agricultural uses. First, the presence of wind turbines is consistent with farming because agricultural uses can occur right up to the base of modern wind turbines. Second, the presence of wind turbines on agricultural land discourages encroaching nonagricultural uses such as residential suburban sprawl. Third, revenues to lessors supplement farming operations' revenues, aiding the viability of agricultural uses. Keeping farmland in production would help to promote the rural and agricultural nature of the region.

The 495 feet maximum height of the wind turbine model currently being proposed also exceeds the existing maximum height limitation for wind turbines specified in the Town of Villenova and Hanover Zoning Laws. The laws establish that the maximum total height of any Wind Energy Conversion System (or wind turbine) shall be 420 feet. When the Towns' Wind Energy Facilities laws were adopted, wind turbine heights were substantially shorter than what is currently the industry standard. Turbine technology has evolved and the general trend in the industry is to maximize efficient use of the wind resource by utilizing turbines that are taller and/or have larger rotor diameters. For example, the Marble River Wind Farm in Clinton

County, New York and the Arkwright Summit Wind Farm in Chautauqua County, New York utilize turbines comparable in height to the turbines currently proposed for the Project.

In recognition of this evolution in the latest technology and in the interests of maximizing the use of the renewable wind resource while also minimizing potential environmental impacts associated with the footprint of the Project, the Town Boards recently introduced amendments to their zoning laws, which would increase the permissible height of any wind energy conversion system (WECS) to a maximum of 495 ft. The review of the amendment to the zoning ordinance is being conducted as part of the SEQRA review for the Project. If the Town does not approve the legislation, the Applicant will seek a variance pursuant to the Towns' zoning law.

The Lead Agency finds that the proposed Project is consistent with community character and land uses in and around the Project Area and is not expected to interfere with future land uses. Although the Project would result in an alteration of the viewshed from various vantage points in the Project vicinity, which could impact the manner in which members of the public perceive the rural character of the community, construction and operation of the Project will result in local economic benefits, and is anticipated to help preserve farmland in its current agricultural use. And, the Project will have a positive impact on future infrastructure improvements within the Towns, because revenues to the Towns generated from the Project will enable improvements to Town-owned roads and other infrastructure.

Although the current maximum height being proposed is taller than what is currently permitted under the existing local laws, the increase in height is the result of an evolution in the latest technology and promotes the Applicant's and Towns' interest in maximizing the use of the renewable wind resource while also minimizing potential environmental impacts associated with a given project. In this case, the current Project design includes a fewer number of turbines

reducing the area of impact associated with turbine footprint, required access roads and collection lines. In this respect, the final Project layout (with fewer turbines) also benefits the community because turbines will be less dense on the landscape, and in proximity to fewer individual residences. As a result, the current Project layout and design mitigates adverse impacts to community character and land use to the maximum extent practicable.

Agricultural Land Uses

Current agricultural land uses within the Project Area include pasture land, hay, row crops, and vineyards. The Project Area lies within or nearby two Chautauqua County agricultural districts: Agricultural District 5 (CHAT005) and Agricultural District 10 (CHAT010), which together encompass 9,702.1 acres in the towns of Hanover and Villenova (NYSDAM 2015). Agricultural District 5 covers 2,017.8 acres in the Town of Hanover, and Agricultural District 10 covers 7,684.3 acres in the town of Villenova. Agricultural districts are often created based on the presence of "prime farmland" and "soils of statewide importance" (NYSDAM 2015). It is important to clarify that the designation of a soil under any of these classes does not mean that the land is currently or was formerly used for agricultural purposes; rather, it simply indicates that the soil type possesses the necessary physical and chemical criteria to satisfy the designation defined by the USDA or pertinent state agencies, such as NYSDAM (USDA 2015; NYSDAM 2015). Soils identified as prime farmland or soils of statewide importance are recognized as having the greatest potential productivity for crop growth. Prime farmlands and soils of statewide importance are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding.

The Project involves both temporary and permanent impacts on soil resources and agricultural productivity in the Project Area. As revised in the FEIS, the Project Area and

Project Site have decreased in size. The original layout, reflected in the SDEIS, would have resulted in the disturbance of soils on 282.6 acres of land, including the permanent impact of 98.1 acres. The current layout would result in the disturbance of soils on 205.2 acres, including the permanent impact to 55.5 acres. If grading is required on the transmission line, an additional 51.4 acres of soils may be temporarily impacted within the ROW. However, this represents a conservative estimate of disturbance to agricultural land as these areas are not necessarily used for active agricultural purposes; rather, based on their physical and chemical properties, they are simply characterized as soils that can consistently produce sustained high crop yields when treated and managed using acceptable farming methods.

Along with this direct impact to agricultural land, movement of equipment and material could result in temporary dismantlement of fences and gates, inadvertent damage to subsurface drainage systems, and temporary blockage of farmers' access to agricultural fields or to local roads. A small amount of residential land could be temporarily impacted by the Project, but these impacts would be confined to the properties of participating landowners, and would be largely temporary in nature (construction activity).

It is noted that the wind turbines and associated facilities have been located to minimize loss of active agricultural land and interference with agricultural operations. To the maximum extent practicable, the Project has been designed in accordance with the NYSDAM Guidelines for Agricultural Mitigation for Windpower Projects.

The Applicant has and will continue to coordinate with NYSDAM to develop an appropriate post-construction monitoring plan to ensure that NYSDAM guidelines are met. The Villenova Town Law governing wind energy facilities requires that "any construction or ground disturbance involving agricultural land shall be done in according to the NYSDAM's publication

titled Guidelines for Agricultural Mitigation for Wind Power Projects." Consistent with NYSDAM guidelines, active agricultural areas that are temporarily or permanently disturbed by construction will be monitored for two years following the completion of initial restoration. General conditions to be monitored include compaction testing, crop productivity, and condition and function of drainage features. During the monitoring period, an environmental supervisor versed in agricultural operations will be retained by the Applicant to identify and make recommendations regarding unforeseen Project-related impacts on active agricultural lands that are found to need of additional mitigation measures.

Soil compaction and mixing of subsoils with the topsoil layer can affect long-term farmland productivity. To minimize these impacts on active agricultural fields during construction, the construction contractor will strip topsoil from the Project workspace and stockpile all topsoil separately from excavated subsoil material in windrows adjacent to the workspace to minimize topsoil handling. Measures that will be implemented to reduce soil compaction within active agricultural lands will also include restrictions on traffic and load placements when conditions of extreme wetness are encountered and until suitable soil moisture conditions have been restored. In addition, impacts on agricultural lands will be minimized by restricting construction equipment and vehicles to the approved construction ROWs.

Following the completion of construction operations, all temporarily disturbed areas located within active agricultural lands will be decompacted to a minimum depth of 18 inches using a deep ripper, subsoiler, or heavy-duty chisel plow, in accordance with NYSDAM guidelines. Due to the potential for adverse impacts on turbine grounding wires, underground collection cables, and the compacted structural fill on top of the foundations, no subsoil decompaction will be performed within a 35-foot radius of the outside edge of each turbine base.

Instead, non-compacted topsoil will be placed on top of the subsoil. If long-term crop loss occurs despite these mitigation measures, the Applicant will compensate the landowner according to existing agreements.

Decompaction of the Project Site will be performed under the direction of the environmental supervisor and verified by use of a soil penetrometer. The Applicant will avoid decompaction during or after periods of heavy precipitation. The Applicant will address soil elasticity conditions on a case-by-case basis as part of the Applicant's Environmental Management Plan (EMP) and in accordance with landowner and NYSDAM recommendations in order to ensure effective soil decompaction. Any decompaction activities conducted after October 1 will be coordinated with NYSDAM.

On agricultural land, blasted or excavated bedrock, boulders, and concentrations of excavated stone or rock materials will not be returned to the excavation or trenches any closer than 24 inches from the exposed work surface of the stripped portion of the ROW. The remainder of the backfill will be limited to suitable subsoil material, backfilled up to the top of the exposed work surface. Excess waste rock/stone materials will be removed from active agricultural areas and properly disposed of.

Restoration of all agricultural land and pasture will be coordinated with the affected landowners and will be in accordance with NYSDAM guidelines, including those in the Seeding, Fertilizing, and Lime Recommendations for Gas Pipeline Right-of-Way Restoration in Farmlands (NYSDAM 2005). Although these recommendations were originally developed or intended for natural gas pipeline ROW projects, the same agronomic principles apply to farmland restoration for wind power projects. The Applicant will continue to coordinate with NYSDAM throughout the construction and operation phases of the Project. Landowners will be

consulted before using any seed mixes or soil amendments in disturbed areas. In addition, the Applicant will ensure that only endophyte-free varieties are used. Additional temporary fencing, as required for coordinating livestock exclusions, will be placed in accordance with landowner requirements. If necessary, alternative grazing plans will be coordinated between the Applicant, the individual landowner, and the appropriate town(s). The Applicant will ensure that the integrity of any fencing or watering systems within or adjacent to the Project ROW is maintained. The environmental supervisor will check the fence integrity on a weekly basis at minimum. Additionally, if necessary, alternative grazing plans will be coordinated between the Applicant and the individual landowner.

The Project will also obtain coverage under a State Pollution Discharge Elimination System (SPDES) general permit. All work will be conducted in strict compliance with the provisions of the permit and an approved Stormwater Pollution Prevention Plan (SWPPP).

Accordingly, based on the above and the comprehensive analysis in the DEIS, SDEIS, and FEIS, the Lead Agency finds that the Project has been designed to properly balance the need to protect farm property while minimizing other environmental impacts. With the implementation of construction impact mitigation and avoidance measures identified in the NYSDAM guideline and a SWPPP as proposed, the Lead Agency finds the Project will not have any significant adverse impacts on agricultural uses and will otherwise avoid impacts to the maximum extent practicable.

Construction Impacts on Land

Construction of the Project is not expected to affect regional geology and topography because the spatial scale of the Project is much smaller than the regional geologic and

topographic scales. Construction of the Project will affect portions of the Project site geology and topography in the following situations:

■ Local topography around the turbine sites and some other Project facilities may be changed (i.e., cut and filled) to accommodate the requirements to construct and operate the turbines and roads. Minor alterations of the turbine sites to level off the area would be required; however, these alterations would not change the overall topography of the Project Area; and

■ If shallow bedrock is encountered during construction, it would be excavated and returned to the excavation or trenches. Blasting during construction is not anticipated. However, if blasting becomes necessary, it would not proceed until approval has been obtained from the proper jurisdictions. Significant changes will not be made to the overall level of bedrock in the Project Area.

The Project would involve both temporary and permanent impacts on soil resources and agricultural productivity in the Project Area. Construction activities, including clearing and grading, trenching and excavation, movement of heavy equipment, and cleanup, may affect soils and agricultural productivity. Potential soil impacts from construction include erosion, compaction, damage to soil structure resulting from construction equipment traffic, and the introduction of stones or rocks from shallow bedrock areas into the topsoil. Rutting and compaction of agricultural soils may result from the passage of heavy equipment and construction vehicle traffic in the proposed construction areas.

These impacts are of particular concern in cultivated fields and may be more likely to occur where soils are poorly drained. Soils with the potential for compaction or rutting resulting from heavy equipment passage were identified through published County Soil Survey

information as well as the USDA SSURGO database, where engineering/construction limitations for a given soil type are provided (USDA 2015).

Agricultural production may also be hampered by the introduction of stones or rocks greater than 4 inches in diameter into the soil surface layer. Subsurface rock fragments and stones may be encountered during grading, trenching, and excavation operations. Excavation of shallow bedrock during construction could also introduce rock fragments and stones into an agricultural field's topsoil layer. Construction in the Project Area may encounter soils with shallow bedrock. Blasting of shallow bedrock for construction purposes could also impact soil integrity. Blasting during construction is not anticipated; however, if blasting becomes necessary, it will not proceed until full approvals have been obtained from the authority having jurisdiction. Soil may also be contaminated by accidental minor spills or leaks of lubricants and fuels used in the construction process.

Soil erosion and off-site sedimentation will be minimized through the implementation of erosion control measures to reduce unnecessary impacts and to comply with the appropriate regulations. BMPs will be implemented in conjunction with applicable guidelines (e.g., NYSDAM guidelines and SWPPP requirements). These BMPs will be managed in the site-specific SWPPP for the Project and will be included and submitted in a Notice of Intent for Construction Activities prior to construction, as required by the New York State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activities. As a general practice, temporary erosion controls, including interceptor diversions and sediment filter devices (e.g., hay bales and silt fences), will be installed prior to initial ground disturbance. As required, temporary trench plugs will be installed immediately following trench excavation for cabling and mulch or erosion control fabrics (e.g., jute netting)

may be used on critical slopes or areas to control erosion. The SWPPP will be filed with the Towns and NYSDEC a minimum of five days prior to the commencement of construction. During construction, the Applicant will monitor the effectiveness of temporary erosion control devices in accordance with the SWPPP and the EMP. To ensure proper functioning, temporary erosion control devices will be monitored on a weekly basis, at a minimum, and after rain events to ensure proper functioning, as required in the New York State Standards and Specifications for Sediment and Erosion Control, and in accordance with the SPDES General Permit for Stormwater Discharges from Construction Activities and the SWPPP.

Temporary erosion control structures will be maintained until the affected areas are successfully stabilized. Following successful revegetation of construction areas, temporary erosion control devices will be removed. Mitigation measures will be applied to all disturbed areas and maintained as necessary to prevent soil erosion and sedimentation during the life of the Project. In areas in or adjacent to agricultural fields, the SWPPP will require revegetation or seeding/mulching, which will be coordinated with individual farmers so that the re-establishment of vegetation complements each farmer's operation. Restoration activities in these areas will be conducted in accordance with NYSDAM guidelines.

Prior to construction, the Applicant will document areas within the Project Site that currently have erosion and sedimentation issues so that the adequacy of restoration efforts and site drainage design can be evaluated.

Soil impacts, such as loss of organic matter, topsoil-subsoil mixing, deterioration of soil structure, and soil settling or slumping, will be minimized and/or avoided to the maximum extent practicable by use of protective measures. These measures are intended to ensure that topsoil-subsoil mixing does not occur and that compaction and other construction-related impacts are

avoided or mitigated. Upland and agricultural topsoil will not be stockpiled adjacent to the Project workspace within 50 feet from any wetland or waterbody boundary. Silt fencing will be properly installed around the perimeter of the toe-of-slope of all upland and agricultural topsoil stockpiles to prevent movement of sediment off site. When topsoil stockpiles are left to "over winter" (prior to final restoration operations), each stockpile will be hydroseeded with an annual rye-grass and a suitable hydromulch prior to the onset of winter weather.

In areas where wetland soils are encountered, all wetland topsoil will be stockpiled separate from upland/agricultural topsoil and placed adjacent to the wetland from which it was removed. These stockpiles will not be placed within 50 feet from any wetland or waterbody boundary. Silt fencing will be placed around the toe-of-slope perimeter of all wetland topsoil stockpiles, and the stockpiles will be clearly identified as "Wetland Topsoil." Wetland topsoil will be re-placed into the wetland from which it was removed as soon as practicable after the completion of major construction operations (e.g., turbine placement, trenching). All excavated subsoil material will be stockpiled separately from all topsoils and adjacent to the Project workspace, no less than 50 feet from any wetland/waterbody. Topsoil would be removed from all areas where subsoil will be stockpiled. Topsoil will be replaced to original depth, and the original contours will be reestablished to the maximum extent practicable. In active agricultural lands where the topsoil has been stripped, soil decompaction will be conducted prior to topsoil replacement as per NYSDAM guidelines to minimize trench settling. The Applicant will backfill the trench with select material followed by the native soil. Subsoil decompaction and topsoil replacement will be avoided during and after periods of heavy precipitation. Following decompaction, rocks 4 inches in diameter and larger will be removed from the surface of the subsoil prior to replacement of the topsoil. If the excavated materials are not suitable for use as

backfill around turbine pads and roadway areas, soil of similar texture may be imported. The unsuitable soils will then be removed from the Project Area and disposed of in accordance with all applicable permit requirements. For active agricultural lands, any imported topsoil will be selected in consultation with the affected landowner and in accordance with NYSDAM guidelines. If rutting occurs in agricultural fields during construction, either topsoil stripping or heavy timber matting will be employed to prevent the mixing of subsoil and topsoil.

The Applicant will dewater all excavations and trenches prior to backfilling. The SWPPP will provide the necessary measures for dewatering of trenches and excavations when groundwater is encountered.

Prior to and throughout construction, the Applicant has and will continue to coordinate with individual landowners to determine the locations of all known drain tiles within the areas disturbed by the Project. This information will be provided to the installation contractors prior to the commencement of construction. Additionally, the Applicant will coordinate with the Chautauqua County Soil and Water Conservation District to determine whether there are any records for the affected properties.

If subsurface drainage tiles are encountered during construction, they will be restored in accordance with the drain tile repair specifications set forth in the SDEIS. Other potential drainage impacts that may occur include changes to the natural drainage ways of agricultural lands. The Applicant will mitigate these potential impacts by implementing subsurface intercept drain lines and ditch plugs and, where necessary, culverts and ford crossings to maintain natural drainage patterns. In addition, where Project access roads are constructed or existing roads are improved, design of these roadways will include drainage systems. New subsurface drain lines will meet or exceed the condition of existing installed structures and will be installed in

coordination with the affected landowner. Prior to replacement, the condition, size, and integrity of the drain tile will be noted to ensure appropriate replacement occurs.

Requirements and procedures to prevent and respond to spills during construction are a component of the SWPPP. The Applicant will require contractors to use BMPs for handling materials to help prevent spills. If a fuel or lubricating oil spill occurs, it will be cleaned up immediately by removing and properly disposing of any contaminated soils pursuant to applicable regulatory requirements.

For the duration of the Project, a complaint hotline will be established to address and resolve landowner complaints from Project construction or operation, which will be addressed according to the Complaint Resolution Plan. The Applicant will work with an agriculture/soil conservation specialist, as required, to address and remediate any complaints received involving soils in agricultural areas. Response procedures in the event of a spill will also be described in the Emergency Response Plan (ERP), developed for the Project.

Based on the above, and the mitigation measures identified in the SDEIS/ FEIS and appendices, the Lead Agency finds the Project will avoid/minimize construction related land impacts to the maximum extent practicable.

Property values

The potential for negative impacts resulting from the construction and operation of wind turbines on residential property values is often raised by property owners in or near proposed wind energy projects. Isolating the potential impact of a single variable, such as the presence of a local wind farm, is difficult. Besides the current land use and structural integrity, property value is influenced by many external factors, including social trends, economic trends, governmental controls, and regulations and environmental conditions. In the 2008 DEIS, an

independent consultant, the KLW Group of Buffalo, New York (KLW) prepared an analysis of the potential impact of wind turbines on property values in the Project Area. The KLW report is attached to the 2008 DEIS in Appendix P and incorporated into this SDEIS as Appendix A. KLW evaluated residential sales data within an approximate 5-square-mile area surrounding four existing wind farms located in NYS. Two of the wind farms are located in Madison County (central New York) and the other two are located in Wyoming County (western New York). Three of these wind farms had been operational for over five years. Additionally, the Noble Bliss Windpark was analyzed, although at the time of the study (spring 2008) only limited sales data were available. The surrounding land uses at each wind farm in the study are similar to the land use in the Project Area (i.e., predominately agricultural, forested, and interspersed with low-density residential development). Two analyses were used to determine if wind energy projects were likely to impact local residential real estate values. A "relative comparison qualitative analysis" was used to compare sales five years prior to the construction of the respective wind energy projects to sales five years subsequent to their construction and operation. A "paired sales analysis" was used to compare sales and re-sales of the same property before and after the construction of the respective wind farms.

KLW found no conclusive evidence that would indicate any actual or potential negative impact on residential real estate values in the market area analyzed as a result of proximity to, or in the viewshed of a proposed or operational wind energy project. The sales data and studies performed on the respective comparable wind farms show no evidence indicating that these facilities have had a detrimental effect on real property values. Each of the studies concluded that prices continued to increase within the respective sub markets after construction and the ongoing operation of the facility. Additionally, sales and re-sales of the same property within the

respective submarkets indicate that the values of the majority of properties were unaffected by the existence of the wind farm. The sale data indicated increases in property values consistent with typical market fluctuations.

This conclusion is consistent with much of the quantitative research available on wind farm effects on property value. It is concluded that no long-term negative property value impacts have occurred in similar market areas where wind farms have been developed (KLW 2008). The Lead Agency finds that although this study was conducted in 2008, the conclusions are still valid to date as new research shows, some of which are summarized below.

Several property valuation studies have been conducted in NYS and nationwide to determine the impacts on property values in the vicinity of recently constructed wind turbines, since the 2008 KLW study. These studies have had similar findings to the KLW report, as they indicate that there are no long-term significant adverse impacts on property values. However, two studies did indicate potential short-term impacts during the siting and construction of wind energy facilities, indicating there are no long-term significant adverse impacts on property values.

A study by B. Hoen, and others, of the Ernest Orlando Lawrence Berkeley National Laboratory entitled The Impact of Wind Power Projects on Residential Property Values in the United States: A Multi-site Hedonic Analysis studied 10 areas throughout the United States that encompassed 24 distinct wind facilities located in New York, Pennsylvania, Illinois, Wisconsin, Iowa, Oklahoma, Texas, Oregon, and Washington (Hoen et al. 2009). This study assessed wind power projects that encompassed nearly 13% of total U.S. wind power capacity installed by 2005. The study evaluated property values based on three categories of concern: Area Stigma, Scenic Vista Stigma, and Nuisance Stigma. The study found no statistical evidence that property

values are consistently, measurably, or significantly affected by either the view of wind facilities or the proximity of such facilities to homes.

M. Heintzelman and C. Tuttle's report, Values in the Wind: A Hedonic Analysis of Wind Power Facilities, studied 11,369 property transactions in three counties in northern NYS over nine years (Heintzelman and Tuttle 2011). They identified a wind turbine as existing from the moment of the finalization of the FEIS for the wind energy project. According to their study, the existence of a wind turbine in proximity to a property did significantly decrease the value of the property in two of the three counties studied. Within these two counties, wind turbines have been operational since 2008, in the third county where the decrease in property value was not significant, wind turbines have been in operation since 2004. The author suggests that this increased familiarity with turbines has diminished their impact on property values.

The study by J. Hinman titled Wind Farm Proximity and Property Values: A Pooled Hedonic Regression Analysis of Property Values in Central Illinois broke down the analysis of property values into construction and operation periods at a wind energy project in Central Illinois (Hinman 2010). This study suggests that the siting and construction of wind turbines may have a negative impact on property values due to the local and tourist populations being wary of wind turbines. However, according to Hinman, after the wind turbine is up and operational, the property values would rebound. According to the Heinstzelman and Hinman studies, there may be temporary, short-term, minor impacts on property values including certain residents moving out of the area due to the proposed locations of the wind turbines; however, it would be expected that property values would rebound after the local population acquires additional information on the aesthetic impacts on the landscape and actual noise impacts of the

wind turbines. After the impacts are experienced, according to the above-mentioned studies, property values would be expected to rebound to pre-wind turbine values.

While no significant adverse impacts on local housing or population are anticipated, the use of local contractors and labor will be utilized to the largest extent practicable. Therefore, new demand for housing or attraction of new population is minimized. In addition, the Applicant will communicate with local merchants about needs for lodging and other services during construction in order to properly prepare for any periods with a high number of out-of-town workers. With respect to the local economy, the Applicant will utilize local services, supplies, and manufacturers to the greatest extent possible during Project construction and operations to pass on the maximum financial benefit to the community. PILOT and host community payments will be provided to the local municipalities and school districts to mitigate environmental and other related impacts which result from the Project. These payments will be negotiated with the Chautauqua County Industrial Development Agency, the Towns, or other relevant taxing jurisdictions.

Given the results of the above-referenced studies and the analyses in the DEIS, SDEIS, and FEIS, it is reasonable to conclude that the proposed Project should not have an adverse impact on local property values. Based on the expert opinion in the record, the Lead Agency finds that the Project will not have an adverse impact on property values in the community.

Cultural and Historic Resources and Impacts

As part of the original cultural resources investigations in 2008, Panamerican Consultants, Inc. (Panamerican) conducted a Phase I cultural resources study for the Project's area of potential effect (APE). This study involved archaeological excavations as well as an analysis of historic architectural resources in accordance with the New York State Historic

Preservation Office (SHPO) Guidelines for Wind Farm Development Cultural Resources Survey Work (SHPO 2006), National Historic Preservation Act (NHPA), New York State Historic Preservation Act, SEQRA, the National Environmental Policy Act, as well as other relevant state and federal legislation. The methodology for these studies was approved by the SHPO prior to commencement of the investigations. To assess modifications to the Project layout, Panamerican performed an archaeological and architectural survey of the Project APE2 in 2012, which was completed in 2013. This task resulted in the completion of an addendum to the original report. The 2008 design incorporated approximately 375 acres and increased to 401 acres that same year; the 2012 design increased the Project footprint to approximately 416 acres. These reports were submitted to the SHPO and concluded their evaluation of eligible resources and the potential impacts on those resources within the Project.

In 2015, Panamerican reentered the field to account for more changes to the Project layout relative to its previous two configurations. The current Project Site falls within the same overall footprint as the 2008 and 2012/2013 project layouts but covers a smaller area.

The results of the 2008 cultural resource surveys were submitted to the SHPO; response was received on September 24, 2008, recognizing that 121 resources were identified and determined eligible for listing in the National Register of Historic Places (NRHP). As a result of the submittal of the 2012/2013 addendum, on September 30, 2013, responses were received recognizing a 15-acre increase in the Project Area and the inclusion of eight additional resources and one historic district that were also determined eligible for listing in the NRHP. Both letters concluded that the Project would have an "adverse impact on cultural resources."

On December 10, 2015, the Phase I archaeological survey report for the redefined Project area was submitted to SHPO for review and comments; the Phase I architectural survey report

was submitted on December 28, 2015. On January 7, 2016, SHPO concurred with the findings of the Phase I archaeological survey report, stating that no additional survey was required within the Project APE.

On April 4, 2008, in accordance with Section 106 of the NHPA, informal consultation requests highlighting the development process and location of the Project were submitted to three federally recognized tribes known to have cultural ties to region: the Seneca Nation, the Tonawanda Band of Seneca Indians, and the Tuscarora Nation. In August 2008, copies of the Phase I cultural resource reports were also submitted to the respective tribal authorities for review and comments. To date, no responses to these requests have been received. As a follow up to these actions, letters outlining recent changes to the Project and copies of the 2015 have been submitted to each of the three tribal authorities.

Archeological Resources

The purpose of the archaeological investigation was to identify all archaeological and cultural resources in the Project Area. The Project's area of potential effect (APE) has been revised from a 401-acre APE at the time of the DEIS, to 354.8 acres in the SDEIS, to a final area of 318.9 acres in this FEIS, based on the revisions made to the Project layout. The APE of the new design crosses similar environmental zones, "Local Habitat Areas," to those of the previously investigated APE. Therefore, the results generated by the first investigation are applicable in assessing the archaeological sensitivity of the current APE. No potentially National Register of Historic Places (NRHP)-eligible archaeological cultural resources have been identified in the current Project Area.

The new Project design was reviewed over historic maps and only two map documented structures (MDSs) were in the vicinity of APE that had not been surveyed. In consultation with SHPO, it was assessed that there is a low potential for the Project to affect archaeological deposits associated with these two MDSs given the inaccuracies of 19th century maps and additional archaeological testing for this Project was not necessary. Specifically, the SHPO agreed that the 2016 configuration of the Ball Hill Wind Farm Project is not sensitive for archaeological resources, and that sufficient field investigations have been conducted.

The Lead Agency determines that construction and operation of the Project will not adversely impact archeological resources.

Architectural Resources

The purpose of the 2016 architectural survey is to identify National Register Listed (NRL)/National Register Eligible (NRE) properties in the Project's 5-mile visual APE study area. The Architectural Survey addresses newly identified areas in the current visual APE that were previously not covered by earlier investigations (i.e., new locations containing historic architectural resources now in the visual APE). It includes an up-to-date analysis of the potential visual effect of the Project on historic architectural resources in the study area. National Register eligibility recommendations presented in the 2016 addendum report are preliminary and not considered final determinations of National Register eligibility. Final determinations will be made by SHPO.

A total of 159 individual NRE properties and two NRE historic districts are in the current visual APE for the Ball Hill Wind Project (a decrease in five properties from the SDEIS). None of these properties are listed on the National Register. The average number of turbines that can

be seen is 15 with an average distance of 3.6 miles. While some of these properties are grouped together within villages or hamlets, along roads or in associated complexes, such as farmsteads, on the whole, the properties are widely dispersed across the area. The impacts to these resources vary with the surrounding topography, distance from the turbines and electrical lines, existing landscaping and vegetation, and surrounding land uses. Some screening would be afforded by mature trees, shrubs, and plantings for at least part of the year. This observation is especially true for buildings/structures in the areas surrounding streams and steep embankments. The topography of some portions of the 5-mile visual APE would provide additional screening. Nevertheless, there are visual impacts to the area associated with the construction of the Project that will require mitigation.

The Applicant is obligated to mitigate adverse visual effects to NRE and NRL properties under Section 106 of the NHPA as well as to mitigate significant visual impacts under Article 8 of the New York State ECL and 6 NYCRR Part 617 as delineated in the NYSDEC report entitled Assessing and Mitigating Visual Impacts (NYSDEC 2000). In the case of this Project, both Section 106 and NYSDEC mitigation were triggered by the same occurrence: the inclusion of NRE or potential NRE properties within the Project visual APE. NYSDEC lists specific mitigation strategies while Section 106 does not; the two are not mutually exclusive, however the strategies for each can have common characteristics.

Mitigation options are limited, given the nature of the Project and its siting criteria (very tall structures typically located at the highest locally available elevations). There is relatively little opportunity for mitigating the visual impact of the wind towers in the current Project layout (which already represents a reduction in the overall number and density of proposed turbines which were analyzed in the DEIS and SDEIS). Mitigation for impacts to historic properties

therefore typically consist of projects that benefit historic properties and/or the public's appreciation of historic resources to offset potential impacts to historic properties resulting from the introduction of wind turbines into their visual setting. Mitigation projects that have been proposed for other wind energy projects in New York State have included activities such as additional historic resources surveys, NRHP nominations, monetary contributions to historic property restoration causes, development of heritage tourism promotional materials, development of educational materials and lesson plans, and development of public history materials, such as roadside markers.

The Applicant shall, in consultation with SHPO, develop mitigation strategies for the Project and develop a SHPO-approved Historic Resources Impacts Mitigation Plan. This Mitigation Plan must follow the strategies set forth above.

Based on the above, the Lead Agency finds that the Project will not have significant adverse impacts on historic and cultural resources, or on the public's use of those resources and that the offset mitigation required by the Applicant will minimize impacts to the maximum extent practicable.

Communication Facilities

Wind turbines, if not properly sited, have the potential to cause interference, such as signal obstruction, attenuation, or other signal alteration, to some types of communication systems. To evaluate the potential for the Project to impact existing communication signals, Comsearch was contracted on multiple occasions to conduct an analysis of the existing communications signals in and near the Project Area and the potential impacts on those signals. In 2012, these studies included an amplitude modulation (AM) and frequency modulation (FM)

radio report, off-air TV analysis, a licensed microwave report, and a land mobile and emergency services report. In 2015, Comsearch was contracted again to perform an updated microwave 3-D GeoPlanner study, TV Report, and AM/FM Report. In September 2016, Comsearch completed an AM and FM Radio Report, an Off-Air TV Analysis, a Land Mobile & Emergency Services Report for Ball Hill Wind, and a Microwave Study based on the updated Project Layout.

Licensed Microwaves. Comsearch identified Federal Communications Commission (FCC)-licensed transmitters and repeaters whose definable paths crossed through the area planned for wind turbine development. In 2012, six microwave paths were identified that intersect the Project Area. In 2015, there was only one path (Faith Broadcasting Network, Inc.) that intersected the Project Area. Based on the Comsearch reports, there will be no significant adverse impact on these transmitters or repeaters as there is no obstruction interference.

The FAA conducts its own review of radar obstruction when wind turbines are registered with them in the process of seeking a "Determination of No Hazard." As required, Ball Hill submitted a Notice of Proposed Construction to the FAA for review on November 23, 2015.

The Interdepartment Radio Advisory Committee (IRAC) of the NTIA was notified of the Project on November 19, 2015, in order to allow government operators of communication devices to comment on the Project.

Broadcast Microwaves. Because of the spreading or omnidirectional nature of broadcast microwaves, it is not possible to select wind turbine locations that avoid their paths. However, the spreading nature of broadcast microwaves also means that the influence of potential obstructions is diminished. Specific types of broadcast communication signals in the vicinity of the Project are discussed below.

AM/FM Radio. Since the 2008 DEIS, AM/FM radio coverage has changed slightly in the Project Area. In 2012 and 2015, two licensed AM radio broadcast transmitters were identified within a 30-kilometer (km) search radius of the center of the Project Area. Both entries were for the same station (WDOE) that operates at two different transmission powers (1 kilowatts [kW] for daytime and 500 watts [W] for nighttime operations). Comsearch identified 19 FM radio transmitters in 2012 and 12 in 2015 within the 30-km search radius. Of these 12, only 11 are currently licensed and operating, five of which are translator stations that operate with a limited range. None of the FM stations are considered full-power stations (greater than 10 kW); four are medium-power stations (1 kW to 10 kW); five are low-power FM stations (100 W to 1 kW); and the remaining stations are all very low-power (less than 100 W). Comsearch identified 12 FM radio transmitters in 2016 within the 30-km search radius, the same number it identified in 2015. Of these 12, only 10 are currently licensed and operating, four of which are translator stations that operate with a limited range (11 were licensed and operating in 2015). None of the FM stations are considered full-power stations (greater than 10 kW); four are medium power stations (1 kW to 10 kW); five are low-power FM stations (100 watts [W] to 1 kW); and the remaining stations are all very low-power (less than 100 W).

Off-Air Television. Since the 2008 DEIS, television coverage has changed slightly. The stations that will most likely produce broadcast coverage to the Chautauqua County area, including the Project Area, will be those stations at a distance of 75 km or less. In this range, as of 2015, there were 29 database records for stations. Of these 29, 16 are currently licensed and operating. Nine of the stations are full-power digital stations and are licensed under call signs WNYB, WBBZ-TV, WKBW-TV, WIVB-TV, WGRZ, WNYO-TV, WUTV, WNLO, and WNED-TV. There are seven low-power translators broadcasting that operate on a special

transmit authority and operate with limited coverage. As of 2012, the number of off-air television broadcasts available to local communities is limited since there are only four full-power analog and digital United States channels available and one Canadian full power analog channel. There are 12 translators available, but they are low power stations with limited coverage and programming. Based on the low number of United States stations in the area, it is not expected that the off-air television stations available in the area are the primary mode of television services for the local communities. Because of this, television cable service, where available, and/or direct satellite broadcast are probably the dominant delivery mode of television service to the proposed wind facility's surrounding communities. Since the 2016 SDEIS, television coverage has again changed slightly. As of 2016, there were 24 database records for stations. Of these 24, 16 are currently licensed and operating. Nine of the stations are full-power digital stations and are licensed under call signs WNYB, WBBZ-TV, WKBW-TV, WIVB-TV, WGRZ, WNYO-TV, WUTV, WNLO, and WNED-TV. There are seven low-power translators broadcasting that operate on a special transmit authority and operate with limited coverage.

Land Mobile Radio (LMR) and Mobile Phones. In 2012, Comsearch identified 65 land mobile radio (LMR) licenses in and around the Project Area. Comsearch also identified 34 area-wide site licenses surrounding the Project Area. In 2012, seven cellular operating licenses were identified in the Project Area. The details regarding coverage areas of these systems are proprietary and not available in the public record. In 2016, Comsearch identified 15 site-based licenses in and around the Project Area. Comsearch also identified 26 area-wide licenses for the state of New York and 11 for the county of Chautauqua. These area-wide licenses are designated for mobile use only. In 2016, nine cellular operating licenses were identified in the Project Area (seven were identified in 2012).

Microwaves. Comsearch's 2016 microwave study, based on the revised Project layout, identified one microwave path intersecting the area of interest for the Project.

Based on the Lead Agency's review of the studies referenced above, together with its expert consultation, it is determined that impacts from construction of the Project will not result in significant adverse impacts on communication signals in the Project Area. The full power digital stations (WNYB, WBBZ-TV, WKBW-TV, WIVB-TV, WGRZ, WNYO-TV, WUTV, WNLO, and WNED-TV) and Class A station WVTT-CD may have disruption in reception in and around the Project. The areas primarily affected would include TV service locations within 10 km of the Project and that have clear line-of-sight to a proposed wind turbine but not the respective station. Communities and homes located in these areas may have degraded reception of the following station: WNYB, Channel 26. This is due to the multipath interference caused by signal scattering as TV signals are reflected by the rotating wind turbine blade and mast. There are 12 FM stations within 30 km of the center of the Project Area. All of the FM stations are located at distances greater than 9.01 km (5.59 miles) from the nearest turbine. At these distances, according to Comsearch, the wind turbine effects on the FM coverage for all of these stations would be very minimal to non-existent. No problems are expected for the coverage of the full-power and medium-power FM stations near the Project Area because the separation distances from the proposed wind turbines are so great. Audio signals from AM broadcast can interact with wind turbines at close range (1 to 3 kilometers [km; 0.62 to 1.86 miles]). However, the two AM transmitters (same station) identified by Comsearch were approximately 10 miles from the center of the Project Area. The Fresnel Zones for the one microwave path identified were calculated and mapped in order to assess the potential impact from the turbines. None of the turbines were found to have potential obstruction with the microwave systems in the area.

The frequencies of operation of LMR repeaters are generally unaffected by the presence of wind turbines. Very little, if any, change in the coverage of the repeaters will occur when the wind turbines are installed. Each LMR/emergency service network is designed to operate reliably in a non-line-of-site environment. Many of the systems are designed with multiple base transmitter stations covering a large geographic area with overlap between the adjacent sites in order to provide handoff between cells. Any signal blockage caused by the Project does not materially degrade the reception because the end user is likely to receive signals from multiple transmitter locations. In addition, the frequencies of operation for these services have characteristics that allow the signal to propagate through the Project. Telephone communications in the cellular and personal communication system (PCS) frequency bands are unaffected by the presence of wind turbines. This is not only because of the frequencies used, but because cell communications are designed to function as a system, passing the signal to a different cell if it is weakened at the first. Cellular and PCS frequency bands are unaffected by the presence of wind turbines because the blockage caused by wind turbines is not destructive to the propagation of signals in these frequency bands. Local obstacles are also generally not a limiting factor for cellular communication frequencies because other cellular sites provide an alternative signal.

The Applicant has implemented or will implement the following mitigation measures to avoid interference with communication signals to the maximum extent practicable:

■ The careful positioning of the turbine towers with respect to the beam patterns of microwave links avoids interference with narrow beam microwave transmissions;

■ The separation distance between planned turbine towers and AM and FM radio transmission antennas is great enough so that no alteration of radio coverage in the area will occur;

■ No discernible change in operation will occur to LMR, cellular and/or PCSs because of the nature of their operation and the frequency bands of operation; and

■ Turbines will be sited farther than 77.5 meters away from land mobile fixed-based stations. This distance is based on the FCC interference emissions from electrical devices. As long as the turbines are located more than 77.5 meters from the stations, they will meet the FCC setback criteria for interference emissions on land mobile bands.

If there is a reported change in LMR coverage, the change can easily corrected by repositioning the affected repeater, or by adding a repeater to the LMR system locations within the wind facility. Repeater antennas can be installed on utility, meteorological, or turbine towers in the wind facility, if needed.

If a cellular system or PCS operator finds that their coverage has been compromised by the presence of wind turbines, coverage can be restored by adding an additional cell or an additional sector antenna to an existing cell. Submission of claims for signal interference by turbines will be accepted up to one year after tower commissioning, utilizing the complaint resolution procedure. The initial validity of claims will be evaluated by line of sight analysis of the communication tower, turbine tower, and receptor.

After construction, the Applicant will confirm and address on-site television reception interference issues on a case-by-case basis. Any complaints would be received by the environmental supervisor, who would follow a complaint resolution process to be developed in consultation with officials in the host communities and described in the Complaint Resolution

Plan. Television reception from cable and satellite providers may be offered as an alternative for those homes whose off-air television reception is found to be degraded.

Traffic and Transportation

The FEIS includes an updated Transportation Study, which identifies two routes into the Project Site from I-86:

- I-86 (from the east) to exit 12, SR 60 N - CR 50 N - US 62 N (through a left hand turn on US 62) - SR 83 N - CR 87 N - Danker Road (W) - Ball Hill Road (N) to the site; and
- I-86 (from the west) to exit 13 to make a U turn onto I-86 east to exit 12, SR 60 N -CR 50 N - US 62 N (through a left-hand turn on US 62) - SR 83 N - CR 87 N - Danker Road (W) - Ball Hill Road (N) to the site.

Alternate routes, including transporting loads in from US 20, are not an option. The corner at the northern end of Ball Hill Road in Forestville would be a difficult turn for a regular semi-truck, much less specialized wind heavy-haul equipment. The Transportation Site Survey determined the Project should be successful in building and utilizing access roads on site to reach the identified turbine locations. No major transport obstacles or obstructions were identified that would prevent movement of equipment from origin points east or west of the Project Site while traveling on I-86.

Some temporary impacts to transportation in and around the Project Area will result from the construction vehicles. In addition to construction vehicles such as gravel trucks, concrete trucks, and tractor trailers, the delivery of wind turbine components to Project construction sites will require the use of specialized flatbed trucks, which are generally larger and heavier than

typical tractor trailer combinations. Consequently, the movement of Project construction and delivery vehicles has the potential to result in adverse impacts to the road surfaces and periodic traffic delays. During construction activities, local traffic may also experience minor delays due to slow moving vehicles. Oversize construction vehicles could cause minor delays on Project Area roads, but these are unlikely to be significant given the relatively low traffic volume through the area. Most of the impacts will be to transportation infrastructure due to the existing road system's likely inability to accommodate construction vehicles.

As a result, impacts to local transportation infrastructure are also anticipated from road improvements which will likely be necessary in some locations to accommodate Project construction vehicles. In some cases, such improvements will involve the widening of intersections to accommodate the turning radii of the vehicles used to transport the turbine components.

It is estimated that 348 truckloads (12 truckloads per turbine) would be required to deliver turbine components to the Project Area (the prior 2008 study estimated between 410 and 500 truckloads). Approximately 1,392 truckloads of concrete would be required to complete the turbine foundations. The current estimate assumes concrete would be provided by a local batch plant. Each turbine foundation would require approximately 480 cubic yards of concrete, for a total of 13,920 cubic yards of concrete. Additionally, approximately 3,516 truckloads would be required to haul gravel to the site, which is based on the current estimate which assumes a total of 75,155 cubic yards of gravel for use on the Project Site, with 22 cubic yards transported per truck. The gravel would be used to build the Project’s 13.0 miles of gravel roads. It is assumed that all gravel and cement loads would leave the Project Area empty.

As part of the Project approval process, the Applicant will enter into road use agreements with the Towns that will require it to perform pre-construction inspections of all roads that will be used for transportation and equipment delivery for the Project. The pre-construction inspection will result in a pre-construction survey report that will evaluate road features, such as embankments, guard rails, and culvert pipe conditions, and a detailed photographic survey of the Haul Route network immediately prior to construction. It will also identify utility lines that need to be raised to accommodate passage of the delivery vehicles and their loads. The road use agreement will designate approved routes and commit the cost of both improvements and repairs to the Applicant. General types of improvement and repairs may include repaving, patching, shoulder repair, and culvert repair. The Applicant will have an obligation to perform any upgrades to the roadways and permanent structures that will be required to allow passage of the aforementioned loads, and will have an obligation to maintain the roads in a safe and passable condition throughout the construction period. At the completion of construction, the Applicant will return the roadways used for construction of the Project to preconstruction, improved conditions.

Typically, intersection improvements include traffic sign removal, compacted gravel widening, drainage ditch filling, and/or drainage pipe culvert extensions. Once the gravel widening has been constructed, traffic signs will be reset to their original location on portable or removable posts so they can be easily moved when oversize loads pass through an intersection. When Project construction is complete, the intersections will be restored to their original condition and the disturbed areas will be reseeded as required.

As mitigation, construction vehicle traffic, with the exception of commuting vehicles carrying Project personnel to and from the job site, will be limited to the hours set forth in the

Towns' local laws. Deliveries of equipment along school bus routes will be coordinated with the school districts to avoid disruption of bus services or potential safety concerns.

If circumstances require that oversized construction vehicles utilize the complete road width, appropriate measures will be taken (e.g., flagging) to safely stop traffic temporarily (typically less than 5 minutes) on affected roads. The Applicant will coordinate traffic safety measures with the Towns, county, and NYSDOT. Additional mitigation techniques will be implemented to minimize impacts on homes, schools, and businesses, including:

■ To the extent practicable, planned haul routes will avoid more densely occupied locales;

■ Scheduled transport vehicles will be confined to the approved travel routes;

■ To the extent practicable, equipment transport and heavy construction traffic will be set up on a one-way travel pattern through the Project Area to minimize the possibility of two-way construction traffic interferences;

■ Parking at the turbine construction sites will be restricted to company vehicles. Centralized parking for personal vehicles will be provided at the laydown areas and at other sites to be determined and provided by the individual contractors. A shuttle service for laborers and contractors will connect these parking areas with the active turbine sites. In addition, limited parking will be available on the individual access roads constructed as part of the Project;

■ Gravel drive-offs from site access roads will serve to remove much of the tire mud from vehicles leaving the construction areas. Mechanical street sweepers will be deployed as required to remove mud from local streets when it accumulates. The environmental compliance officer will have a direct line of communication with Town representatives to address any complaints in a reasonable but prompt manner, according to the complaint resolution process;

■ Water trucks will be used to control dust during dry periods;

■ Local emergency response units will be updated weekly with the location of construction activities and with the schedule/routing for relocating equipment (cranes) that might block travel on local roads;

■ Mandatory safety orientation for contractors and employees will include discussion of vehicle safety concerns;

■ Flags, signs, and flagmen will be used during construction where necessary for safe travel. In addition, site-specific traffic safety plans will be developed as part of the Highway Occupancy Permit and submitted to the appropriate parties with the NYSDOT and Chautauqua County for access roads within their respective jurisdiction, and described in the Safety Program File; and

■ Police or pilot cars will be used to safely warn motorists in advance of an intersection with a bad horizontal site distance while OS/OW equipment delivery vehicles are moving through the intersection.

No significant adverse traffic impacts are expected once the Project becomes operational. A limited number of light trucks would occasionally access the Project Site for service and maintenance of the facilities (estimated two truck trips per day); however, existing road traffic would be light. To the extent repair work is required at a turbine, the Applicant will be required to address the haul route prior to use, as well as repair any damage following the work.

With regard to air traffic, the FAA conducts its own review of radar obstruction when wind turbines are registered with them in the process of seeking a "Determination of No Hazard." As required, the Applicant submitted a Notice of Proposed Construction to the FAA for review on November 23, 2015. During the review process, the FAA also circulates the

application data to the U.S. Department of Defense and the DHS. The FAA responded to the Applicant's application on August 11, 2016 with a "Determination of No Hazard to Air Navigation" for all the proposed turbine locations.

In light of the above, the Lead Agency hereby determines that the impacts on traffic and transportation have been mitigated to the maximum extent practicable.

Air Quality and Climate

The Lead Agency has investigated the potential for impacts on air quality and finds that the Project is not expected to have any short-term impacts on air quality other than minor, temporary impacts anticipated during site preparation and construction. The operation of construction equipment and vehicles will produce emissions from engine exhaust and fugitive dust generation during travel on unpaved roads and construction activities. The contractor and/or construction manager will minimize fugitive dust and airborne debris to the maximum extent practical by implementing appropriate control measures. These measures may include (but are not limited to) the application of mulch, water, stone, or an approved chemical agent on any public roads, access roads, exposed soils, or stockpiled soils when dry and windy conditions exist. Other mechanisms to initiate dust control procedures include a determination from the environmental monitor that control measures shall be implemented, or a complaint by a landowner or local resident, which is confirmed by the environmental monitor. A watering vehicle shall be available for use for the duration of Project activities, including restoration.

The operation of this Project is anticipated to result in indirect positive impacts on air quality. Fossil fuel-based energy production has played a major part in causing global warming. Electricity generation from coal and natural gas is responsible for about one third of all greenhouse gas emissions in the U.S., so moving toward renewable energy technologies in the

energy industry represents one important way to mitigate climate change. Climate change will have adverse effects for people and ecosystems, and New York State has implemented initiatives that curb greenhouse gas emissions, with the goal of reducing the severity of climate change in the future.

Based on the foregoing, except for minor, short-term impacts from construction vehicles, the Lead Agency finds the Project will have no adverse impacts on air quality. Mitigation measures including implementation of a dust control plan and proper vehicle maintenance will be employed to address these minor, short term impacts. Overall, the Project will have a significant long-term beneficial impact on climate and air quality and benefit can be viewed as mitigation for other environmental impacts associated with the Project.

Safety Issues

Construction of large-scale generating facilities presents potential impacts on public safety. The Lead Agency has considered these impacts and determines that the Project design and other mitigation measures, which will be implemented by the Applicant, will avoid or reduce these impacts to the maximum extent practicable.[4]

Fire Safety

The Project's Health and Safety Plan will incorporate fire-safety planning consistent with the Applicant's standard practices used in other facilities of its parent company to ensure that fire safety planning is incorporated into the design, construction, and operation of all facilities. Each turbine will be located on a parcel of open land that occupies a maximum of 230-foot radius

4 Traffic safety issues are dealt with in the Traffic section.

around the turbine pedestal. The open land will be free of significant vegetative regeneration, thus minimizing the potential spread of a fire should one start. Significant vegetative regeneration will be avoided by regular maintenance, which will consist of trimming of trees and clearing of undesirable vegetation by side trimming, cutting, and mowing.

The fire-protection features of the turbines include components within the nacelle that monitor bearing, oil, and nacelle temperatures. These components will be connected to the turbine supervisory control and data acquisition (SCADA) system. The SCADA system will monitor sensor temperatures and automatically shut the turbine down and send an alarm to the control room if predetermined set points are exceeded. In addition to the monitoring system, each nacelle and each service vehicle will be equipped with a fire extinguisher. Beyond the physical fire protection components of the facility, the operations staff will develop a site-specific Emergency Response Plan ("ERP") prior to the start of construction. This plan will detail the actions to be taken by the site manager and staff should an emergency or fire occur. The ERP will be coordinated with the local fire departments and emergency response organizations and will establish the lines of communication in the event of a fire or other emergency.

Local fire departments and emergency medical services will be consulted in the development of the Project-specific ERP, and local responders will receive training so the roles of all parties are clearly understood in the event of a fire. The Project-specific ERP will be fully developed and finalized prior to construction of the Project. Specialized services associated with high angle rescue will be coordinated by the Applicant in cooperation with the local departments.

The Project Site contains several public and private natural gas lines and wells. Prior to final design and construction, the Applicant will coordinate with "Dig Safely New York" and the

respective gas utility companies to determine the locations of all active gas lines and wells within the Project Site. Gas companies will be consulted to allow the Applicant to establish appropriate setbacks and crossing procedures to effectively minimize risks of interference. Where encroachments are necessary, the Applicant will coordinate with the applicable company to be consistent with its encroachment polices. During construction, no gas line will be crossed without it first being exposed to confirm its depth.

Ice Shed

While ice shed has emerged as a public concern associated with wind energy facility safety in cold weather climates, proper siting and adherence to setback requirements and safety procedures minimize any potential risk to the public. Ice shed, or throw, is caused by the buildup of ice on the turbine's blades and can occur under certain conditions. This generally takes place when a stationary blade accumulates ice followed by an increase in temperature, which causes the ice on the rotor blades to thaw. If the blades are stationary, the ice will fall near the turbine base, but once the blades begin to rotate, ice fragments on the blade may be thrown under certain wind speeds and directions. When temperatures are below or just above freezing, the risk of ice buildup exists and can occur as result of two types of events: creation of rime and freezing rain.

The setbacks included in the Town's wind laws require a 1,000-foot setback from the nearest off-site residence and 500 feet from the nearest public road. The Applicant meets and exceeds these requirements. The Project has been sited in order to protect the public from the potential danger of proximity to turbines. In addition, potential safety concerns as a result of ice shed are considered low because the Project is located on private property and access by the general public is restricted. As a result, incidents from ice shed should be minimal. The

operations staff working in and around the turbines may be at risk of ice shed from the blades if they are beneath the blades when icing conditions exist; however, the staff will be trained in recognizing this condition and have specific protocols to follow if they are working when such conditions exist. These protocols include: contacting the Applicant's operations team to determine if an icing event has occurred based on turbine output and wind speed; visual inspection for ice; restricting individuals from within 300 feet of an operating iced turbine; restricting tower entry (for example, if the rotor is directly over the tower door); mandatory use of hard hats; and parking company vehicles a safe distance away.

In addition, ice buildup slows a turbine's rotation, which can be sensed by the turbine's control system. The plant operators have a standard operating procedure that requires them to closely monitor turbine performance vs. wind speed (anemometers are heated so icing is not an issue for them) when icing conditions could exist based on weather forecasts. If performance is below normal due to the ice buildup, the operators can initiate shutdowns. Academic research and risk analyses have been conducted on the subject of ice shed and throw, primarily in Europe. The general conclusion is that wind turbines should not cause risks as they are normally set back from residences and roadways and that the hypothetical risk of being struck by ice is small, particularly by large and/or long ice fragments, which experience more drag and will hit the ground closer to the turbine.

Published literature by Seifert et al. (2003) reports typical drag coefficients for ice particles at 1.2 based on wind tunnel testing. In the throw forecast calculations, a conservative 1.0 drag coefficient and a maximum wind speed of 18 meters per second (m/s; 40 mph) is used. The report describes observed ice fragment throws based on data from several test sites at various locations in Europe and wind tunnel simulations, the longest of which was slightly less

than 410 feet (125 meters). The comparison between calculations and an inquiry among operators of wind. turbines has shown hypothetical calculations to be conservative (Seifert et al. 2003).

In 2007, Garrad Hassan and Partners, Ltd. developed risk assessment recommendations for the Canadian Wind Energy Association. The example calculations were designed to represent a typical wind farm project in rural southern Ontario, a climate similar to that of the Ball Hill Project Area. The calculated risk associated with an ice throw event striking a fixed dwelling located 300 meters (984 feet) from a turbine was calculated to be 0.000002 strikes per year, equivalent to one strike per 500,000 years. The probability of a vehicle being struck while traveling on a public roadway located 200 meters (656 feet) from a turbine is 0.0000038 strikes per year, equivalent to one vehicle strike per 260,000 years. The probability of an individual being struck within 300 meters (984 feet) of a turbine is even smaller, 0.000000007 strikes per year, or one strike in 137,500,000 years (Garrad Hassan Canada, Inc. 2007). In comparison, the average annual per capita lightning strike rate in the United States is approximately one in 600,000, which is significantly higher than the probability of an individual being struck by ice thrown from an operating wind turbine.

The Lead Agency determines that the Project as designed and sited is not likely to result in any significant adverse impacts from ice shed/throw and that any such impacts, to the extent they exist, have been mitigated to the maximum extent practicable, as described above.

Stray Voltage and Electric Shock

Stray voltage is a legitimate concern in the design of wind generating facilities as with any large scale electrical generating facility. Stray voltage is preventable with proper electrical

installation and grounding practices. The Project's power collection system will be properly grounded, and will not be connected to the local electrical distribution lines that provide electrical service to farm buildings and homes. It will be physically and electrically isolated from all of the buildings in and adjacent to the Project Area. Additionally, the wind farm's electrical collection lines will be located a minimum of 42 inches below ground, which will prevent any incidental contact with farming operations and will protect the collection system's insulation materials from damage. Proper grounding, installation, and maintenance practices will assure that the Project does not cause or contribute to stray voltage in the area. In the event that a Project participant suspects that there is a pre-existing stray voltage problem at their agricultural operation, the Applicant will conduct tests to quantify the existing voltage potential prior to construction and during operation to determine later if the problem has increased as a result of Project improvements. The Applicant will implement a complaint resolution procedure to assure that any complaints regarding stray voltage are adequately investigated and resolved.

These protective measures will mitigate or avoid potential adverse impacts from stray voltage to the maximum extent practicable.

Tower Collapse/ Blade Throw

It is unlikely that a tower collapse or blade failure incident should occur at the Project as this is a rare and unexpected occurrence with wind turbine infrastructure. Technological improvements and mandatory safety standards during turbine design, manufacturing, and installation have largely eliminated such occurrences. Modern utility-scale turbines are certified according to international engineering standards. The engineering standards of the wind turbines proposed for this Project are of the highest level and meet all federal, state, and local codes. In

the design phase, state and local laws require that licensed professional engineers review and approve the structural elements of the turbines. Technological safeguards, such as brakes, pitch controls, and sensors have already been incorporated into the turbine design and will shut down turbines when equipment malfunctions.

Siting turbines with adequate setbacks from residences and public roads is another important mitigation measure that has been incorporated in the Project design to ensure safety in the event of a tower collapse or blade failure. The setbacks included in the local zoning laws ensure, to the maximum extent practicable, that a tower failure would not endanger adjacent properties, roadways, or utilities. In addition, members of the public do not have access to the private land on which the turbines are located, and distance to the nearest public road/non-participating residence essentially eliminates risk to the public due to tower collapse/blade throw.

The Applicant shall comply with IEC Testing Standards. Usage of the wind turbines is certified by internationally recognized agencies to comply with international industry (i.e., IEC) standards. IEC testing standards include both fatigue and maximum-strength testing. The fatigue testing typically includes long duration testing of continuously cycling the load on the blade. Similarly the extreme load test is usually a test to failure, and it mimics the specified extreme load.

The Applicant shall implement and comply with regular inspection and maintenance programs. The blade manufacturing industry follows rigorous quality plans and standards that are reinforced by the turbine manufacturer's quality inspection. As with all types of important machinery and components, all components are inspected regularly for safe and reliable operations.

The Applicant shall provide for automatic blade pitch adjustments. Extreme weather events are subject to occur and, as such, blade failure could occur due to an extreme storm, such as tornado or hurricane. In the event of extreme weather, turbine blade pitch will automatically adjust and the machine will stop. Additionally the mechanical brake will be activated to block the rotor in place minimizing the potential of blade failure. Lastly, the turbine is equipped with vibration sensors capable of detecting and reacting to any imbalance in the blades and shutting down the turbine, if necessary.

Mechanical Load Analysis. Blade failure sometimes occurs when an inappropriate turbine model is selected for a site. In order to avoid this, turbine manufacturers analyze the wind data of the chosen site and confirm that the selected wind turbine model is sufficient. Turbine manufacturers define the results of this analysis as the Mechanical Load Analysis (MLA). Essentially the MLA is an extreme and fatigue load analysis based on wind data provided to the manufacturer. Once analyzed, the manufacturer will confirm whether the selected model is suitable for the site based on IEC standards.

The Lead Agency hereby determines that there will not be significant adverse impacts from blade throw/tower collapse, and that any such impacts have been mitigated to the maximum extent practicable.

Lightning Strikes

Due to their height and metal/carbon components, wind turbines are susceptible to lightning strikes. However, there is no evidence that the presence of wind turbines increase risks to humans from lighting strikes. Most lightning strikes hit the rotor, and their effect is highly variable, ranging from minor surface damage to complete blade failure. All modern wind turbines include lighting protection systems, which generally prevent total blade failure. These

systems rely on lightning receptors and diverter strips in the blades that provide a path for the lightning strike to follow to the grounded tower. Lightning is effectively and safely intercepted at several receptor points including the outermost blade tip and the blade root surface, and transmitted to the wind turbine's lightning conductive system. These safety features will be incorporated into the turbine design and mitigate impacts form lighting strikes to the maximum extent practicable. In addition, the setback distances of the wind turbines to public roads and residences ensure, even if a wind turbine is hit by lightning, there will be no risk to the public.

Low Frequency Noise

The Lead Agency received several comments during the Public Hearing conducted for the Project Sponsor's amended Special Use Application on the potential for health effects from the Project on the local community including health effects from shadow flicker and noise (specifically "wind turbine syndrome" and infrasound). The Massachusetts Department of Environmental Protection (MassDEP), in collaboration with the Massachusetts Department of Public Health (MDPH), convened a panel of independent experts to identify any documented or potential health impacts or risks that may be associated with exposure to wind turbines, and, specifically, to facilitate discussion of wind turbines and public health based on sound science (MassDEP and MDPH 2012).

During their evaluation, the Panel conducted an extensive literature review of the scientific literature as well as other reports, popular media, and the public comments received by the MassDEP and MDPH. In January 2012 the panel presented its finding on population responses to turbines and noise, vibration, and flicker.

The following are the findings with respect to infrasound (vibrations with frequencies below 20 Hertz [Hz]) and health impacts of noise and vibration:

■ Infrasound from wind turbines is not related to nor does it cause a "continuous whooshing."

■ There is insufficient evidence that the noise from wind turbines is directly (i.e., independent from an effect on annoyance or sleep) causing health problems or disease.

■ Claims that infrasound from wind turbines directly impacts the vestibular system have not been demonstrated scientifically. Available evidence shows that the infrasound levels near wind turbines cannot impact the vestibular system.

■ There is no evidence for a set of health effects, from exposure to wind turbines, that could be characterized as a "wind turbine syndrome."

■ The strongest epidemiological study suggests that there is not an association between noise from wind turbines and measures of psychological distress or mental health problems. There were two smaller, weaker, studies: one did note an association, one did not. Therefore, the Lead Agency concludes that the weight of the evidence suggests no association between noise from wind turbines and measures of psychological distress or mental health problems; and

■ None of the limited epidemiological evidence reviewed suggests an association between noise from wind turbines and pain and stiffness, diabetes, high blood pressure, tinnitus, hearing impairment, cardiovascular disease, and headache/migraine.

In addition, the Chief Medical Officer of Health of Ontario Canada, prepared a report in response to public health concerns about wind turbines in May 2010 (Chief Medical Officer Of Health 2010), which concludes: "…that while some people living near wind turbines report symptoms such as dizziness, headaches, and sleep disturbance, the scientific evidence available

to date does not demonstrate a direct causal link between wind turbine noise and adverse health effects.

The sound level from wind turbines at common residential setbacks is not sufficient to cause hearing impairment or other direct health effects, although some people may find it annoying."

Numerous studies show that the low frequency content in the sound spectrum of a typical modern wind turbine—like those proposed for this Project—is no higher than that of the natural background sound level in rural areas (Sondergaard & Hoffmeyer, 2007[5]; Hessler *et. al.*, 2008[6]; Hessler, 2011[7]). Additional recent studies, such as Howe (2015)[8] and Tonin (2015)[9], suggest a psychosomatic origin for what appear to be legitimate and very real symptoms. The Government of Canada (Health Canada, 2015)[10] has recently completed a very extensive epidemiological study using both self-reported and objectively measured health outcomes to impartially investigate and quantify the prevalence of health effects and health indicators among a large sample of residents living within 11 km of wind projects. In general, it was found that there was

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5 Sondergaard, B. and D. Hoffmeyer. 2007. *Low Frequency Noise from Wind Turbines*. Proceedings from Wind Turbine Noise 2007. Lyon, France. September 21, 2007.

6 Hessler, G.F., D.M. Hessler, P. Brandstaett, and K. Bay. 2008. *Experimental Study to Determine Wind-Induced Noise and Windscreen Attenuation Effects on Microphone Response for Environmental Wind Turbine and Other Applications*. Noise Control Engineering Journal, J.56, July-August 2008.

7 Hessler, G.F. and D.M. Hessler. 2011. *Recommended noise level design goals and limits at residential receptors for wind turbine developments in the United States.* Noise Control Engineering Journal, J. 59(1). January-February 2011.

8 Howe, B. 2015. Findings of the Council of Canadian Academies Expert Panel on Wind Turbine Noise and Human Health. 6th International Conference on Wind Turbine Noise, Glasgow, Scotland, 20-23 April, 2015.

9 Tonin, R. 2015. Response to Simulated Wind Farm Infrasound Including Effect of Expectation. 6th International Conference on Wind Turbine Noise, Glasgow, Scotland, 20-23 April, 2015.

10 Health Canada. 2015. Summarized by David S. Michaud, PhD of Health Canada in "Wind Turbine Noise and Health Effects: Summary of Results. 6th International Conference on Wind Turbine Noise, Glasgow, Scotland, 20-23 April, 2015.

no statistically significant exposure-response relationship between wind turbine noise and public health symptoms.

After reviewing the evidence presented, the Lead Agencies finds there is no evidence of adverse public health effects from low frequency sound from wind turbines.

Other Identified Potential Safety Issues

The FEIS also analyzed potential adverse impacts resulting from electromagnetic fields, vibrations, release of hazardous materials, blasting, and public health effects. There are no significant impacts from electromagnetic fields anticipated, therefore, no mitigation is required. With respect to vibrations, sensors will recognize if vibrations occur and cease turbine operation. Design standards take into account potential vibration from seismic activity, and adherence to standards would prevent turbine collapse in the event of vibration from mechanical problems. Blasting is not anticipated, but if it is subsequently determined that that blasting of near surface exposed rock and rock removal may be required in some instances it will be conducted in compliance with a blasting plan and in accordance with all applicable regulations to avoid impacts to sensitive receptors. The potential for release of hazardous materials is mainly due to presence of small amounts of fuel, coolants, and lubricants present on the Project site. These fuels are mainly with the construction vehicles and also with the turbines themselves. Therefore, spills, should they occur, would likely be confined to the Project Site. The Applicant will prepare a SPCC Plan that addresses this risk and will submit the plan to local emergency response organizations and other governmental agencies prior to the start of construction to mitigate any adverse impacts associated with the release or potential release of hazardous

materials. Finally, there are no anticipated adverse effects to public health resulting from the construction and operation of the Project. As such, no further mitigation is proposed or required.

Water Resources

The DEIS, SDEIS, and FEIS analyzed the potential impacts to waterbodies and wetlands, including the preparation of a wetland delineation report. Impacts of the Project on water quality have been further reduced from those presented in the SDEIS as a result of the changes in the layout. As noted in the SDEIS, the Applicant minimized any potential construction impacts on wetlands, surface water, and groundwater through the implementation of BMPs. Long-term impacts are expected to be minimal because Project components were sited in previously disturbed areas to the extent practicable. Based on the layout of Project components, a total of 31 perennial streams, six intermittent, and six ephemeral streams would be crossed by Project facilities. Seventeen NYSDEC-protected streams would be crossed by the Project facilities. These streams are discussed under the Protected Streams section of Appendix E, Water Quality and Wetlands (Section E.1) in the FEIS.

As described above, construction of the Project may result in minor, short-term impacts on the streams crossed. These impacts could occur as a result of instream construction activities or construction on slopes adjacent to stream channels. If permanent culverts are necessary, they will be designed and installed in a manner maintaining natural stream flow and water velocity. Clearing and grading stream banks, culvert installation, in-stream trenching, trench dewatering, and backfilling could result in modification of aquatic habitat, increased water temperature, increased sedimentation, turbidity, decreased dissolved oxygen concentrations, releases of chemical and nutrient pollutants contained in stream sediments, and introduction of chemical

contaminants, such as fuel and lubricants from possible spills. In general, these impacts would be temporary, short-term, and reversible as they are limited only to the period of in-stream construction activities.

Construction of the Project could result in indirect impacts on the quality of stormwater runoff as a result of increased surface runoff from disturbed areas and the possible release of pollutants or hazardous materials in the event of a spill during construction. These impacts are still expected to be minor, short-term, and reversible, with the exception of a minor permanent increase in impervious surface area, which will be mitigated through compliance with the site-specific SWPPP and Spill Prevention, Control, and Countermeasures.

As stated in the 2016 SDEIS, if areas of shallow groundwater exist in the vicinity of Project facilities, they would be identified during site-specific, detailed foundation engineering investigations performed in conjunction with the road and foundation design processes and addressed in the design plans which would be submitted to the Towns prior to construction. In addition, stream crossings will be engineered, designed, and installed to maintain sufficient flow during construction in accordance with applicable regulations. These methods will be provided to the Towns upon submittal of the Joint Wetland Permit Application to NYSDEC and the USACE.

Wetland delineation surveys were conducted in 2015 and 2016 to evaluate impacts and proposed mitigation and to support federal and state permits. The Project Wetland Delineation Report and a request for jurisdictional determination were submitted to the USACE and NYSDEC on July 21, 2016. The USACE and NYSDEC conducted site visits to verify wetland boundaries on August 24, 2016, and September 14, 2016, respectively. The preliminary impact analysis provided in the SDEIS was prepared utilizing data from surveys conducted in 2011,

2012, and 2015. Since that time, the updated stream and wetland information was used to support micro-siting of the Project to avoid and minimize impacts on streams wherever practicable. The results are provided in Appendix E to the FEIS, Water Quality and Wetlands.

Construction of the Project (*i.e.*, access roads, collection lines, transmission lines, laydown and O&M areas, and turbine sites) would result in total construction disturbance of 25.83 acres of wetlands, 0.87 acres of which would be permanently impacted by placement of fill associated with turbine staging areas, access roads, and the transmission substation. The remaining 24.96 acres of wetlands would be limited to temporary ground disturbance impacts or permanent impacts associated with conversion of forested wetlands to an herbaceous or scrub-shrub state (see Table E-2 in Appendix E of the FEIS). All other Project facilities, including the interconnection substation and all turbine foundations, are located outside of delineated wetlands.

Temporary impacts consist of 24.96 acres of wetland that would be temporarily impacted by grading, ground disturbance, or placement of fill during construction and would be returned to preconstruction contours and allowed to revegetate to scrub-shrub or emergent cover. All of these wetland impacts are assumed to be under federal jurisdiction. The majority of wetlands subject to temporary clearing within the construction ROW are herbaceous and scrub-shrub wetlands (18.11 acres), which are expected to quickly revert to their preconstruction conditions. Some areas that are currently forested wetlands would be temporarily cleared during construction to allow for safe construction at turbine sites, but would be allowed to revert to a forested wetland condition over time (0.31 acres). An additional 6.54 acres of forested wetlands along the transmission and collection lines would be permanently impacted in association with forest conversion. Impacts to forested wetlands increased from the SDEIS layout to the FEIS layout

due to completing the wetland and stream delineations and conducting micrositing of Project components to reduce overall impacts.

Of the wetlands impacted along the transmission line, 5.90 acres are mapped as NYSDEC wetlands (SC-12, a Class II wetland; and SC-13, a Class III wetland; see Table E-3 in Appendix E of the FEIS.). Of the 5.90 acres of wetland temporarily subjected to ground disturbance or fill, 2.82 acres would also be permanently impacted by forest conversion.

Operation of the generation and transmission facilities could result in temporary impacts on wetlands associated with clearing to maintain ROWs for the transmission line and collection lines as well as temporary impacts on wetlands for maintenance access. Total wetland impacts for the entire Project are listed in Table E-2 of the FEIS. Impacts on state jurisdictional wetlands are presented in Table E-3 of the FEIS.

The Applicant has submitted the Conceptual Wetland Mitigation Plan to the agencies (see Appendix F, Conceptual Wetland Mitigation Plan) and includes an invasive species management plan, as part of the Environmental Monitoring Plan (EMP) of this FEIS. The Applicant will continue to coordinate with NYSDEC and USACE during their review of the Joint Application for Permit and implement additional mitigation measures, if necessary, due to unavoidable wetland impacts. The Applicant will provide a Final Wetland Mitigation Plan approved by NYSDEC and USACE prior to permit issuance.

The Lead Agency hereby determines that the construction and operational impacts to wetlands, groundwater, waterbodies, and water quality will be mitigated to the maximum extent practicable through the mitigation required by the Applicant herein and as stated in the DEIS, SDEIS, and FEIS.

Vegetation and Wildlife Impacts

Vegetation

Where feasible, the Applicant has sited Project facilities to minimize fragmentation of forested habitat and avoid wetlands and aquatic habitats, thereby minimizing the potential for impacts on wildlife. The FEIS indicates the ecological community types that would be impacted by the Project under the revised layout, where the total acres to be impacted have been reduced from 330 acres in the SDEIS to 256.6 acres. Forest impacts, in which all clearing of forested habitat is considered to be a permanent impact due to the length of time needed for a forest to regenerate to pre-construction conditions, account for a total of 97.9 acres based on best available geographic information system (GIS) data for ecological community types for the Project Site. In addition, 21 acres of tree clearing would be required in the additional limits of disturbance ("LOD") area of the Project. In total 118.9 acres of tree clearing is anticipated from the Project.

The Lead Agency considered forest impacts when evaluating the revised layout. As noted by NYSDEC in their comment on the SDEIS, any contiguous forest block of 150 acres or larger is considered valuable forest habitat that is viable for many bird species that require interior forests for breeding. Most of these species are protected by federal and state laws, such as the Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Part 182 of NYCRR, and Article 11 of the New York State Environmental Conservation Law (ECL; Edick 2016). Analysis of available GIS data identified contiguous forest blocks of 150 or more acres within the Project Area. Construction of the Project would include tree removal within these forest blocks; however, in all instances but one, there would still be a portion of contiguous forest block

greater than 150 acres. Once the Project is constructed, there will be 15 contiguous forest blocks greater than 150 acres and seven new forest blocks less than 150 acres in size.

Indirect impacts on forest habitat blocks greater than 150 acres as a result of construction and operation of a wind energy project may occur 300 feet from the boundary of a disturbance (i.e., a new forest edge). The construction of the Project will indirectly impact an additional 939 acres of forested habitat based on applying a 300-foot buffer to all construction impacts in forested habitat. These areas may experience indirect impacts, as pertaining to interior forest breeding birds. In total, 2.3% of the forested habitat in the Project Area would be impacted by Project construction (18.3% indirectly impacted), the majority of which is considered to be habitat for interior forest wildlife. Given the fact that access to the Project during operation would be limited to a small number of vehicles and that habitat in the Project Area is already segmented by existing roads and infrastructure, it is unlikely that the Project would significantly impact interior forest wildlife species.

Other than minor disturbances to vegetation as a result of routine maintenance and occasional repairs, impacts to vegetation associated with the actual operation of the Project will be limited. Turbine sites, access road embankments, and collection line routes will be maintained in low-growing vegetation (successional or active agriculture). The application of herbicides or pesticides is not anticipated, other than within the fenced substation enclosure. Throughout the life of the Project, periodic vegetation management will also be conducted along collection line corridors, road shoulders, and turbine sites.

In general, the Project has been designed to avoid impacts to sensitive ecological communities such as wetlands and mature forest to the greatest extent practicable. Additionally, the Applicant will develop and implement a SPCC and comprehensive sediment and erosion

control plans, as well as an approved SWPPP to reduce the potential indirect effects of sedimentation and erosion resulting from the loss of vegetation and ground disturbance. Based on the foregoing, the Lead Agency determines impacts to vegetation which have been identified and analyzed in the DEIS, SDEIS, and FEIS have been mitigated to the maximum extent practicable.

Wildlife

Information on the existing bird and bat resources within the Project Area is included in the 2008 DEIS. Additional surveys were conducted to provide updated information, which are included in the SDEIS and FEIS.

Breeding Bird Survey. In May 2011, NYSDEC suggested that an additional breeding bird survey be conducted to better understand the local breeding population and diversity and to see if baseline conditions changed since the previous survey. In 2011, a supplemental breeding bird survey spanning two days (June 16 and 17) was conducted by Ecology and Environment, Inc. (E & E) at 25 of the proposed wind turbine locations (which were very similar to current proposed wind turbine locations). Five minute point counts were conducted following USGS Breeding Bird Survey protocol between sunrise and approximately 10:30 a.m. All birds seen or heard during the point count were recorded. A total of 502 birds of 66 species were identified across the 25 survey points. The most common species recorded were Bobolink (93 birds), Red-winged Blackbird (67 birds), and Savannah Sparrow (31 birds). The total number of birds recorded per point ranged from nine to 72, with an average of 20.8 birds detected per survey point. The total number of species recorded per point ranged from four to 18, with an average of 11.0 species detected per survey point. No federally or state-listed threatened or endangered

species were observed during the surveys or time spent traveling throughout the Project Area (during nonsurvey time). One state-listed species of special concern, the Grasshopper Sparrow, was identified. The solitary Grasshopper Sparrow was identified by sound, and was heard singing multiple times throughout the 5-minute survey period. Based on the time of year, the habitat (an agricultural field dominated by wheat and other tall grasses), and their known breeding range, it is likely this was a breeding individual.

An additional breeding bird survey was conducted in June 2016 to supplement the data obtained during the surveys conducted in 2007, 2008, and 2011. A transect-style survey methodology was utilized, which will allow for better comparison of pre-construction avian use to post-construction avian use. The results of the breeding bird surveys in 2016 are not directly comparable to the results from previous years due to differences in survey methodologies. The total number of species detected was somewhat higher in 2016 (80 species) than previous years but comparable when including only birds within 50 meters of the transect (67 species). The two most common species detected during the 2016 breeding bird surveys were Bobolink and Red-winged Blackbird, which were also the most abundant species detected in the 2011 surveys. The transects in pasture/hayfield habitats had the highest number of birds, dominated by Bobolinks and Red-winged Blackbirds and to a lesser extent Savannah Sparrows and Song Sparrows. Forested habitats had higher species diversity, which was expected given the wider array of habitats within the forested transects. Overall, the findings from the breeding bird surveys are consistent with the existing knowledge of the bird resources in the region. Typical for Chautauqua County, a good diversity of breeding species is associated with the area, primarily in forested areas. The methodology and results are included in the 2016 breeding bird survey report in the FEIS (Appendix H).

Eagle Surveys. In 2011, there were two known Bald Eagle nests within 10 miles of the Project Area plus an unspecified number of Bald Eagle nests along Cattaraugus Creek more than 10 miles from the closest Project Area boundary (Roblee 2012). Evidence of Bald Eagle nesting was discovered in 2012 at two additional locations within 10 miles of the Project Area. Subsequent to 2012, additional information became available on other nests within approximately 10 miles of the Project Area. The specific nest locations are considered sensitive; therefore, only general locations are included here with approximate distances from the Project Area. The information is summarized based on Natural Heritage Program ("NHP") responses, discussions with Ken Roblee and Brianna Gary of NYSDEC (Roblee 2012; Gary 2015), and E & E field observations.

■ The "Thruway nest" occurs approximately 0.8 miles northwest of the proposed transmission line and is in the vicinity of the NYS Thruway. It is approximately 5 miles from the closest proposed turbine location. This nest site has been active for several years.

■ The "Dayton nest" occurs approximately 5.5 miles southeast of the Project Area. This nest site has been active for eight or more years.

■ There are an unspecified number of active nests along Cattaraugus Creek in the vicinity of the Cattaraugus Indian Reservation. The reservation is approximately 10.0 miles north of the Project Area at its closest point and the nests are thus more than 10 miles from the Project Area boundary.

■ The "Pomfret nest" is located approximately 7.0 miles west of the Project Area in the vicinity of the Fredonia reservoir. NYSDEC discovered nesting activity in this location in 2012.

■ E & E discovered the "Hanover nest" in early April 2012. The nest is located in the vicinity of the Silver Creek reservoir approximately 1 mile east of the nearest Project component

(an access road). Two adult Bald Eagles were observed regularly at the nest during subsequent visits in April and May 2012. A single Bald Eagle was observed perched near the nest in October and December 2012 and January and February 2013. The adult eagles were never observed inside or on the nest, but they were observed perched in the same tree as the nest. The eagles exhibited territorial behavior by driving off an Osprey and another adult Bald Eagle that approached the area. It is possible that there was an early nest failure and/or they were a young pair. Upon discovery of this nest, E & E informed NYSDEC of its location and status. On two occasions E & E observed one of the Bald Eagles flying to this site from the northeast (opposite direction of Project Area). The nest has remained active through 2015.

■ The "Lake Erie nest" is located approximately 3 miles northwest of the Project Area in the vicinity of Eagle Bay. This nest was established in approximately 2011.

Although no longer protected under the federal Endangered Species Act (ESA), the Bald Eagle is federally protected under the Bald and Golden Eagle Protection Act (BGEPA) and protected as a threatened species by NYS. The USFWS indicated Bald Eagle occurs in Chautauqua County but did not identify any other federally listed threatened or endangered species as occurring in the Project Area.

In April 2012, the USFWS recommended that eagle surveys be conducted in the Project Area following the Draft Eagle Conservation Plan Guidance (USFWS 2011). In anticipation of this recommendation, the Applicant initiated surveys in March 2012. E & E conducted eagle point-count surveys at 13 locations within the Project Area, concentrated in the areas of proposed turbines and along the proposed transmission line. Each point-count survey was conducted over the course of one hour. Two rounds of surveys were conducted for each month from March 2012 through February 2013. Seventeen Bald Eagle sightings and two Golden Eagle sightings

were recorded during the point-count surveys. Two additional, incidental Bald Eagle sightings were made outside of the point-count radii. Bald Eagles were identified in the Project Area during six of the 24 survey rounds (both March rounds, the late April round, the early August round, and the early September and October rounds). Golden Eagles were identified during two of the 24 survey rounds, with both observed during the March migration period. The sighting rates in the Project Area (not including incidental sightings) were 0.05 Bald Eagle per hour and 0.01 Golden Eagle per hour.

Additional eagle surveys were conducted to gather current information to supplement the data obtained during the surveys conducted in 2012-2013. Eagle point count use surveys were initiated in March 2016. During each spring and summer season field visit, E & E also observed the two nearest Bald Eagle nests and collected sighting and nest status notes. An interim report that summarizes the results of the 2016 eagle surveys conducted through September 2016 is included in the FEIS (Appendix H). Eagle surveys will continue through February 2017 and then the report will be updated and shared with NYSDEC and the USFWS.

Bald Eagles were periodically observed in the Project Area during surveys between March 2016 and September 2016, with 36 total sightings, most of which occurred in September. Golden Eagles were not observed in the Project Area during the 2016 surveys. The Bald Eagles were likely a mix of migrants, locals, and transients and included adult and immature birds. The relatively high sightings per hour at the three most northern survey points is influenced by the large number of sightings on September 1, which involved surveying only the northern half of the site, and repeated sightings of the same eagles. Aside from the number of sightings on September 1, the results of the 2016 surveys to date are generally consistent with the results reported in previous studies conducted by E & E in the Project Area, suggesting Bald Eagle

activity within the Project Area during spring and fall migration seasons and more occasional activity during summer months. Bald Eagles continue to increase their presence and expand their distribution in Chautauqua County as well as in western New York State, adjacent states, and the Great Lakes region. Two Bald Eagle nest locations in the vicinity of the Project Area were monitored in 2016 and both were confirmed to be occupied by incubating Bald Eagles. The "Hanover nest" apparently failed later in the season while the "Thruway nest" possibly fledged two young.

The Applicant will continue to coordinate with NYSDEC and the USFWS regarding eagle activity. All data presented to and discussions with NYSDEC and USFWS will be utilized to develop appropriate minimization measures that will be included in the Project Bird and Bat Conservation Strategy (BBCS) and Eagle Management Plan (Eagle MP), including, at a minimum, the necessary post-construction monitoring activities to evaluate risk to eagles from the operation of the Project and adaptive management measures that will be taken based on that monitoring.

Bird Species Identified and Federally and State-listed Species. During the breeding bird and eagle surveys, E & E staff identified a few bird species that were not previously identified in the Project Area, which are identified in the SDEIS/FEIS. During field surveys, two state-listed endangered species (the Golden Eagle and Peregrine Falcon), two state-listed threatened species (the Bald Eagle and Northern Harrier), and seven state-listed special concern species (the Common Loon, Osprey, Sharp-shinned Hawk, Cooper's Hawk, Red-shouldered Hawk, Horned Lark, and Grasshopper Sparrow) were observed in the Project Area.

The NYS NHP was contacted in 2012 and again in 2015 for the purpose of identifying any federally or state-listed species that may potentially occur within the Project Area.

Responses were received on September 6, 2012 and March 17, 2015, indicating a total of seven rare bird species that potentially occur within 10 miles of the Project Area; no federally listed species were identified. A total of five state-threatened and state endangered species were identified, including the state-endangered Short-eared Owl, and the state-threatened Bald Eagle, Henslow's Sparrow, Northern Harrier, and Sedge Wren. Additionally, one species of special concern, the Red-headed Woodpecker and one protected bird species (under the Migratory Bird Treaty Act), the Great Blue Heron were identified by the NHP. The Great Blue Heron was identified by the NHP due to the Project Area's proximity to a heronry.

Passive Bat Acoustical Study (2012). In May 2011, NYSDEC suggested that an additional passive bat acoustical study be conducted to see if baseline conditions changed since the previous study. On April 14, 2012, two AnaBat SD1 bat detectors were installed by E & E biologists on a meteorological tower within the Project Area. The detectors were set at approximately 5 meters (low detector) and 40 meters (high detector) above ground level (AGL). The detectors were taken down on October 25, 2012. The following summary is based on the data collected during this entire survey period, which represents 196 survey nights. The high detector was functional all 196 survey nights, although a few nights experienced some technical difficulties where a portion of the survey night may not have been recorded. The low detector was fully functional for 190 of the 196 survey nights (96.9%). A total of 4,530 bat passes were recorded during the survey period, and 2,243 (49.5%) of these passes were of sufficient quality to be identified to low frequency, mid-frequency, or Myotis species groups. The low-frequency species group could include hoary bats, big brown bats, and silver-haired bats, while the mid-frequency species could include eastern red bats and tri-colored bats. Bat passes identified to the Myotis species group could possibly include eastern small-footed bats, Indiana bats, little brown

bats, and northern long-eared bats. Mean total activity for both detectors combined for the entire survey was 11.7 bat passes per detector night (bp/dn). The high detector had a total activity level of 6.9 bp/dn while the low detector had a total activity level of 16.7 bp/dn for the entire survey period. The period of highest total activity at the high detector was observed at the end of July through the beginning of August. The period of highest total activity for the low detector was observed in early September.

Low-frequency bat calls were the most prevalent (1,334 bat passes) and comprised 59.6% of the identifiable bat passes. Myotis species (469 bat passes, or 20.9%) and mid-frequency bat calls (437 bat passes, or 19.5%) were less common than those from low-frequency bats. All three species groups—low-frequency, mid-frequency, and Myotis species bats—were more prevalent at the low detector than the high detector. The average number of low-frequency bat passes per detector night at the low detector was 5.1 bp/dn, compared with 1.8 bp/dn at the high detector. Mid-frequency bat activity was found to be only slightly higher at the low detector compared with the high detector (1.3 bp/dn vs. 1.0 pb/dn respectively) while the Myotis species group was detected approximately 30 times more often by the low detector than by the high detector (2.4 bp/dn vs. 0.1 bp/dn).

Northern Long-Eared Bat Acoustic Survey (2015). In July 2015, an acoustical survey was initiated in response to the recent listing of the northern long-eared bat as threatened by the USFWS under the ESA. This species is also listed as threatened in NYS. Acoustic surveys followed the guidelines outlined in the USFWS Work Plan for Ball Hill, submitted to the USFWS on July 23, 2015 (E & E 2015) and subsequently reviewed, which was based on recommendations in the 2015 Range-Wide Indiana Bat Summer Survey Guidelines (USFWS 2015 [USFWS Guidelines]) applicable for northern long-eared bat presence/probable absence

surveys for the 2015 field season. Over a three-week period, beginning July 29 and concluding August 19, 2015, AnaBat (Titley Scientific) bat detectors were installed at 49 sites or 99 detector locations (two detectors per site with three detectors at one site), in suitable habitat within the Project Area and set to record for a minimum of two consecutive nights. The methodology is detailed in the SDEIS/FEIS. Based on the previously defined presence determinations, presence of northern long-eared bat was considered "possible" at two sites and "probable" at one other site.

White Nose Syndrome ("WNS"). Since the 2008 DEIS, the status of WNS has spread and worsened. WNS, which has been associated with the mortality of more than 5.7 million bats comprising seven species, including eastern small-footed bats and Indiana bats, is an additional threat to current populations in the eastern half of the United States (Bat Conservation International [BCI] 2015). WNS was first documented on hibernating bats in a New York cave during the winter of 2006, and is named for the presence of a white fungal growth around the affected bats' muzzle, ears, and wing membranes (Blehert et al. 2009). Thus far, bats with WNS have been confirmed in 26 U.S. states and five Canadian provinces, and predictions are that WNS will continue to spread (BCI 2015). To date, WNS has been documented in 20 NYS counties, including a hibernaculum in Erie County that is approximately 50 miles from the Project Area, and is presumed by NYSDEC to occur throughout NYS (Heffernan 2015). The BCI map indicating current extent of WNS throughout North America shows bat hibernation areas being present in the southern portion of Chautauqua County although the disease has yet to be detected there (BCI 2015). During its most recent winter hibernacula surveys, NYSDEC observed statewide declines of 98% for northern bats, 95% for tri-colored bats, 90% for little brown bats, 71% for Indiana bats, and 13% for eastern small-footed bat compared with the

numbers observed during hibernacula surveys conducted prior to the discovery of WNS; therefore, the mortality toll on these species from WNS has been severe (NYSDEC 2012a).

*Impacts to Wildlife and Habitat from Construction*

The primary impacts on biological resources would result from temporary and permanent loss of habitat due to construction activities. During construction there would be a loss of upland vegetation due to the removal of existing vegetation through clearing of forested, scrub-shrub, and herbaceous vegetation as part of construction activities. Secondary impacts may include increased soil erosion, which may, in turn, result in a localized reduction of available wildlife habitat. Clearing and grading associated with Project construction has the potential to result in mobilization of soil once the vegetation has been removed. Soil mobilization would be most problematic on slopes, which are more susceptible to erosion. These potential impacts are most likely to occur in conjunction with access roads and the collection system, since the turbine sites would be located on relatively level ground. Construction of the Project would result in a localized reduction in the amount of available forest habitat. Based on field surveys, the greatest percentage of forested vegetation that would be impacted by the Project is Hemlock – Northern Hardwoods. Other forest communities that would be affected include successional northern hardwood forest and beech-maple mesic forest. Habitat fragmentation resulting from Project construction would be minimized by using existing corridors (e.g., existing farm and logging roads) to the extent practicable. The reduction in the amount of forested habitat and the extent of habitat fragmentation within the Project Area would be minor in comparison with the overall acreage of forested land located in the Project Area.

The existing mosaic of land uses within the region, including agricultural lands and early successional stages of forestland, indicate that disturbance is a common occurrence in this

landscape. Other upland communities that would be impacted by construction of Project facilities include agricultural land (cropland/field crops, row crops, pastureland, and vineyards) and successional old fields and shrubland. These communities are routinely subjected to disturbance or have been subjected to past disturbance and are a result of re-vegetation following disturbance.

Among the impacts discussed, soil erosion may result in the transfer of sediment off the construction area to adjacent waterbodies, which may cause turbid waters and act to fill wetlands or embed stream substrate. These potential impacts could affect the quality of aquatic habitats. Mitigation measures, including a SWPPP, would be developed for the Project Site and implemented to reduce impacts from sedimentation and erosion during construction.

Most wildlife species are not expected to experience significant direct impacts as a result of construction of the Project and are expected to avoid the Project Site during the active construction period. The extent to which these species would be present at the Project Site during construction will vary. Project Area habitat supports black bear (Ursus americanus), eastern chipmunk (Tamias striatus), eastern cottontail (Sylvilagus floridanus), gray fox (Urocyon cinereoargenteus), gray squirrel (Sciurus carolinensis), opossum (Didelphis virginiana), porcupine (Erethizon dorsatum), red bat (Lasiurus borealis), red squirrel (Tamiasciurus hudsonicus), striped skunk (Mephitis mephitis), the big brown bat (Eptesicus fuscus), coyote (Canis latrans), eastern cottontail, hoary bat (Lasiurus cinereus), red fox (Vulpes vulpes), striped skunk, white-tailed deer (Odocoileus virginianus), and woodchuck (Marmota monax).

Less mobile species in upland vegetative communities may experience some limited mortality during the course of construction, including small mammals that may not have time to escape areas of disturbance. This may also include nocturnal species that roost in trees during

the day when construction activities take place. The same could be expected for common wildlife species that inhabit agricultural fields and lands in various stages of succession; while most species would relocate to avoid construction impacts, construction may inadvertently impact ground-dwelling or burrowing wildlife.

Construction-related activities (e.g., clearing, infrastructure construction, equipment noise, increased vehicle traffic, and human presence) can potentially impact birds and bats by causing temporary displacement from habitat and direct mortality. Because these impacts are generally only temporary in nature, impacts on bird and bat populations are typically not significant. Pre-construction monitoring and/or seasonal restrictions can also help avoid and minimize impacts. Potential construction impacts on habitat would be caused by ground disturbance and tree removal, which are also associated with farming and logging practices, which are common in the area. At this stage of Project development, it is uncertain when tree clearing activities would be conducted. Tree clearing during the late fall, winter or early spring months would present the lowest potential risk to birds by avoiding potential disturbance of nests. Tree clearing during the late spring, summer, or early fall would have the greatest potential to have an adverse impact on nesting birds. Tree clearing during these months will be minimized to the greatest extent practicable if total avoidance is not achieved due to Project timing considerations.

Indirect impacts on wildlife would also result from habitat alteration associated with construction of the Project; however, these impacts are not expected to be significant. These localized impacts on habitat are consistent with activities and conditions that regularly occur throughout the Project Area, such as ground disturbance and tree removal associated with farming and logging activities. Some areas would be subject to permanent forest impacts due to

construction and operation of Project facilities and clearing of ROWs for collection and transmission lines. Most areas with permanent forest conversion would be allowed to revegetate to an herbaceous or scrub-shrub condition. It is anticipated that wildlife in the Project Area are accustomed to disturbances of this nature and would either relocate to adjacent suitable habitat or, upon cessation of construction, make use of temporarily disturbed areas as revegetation takes place.

Based on consultation with the U.S. Fish and Wildlife Service (USFWS) and the NHP, no non-avian species listed as threatened or endangered potentially occur in the Project Area, except for transient individuals. Therefore, no significant adverse impacts on non-avian threatened and endangered animal species are expected as a result of construction of the Project.

No significant adverse impacts on migratory bird populations, including raptors, passerines, and waterbirds, are expected as a result of construction of the Project. Most species are expected to temporarily avoid immediate areas during active construction. During construction, increased traffic and machinery are expected within the Project Area, which could potentially lead to a short-term increase in bird mortality as a result of vehicle collision. It is expected that, while bird mortality could potentially increase on a short-term basis during construction, the increase would not significantly impact birds at the population level. Implementing BMPs to reduce vehicular speed limits will help minimize impacts. The Applicant shall employ a 20 mph speed limit during construction for safety and wildlife protection reasons. This speed limit would only apply to dedicated construction roads located on the Project Site. The Applicant will also instruct Project personnel to be alert for wildlife, to use additional caution while driving in low visibility conditions, to restrict travel to established travel routes and work areas, and what to do when encountering dead or injured wildlife. Site specific

environmental and wildlife information will be included in the site safety orientation given to all site employees before they can work on the Project.

No significant adverse impacts on breeding bird populations are expected as a result of Project construction. If Project construction commences prior to the breeding bird season, it is anticipated that local breeding birds would likely avoid areas of construction activity during the construction period. If construction were to begin during the breeding season, birds that have been exposed to similar disturbances (e.g., farming activities) and are accustomed to regular disruption would likely remain in the area, while other birds not accustomed to regular or periodic anthropogenic disturbances would likely relocate to nearby suitable habitat, if available. Incidental loss of some nests, eggs, and/or young is possible when construction activities (e.g., land clearing) are conducted during the breeding season; however, the Applicant will avoid loss of active nests, eggs and/or young to the extent possible. The Applicant will instruct Project workers to immediately report any discovery of a bird nest the on-site environmental supervisor so that protective measures, such as non-disturbance buffers can be implemented and the Applicant will contact NYSDEC and USFWS.

During construction, it is expected that the increased noise and activity resulting from construction activities would cause displacement rather than mortality, as birds are highly mobile. Surveys performed by E & E suggest that many of the bird species present in the Project Area are common and are likely accustomed to human-induced disturbances, such as farming and logging. It is expected that displaced birds would utilize contiguous habitat and remain local. Increased traffic throughout the Project Area would also increase the likelihood of nest destruction and abandonment, due either to direct mortality or indirect noise disturbance. However, access roads would be utilized and construction vehicles would stay on these roads to

the extent practicable, which along with a 20 mph speed limit would reduce the extent of disturbance and minimize any potentially adverse impacts on breeding birds.

The potential for habitat loss has been minimized through site planning (i.e., the placement of turbines in agricultural areas where practicable). A majority of the construction impacts would occur in agricultural lands, which are subject to regular disturbance throughout most years (e.g., farming, tilling, and harvesting) and generally harbor a relatively low diversity of bird species due to their homogenous nature and regular disturbance. While some disturbance would occur as a result of construction, it is expected that any disturbances to birds utilizing the Project Area would be highly localized and temporary. No significant impacts are anticipated.

The Applicant has sited Project facilities and roadways in an attempt to minimize impacts on ecologically important lands to the maximum extent practicable. By doing so, the Project aims to further limit the total impacts on bird and bat populations by minimizing habitat fragmentation. The most disturbed areas would be those associated with the wind turbines, the majority of which would be sited in agricultural fields, which are already subject to regular disturbance. The reduction in the number of turbines from the layout identified in the DEIS has also helped reduce disturbances. Outside of short-term, minor, and localized construction disturbance, no significant adverse impacts on breeding birds are anticipated.

Only limited use of the Project Area by bird species listed as endangered, threatened, or of special concern is anticipated during construction. Occurrences would be related to migratory, transient/foraging, and breeding behavior. Species that breed in the Project Area would likely occur in very low numbers, and the potential for impacts during construction would be minimized by the use of on- site environmental personnel and immediate incorporation of adaptive management measures upon discovery of nesting prior to or during construction. Of the

listed species mentioned above, disruption by construction (e.g., land clearing) during the breeding season could potentially affect the Northern Harrier, Sharp-shinned Hawk, Cooper's Hawk, Red-shouldered Hawk, and Grasshopper Sparrow because these species could potentially breed in the Project Area. It is anticipated that monitoring in grassland habitats (for the Northern Harrier and Grasshopper Sparrow) and forested areas (for the Sharp-shinned Hawk, Cooper's Hawk, and Redshouldered Hawk) would identify nests and reduce potential impacts during construction.

Transient and/or migratory use by the other listed species is not expected to result in any significant adverse impacts during construction. If endangered, threatened, or special concern bird species are identified as nesting immediately prior to or during construction, then monitoring, avoidance, and minimization measures would be implemented to reduce the potential for construction to negatively impact these species. With implementation of monitoring activities, no significant adverse impacts from construction on threatened, endangered, or special concern bird species are anticipated.

The USFWS issued the National Bald Eagle Management Guidelines (Guidelines) (USFWS 2007), which include general recommendations for land management practices that will benefit and avoid disturbing Bald Eagles. Nesting Bald Eagles are sensitive to a variety of human activities, but not all eagle pairs react to human activities in the same manner. The variability in response may be related to a number of factors, including visibility, duration, noise, and extent of the area affected by the activity; prior experiences with humans; and tolerance of the individual nesting pair (USFWS 2007). According to the Guidelines, the chronology of typical reproductive activities of Bald Eagles in the northern United States, including NYS, is as follows:

■ Nest building (December-February);

■ Egg laying/incubation (February-April);

■ Hatching/rearing young (March-June); and

■ Fledging young (June-August).

These are the time periods during which Bald Eagles are sensitive to anthropogenic disturbance, with nest building considered to be when eagles are most sensitive. After fledging, juvenile Bald Eagles usually roam up to 0.25 miles from the nest site and are still dependent upon adults to feed them for approximately six weeks (USFWS 2007). The USFWS recommendations for avoiding nest site disturbances include: 1) maintaining a distance buffer between the activity and the nest, 2) maintaining a landscape buffer (forested or natural areas) between the activity and nest trees, and 3) avoiding disruptive activities during the breeding season (USFWS 2007). Under the activity-specific guidelines, construction of a wind farm is interpreted as a Category B activity (i.e., building construction of three or more stories). Given the locations of known Bald Eagle nests in the vicinity of the Project Area, construction activity is not anticipated to be directly visible from any of the nest sites because of forest cover and topography. Therefore, the recommended minimum distance buffer is 660 feet, or 1/8 mile (USFWS 2007), which is outside the Project Area boundary and would be maintained during Project construction. Since the nearest Bald Eagle nest is outside the limits of the Project Area and beyond the minimum USFWS guidance (2007) for construction, no significant adverse impacts from construction activities on Bald Eagles are anticipated. The Applicant will continue to coordinate with the USFWS regarding the potential risk from the Project on eagles.

There is a potential for impacts on both tree bats and cave bats as a result of habitat alteration or loss associated with construction of the Project. Activities, such as infrastructure

construction, equipment noise, increased vehicle traffic, and human presence, would not be expected to have a significant adverse effect on bat populations because bats are most active at night when construction is not taking place and because they can temporarily relocate. However, tree clearing activities have a potential to have an adverse impact on bats within the Project Area. Potential construction impacts on habitat would be caused by ground disturbance and tree removal, which are also associated with farming and logging practices, which are common in the area. Tree clearing during the late fall, winter or early spring months would present the lowest potential risk to bats by avoiding potential removal of roosting or maternity trees. Tree clearing during the late spring, summer, or early fall would have the greatest potential to have an adverse impact on colonial roosting bats, such as the tri-colored bat, big brown bat, and Myotis species, if a roost or maternity colony were to be cut down. Tree clearing during these months will be minimized to the greatest extent practicable if total avoidance is not achieved due to Project timing considerations. Changes in vegetation may influence the behavior of bats by changing microclimatic conditions and the quality of habitat for foraging or roosting bats (National Research Council [NRC] 2007). Bats may also become attracted to openings made in forested areas from tree clearing activities for access roads as they may find foraging opportunities in the openings. It is anticipated that any bats that are present in the Project Area would return to areas that were temporarily disturbed following the completion of construction activity. Studies suggest that a robust bat population is present within the Project Area, so there is a potential for some adverse impacts during construction of the Project. These risks will be reduced if tree clearing activity can be limited to the later fall, winter, or early spring months. If tree clearing cannot be limited to these months, the Applicant will minimize any adverse construction impacts on active roost trees and bat species within the Project Area. If necessary based on NYSDEC

and USFWS coordination, the Applicant will have qualified biologist(s) conduct tree inventories to identify potential roost trees and monitor with acoustic devices and/or conduct dusk exit surveys, or other similar methods as coordinated with NYSDEC and USFWS.

The geographic range of the federally and state-listed threatened northern long-eared bat encompasses western New York, including the Project area. The nearest known hibernacula for this species occur near Akron and Mount Morris, New York, approximately 50 miles northeast and 68 miles east of the Project area, respectively. Summer occurrence of this species occurs throughout all of NYS, where their presence would be expected to increase in likelihood in late summer, during usual peak migration season. Based on their probable presence during the 2015 acoustic survey in the Project Area, impacts to this species could occur from construction activities. The Applicant will continue to consult with the USFWS and NYSDEC regarding surveys and protective measures for this species. Tree clearing will be minimized in the late spring, summer, and early fall months to the greatest extent practicable to minimize impacts to this species. The geographic range of the federally and state-listed endangered Indiana bat does not extend into western NYS; therefore, it is not expected to be present. No Indiana bat hibernacula or summer maternity colonies have been identified in western New York (USFWS 2007). The known Indiana bat hibernacula in NYS closest to the Project Area are in Onondaga County, approximately 150 miles to the northeast, and in Jefferson County, approximately 190 miles to the northeast. The closest known summer occurrence of the Indiana bat in NYS is from Seneca and Cayuga counties, approximately 120 miles to the northeast. Outside of NYS, known Indiana bat hibernacula have been identified in central and southern Pennsylvania, which are a similar distance away from the Project as those located in NYS. The closest known summer

occurrence of the Indiana bat outside of NYS is from Elk County, Pennsylvania, approximately 55 miles south of the Project.

Indiana bats have also been recorded to roost in the summer in Ashtabula County, Ohio, approximately 77 miles southwest of the Project. Based on the known locations of Indiana bat hibernacula and maternity colonies in NYS, and no previous documentation of this species in western New York, it is unlikely that Indiana bats would be found residing in or migrating through the Project Area, therefore, the potential for any impacts is considered remote. Since Indiana bats are capable of migrating upwards of 300 miles (USFWS 2004), complete avoidance of impacts on Indiana bats within that range can never be absolutely guaranteed.

Very limited information is available on the life history or distribution of the eastern small-footed bat, a NYS-listed species of special concern. It is unlikely but still possible that this species could utilize the Project Area because New York had an estimated pre-WNS winter population of roughly 3,000 to 3,500 eastern small-footed bats and the Project Area contains suitable forested blocks for bats in general (Erdle and Hobson 2001). Since eastern small-footed bats generally do not roost in trees, vegetation clearing would have minimal impact on this species. A desktop review of the Project Area and site visits made as part of the Project's pre-construction environmental surveys did not identify any barren land or high elevation forested areas with rocky outcrops. However, if any talus piles or rocky outcrops in forested areas exist in the Project Area and are discovered and disturbed during construction, the potential exists for disturbance of eastern small-footed bat roosts, if present. In addition, excessive noise or ground vibration produced during construction may disturb torpid eastern small-footed bats in their roosts and result in their effort to relocate. Eastern small-footed bats relocating to another day roost are expending extra energy to do so and are unprotected from diurnal predators, such as

raptors. Eastern small-footed bats are not known to occur in or within 10 miles of the Project Area and suitable roost habitat does not appear to be present (Seoane 2006, 2008; Pietrusiak 2012; Conrad 2015). However, if these bats are present, they would likely occur in very low numbers and the potential for impacts during construction would be minimal.

White-tailed Deer and Black Bear. Direct impacts on white-tailed deer and black bear as a result of construction of the Project would be minor, temporary, and limited to discouraging use of the areas where construction occurs. Although the Project would result in the removal of forested habitat, the clearing required for construction and operation of Project facilities would result in new understory growth and additional herbaceous/scrub-shrub habitats. Depending on the species composition of the regrowth, these habitats could provide new foraging areas for both deer and bear. Deer typically congregate in the hemlock-northern hardwood mixed forests during the hardest part of the winter. Construction of the Project would result in some permanent impacts on hemlock-hardwood forest and permanent forest conversion throughout the Project Area. However, the reduction in the amount of hemlock-northern hardwood forest habitat as a result of the Project would be insignificant given the overall acreage of hemlock-hardwood forest in the Project Area. In addition, deer have adapted to disturbances of this nature and would either relocate to adjacent suitable habitat or make use of temporarily disturbed areas as revegetation takes place following construction. Therefore, the Project is not likely to cause any significant adverse impact on deer wintering concentration areas. Southern black bear range has expanded in recent years and currently includes the entirety of Chautauqua County, wherein the Project Area lies (NYSDEC 2014).

However, construction of the Project is not expected to cause a significant adverse effect on black bears, which can adapt to changing habitat conditions and have the ability to

temporarily relocate to adjacent suitable habitat. Thus, any individual bears would likely tend to avoid the Project Site during construction activities.

Trout. Construction of the generation portion of the Project would not cause significant adverse impacts on trout. Construction of access roads associated with the transmission portion of the Project may cross three designated trout streams, depending on final design, all three would also be crossed overhead by the transmission line. Access roads that cross these streams would be installed within a narrowed 20-foot-wide construction ROW, and their permanent width would be reduced to 12 feet. Permanent culverts of an appropriate type and size to maintain sufficient flow may be used for equipment stream crossings at some locations. Upon completion of construction of the transmission line, O&M vehicles would be ATVs, or comparable, and utilize either permanent culverts or wetland mats. The transmission line may also cross three additional designated trout streams that would not likely be crossed by access roads. Due to the overhead location of the transmission line, impacts associated with the crossings are expected to be minimal, though clearing of the ROW for the transmission line would remove minor lengths of riparian vegetation that provide shading and shelter for these streams. However, stumps would be left in place to facilitate natural revegetation of the ROW. Additionally, trees will not be felled into streams or on stream banks.

*Impacts to Wildlife and Habitat from Project Operation*

Permanent impacts on upland vegetation, which provides habitat for wildlife, would result from ongoing maintenance of the turbine sites, electrical collection and transmission system, and access road ROWs during operation of the Project. Vegetation would be permanently removed from the locations of the turbine pedestal, turbine crane pad, ancillary Project facilities (i.e., substation, switchyard, and O&M building) and permanent access roads

(18 feet wide for turbines and laydown areas and 12 feet wide for the transmission portion of the Project). Permanent impacts from the Project would affect no more than 149.9 acres of vegetation. The remainder of the Project would be allowed to revegetate naturally, although portions would be subject to periodic removal of woody vegetation to maintain an herbaceous or scrub-shrub state, especially adjacent to access roads and within collection and transmission system corridors. The degree of impact would depend on the type and amount of vegetation to be cleared, the rate of revegetation, and the frequency of maintenance (clearing/mowing) during operation of the Project. Although some of the impacted forested land will be allowed to naturally revegetate, this would not occur within the lifetime of the Project (approximately 20 years). Converted forests would continue to be vegetated and there would not be a total loss of habitat in these areas. However, since it is forest conversion, these impacts are considered permanent. The reduction in the amount of forested within the Project Site would be minor, however, in comparison with the overall acreage of forested land located in the Project Area.

The Applicant does not expect to use herbicides or pesticides to control vegetation or pests along access roads and turbine maintenance areas. Generally, these areas are not expected to promote vegetation growth because of the use of geotextile fabric and gravel construction and because of the periodic use of the access roads by vehicles. In some cases, herbicidal spot control of upland invasive species might be required along access roads and turbine maintenance areas. If the use of herbicides becomes necessary to control vegetation, application would be performed by a certified contractor and in accordance with all applicable regulations. The natural vegetative conditions would be restored after construction and preserved to the maximum extent practicable throughout the Project Area.

Operation of the Project is not expected to result in significant adverse impacts on most wildlife species. Vegetation along access road shoulders and in collection and transmission ROWs would be maintained in an herbaceous or scrub-shrub state. This maintenance could have impacts on less mobile species, including ground-dwelling and burrowing mammals, which could be impacted by vehicle traffic used to access areas in need of vegetative maintenance, and nocturnal species that roost in trees during the day when maintenance activities would take place. As recognized from other active wind power projects throughout the United States, operation of the Project does have the potential to impact birds and bats, discussed more fully further below.

The Project is expected to result in minimal loss of habitat relative to the available habitat in the Project Area and region. In addition, the impacts on habitat are consistent with activities and conditions that regularly occur throughout the Project Area, such as mowing of vegetation, access road use associated with farming and logging activities, and tree removal. It is anticipated that wildlife in the Project Area are accustomed to disturbances of this nature and would either relocate to adjacent suitable habitat or adapt to post-construction site conditions. The conditions of available habitat would improve following construction, because areas would be allowed to naturally revegetate.

Operation of the Project facilities may slightly increase vehicle traffic within deer wintering areas where access roads traverse hemlock-northern hardwood forests. However, use of the access roads would be infrequent and consistent with current winter use levels throughout the area (i.e., snowmobile trails and logging activities) and the Applicant will enforce a speed limit of 20 miles per hour (mph). Further, access road and collection and transmission line ROWs may provide corridors for movement of deer and additional edge habitat for foraging. Edge habitat refers to the transitional area between two habitat types (in this case forest habitat

and emergent or scrub-shrub habitat) and is used by deer for feeding and traveling. Operation of the Project is also unlikely to have a significant adverse impact on black bears. The Project Area is within the expanding range of the southern black bear. Bears are adapted to wide range of habitat types and likely range over a relatively large area; the Project Area comprises only a small portion of their range. While operation of the Project may slightly increase traffic and human presence in areas where only minimal disturbance occurs, deer and bears would be expected to avoid direct interaction with humans. Operation of Project is unlikely to cause significant adverse impacts on trout and herpetofauna, as full restoration of temporarily disturbed wetlands and waterbodies would take place following construction.

Operation of wind turbines can potentially impact birds and bats through collisions with the turbine blades and towers, or transmission lines; displacement from habitat; or influence on migration or other behavior. Collisions are typically the primary operation-related impact associated with wind facilities. Potential impacts can vary among different bird and bat populations and groups.

Raptor migration is diffuse away from the Great Lakes shorelines, and the nearest proposed turbine location is approximately 7 miles from the Lake Erie shoreline. There are no geographical or topographical features in the Project Area that would attract or concentrate migrating raptors. No concentrated flight paths were identified during the spring or fall migration surveys, and survey findings were consistent with existing knowledge of the bird resources in the region. Therefore, relatively low numbers of migrant raptors are anticipated to occur in the Project Area, especially as compared to the known spring season concentrated flight path adjacent to Lake Erie. Based on comparative studies of raptor passage rates through wind farm sites in NYS and small number of raptor fatalities experienced at wind sites in NYS to date,

the overall raptor fatality rate in the Project Area is expected to be low. A raptor's use of the rotor-swept area increases the individual's collision risk (Strickland et al. 2011); however, there is the potential for some displacement at a wind farm site following construction, which could reduce the potential collision risk to raptors. Moreover, some raptors appear to avoid wind farm sites all together, as suggested by a study conducted by Garvin et al. (2011) where they compared the abundance and behavior of raptors at a wind energy facility in Wisconsin. The study found that the number of raptors declined by 47% when post-construction levels were compared to pre-construction levels. They also found that some raptors exhibit avoidance behavior by generally remaining at least 100 meters from the turbines and above the height of the rotor swept zone. The study concluded that the degree of behavioral response to the turbines was dependent on the species (Garvin et al. 2011). As raptor use in the Project Area is relatively low and the likelihood of turbine avoidance is high, the potential for impacts is low. No biologically significant adverse impacts on migrant raptors are anticipated as a result of Project operation.

Nocturnal migrant passerine birds run the risk of colliding with all tall structures, including wind turbines. Nocturnal migrant passerines comprise the greatest number of bird fatalities in a review of post-construction mortality studies at existing wind projects in the eastern United States (American Wind Wildlife Institute [AWWI] 2015). The majority of post-construction surveys have found that bird fatalities typically accumulate in small numbers over the course of a season (Strickland et al. 2011). However, in 2011 several larger fatality events occurred at wind energy facilities in the mid-Atlantic Highlands resulting from the nighttime artificial lighting associated with buildings and inside nacelles (Young et al. 2012; Wald 2011). These large fatality events can be avoided through lighting design for Project buildings (avoid flood lighting and have lights pointed down) and successfully implementing BMPs to keep

nacelle lighting turned off at night, which will be implemented for this Project. There are no geographical or topographical features within the Project Area that would attract or concentrate nocturnal migrant passerines. The Project Area is not immediately proximate to any large waterbodies or isolated habitat patches that large numbers of nocturnal migrants would use as stopover areas. Outside of such areas, passerine migration is typically diffuse over a broad front. Results of the nocturnal radar study conducted in the Project Area are generally consistent with this assessment (Stantec Consulting 2008). The migratory passage rates over the Project Area in fall 2006 were below average and in spring 2007 were above average, but both were within the values of studies conducted at other locations. A radar study was conducted along the southern shore of Lake Erie at Evangola State Park in 2012 by the USFWS; however, at this time only preliminary results of this study have been made publically available (USFWS 2013a). This location is approximately 11 miles north of the Project Area.

In fall 2006 and spring 2007, the respective mean flight altitudes for passerines were 768 feet and 1,230 feet higher than the maximum turbine height for the then planned turbine technology. Based on these results, the majority of nocturnal migration occurs well above the height of the proposed turbines. The mean flight altitude in fall and spring were similar to each other and to other locations in the eastern United States where similar studies have been conducted (NYSDEC 2010b). Approximately 9% of all nocturnal targets in fall 2006 and approximately 3% of all nocturnal targets in spring 2007 flew below 394 feet AGL, a close approximation to the then-proposed maximum turbine height. The currently proposed maximum turbine heights for the Project (492 feet) are higher than the AGL height used to analyze nocturnal radar studies but below the flight altitudes observed. In addition, the rates of passage

below the maximum turbine heights are still expected to be within the range of results from other radar studies in the northeastern United States (NYSDEC 2010b).

Based on results from other nearby wind projects, bird fatalities would likely be distributed among many species, with low numbers of any particular species in a given year. The potential mortality risk to migrant passerines is considered to be low based on the Project's location, passage rate and flight altitude data from radar studies (in addition to other regional radar studies), avoidance behavior of passerines exhibited at wind energy facilities, and known fatality rates from post-construction monitoring at regional wind energy facilities. No biologically significant adverse impacts are anticipated for any passerine species resulting from operation of the Project.

The Project is not located in an area where there are large movements of migratory or local waterfowl/waterbirds. Post-construction studies at existing wind energy facilities have shown that waterfowl/waterbirds are less susceptible to collision than other species groups (Erickson et al. 2002; BirdLife International 2003; Kingsley and Whittam 2007 as cited in National Wind Coordinating Collaborative [2010]; AWWI 2015). Therefore, the potential risk for waterfowl/waterbird mortality resulting from the Project is anticipated to be very low.

Given the various habitats and site topography in the Project Area, there is a fairly high diversity of breeding bird species; however, the majority of the turbines would be sited in agricultural fields and open areas, habitats with a relatively low species diversity and density. There is a significant degree of existing habitat fragmentation in the Project Area due to agricultural operations and logging. By siting Project components away from wetlands and mature forests to the extent possible, potential impacts on resident birds would be minimized. Much of the Project would be constructed in agricultural areas and along edges of young

woodlands, and breeding birds in these habitats may demonstrate temporary displacement. Most breeding birds are expected to habituate to the presence of the turbines, and long-term displacement would be minimal. Grassland-nesting species (i.e., Bobolink and Eastern Meadowlark) may not habituate to the presence of the turbines as much as species in other habitats. Some species are more susceptible to displacement than others (Kerlinger and Guarnaccia 2009; Shaffer et al. 2012), and displacement may be limited to the immediate area (i.e., the surrounding field) of each turbine, depending on site-specific conditions, including habitat, size of field, hay mowing, and pesticide practices. A study at the Noble Bliss Windpark in Wyoming County, New York, concluded that bird diversity and abundance around turbines decreased in the year following construction (Kerlingerand Guarnaccia 2009). In the next following year, bird diversity rebounded, while abundance did not. A study at the Noble Wethersfield Windpark in Wyoming County, New York, concluded that one species of bird, the Bobolink, showed an effect of turbine displacement following construction, with significantly fewer Bobolinks within 246 feet (75 m) of turbines situated in hayfields (Kerlinger and Guarnaccia 2010). However, another species of bird, the Savannah Sparrow, did not show a significant difference in abundance with distance from the turbines. Avian displacements similar to those observed at these two wind farms are expected in the Project Area, with some species but not others exhibiting displacement effects.

No substantial negative impacts on habitat through loss, degradation, or displacement of breeding birds are anticipated. No significant long-term adverse impacts on breeding birds are anticipated from operation of the Project.

During field surveys, two state-listed endangered species (the Golden Eagle and Peregrine Falcon), two state-listed threatened species (the Bald Eagle and Northern Harrier), and

seven state-listed special concern species (the Common Loon, Osprey, Sharp-shinned Hawk, Cooper's Hawk, Red-shouldered Hawk, Horned Lark, and Grasshopper Sparrow) were observed in the Project Area. Generally, these species were observed in low numbers, and significant impacts would not be anticipated to these species.

Two migrant Golden Eagles were observed in the Project Area by E & E staff during the spring raptor surveys conducted on March 30 and April 7, 2008, and two migrant Golden Eagles were observed during the eagle surveys conducted on March 13 and 27, 2012. There are no active Golden Eagle nests in NYS, and the Project Area is outside of this species' breeding range. Golden Eagles are very rare in winter in western New York as the wintering range for the eastern population is in the mid-Atlantic Highlands to the south (i.e., Pennsylvania and West Virginia). No activities pertinent to the life cycle of the Golden Eagle would regularly bring it to the Project Area except as a migrant or occasional transient. With such low utilization of the Project Area, the potential for direct mortality or injury of Golden Eagles resulting from collision with wind turbines is considered to be very low. Similarly, as breeding is not expected in the Project Area, the potential for harassment, displacement, or habitat impacts are also remote. Therefore, no potential significant adverse impacts on the Golden Eagle are anticipated.

Peregrine Falcons can occur in the Project Area at any time throughout the year, but are more likely during the fall and spring migrations. The potential for direct mortality or injury of Peregrine Falcons as a result of collisions with wind turbines is considered to be low, as they are not common to the Project Area and there are no potential nesting sites (e.g., cliff faces, tall buildings, or bridges) in or near the Project Area. No potential significant adverse impacts on Peregrine Falcons are anticipated.

Two Bald Eagles were observed by E & E staff in the Project Area during spring raptor surveys conducted in 2007 (one migrant on April 23, 2007, and one local bird on April 30, 2007). Two Bald Eagles were observed during spring raptor surveys conducted in 2008 (one migrant and one local bird, both on April 7, 2008). During the 2012-2013 eagle surveys, a total of 17 Bald Eagle sightings were made. Of the total 17 Bald Eagle sightings during the eagle surveys (not including incidental sightings), seven were observed flying at least partially within the rotor swept zone (RSZ) for a total of 19 minutes, or 0.10% of the total survey time spent within the Project Area. This suggests that Bald Eagles do not frequently fly within the RSZ and that wind turbines would pose a minimal threat to eagles. Several Bald Eagle nesting areas have been identified within 10 miles of the Project Area. Based on suitable foraging habitat and relative proximity to the nearest nesting locations, Bald Eagles may enter the Project Area en route to visit East Mud Lake, West Mud Lake, Lake Erie, Silver Creek Reservoir, Fredonia Reservoir, and the Dayton gravel ponds. Coming from the nearest nesting locations, Bald Eagles could reach these small lakes without crossing the Project Area; however, as has been documented during the 2012 eagle surveys, some flights within the Project Area are expected. Eagle populations in western New York and especially Chautauqua County are rapidly expanding; as populations continue to increase, greater nest densities may occur in preferable habitats, and eagles may also begin to nest in less ideal habitats further from foraging areas.

The USFWS published a final rule (Eagle Permit Rule [50 Code of Federal Regulations 22.26]) on September 11, 2009, under the BGEPA authorizing limited issuance of permits to take Bald and Golden Eagles. A permit would authorize the take of Bald and Golden Eagles where the take is (1) compatible with the preservation of the Bald Eagle and the Golden Eagle, (2) necessary to protect an interest in a particular locality, (3) associated with but not the purpose

of the activity, and (4) for individual incidences (i.e., the take cannot be practicably avoided) and programmatic take (i.e., the take is unavoidable even though advanced conservation practices are being implemented). The USFWS published the Draft Eagle Conservation Plan Guidance in February 2011 and revised in April 2013 (USFWS 2011, 2013b), which explains the USFWS's approach to issuing permits to individual companies or broad, industry-wide permits for ongoing take of eagles under this authority, and provides guidance for permit applicants (Project proponents). The final rule notes that wind power is an industry sector for which programmatic permits are appropriate. E & E met with the USFWS in Cortland, New York, on December 11, 2012, to go over the Project's survey results to date and to discuss appropriate avoidance and minimization measures for the Project to reduce risks to eagles. It is anticipated that there will be permit conditions from NYSDEC regarding monitoring for Bald Eagles and other listed species during Project operation and measures to avoid and minimize any potential impacts from operation. Bald Eagles may occur in the Project Area throughout the year. As such, there is potential for direct mortality or injury to Bald Eagles resulting from collision with wind turbines and the potential for harassment, displacement, or habitat impacts; however, these risks appear to be minimal. To date, few impacts on Bald Eagles as a result of wind farm development have been reported with eight Bald Eagle fatalities reported at wind energy facilities in North America: three in Iowa; two in Ontario; two in Wyoming; and one in Maryland (2012) (Allison 2012; Pagel et al. 2013).

Additional regulatory rulings are anticipated in 2016 as updates for the Eagle Permit Rule, and the Applicant will continue to coordinate with the USFWS and NYSDEC regarding potential risks from the Project to eagles. While the potential for unavoidable Bald Eagle-related

impacts exists, it is anticipated that the Project would not significantly impact local or migrating Bald Eagles.

E & E staff observed Northern Harriers in the Project Area on several occasions during spring and fall raptor surveys, spring migratory surveys, and eagle surveys. Because there is ample suitable nesting habitat in and near the Project Area, the potential risk of displacement is low. Very few Northern Harrier fatalities resulting from collisions with wind turbines have been documented, even at sites that have relatively high use by this species (Erickson et al. 2002). This is likely due to Northern Harrier foraging behavior that is typically well below the rotor sweep zone. The Short-eared Owl is listed by the NHP as occurring in the town of Sheridan in Chautauqua County. This location is assumed to be a wintering location rather than a breeding area, because this species is a very rare breeder in western New York and no breeding has been documented in Chautauqua County (McGowan and Corwin 2008). It is suspected that a few birds may forage in the Project Area in some winters. The potential impact on this species is anticipated to be low. The Sedge Wren has been identified by the NHP as occurring in the town of Sheridan in Chautauqua County. The potential risk of turbine collision for this species is considered to be very low, and the potential risk of displacement is also considered to be very low because suitable habitat would not be altered. The Red-headed Woodpecker has been identified by the NHP as occurring within 10 miles of the Project Area. While this species can potentially occur within the Project Area, the potential risk of turbine collision is considered low. As such, it is anticipated that no potential significant adverse impacts will result from the Project for this species. Henslow's Sparrow has been identified by NHP as occurring in the town of Arkwright, Chautauqua County, approximately 6 miles west of the Project Area. Suitable habitat for this species would not be altered by construction or operation of this Project; therefore, the

potential risks of turbine collision and displacement are considered to be very low. As such, it is anticipated that no potential significant adverse impacts will result from the Project for this species. The Great Blue Heron has been identified by the NHP because a grouping of more than 50 nests per year (a heronry) has been documented at Dibble Hill/Farrington Hollow in the town of Arkwright, Chautauqua County, approximately 2 miles west of the Project Area. The potential risks of collision and displacement of Great Blue Herons resulting from Project operation is considered low. As such, it is anticipated that no potential significant adverse impacts will result from the Project for this species. All of the species of special concern identified in the Project Area (Common Loon, Osprey, Sharp-shinned Hawk, Cooper's Hawk, Red-shouldered Hawk, Horned Lark, and Grasshopper Sparrow) were documented in very low numbers. Of these seven species, Common Loon and Osprey do not breed in the Project Area, and the other five species may breed in low numbers in the Project Area. The potential risks of collision and displacement resulting from Project operation are considered to be very low for each of these species. As such, it is anticipated that no potential significant adverse impacts will result from the Project for these species.

Operation of the Project may result in impacts on bats. Direct impacts on bats primarily result from turbine collisions. Post-construction mortality surveys at operating wind projects in the United States have shown that tree bats comprise a large majority of the total number of bat fatalities (AWWI 2015; Arnett et al. 2008; Kerns et al. 2005). Generally, cave bats appear to be less vulnerable to the impacts with turbines. Although it is a cave bat, the tri-colored bat also has a high relative mortality rate at wind farms, potentially indicating it is also vulnerable to turbine impacts like tree bats. Pre-construction acoustic surveys have shown that these species, which are most likely to be impacted, compromise the vast majority of observed bat passes at the high

detector, which was located within an RSZ. As discussed above, WNS has a greater impact on the cave bat species group than it does on tree bat species due to the proliferation of the disease in cave populations (Frick et al. 2010). The significance of localized bat mortality from wind operations on a population as a whole is largely not understood, and current national research is aimed at addressing this issue. On September 3, 2015, the American Wind Energy Association (AWEA) announced that 17 of its member companies, including RES, the parent company of the Applicant, will voluntarily limit the operations of wind turbine generators in low-wind speed conditions during the fall bat migration season (AWEA 2015). Engagement in this voluntary program will greatly reduce risk to bats during migration, when numbers of bats passing through the Project Area would be expected to increase dramatically. By slowing blade rotations to fewer than one to three revolutions per minute during the period when migrating bats are most at risk, the Lead Agency expects the Applicant to greatly reduce impacts on bats from the operating turbines as has been demonstrated in multiple research studies performed by the Bats and Wind Energy Collaborative.

It is anticipated that the risk to the resident/summering bat populations in the Project Area would be much lower than the risk to migrants because collisions with migrating tree bat species have been shown to exceed those of other bat species. For example, 151 of the 203 dead bats found during the 2007 post-construction study at the Maple Ridge project were of the three tree bat species mentioned above (Jain et al. 2009a). In addition, bat fatalities at wind projects in general are higher during the fall migration season compared with the spring or summer months (Arnett et al. 2008). As the population sizes and trends of most bats in NYS are unknown, it is uncertain what level of impact results from wind projects, especially in light of the even greater mortality risk from WNS.

As indicated previously, the northern long-eared bat was shown to have "probable" presence in the Project Area based on summer 2015 surveys. Based on its presence, there is a potential risk of collision with turbines in the Project Area. Fatalities of this species have been documented from operation of wind projects in the Northeast (Gruver and Bishop-Boros 2015). These fatalities have been documented in small numbers, even at sites where northern long-eared bats have been found to be present in large numbers. The voluntary program to minimize bat impacts will also reduce the potential impacts on northern long-eared bats from the Project. The Applicant will continue to coordinate with the USFWS regarding survey results and avoidance and minimization measures, and other possible regulatory requirements for this species.

Based on the known locations of Indiana bat hibernacula and maternity colonies in NYS, and no previous documentation of this species in western New York, it is unlikely that Indiana bats would be found residing in or migrating through the Project Area. Therefore, the potential for any impact is considered remote. However, since Indiana bats are capable of migrating upwards of 300 miles (USFWS 2004), complete avoidance of impacts on Indiana bats within that range can never be absolutely guaranteed.

The eastern small-footed bat has not been identified in the Project Area or in the vicinity, but there is potential bat habitat at the site (i.e., forested areas). The available data indicate that eastern small-footed bats tend to be low, erratic fliers, flying roughly 1 to 3 meters off the ground (Harvey et al. 1999). This suggests that these bats are less likely to fly in the RSZ than other bats. To date, only two eastern small-footed bat fatalities have been discovered at wind energy facilities in the United States (Gruver and Bishop-Boros 2015). Because of the potentially limited presence and flight tendencies of the eastern small-footed bat, collisions with wind turbines or barotrauma-related mortality is not anticipated to occur. Since eastern small-footed

bats generally do not roost in trees, vegetation clearing as part of regular Project maintenance would have minimal impact on this species. A desktop review of the Project and site visits made as part of the Project's preconstruction environmental surveys did not identify any barren land or high elevation forested areas with rocky outcrops. However, if any talus piles or rocky outcrops in forested areas are discovered and disturbed during vegetation clearing or decommissioning activities, the potential exists for disturbance of eastern small-footed bat roosts, if present. Eastern small-footed bats are not known to occur in the Project Area, and suitable roost habitat for this species does not appear to be present. However, if these bats are present and breeding, they would likely occur in very low numbers; thus, the potential for significant adverse impacts during operation would be minimal.

*Mitigation*

The overall impacts from construction and operation of the Project on vegetation, wildlife, and wildlife habitat are anticipated to be minimal as a result of careful site planning and use of BMPs. To minimize impacts on vegetation, aquatic habitat, and fish and wildlife, facilities have been sited, to the extent practicable, within previously disturbed areas, such as reverting farm fields, along existing farm roads, and successional hardwood forests. Where practicable, the access roads, collection system, and transmission line have been located in areas with minimal tree growth, such as edges of farm fields, or collocated with existing logging roads.

After initial siting of the facilities, the locations of Project components were modified based on field surveys to avoid wetlands and other high-quality habitats to the greatest extent practicable. In many cases, turbines, access roads, and collection and transmission lines were relocated or eliminated to reduce impacts, primarily on forest habitat and wetland communities. Few modifications were needed after initial siting because experience from prior layouts allowed

the avoidance of wetlands and other areas and habitats of concern to the greatest extent practicable during the initial planning stages. Further reduction of impacts to biological resources were realized upon final Project design as micro-siting of turbines and components continued.

The Project layout has been designed to protect existing habitats by minimizing the clear cutting of trees and, where practicable, co-locating roads and collection and transmission lines with existing logging roads and trails. In addition, temporary and permanent access roads have been located, wherever feasible, along hedge rows within agricultural fields. Where construction activities would require the removal of any trees of economic value, landowners would be compensated in accordance with their individual easement agreements. In many cases, these existing logging roads and trails have not been adequately maintained and may adversely impact streams and aquatic habitat by directly traversing these features. The Project will result in a collateral improvement to some of those existing crossings through the installation of culverts at stream crossings to accommodate access roads. This may also provide alternative routes for ATVs and other vehicles that may otherwise use off-road areas.

When construction is complete within all jurisdictional boundaries, restoration of disturbed areas that do not require permanent facilities will take place in a manner that prevents impacts from invasive species. An invasive species management plan ("ISMP") has also been developed and would be implemented to establish revegetation by native, non-invasive species in areas disturbed by construction of the Project. The ISMP will serve as a reference source to aid in the management of environmental issues that may potentially be encountered during construction of the Project. Furthermore, the ISMP provides framework for the daily and long-term monitoring and reporting structure to ensure that the Project goals are accomplished within

the parameters set forth in the permits issued for the Project. The ISMP is intended to be a "living" document, which will continuously evolve as the Project progresses and/or as unanticipated issues arise.

Areas temporarily impacted during the construction of the Project will be restored to pre-construction contours and revegetated immediately following the completion of regulated activities throughout the Project Site. An appropriate native seed mixture shall be applied to disturbed areas. All seed will be from local sources, to the extent possible dependent upon seed availability, and applied at recommended rates. A facultative wetland (Wet Meadow Mix) seed mixture, or an equivalent approved seed mix, will be used in the restoration of all wetland areas and riparian zones impacted by construction activities.

Impacts on fish and wildlife would be further minimized through the implementation of BMPs. Erosion control structures would be used to prevent the off-site migration of soil and minimize impacts on fish and other aquatic species. Silt fencing would be installed along the construction ROW in all areas adjacent to wetlands, in accordance with the SWPPP. BMPs that would be used during construction to prevent excess storm water runoff from the construction areas would be implemented via the SWPPP. The clearing of natural vegetation adjacent to streams would be limited to the material that poses a hazard or hindrance to construction or Project facilities. Snags that provide shelter in streams for fish would not be disturbed unless they cause serious obstructions, scouring, or erosion. Trees would not be felled into any stream or onto the immediate stream bank. All in-stream work, as well as any work that may result in the suspension of sediment, shall not occur during the trout spawning and incubation period (October 1 through April 30), unless prior approval is obtained from NYSDEC. Crossing

methods and any potential impacts on protected streams and wetlands are subject to approval by NYSDEC and the USACE.

The primary mitigation measure taken to avoid or reduce the potential for significant bird and bat impacts was the approach to siting of the Project, which the Applicant continued with its refined layout. Initially, studies of potential Project areas were conducted using a literature review to ensure that no regional bird or bat populations would be adversely impacted should the Project be constructed and operated. During the siting phase, the Applicant selected available and appropriate locations for turbines, in part, by avoiding, and thus preserving, potentially important habitat, which minimized potential impacts on wetlands, habitat, and land use—all of which are related indirectly to birds and bats. The Project is also sited in an area that avoids topographical features that could potentially attract raptors and migrating birds. These considerations would minimize potential impacts on birds and bats.

The Applicant shall prepare and implement a site-specific Bird and Bat Conservation Strategy ("BBCS") outlining various processes that has and/or will be employed through construction, operation, and decommissioning at the Project to:

■ Comply with all state and federal avian and bat conservation and protection laws and regulations applicable to the Project;

■ Document adherence to the USFWS Land-based Wind Energy Guidelines (USFWS 2012);

■ Ensure that any impacts on avian and bat resources are identified, quantified, and analyzed; and

■ Implement various conservation, avoidance, minimization, and mitigation measures to address any impacts that result from operation of the Project.

This would be accomplished through adherence to the adaptive management process identified in the USFWS Land-based Wind Energy Guidelines.

Clearing for road and infrastructure construction, equipment noise, and increased vehicle traffic could adversely impact birds and bats during construction of the Project. Impacts on birds and bats due to construction would be minimized through the implementation of BMPs. Erosion control structures would be used to prevent off-site migration of soil and minimize impacts on aquatic resources. Silt fencing would be installed along the construction ROW in all areas adjacent to wetlands, in accordance with the SWPPP. Clearing of natural vegetation adjacent to streams would be limited to the material that poses a hazard or hindrance to construction or Project facilities. If construction takes place in suitable nesting habitat for endangered, threatened, or special concern bird species in the spring and early summer, the work area would be surveyed and cleared by an environmental supervisor in advance of construction. If threatened, endangered, or special concern bird species are found nesting in the immediate vicinity of a construction area, the Applicant will identify potential impacts, evaluate options, and develop a mitigation plan to address site-specific occurrences of the identified species. Measures that may be implemented depend on the nest's proximity to construction, the construction activities involved, the species involved, the date and stage of the breeding season, and other potential factors (e.g., hay mowing). Possible avoidance measures may include delaying construction until the young have fledged from the nest, continual monitoring during the initial construction period to ensure the birds are not impacted, or implementation of a non-disturbance buffer. The Applicant will coordinate any such activities with the USFWS and NYSDEC.

During nights of inclement weather and/or poor visibility, passerines may fly at lower altitudes and, for unknown reasons, be attracted to lights, especially steady (i.e., non-blinking) lights, such as those fixed to the tops of some turbines. This attraction is supported by data collected from tall structures (e.g., communication/television towers and buildings), which indicate that bird collisions increase during nights with poor visibility at structures with steady lights (Gehring et al. 2009). In order to reduce this potential, the Applicant will avoid using non-blinking lights where practicable. In addition, the Applicant will:

■ Provide the minimum allowable lighting in accordance with FAA recommendations; these lights would be flashing red aviation warning lighting and would operate only at night.

■ Avoid using floodlights at any structures on site or steady light sources near the turbines. Lighting at the substation would consist of pole-mounted flood lights directed downward at the substation infrastructure. Outdoor lights would be controlled by manual or motion detection switches at the substation and only be lit when maintenance personnel must work in the substation during nighttime or periods of low light.

■ Locate the collection lines underground. All overhead electric lines (collection or transmission lines) will be built to Avian Power Line Interaction Committee standards outlined in the Suggested Practices for Avian Safe Power lines.

Post-construction mortality monitoring will be implemented by the Applicant to evaluate the actual impacts of the Project on birds and bats as per the approach and objectives in Tier 4 of the USFWS Land-based Wind Energy Guidelines. This would help establish the bird and bat fatality rates for the Project and allow comparison to the predicted rates and significance of the impacts. Prior to operation of the Project, the Applicant will develop a study plan for post-construction monitoring through coordination with NYSDEC and the USFWS. It is anticipated

that monitoring will include fatality studies involving searching for bird and bat carcasses beneath turbines in the first full year following the start of operations. Results of the first year of post-construction fatality monitoring will be reviewed with NYSDEC and the USFWS following completion of the survey. If bird or bat impacts are significantly greater than anticipated then the Applicant will continue to coordinate with the agencies and through the adaptive management process in the BBCS and will identify additional monitoring and/or minimization measures to reduce impacts.

The Lead Agency determines that based on the above, and the information included in the DEIS, SDEIS, and FEIS, that the Applicant has mitigated the impacts on vegetation and wildlife to the maximum extent practicable.

Project Benefits

As set forth in more detail below the Project would have both direct and indirect positive economic effects on individual landowners participating in the Project and on the municipal entities within and near the Project Area. These effects would begin during construction and continue throughout the operating life of the Project. Short-term benefits would include additional employment and expenditures associated with construction of the Project. Long-term benefits from operating the Project would include significant additional revenue through fees to host communities, a payment in lieu of taxes (PILOT) agreement, purchases of goods and services, and lease payments to participating landowners.

Economy and Employment

The Lead Agency finds there are significant economic benefits from this Project. Based on the analysis reported in the results of the JEDI model described in Section 2.13.1 of the SDEIS (Table 2.13-5), construction of the Project is anticipated to generate up to 384 jobs. Of these, 62 to 64 are on-site construction and project development jobs, such as electrical workers, crane operators, carpenters, and other construction workers, up to 320 turbine manufacturing and supply chain jobs, and other jobs that result from induced demand through the spending of additional household income. The total impact of 384 new jobs would result in approximately $29,300,000 of earnings, assuming a 2016 construction start and wages consistent with statewide averages. Local employment would primarily benefit those in the construction trades, including equipment operators, truck drivers, laborers, and electricians. In addition to jobs and earnings, the construction of the Project is expected to generate $58,000,000 in economic output. Between workers' additional household income and industries' increased production, the impacts associated with the Project are likely to occur throughout many different sectors of the statewide economy.

Economic and employment contributions that will result from the Project will include annual wages, annual royalty payments, annual PILOT payments, annual community host payments, annual sales tax revenue, and annual fire district payments. In addition, the total revenue from the Project may be greater due to additional revenue in the form of neighbor agreements that were not included in the study.

Project operation and maintenance are estimated to generate six (6) full-time equivalent jobs with estimated average annual earnings of $500,000. These six (6) jobs comprise the Project's long-term employment impact, and will include a Site Manager, Wind Technicians, and

administrative personnel. Project wage rates are consistent with statewide averages. The operation and maintenance of the Project will also generate new jobs in other sectors of the economy. In total, while in operation, the Project is anticipated to generate demand for 10 jobs with annual earnings of approximately $1,300,000. Total increases in economic activity will likely increase by an estimated $3,500,000 as a result of Project operations and maintenance.

Taxes, PILOT Payments, Host Community Payments

During construction, the Project would not adversely impact municipal budgets and taxes. Temporary construction workers would not create significant demand for municipal or school district services or facilities. These workers would not generate significant revenue through payment of property taxes. Although, as discussed in Section 2.11 of the SDEIS, the Project could result in impacts to the local road system. Such impacts will not affect municipal highway budgets because the Applicant will pay for the cost of construction-related road repairs and/or improvements. In addition, the Project will not require, or create a demand for, significant municipal or school district services. Therefore, the Project should not negatively affect the municipal budgets of the jurisdictions within the Project Area.

The Project would, however, have a beneficial impact on municipal budgets since the taxing jurisdictions would receive additional revenue from the Project in the form of PILOT revenues and, in the case of the Towns, in the form of host/mitigation payments. The economic and fiscal impact analysis in Section 2.13.2 SDEIS provides a breakdown of the estimated revenues to local taxing jurisdictions from the PILOT and Community Host Agreements from the Project, as well as estimated revenues from sales taxes on the additional spending on local goods and services. The Applicant proposes to negotiate a PILOT agreement with the

Chautauqua County Industrial Development Authority (CCIDA), through which affected taxing jurisdictions would receive revenues.

The terms of these host community agreements have not been determined; however, such agreements often payments to host municipalities. PILOT payments have typically lasted for 10 to 20 years for wind include and other energy generation facilities, while the host community payments generally last for the life of the Project. After the PILOT agreement expires, the facilities would be taxed at their assessed values. These payments would more than offset any minor increases in community service costs that may be associated with long-term operation and maintenance of the Project (e.g., slightly increased road maintenance costs). Because the wind facility would generate a predictable source of additional revenue for all of the affected municipalities and school districts over at least the next 20 plus years, the Lead Agency finds the Project would positively impact municipal and school district revenues.

Population and Housing

The Project is not expected to have a long-term impact on housing and population in the Towns of Villenova or Hanover, but it may result in short-term impacts on local lodging. It is estimated that during the construction period there will be a temporary influx of construction workers to the area, and there will be additional non-local personnel delivering equipment or materials. Local contractors and labor will be utilized to the extent practicable to maximize the benefit to local the local community, and these individuals will commute to the Project Site. This will mitigate the temporary increase in local population and the need for additional local housing. Construction workers coming from outside the Project Area for the construction phase of the Project will likely reside in motels/ hotels in the vicinity of the Project Area. As noted in

the DEIS and SDEIS, this demand would be relatively modest, and could easily be accommodated by available housing in the affected Towns and surrounding communities. Beyond this relatively minor (and positive) short-term impact, the Lead Agency finds the Project will not have significant impact on population and housing.

Other Positive Benefits

The proposed Project will have significant, long-term beneficial effects on the use and conservation of energy resources. The identified effects on the use and conservation of energy resources discussed in detail in the DEIS and SDEIS are very similar for, and still relevant to, the revised project described in the FEIS. Energy will be expended during the construction phases of the Project, as well as for the maintenance of the wind turbines and support facilities on-site. However, the operating Project will possess a maximum of 100.5 MW of electricity generation capacity without consuming water or producing toxic air or water emissions on an ongoing basis. This greatly exceeds the energy required to construct and operate the Project. Assuming that the Project generates approximately 33% of its nameplate generating capacity, this is enough power to support between approximately 31,600 average homes in New York State (based on the New York and national averages). The Project will add to and diversify the state's sources of power generation, accommodate future growth in power demand through the use of a clean, renewable resource (wind), and over the long term may displace some of the state's older, less efficient, and less environmentally sustainable sources of power that emit toxic gases or effluent and/or the amount of energy imported into the state.

The public need and benefits from the Project are best understood in the context of the challenges posed by addressing climate change and energy issues facing New York State. The immediate benefits of utility scale renewable projects, such as the Ball Hill Wind Energy Project,

include economic development and jobs for the community, greater stability in customer bills, cleaner air, and compliance with State and Federal mandates. In the long run, as recognized by the newly issued State Energy Plan, benefits may be similar to those New York enjoys from the State's hydroelectricity facilities today, below-market electricity prices and a healthier environment.

The Project will help the State achieve its goals of reducing carbon emissions from the electricity generation industry that currently contribute to climate change. Global climate change has been recognized as one of the most important environmental challenges of our time. (See New York State Climate Action Plan Interim Report, November 2010; DEC's Commissioner Policy 49, issued October 22, 2010; DEC Guidance Assessing Energy Use and Greenhouse Gas Emissions in Environmental Impact Statements, issued July 15, 2009). There is scientific consensus that human activity is increasing the concentration of greenhouse gases (GHGs) in the atmosphere and that this, in turn, is leading to serious climate change. By its nature, climate change will continue to impact the environment and natural resources of the State of New York. (See DEC Guidance). Historically, New York State has been proactive in establishing goals to reduce GHG emissions, including Executive Order 24, which seeks to reduce GHG emissions by 80% by the year 2050 and also includes a goal to meet 50% of New York's electricity needs through improved energy efficiency and clean renewable energy by 2030. (See New York State Clean Energy Standard). The overwhelming majority of CO2 emissions in New York – estimated at approximately 250 million tons of CO2 equivalent per year- from result fossil fuel combustion. Overall fossil fuel combustion accounts for approximately 89% of total GHG emissions in New York State.

In an effort to encourage and incentivize the shift of New York State's energy sector from reliance on GHG emitting fuel sources to renewable energy sources, the State has established a Renewable Portfolio Standard (RPS) which initially called for an increase in renewable energy used in the State to 25% by the year 2013 (PSC, 2004)[11]. Following a comprehensive mid-course review and in an effort to further spur renewable energy project development, in an Order issued in January 2010, the New York Public Service Commission (PSC) expanded the RPS target from 25% to 30% and extended the target date from 2013 to 2015. The RPS is expected to reduce CO2 emissions by 50 million tons over the life of the projects (NYSERDA, 2015).

Unlike other states with an RPS, in New York, the New York State Energy Research and Development Authority ("NYSERDA") is responsible for obtaining the targets established in the RPS through competitive bidding and contract procurements. As of the date of the SDEIS, NYSERDA has conducted 10 Main Tier (larger, utility scale resources) solicitations in pursuit of the RPS target. From the nine completed solicitations, NYSERDA currently has contracts with electricity generators for 65 large-scale projects, including the Ball Hill Wind Energy Project Project (NYSERDA, 2015). These projects will add more than 2,035 MWs of new renewable capacity to the State's energy mix. However, as of December 2014, the State, through NYSERDA, has only procured enough renewable energy to meet 56% of the RPS targets. (NYSERDA, 2015).

The PSC has extended the original target of 30% by 2015 and has authorized NYSERDA to issue additional solicitations in 2015 and in the future if NYSERDA determined that market

[11] New York State Public Service Commission (PSC), 2004. *Order Regarding Retail Renewable Portfolio Standard.* Available at: http://www3.dps.ny.gov/pscweb/WebFileRoom.nsf/Web/85D8CCC6A42DB86F85256F1900533518/$File/301.03e0188.RPS.pdf?OpenElement. Accessed: August, 12, 2015.

conditions were appropriate. As part of this authorization, NYSERDA has proposed a comprehensive Clean Energy Fund (CEF) to ensure continuity of the State's clean energy programs after 2015. The CEF is one part of New York State's Reforming the Energy Vision ("REV") initiative, a 10-year $5 billion funding program to support clean energy market development and innovation and to secure renewable energy resources as part of New York's clean energy future. As stated by the PSC in the REV Order, "A significant increase in the penetration of renewable resources is essential to meeting our objectives, state goals and proposed federal requirements" (PSC, 2015)[12].

The Project will also help the State achieve the goals of the 2015 State Energy Plan. State Energy Law 6-104 requires the State Energy Planning Board to adopt a State Energy Plan. The latest iteration of the New York State Energy Plan was announced on June 25, 2015. The State Energy Plan contains a series of policy objectives and coordinates with the REV initiative and the objectives to increase the use of energy systems that enable to the State to significantly reduce GHG emissions while stabilizing energy costs. According to the Plan, the Plan is a "comprehensive strategy to create economic opportunities for communities and individual customers throughout New York." Through the State Energy Plan, New York has committed to achieving a 40% reduction in GHG emissions from 1990 levels by 2030 and reducing total carbon emissions 80% by 2050. In addition, the State Energy Plan calls for 50% of generation of electricity from renewable energy sources by 2030. According to the Plan, "Renewable Energy sources, such as wind, will play a vital role in reducing electricity price volatility and curbing

[12] PCS, 2015. *Order Adopting Regulatory Policy Framework and Implantation Plan*. Proceeding on the Motion of the Commission in Regard to Reforming the Energy Vision. Issued and Effective February 26, 2015. Available at: file:///C:/Users/JWojcikiewicz/Desktop/New%20folder%20(4)/%7B0B599D87-445B-4197-9815-24C27623A6A0%7D.pdf. Accessed: August 12, 2015.

carbon emissions" (NYSEPB, 2015)[13]. Ball Hill Wind Energy Project fully advances the objectives of the State Energy Plan and assists the State in achieving the 50% renewable energy generation objective.

Further, federal policy has recognized the need for increased supply of energy to the U.S., and for new renewable energy resources. The Project fulfills a need for the production and transmission of renewable energy, which would serve the public interest. The Project is consistent with Executive Order 13212 (dated May 18, 2001), which states, "The increased production and transmission of energy in a safe and environmentally sound manner is essential to the well-being of the American people. In general, it is the policy of this Administration that executive departments and agencies shall take appropriate actions, to the extent consistent with applicable law, to expedite projects that will increase the production, transmission, or conservation of energy."

On June 25, 2013, President Obama announced the Climate Action Plan, a national plan for tackling climate change. The three sections of the Plan focus on 1) steps to cut carbon pollution in the United States, including standards for both new and existing power plants, 2) actions to prepare the U.S. for the impacts of climate change, and 3) plans to lead international efforts to address global climate change. The Plan directs the Environmental Protection Agency ("EPA") to establish the first ever restrictions on carbon pollution from power plants, the largest source of unregulated CO2 emissions in the U.S. It also fast-tracks permitting for renewable energy projects on public lands; increases funding for clean energy technology and efficiency improvements; calls for improved efficiency standards for buildings and appliances, as well as heavy trucks; establishes the first-ever Federal Quadrennial Energy Review to encourage

[13] New York State Energy Planning Board (NYSEPB). 2015. *2015 New York State Energy Plan.* June 25, 2015.

strategic national energy planning; and outlines plans for cutting greenhouse gas emissions from hydrofluorocarbons and methane. The Plan states, "With abundant clean energy solutions available, and building on the leadership of states and local governments, we can make continued progress in reducing power plant pollution to improve public health and the environment while supplying the reliable, affordable power needed for economic growth. By doing so, we will continue to drive American leadership in clean energy technologies" (Executive Office of the President, 2013)[14].

In fulfillment of President Obama's commitment under the 2013 Climate Action Plan, EPA proposed "Clean Power Plan" regulations in 2014 establishing a framework for states to regulate carbon dioxide emissions from existing fossil fuel-fired electric generating units. (See 79 Federal Register 34830; June 18, 2014). Once the guidelines are issued, states must develop plans that explain how they will achieve those guidelines. Nationwide, the proposal calls for reducing CO2 from the power sector by approximately 30% from 2005 emission levels by 2030. The proposal establishes emission rate-based CO2 goals for each state as well as guidelines for the development, submission and implementation of state plans to achieve those goals. The proposal relies on four basic building blocks: (1) reducing the carbon intensity of generation at individual units through heat rate improvements; (2) substituting less carbon-intensive generating units (e.g., replacing coal with natural gas); (3) increasing reliance on low or zero-carbon generation sources such as solar and wind; and (4) increasing reliance on demand-side energy efficiency programs. Each state must then develop a plan that explains how they intend to achieve their state-specific CO2 emission rate goal that includes enforceable CO2 emission limits applicable to each affected unit. EPA plans to finalize the rule by summer 2015; state

[14] Executive Office of the President. 2013. *The President's Climate Action Plan*. The White House, Washington, DC. June 2013.

plans would be due by June 30, 2016. States would be expected to begin making CO2 emission reductions by 2020, with full compliance to be achieved by 2030.

In support of the President's efforts to diversify the U.S.'s clean energy mix, the U.S. Department of Energy (2015a)[15] recently issued its "Wind Vision" which concluded that the benefits of wind energy are substantial and include:

- **Wind energy is available nationwide.** The Wind Vision Report shows that wind can be a viable source of renewable electricity in all 50 states by 2050.
- **Wind supports a strong domestic supply chain.** Wind has the potential to support over 600,000 jobs in manufacturing, installation, maintenance, and supporting services by 2050.
- **Wind is affordable.** As wind generation agreements typically provide 20 year fixed pricing, the electric utility sector is anticipated to be less sensitive to volatility in natural gas and coal fuel prices with more wind. By reducing national vulnerability to price spikes and supply disruptions with long-term pricing, wind is anticipated to save consumers $280 billion by 2050.
- **Wind reduces air pollution emissions.** Wind energy can help avoid the emission of over 250,000 metric tons of air pollutants, which include sulfur dioxide, nitric oxide, nitrogen dioxide, and particulate matter, as well as 12.3 gigatonnes of greenhouse gases by 2050.

[15] USDOE. 2015a. *Wind Vision*: *A New Era for Wind Power in the United States*. DOE/GO-102015-4557. April 2015.

- **Wind energy preserves water resources.** By 2050, wind energy can save 260 billion gallons of water—the equivalent to roughly 400,000 Olympic-size swimming pools—that would have been used by the electric power sector.
- **Wind deployment increases community revenues.** Local communities will be able to collect additional tax revenue from land lease payments and property taxes, reaching $3.2 billion annually by 2050.

Progress in the State RPS program through December 31, 2014 has yielded, and is expected to continue to yield, significant economic benefits to New York State and local communities. Economic benefits accrue from the planning, development, construction, and operation of renewable energy facilities. The Main Tier (large or utility scale) of the RPS is expected to generate $2.6 billion of direct economic investment in New York, at a benefit-cost ratio of $5-$1. This analysis also determined that for every 1 MWh of renewable energy generated under the RPS, approximately $27 is directly invested in New York State by RPS facilities (NYSERDA, 2015). The RPS has added approximately 650 jobs annually to New York's workforce. In addition, every dollar invested in New York energy resources remains in New York State, helping to reduce the dollars New Yorkers are currently sending out of state for economy-wide energy costs, estimated to be nearly $39 billion in 2012.

All of these economic and environmental benefits have occurred in New York with total RPS program costs expected to comprise less than 0.2% of total retail electricity expenditures, and perhaps more importantly, a cumulative net rate impact of essentially zero due to wholesale electricity price reductions resulting from the RPS program.

In addition to helping achieve the State and Federal goals described above, implementation of the proposed action will result in additional environmental, and human health benefits, each of which are briefly summarized below.

Environmental Benefits

- Within the New York electricity market, wind-generated electricity typically displaces the use of fossil fuels in conventional power plants, producing a reduction in the emission of key air pollutants; sulfur dioxide and nitrogen oxides (acid rain precursors); mercury; and carbon dioxide (a contributor to global climate change). NYSERDA found that if wind energy supplied 10% (3,300 MW) of the state's peak electricity demand, 65% of the energy it displaced would come from natural gas, 15% from coal, and 10% from electricity imports. This equates to an annual displacement of 6,400 tons of nitrogen oxides and 12,000 tons of sulfur dioxide (GE Energy, 2005)[16].
- Energy efficiencies and renewable generation together will reduce New York's greenhouse gas emissions, helping to achieve the State's CO2 reduction goals (NYSEPB, 2009, 2014).
- The well-being of some ecosystems in the northeastern U.S., including New York State, is at serious risk as a result of the negative environmental externalities associated with fossil fuel based power plant emissions. Research conducted by scientists from the Hubbard Brook Research Foundation concluded that "hotspots" throughout the Northeastern U.S. have levels of mercury deposition "10 to 20 times higher than pre-

[16] GE Energy. 2005. *The Effects of Integrating Wind Power on Transmission System Planning, Reliability, and Operations. Report on Phase 2: System Performances Evaluation*. Prepared for NYSERDA. March 4, 2005.

industrial conditions, and 4 to 5 times higher than current EPA estimates". This research highlights "the connection between airborne mercury emissions from United States sources and the existence of highly contaminated biological hotspots…Emission reductions from high-emitting sources near biological hotspots in the United States will yield beneficial improvements in both mercury deposition and mercury levels in fish and wildlife" (Driscoll et al., 2007)[17].

- The Project will not require to use of water or water resources to generate electricity. Protection/conservation of surface and groundwater resources is a significant environmental concern and the development of electricity generation that is not reliant on water resources is extraordinarily important.

Human Health Benefits

- Airborne mercury, released primarily by coal-fired power plants, has contaminated numerous rivers, lakes, and streams across the State. While eating fish from State water bodies is not prohibited, the New York State Department of Health (NYSDOH) has issued advisories pertaining to fish consumption from certain waterbodies. Pregnant women, women who may become pregnant, or children under the age of 15 are advised not to consume any fish, at any time, from any of the listed waterbodies (NYSDOH, 2014[18]).

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[17] Driscoll, C.T., D. Evers, K.F. Lambert, N. Kamman, T. Holsen, Y-J. Han, C. Chen, W. Goodale, T. Butler, T. Clair, and R. Munson. 2007. *Mercury Matters: Linking Mercury Science with Public Policy in the Northeastern United States*. Hubbard Brook Research Foundation. Science Links Publication, Vol. 1, no. 3.

[18] New York State Department of Health (NYSDOH). 2014. *Fish: Health Advice on Eating Fish You Catch*. Available at: http://www.health.ny.gov/environmental/outdoors/fish/health_advisories/ (Last updated May 2014; Accessed May 28, 2015).

- Sulfur dioxide and nitrogen oxide emissions react with volatile organic compounds in the atmosphere (i.e., gasoline vapors or solvents) and produce compounds that can result in severe lung damage, asthma, and emphysema (Wooley, 2000)[19].
- Researchers at the Harvard School of Public Health estimated that air pollution from conventional energy sources across the U.S. kills between 50,000 and 70,000 Americans every year (Levy et al., 2000)[20].
- Research undertaken by the American Cancer Society, Harvard School of Public Health, and the Environmental Protection Agency shows that residents in every single state across the Nation were at risk of premature death from air pollution (Cooper & Sovacool, 2007)[21].

Sound

To evaluate potential sound impacts from the turbines proposed for the Project as set forth in the FEIS, Epsilon Associates, Inc. (Epsilon) prepared a *Sound Level Assessment Report* (Epsilon Associates, Inc., 2016). This document is included as Appendix J of the FEIS. The two primary phases of the study consisted of 1) ambient sound level surveys during both summer (foliate) and winter (defoliate) conditions to characterize the existing acoustical environment and 2) a computer modeling analysis of future Project operation sound levels, which were compared to the noise thresholds set forth in the local ordinance and NYSDEC guidelines. For the purpose

[19] Wooley, D. 2000. *A Guide to the Clean Air Act for the Renewable Energy Community.* Issue Brief No. 15, Renewable Energy Policy Project. February 2000.

[20] Levy, J., J. Spengler, D. Hlinka, and D. Sullivan. 2000. *Estimated Public Health Impacts of Criteria Pollutant Air Emissions from Nine Fossil-Fueled Power Plants in Illinois.* Harvard School of Public Health.

[21] Cooper, C. and B. Sovacool. 2007. *Renewing America: The Case for Federal Leadership on a National Renewable Portfolio Standard (RPS).* Network for New Energy Choices. Report No. 01-07. June 2007.

of presenting a conservative analysis, Epsilon Associates evaluated 29 potential turbine site locations. In addition, all of the turbines include in the model were assumed to be Vestas 3.45 MW class turbines, which according to the manufacturer specifications, has sound power levels slightly higher (between approximately 1 and 5 dBA, depending on wind speed) than the wind turbines used in the noise analyses presented in the DEIS and SEIS. Noise contour maps of the Project Site visually representing the results of the modeling were completed to determine whether the SEIS2 Project layout will operate in compliance with the applicable state and local guidelines and standards.

In March 2008, Hessler Associates conducted baseline noise surveys to determine existing ambient environmental sound levels within the vicinity of the Project. These baseline surveys were conducted as part of the original sound studies for the Ball Hill Wind Energy Project. Land use and vegetation within the Project site has not changed since the ambient sound data was collected in 2008. Therefore this data remains valid and it was not necessary to conduct additional ambient sound data surveys. The sound monitoring data was then used to compare existing ambient sound levels to future operational levels and to assess compliance with applicable criteria. For a more detailed discussion of the methodology used by Hessler Associates to assess and compare ambient sound levels to future operational levels, the reader is referred to Section 2.15 of the DEIS. The full results of the 2015 Sound Study is presented in Appendix O of the SDEIS. A summary of study methodology and results is presented below.

There are no universally accepted methods to measure the subjective effects of noise, or to measure the corresponding reactions of human annoyance and dissatisfaction. However, it is a well-established fact that for a new broadband, atonal noise source with a frequency spectrum similar to that of the background, a cumulative increase in the total sound level of about 5 or 6

dBA is required before the new sound begins to be clearly perceptible or noticeable to most people. Cumulative increases of between 3 and 5 dBA are generally regarded as negligible or hardly audible.

The Villenova and Hanover wind energy ordinances (Villenova Zoning Law § 690 and Hanover Zoning Law Article XVI) require that noise from any wind energy conversion system be limited to 50 dBA measured in terms of the $L_{10}$ statistical level at "any residence existing at the time of completing the SEQRA review of the application". In addition, the law provides that if the ambient levels exceed 48 dBA, the standard shall be ambient dBA plus 5dBA. In the event the ambient noise level (exclusive of the development in question) exceeds the applicable standard given above, the applicable standard is adjusted so as to equal the ambient noise level. As noted in the FEIS, pre-existing sound levels already randomly exceed the 50 dBA limit approximately 10% of the time during the summer irrespective of the wind conditions. These results indicate that, assuming no tonality, the permissible project sound level will be higher than the 50 dBA (5 dBA above the 50 dBA + background level) at times.

The NYSDEC Program Policy Memorandum, "Assessing and Mitigating Noise Impacts," suggests that new noise level increases that exceed 6 dBA above ambient may result in complaints in sensitive locations or may require additional analysis. The NYSDEC thresholds indicate that cumulative increases in the total ambient sound level of 6 dBA or less are unlikely to constitute an adverse community impact. As discussed in Appendix J of the FEIS, from a practical standpoint, because decibels add logarithmically, this threshold means that noise from the project is likely to be considered largely acceptable so long as it does not exceed the existing background level by more than 5 dBA. The NYSDEC impact thresholds for each season based on a 6 dBA cumulative increase in the overall sound level are provided in the FEIS, Appendix J.

Noise from construction activities associated with the Project may temporarily constitute a moderate, unavoidable impact at some homes in the vicinity of the Project. Assessing and quantifying these impacts can be difficult due to the often highly variable nature of construction activities. In general, the maximum potential noise impact at any single residence might be analogous to a few days to a few weeks of repair or repaving work occurring on a nearby road or to the sound of machinery operating on a nearby farm. More commonly (at houses that are some distance away), the sounds from Project construction are likely to be faintly perceived as the far off noise of diesel power earthmoving equipment characterized by engine revving, back up alarms, gravel dumping and the clanking of metal tracks.

Depending on the particular activity, sounds from construction equipment are likely to be significant at distances of up to 5500 feet – which means that construction will occur close enough to many homes within the project area that its noise will be clearly audible. Sound levels ranging from 54 to 61 dBA might temporarily occur at the closest homes to turbine locations over several weeks due to construction activities and somewhat higher levels might be temporarily experienced at homes that are very close to road construction or trenching operations. Such levels would not generally be considered acceptable on a permanent basis or outside of normal daytime working hours (when all project construction is planned), but as a temporary, daytime occurrence construction noise of this magnitude may go unnoticed by many in the project area. For others, project construction noise may be an unavoidable temporary impact.

Noise from the very small amount of daily vehicular traffic to and from the current site of construction should be negligible in magnitude relative to normal traffic levels (even given the rural nature of the roads in the project area) and temporary in duration at any given location.

While no blasting is planned during construction, if blasting is required, the level of noise generated will be dependent upon technical specifications (size and depth of drilled holes, type and amount of explosive), atmospheric conditions (wind direction, temperature, humidity), and geologic conditions (soil type, bedrock type) (APAO website). In addition, any blasting-related noise will be temporary and infrequent.

Operational noise levels were determined using the design sound power level spectrum for the Vestas 3.45 MW class turbine, sound level contour plots were calculated using the Cadna/A®, noise calculating software developed by DataKustik Corporation, 2015. The site plan used in the analysis includes 29 turbines. This series of plots generated by the modeling analysis essentially demonstrates that the Project is not expected to generate sound levels above the NYSDEC 6 dBA cumulative impact threshold at residences in the project area during "typical" conditions. Moreover, this is fully compliant with the Towns' noise standards.

Based on first-hand observations and detailed noise modeling analyses of similar substations for other projects, it can be safely said that the sound emissions from the relatively small substations and transformers connected with wind projects of this size are virtually negligible. Highly, if not grossly, conservative modeling analyses for comparable substations typically put the total sound level at a very low level of approximately 35 dBA at 400 ft. Such a sound level is similar to the natural background sound level typically measured in rural areas. Station sound emissions should be insignificant, if they are audible at all from the closest residences. Consequently, no adverse noise impact is anticipated. The 2016 Epsilon study also evaluated Low Frequency Sound, which are generally sound levels in the 32, 63 and 125 Hz octave-bands. Results indicated that in the ten structures most likely to have the greatest potential

impact, predicted sound levels will be well below the relevant criteria indicating that no low frequency sound impacts are expected.

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

- Implementing best management practices for sound abatement during construction, including use of appropriate mufflers and limiting hours of construction.
- Notifying landowners of certain construction sound impacts in advance (e.g., if blasting becomes necessary).
- Implementing a complaint resolution procedure to assure that any complaints regarding construction sound are adequately investigated and resolved (see Appendix L of the FEIS for additional information).

With these measures in place, construction noise from the Project will be mitigated to the maximum extent practicable.

While the possibility of adverse reactions from some residents in the Project area cannot be ruled out, actual Project sound levels are expected to be lower than those predicted by the models for the majority of the time. Sound modeling indicates overall increases of less than 6 dBA at the majority of receptors in the study area during the majority of the year. Furthermore, the modeling analysis indicated that full compliance with both Towns' local laws relating to wind energy facilities is expected. Therefore, it is not anticipated that sound will be a potential significant adverse impact. Despite these findings, the Applicant understands that turbine noise will be audible and can be a source of annoyance to certain receptors, under certain conditions. Consequently, the Applicant has committed to the following, as necessary:

- Implementing the complaint resolution program (set forth in Appendix L of the FEIS) whereby neighboring residents (or others) can contact the Applicant with their concerns. Such complains will be logged and investigated in order to resolve the identified issue.
- Complete sound testing after commissioning to ensure wind turbines are meeting the manufacturer's noise specifications.

Also, the current layout, with six (6) fewer turbines, differs from the layout that was evaluated in the noise assessment presented in the SDEIS. Overall noise of the Project will be reduced as a result of this Project change. Based on the current Project design, the analysis in the SDEIS and FEIS, and the mitigation measures discussed above, the Lead Agency determines the Project will comply with applicable regulatory standards and that noise from the Project is not anticipated to result in any significant adverse impacts. Any adverse impact associated will be mitigated to the maximum extent practicable.

Visual Impacts

To assess the visual impacts of the Project three visual impact assessments were performed. The DEIS included an initial Visual Resource Assessment (VRA, Appendix K of 2008 DEIS) and the SDEIS included a Supplemental Visual Resource Assessment (SVRA, Appendix M of the SDEIS). To evaluate the visual impact of the FEIS Project layout relative to the evaluation of the Project's visual impacts as presented in the DEIS and SDEIS, a Final Visual Resource Assessment (FVRA) and Shadow Flicker Report for the FEIS Project layout was prepared and is appended to the FEIS (Appendix I). Changes in the FEIS Project layout that affect potential visual impacts include the reduced number of proposed turbines from 36 to 29, the increase in turbine height, the elimination of turbines and overhead collection lines in the

southeastern portion of the Project Site, and the reduced number of proposed turbines to be lit with FAA warning lights.

The study area evaluated in the FVRA (the FVRA Study Area) is defined as the area within 5 miles of proposed wind turbines in the FEIS Project Layout and includes 138.3 square miles (SEIS2 [Figures 13 and 14]). Visual resources within 5 miles of the Project were identified including any historical structures, parks, scenic views and landmarks. The visual resources were then analyzed to identify the most prominent views of all the Project from these resources and from the general area around each site. As set forth in more detail below, the Project's general impact on the physiographic/visual setting of the study area is generally as described in the SDEIS. However, due to changes in the FEIS Project Layout, specifically including the reduced number of proposed turbines, the Project's potential visual effect on some portions of the study area have been reduced relative to the evaluations presented in the DEIS and SEIS. The current Project layout reduces the number of turbines to 29.

For the FVRA1, two five-mile radius topographic viewsheds were mapped, one to illustrate "worst case" daytime visibility (based on a maximum blade tip height of 492 feet, or 150 meters, above existing grade) and the other to illustrate potential visibility of turbine lights (based on the FAA warning light height of 328 feet, or 100 meters, above existing grade and the anticipated lighting plan, which proposed that eight turbines would be equipped with FAA warning lights). The topographic viewshed maps define the maximum area from which any portion of any turbine within the completed Project could potentially be seen within the study area during both daytime and nighttime hours. Because the screening provided by vegetation and structures is not considered in this analysis, the topographic viewshed represents a "worst case" assessment of potential Project visibility.

To supplement the topographic viewshed analysis, a vegetation viewshed was also prepared to illustrate the potential screening provided by forest vegetation. A base vegetation layer was created using the 2011 USGS National Land Cover Dataset (NLCD) to identify the mapped location of forestland (including the Deciduous Forest, Evergreen Forest, Mixed Forest, and Woody Wetland NLCD classifications). As with the topographic viewshed analysis, two vegetation viewsheds were mapped, one to illustrate "worst case" daytime visibility (based on a maximum blade tip height of 492' or 150 meters above existing grade) and the other to illustrate potential visibility of turbine lights (based on an FAA warning light height of 328' or 100 meters above existing grade and the anticipated lighting plan, which proposed that up to 22 turbines would be equipped with FAA warning lights). Considering the scale of the proposed Project and because its turbines will, at times, be visible at distances greater than 5 miles, Saratoga Associates completed a vegetated viewshed map to 7.5 miles around the outermost turbines (Appendix A to FVRA). Because it accounts for the screening provided by mapped forest stands, the vegetation viewshed is a much more accurate representation of potential Project visibility. However, it is noted 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 Project visibility.

The results of the revised viewshed analysis are depicted in the FEIS (Appendix I). With respect to viewshed results, the most influential differences between the SVRA and FVRA turbine layouts include a decrease in the number of turbines proposed from 36 to 29 turbines; the associated decrease in the size of the 5-mile visual study area, and the maximum blade tip height

of 492 feet. In general, the FVRA blade tip topographic viewshed shows a very similar pattern and extent of potential visibility to the viewshed maps presented in the SVRA.

Once the screening effects of mapped forest vegetation are factored into the analysis, Project visibility is significantly reduced. Approximately 67.7 percent of the study area will likely have no visibility of any turbines and 32.2% of the study area will likely have one or more of the proposed turbines be visible where the turbines are fully screened from view.

The general discussion regarding impact on visually sensitive resources presented in Section 2.7 of the SDEIS remains accurate. As noted in that section, based on the viewshed analysis, the highpoint of one or more of the proposed turbines will be visible from approximately 44 of the 56 inventoried visual resources, compared with 43 in the SDEIS. The remaining resources would likely be screened from the proposed Project by intervening landform or vegetation/structures and are eliminated from further study. Tables 2.7-1 and Figures 1 and 2 in the SVRA (SDEIS, Appendix M) and Table 5 in FVRA (FEIS Appendix J) provide a visibility and impact summary for each of the resources. However, it is noted the FEIS Project layout will result in minor changes in anticipated visibility from some visually sensitive resources. Shifts in proposed turbine locations could cause an increase or decrease visibility from individual sites when compared with the SDEIS Project Layout, depending on their locational relationship. Additionally, the elimination of some turbines from the layout will reduce visibility from some sites, while the increase in overall turbine height will increase Project visibility from some areas. The inventory of visually sensitive resources and associated mapping provided in Appendix J of the FEIS includes updated information on the anticipated viewshed visibility from each inventoried visually sensitive resource. While most changes that have occurred are subtle, the revised viewshed results indicate that a few resources

that were formerly anticipated to be fully screened from view now may have limited Project visibility.

Affected viewers within the study area include local residents, commuters, travelers on regional highways, and tourists. The effect on potential views will be highly variable for each of these viewer groups, and depends on factors such as distance, the number of turbines visible, whether the viewer is stationary or moving, duration of view, and attitudes of the viewer towards wind turbines and/or expectations for the rural landscape. The DEIS and SDEIS included visual simulations from 14 viewpoints and based on comments and feedback received from the Lead Agency. In total, visual simulations from 14 viewpoints were prepared for inclusion in the FVRA (a detailed description of the process used to prepare the photo simulations is included in the FVRA, which is included as FEIS, Appendix J) as well as additional views to capture the transmission line and other visually sensitive resources (see FEIS, Appendix J, Figures C-3 and C-4).

A comparison of the visual simulations for the SDEIS and FEIS Project layouts indicates that the changes in the Project layout do not result in a significant change for the overall visual impact of the Project. The differences in the proposed view from these viewpoints are relatively minimal, and generally reflect a minor change in the number and/or arrangement of turbines that will be visible. Relative to the SDEIS Project layout that is depicted in the SVRA simulations, the potential visual effects of the FEIS Project layout are generally consistent with the visual effects of the SDEIS Project layout.

The potential visual effect of the proposed transmission line is depicted in the FVRA simulations for Viewpoints C-3 and C-4. As discussed in the FVRA, although the transmission structures will be tall steel poles (approximately 70 feet), the proposed transmission line will not

significantly affect perceptions of the existing agricultural/rural land use. In addition, the Project also includes construction of substation in the Town of Hanover. The Applicant has also proposed a switchyard/substation in the town of Hanover to the north at the junction of the transmission line and the existing 230 kV transmission line. The substation is considered to have a minimal visual effect relative to the wind turbines. In addition, the engineering design for the substation has not been completed. However, to provide an evaluation of the potential visual effect of the substation, photographs of existing substation facilities built for other wind energy projects in New York were included as FVRA, Figure I-2.

The current FAA lighting plan (which is the same plan used for the SDEIS Project layout) proposes use of 22 warning lights. As a result, most areas with nighttime visibility will have a view of similar numbers of turbine lights when compared to the SDEIS layout. Based upon nighttime photos/observations of existing wind power projects, the synchronized, red flashing lights on the turbines could result in a nighttime visual impact on certain viewers. The actual significance of this impact from a given viewpoint will depend on how many turbines are visible, what other sources of lighting are present in the view, the extent of screening provided by structures and trees, and nighttime viewer activity/sensitivity.

In general, turbines will be visible from many locations within the surrounding area, particularly in agricultural areas with wide open fields, but will also be fully or partially screened from viewers in many locations (e.g., in forested areas, and developed settings). Due to the inherent requirements for wind energy projects (very tall structures located in areas of high elevation), visual impacts cannot be avoided and mitigation options are limited. In accordance

with NYSDEC *Program Policy: Assessing and Mitigating Visual Impacts* (NYSDEC, 2000)[22], proposed mitigation measures for the potential visual effects of the Project are described in Section 2.7 of the SDEIS. In addition to the discussion presented in the SDEIS, considerations relevant to the mitigation measures included in the NYSDEC Program Policy include:

A. Professional Design. All turbines will have uniform design, speed, color, height and rotor diameter. Turbines will be mounted on conical steel towers that include no exterior ladders or catwalks. The placement of any advertising devices (including commercial advertising, conspicuous lettering, or logos identifying the Project owner or turbine manufacturer) on the turbines will be prohibited.

B. Screening. Due do the height of individual turbines and the geographic extent of the proposed Project, screening of individual turbines with earthen berms, fences, or planted vegetation will generally not be effective in reducing Project visibility or visual impact. However, if adequate natural screening is lacking at the proposed substation site, a planting plan should be developed and implemented to minimize the visibility of this facility.

C. Relocation. Because of the limited number of suitable locations for turbines within the Project Site, and the variety of viewpoints from which the Project can be seen, turbine relocation will generally not significantly alter visual impact. Moving individual turbines to less windy sites would not necessarily reduce impacts but could affect the productivity and viability of the Project. Where visible from sensitive resources within the study area, generally more than half of the proposed turbines will be visible, and relocation of individual machines would have little effect on overall visual impact. Additionally,

[22] New York State Department of Environmental Conservation. 2000. Program Policy: Assessing and Mitigating Visual Impacts. Available at: http://www.dec.ny.gov/docs/permits_ej_operations_pdf/visual2000.pdf.

throughout the study area, views of the Project are highly variable and include different turbines at different vantage points. Therefore, turbine relocation would generally not be effective in mitigating visual impacts. Additionally, the Project layout has been designed to accommodate set-backs from roads and residences. Options for relocation of individual Project components are constrained by compliance with these various setbacks.

D. Camouflage. The white/off white color of wind turbines (as mandated by the FAA) generally minimizes contrast with the sky under most conditions. This is demonstrated by simulations prepared under a variety of sky conditions. Other components of the Project will be designed to minimize contrast with the existing agricultural character in the Project area. For instance, new road construction will be minimized by utilizing existing farm lanes wherever possible and electrical collection lines will be buried.

E. Low Profile. A significant reduction in turbine height is not possible without significantly decreasing power generation. Less generating capacity (resulting from smaller turbines) could threaten the Project's economic feasibility. To avoid generation losses, use of smaller turbines would require that additional turbines be constructed. Several studies have concluded that people tend to prefer fewer larger turbines to a greater number of smaller ones (Thayer and Freeman, 1987[23]; van de Wardt and Staats,

[23] Thayer, R.L. and C.M. Freeman. 1987. *Altamont: Public Perception of a Wind Energy Landscape*. Landscape and Urban Planning. Vol. 14, pp. 379-398.

1988[24]). There will be minimal visual impact from the electrical collection system because the majority of the collection system will be installed underground.

F. Downsizing. The FEIS Project layout reduces the number of proposed turbines from 36 to 29 without compromising Project benefits or energy generation. Given the current technologies available, further reduction in the proposed number of turbines would compromise the Project's energy generation potential and associated benefits.

G. Alternate Technologies. Alternate technologies for power generation, such as gas-fired generation, would have different, and perhaps more significant, visual impacts than wind power. Viable alternative wind power technologies (e.g., vertical axis turbines), that could reduce visual impacts, do not currently exist in a form that could be used on a commercial/utility-scale project.

H. Non-specular Materials. Non-reflective paints and finishes will be used on the wind turbines and other Project facilities to minimize reflected glare.

I. Lighting. Turbine lighting will be kept to the minimum allowable by the FAA. It is anticipated that 22 of the proposed turbines will be lit. Medium intensity red strobes will be used at night, rather than white strobes or steady burning red lights. Fixtures with a narrow beam path will be considered as a means of minimizing the visibility/intensity of FAA warning lights at ground-level vantage points. Lighting at the substation will be kept to a minimum, and turned on only as needed. Full cut-off fixtures will be utilized to the extent practicable (consistent with safety and security requirements).

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[24] Van de Wardt, J.W. and H. Staats. 1988. *Landscapes with wind turbines: environmental psychological research on the consequences of wind energy on scenic beauty*. Research Center ROV Leiden University.

J. Maintenance. The turbines and turbine sites will be maintained to ensure that they are clean, attractive, and operating efficiently. Research and anecdotal reports indicate that viewers find wind turbines more appealing when the rotors are turning (Pasqualetti et al., 2002[25]; Stanton, 1996[26]). In addition, the Project developer will establish a decommissioning fund to ensure that if the Project goes out of service and is not repowered/redeveloped, all visible above-ground components will be removed.

K. Offsets. Correction of an existing aesthetic problem within the viewshed is a viable mitigation strategy for wind power projects that result in significant adverse visual impact. In addition, as noted previously in Section 1.1.14 of the FEIS, the Applicant has undertaken consultation with the Lead Agency and the SHPO regarding the Project's potential visual effects on historic resources. This will likely result in the Applicant entering into an agreement with the Towns of Villenova and Hanover to provide funds for historic preservation projects that will mitigate the Project's visual effect on historic resources.

The Lead Agency finds, inclusion of the mitigation measures described above helps to minimize the visual impacts of the Project. By reducing the proposed number of turbines and selecting a more efficient and more productive turbine model, the current layout balances the potential energy generation and associated benefits of the Project while mitigating visual impacts to the maximum extent practicable.

Construction of the proposed wind turbines will require use of large mobile cranes and other large construction vehicles. Turbine components will be delivered in sections via large

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[25] Pasqualetti, M. J., Gipe, P. and Righter, R. W. 2002. A landscape of Power. Section in *Wind Power in View: Energy Landscapes in Crowded World*. San Diego Academic Press. San Diego, California,

[26] Stanton, C. 1996. The Landscape Impact and Visual Design of Windfarms. Landscape Publication No. LP/9603. School of Landscape Architecture, Heriot-Watt University, Edinburgh.

semi-trucks. The construction period for each turbine is expected to be quite short; therefore, construction related visual impacts will be brief and are not expected to result in adverse prolonged visual impact to area residents or visitors. Because construction- related impacts to visual resources are anticipated to be minor and temporary, no mitigation is required. The Applicant will ensure work areas are confined to the Project Site and are well maintained.

Shadow Flicker

Shadow flicker refers to the moving shadows that an operating wind turbine casts over an identified receptor at times of the day when the turbine rotor is between the sun and a receptor's position. The shadow-flicker analysis conducted for the proposed Project (FEIS, Section 1.4.7 and Appendix J, Section 3.6). The shadow flicker analysis evaluated the potential impact of 29 Vestas 3.45 MW class turbines, each with a hub height of 87 meters and a total height of 492'.

The analysis presented in the FEIS is a conservative projection of the shadow-flicker effects at ground level. The results of this analysis indicate that 22 receptors are predicted to experience shadow flicker of more than 30-hours per year. Although shadow flicker at these 22 receptors exceeds the recognized, 30-hour per year threshold, these calculations do not take into account the actual location and orientation of windows, or the screening effects associated with existing, site-specific conditions and obstacles such as vegetation and/or buildings. Further, this analysis assumes turbine rotors are continuously in motion during daylight hours and clear sunny conditions. Given these assumptions, the predicted shadow-flicker frequency represents a conservative scenario, and almost certainly overstates the actual frequency of shadow flicker that would be experienced at any given receptor location. In addition, many of the modeled shadow flicker hours are expected to be low intensity because they would occur during the early morning

or late afternoon hours when the sun is low in the sky. As the sun sinks below the horizon, more of its light is scattered by the atmosphere, which has the effect of dampening its brightness and therefore reducing its ability to cast dark shadows (EMD, 2013[27]).

The shadow flicker analysis is considered to present a worst case scenario, particularly considering the Applicant will only construct and operate 29 wind turbines instead of the 36 potential turbine locations included in the SDEIS analysis. Therefore, it is anticipated that the number of hours per year that some receptors will experience shadow flicker will be less than modeled. In general, due to the low overall number of potentially affected receptors, the Project is not anticipated to result in significant shadow flicker impacts. The analysis indicates that 22 receptors are predicted to receive more than 30 hours per year of shadow flicker. In the instances where receptors have partial or limited visibility of the Project, the shadow flicker received by that receptor would be far less than predicted by the model. Due to the low overall number of potentially affected receptors, the Project is not anticipated to result in significant shadow flicker impacts.

Cumulative Impacts

In accordance with 6 NYCRR § 617.9(b)(5)(iii)(a), SEQRA requires a discussion of cumulative impacts where such impacts are "applicable and significant." Cumulative impacts are two or more individual environmental effects which, when taken together, are significant or that compound or increase other environmental effects. The individual effects may result from a single project or from separate projects. Potential cumulative impacts resulting from individual

[27] EMD. 2013. *WindPRO 2.8 User Manual*. Available at: http://help.emd.dk/knowledgebase/ (Accessed May 2015).

effects of the Project and their interaction with other effects of the Project, have been discussed individually in the prior sections of this Findings Statement. This section addresses the potential cumulative impacts that may arise from interactions between the impacts of the Project and the impacts of other projects.

Across New York State, numerous wind-powered generating facilities have been constructed and are operational, while others are in the project planning and development phases. The closest operational Projects are First Wind Steel Winds and Noble Bliss Wind Park located approximately 25 miles and 55 miles from the Project respectively. These operating projects are too distant to pose the potential for significant adverse cumulative impacts. Cumulative Impacts of the Ball Hill Wind Energy project, the Arkwright Summit Wind Farm and the Cassadaga Wind Project were extensively studied in Section 4 of the SDEIS and Section 1.4.16 of the FEIS (which considered the changes to the Cassadaga Wind Project subsequent to the acceptance of the SDEIS).

The Arkwright Summit Wind Farm is located in the Towns of Arkwright, which are adjacent to the Town of Villenova. The closet turbines between the Arkwright Summit project and the Ball Hill project is 1.4 miles. Additionally, the Cassadaga Wind Project is located south and southwest the Project in Chautauqua County. The Cassadaga Wind Project is being reviewed under Article 10 of the Public Service Law, and is being developed by Cassadaga Wind LLC, a subsidiary of EverPower Wind Holdings, Inc. (EverPower). Neither EverPower nor Cassadaga Wind LLC are affiliated with Ball Hill Wind Energy LLC or RES Americas, Inc. According to public filings, the Cassadaga Wind Farm is located south of the Arkwright Summit Wind Farm, primarily within the Towns of Cherry Creek and Charlotte, and a small portion of Arkwright in Chautauqua County. The Project proposes to interconnect with the New York State electric grid

in the Town of Stockton. This location is approximately 6 miles south of the proposed Project generator lead and substation in the Town of Pomfret. Therefore, there will be no cumulative effects related to the Projects' proposed interconnection/transmission facilities.

Up to 58 wind turbines are now being proposed for the Cassadaga Wind Project, together with the associated collection lines (below grade and overhead), access roads, meteorological towers, operation and maintenance (O&M) building, a collection substation, a 5.5-mile long 115 kV electrical transmission line. The closest turbine in the Cassadaga Wind project is located approximately 12.2 miles from the edge of the Project Area for the Ball Hill Wind Energy Project., which represents the shortest possible distance between the two projects.

Due to the distances between the proposed Project, Cassadaga Wind Project, and Arkwright Summit Wind Farm, cumulative impacts resulting from construction and operation of the Projects are possible. Cumulative impacts to local roads and bridges could be possible due to construction-related transportation activities. Such impacts would only occur if the same transportation routes were used and if construction schedules overlapped. Currently, the Project is scheduled to commence construction in the spring/summer of 2017. The Arkwright Summit Wind Farm originally proposed to commence construction in the summer of 2016 but is now extended that timeframe. With respect to the Cassadaga Wind Project, under the soonest timeframes available under Article 10, it is unlikely that the Project will be in construction in the summer of 2017. Moreover, at this point, given the fact that the "project area" has been broadly defined and does not contain exact locations for turbines and other Project components, it is premature to assume that the construction of the two projects would utilize similar local roads. However, should this situation arise, consultation with the involved project developers would be conducted to coordinate the transportation routes to minimize the extent of the impact and assure

road repair and restoration is accomplished at the appropriate time, in consultation with the affected jurisdictions. In addition, given the distance between the three projects, it is unlikely that cumulative impacts associated with construction noise or dust will exist.

With respect to operation, cumulative impacts occurring as a result of the simultaneous operation of the three projects are anticipated to be limited to those occurring to visual and avian/bat resources. As described in Section 2.7 of the SDEIS, and 1.4.7 of the FEIS, the visibility and visual effect of the Project will be highly variable based on viewing distance, viewer orientation, and the number of turbines visible, as well as the potential screening effects of topography and vegetation. If the Cassadaga or Arkwright Summit Projects are visible from a vantage point within the Project Site, they will typically be background features in any foreground or middleground view that includes the Ball Hill turbines. From larger distances, the three Projects may appear to be a single larger Project. However, the visual effect of all three Projects at longer distances (i.e., greater than 5 miles) will be relatively minimal due to the effects of distance.

With respect to the potential for cumulative impacts to avian and bat species, since the preparation of the DEIS and SDEIS there have been additional studies of operational wind projects in the Northeastern U.S. that allow for an assessment of potential cumulative impacts from wind projects operating in close proximity to each other in western New York. As described in Section 4.2.2 of the SDEIS, the results of a review of bird and bat mortality rates at several operating wind projects indicate that mortality rates fluctuate from turbine to turbine and project to project. to between approximately 2 and 8 bats and 1 to 3 birds per MW per year are expected as a result of operation of the Project. Given that the Project will have an operating capacity of 100.5 MW, mortality rates of between approximately 46 and 1630 bats per MW and

44 to 363 birds per year are anticipated as a result of Project operation. Considering the close proximity of the proposed Cassadaga Wind Project and Arkwright Summit Wind Project, it is expected that the same bird and bat mortality rates anticipated for the Project would apply to the Cassadaga and Arkwright Summit projects. Consequently, given the proposed 126 MW operating capacity of the Cassadaga Wind Project, mortality rates of between approximately 58 and 2054 bats and 55 to 709 birds per year are expected as a result of operation of the Cassadaga Wind Project. Given the proposed 79 MW operating capacity of the Arkwright Summit Wind Farm, mortality rates of between approximately 36 and 1288 bats and 35 to 445 birds per year are expected as a result of operation of the Arkwright Summit Wind Farm.

If the anticipated impacts to birds and bats from all three projects are combined, mortality rates of between approximately 140 to 4972 bats per MW and 134 to 1717 birds per year are anticipated from the simultaneous operation of the three Projects. However, it is worth noting that these estimates do not consider site-specific factors such as habitat availability, proximity to water sources, or other factors that affect bird and bat use of the Project sites in question. Therefore, the potential cumulative impacts described herein are conservative and likely overstate potential impacts.

As discussed previously, positive cumulative impacts associated with these combined projects are related to air quality improvements through the displacement of other polluting energy sources with wind power, and better meeting the state's RPS/LSR requirements and other related federal and state energy policy goals. Additional cumulative impacts include the economic benefits to the region that may be realized by the addition of income to participating landowners, the increased number of construction and operation employment opportunities, and the monies received by the host community in the form of the PILOT agreement.

Alternatives

Alternatives to the proposed Project that were considered and evaluated include alternative Project Area, alternative project design/layout, alternative project size, alternative technologies, alternative construction phasing, and no action. The identified alternatives discussed in detail in the DEIS and SDEIS are very similar for, and still relevant to, the revised project described in the FEIS and the current Project layout.

No Action

The no action alternative assumes that the Project Site would continue to exist as agricultural, forested, successional and rural residential land. This no action alternative would not affect on-site ambient noise conditions, construction traffic or public road conditions, wildlife or wildlife habitat, wetlands and streams, or television/communication systems, and would maintain community character, economic and energy-generating conditions as they currently exist. Under this alternative, no wind turbines or infrastructure (e.g., roads, buried or above ground electrical interconnects, and substations) would be developed on the site. Consequently, none of the environmental impacts associated with Project construction and operation would occur. In addition, no economic benefits would accrue to the area. These unrealized economic benefits would include income from construction jobs, lease payments to the landowners, and annual PILOT payments to the affected town, school district, and county. Annual revenues to the towns of Villenova and Hanover, Chautauqua County, and the school district remain to be negotiated in the final terms of a PILOT agreement. In addition, the Applicant is currently discussing a Host Community Agreement with the Towns of Villenova and Hanover, which will include additional financial benefits to the Towns. Under the no action alternative, multiplier effects from these and other economic benefits would also not be realized.

In addition, if the no action alternative is pursued, the lack of economic development resulting from Project construction and operation could result in undesirable impacts in the following areas:

- Loss of increased revenues to local taxing jurisdictions
- Loss of lease revenues for participating landowners
- Loss of income from operating and maintenance jobs
- Loss of payments to Project neighbors
- Loss of income from approximately 64 construction jobs

Furthermore, if the "no action" alternative were selected, the Project would not have the opportunity to support the recently announced State Energy Plan and related initiatives seeking to expand the base of electricity in New York State generated from renewable energy.

Finally, the no action alternative is also inconsistent with Article XVI of the Town of Hanover and Section 690 of the Town of Villenova zoning law which designates commercial wind energy facilities (WECS) as specially permitted uses. Given the short-term nature of anticipated construction impacts and the generally minor long-term impacts of Project operation, as compared to the significant economic, policy and environmental benefits that the Project would generate, the no action alternative is not considered a preferred alternative.

Alternative Project Location

A discussion of the process by which the Applicant determined the site for the proposed Project is as described in the FEIS and this Findings Statement. The process of selection for a wind farm location is based on multiple factors that contribute to the operation of a facility in a technically and economically viable manner. The current location of the proposed Project reflects the best possible combination of many factors. The Project site is suitable for

commercial scale energy production because of the presence of the wind resource, the presence of available land and willing landowners, the relative ease of access to the site, the proximity and the relative ease of connecting to the existing electric transmission grid. Also, it is worth noting that the Applicant is a private entity, without the power of eminent domain, and therefore, site alternatives analysis is properly limited to land controlled by the Applicant.

Alternative Project Design/ Layout

In the process of arriving at the Project layout presented in the FEIS, the Applicant has developed a number of different configurations, including those presented in the DEIS and SDEIS. Each iteration of the Project layout has incorporated either major or minor adjustments according to the often dynamic criteria that are considered when siting the Project facilities. A preliminary layout of the Project was based on constraint information from a desktop review and wind resource data. A process of refinement was then initiated that included incorporating information from engineering and environmental work to account for wetlands and other significant natural resources. Additional changes to the Project layout were made to incorporate setbacks, turbine spacing, meteorological data, and landowner participation. This process resulted in the 67 turbine layout of the Project presented in the DEIS. Subsequent to the preparation of the DEIS, the applicant conducted numerous additional support studies to add further details on the location of environmentally sensitive areas, and re-evaluated the engineering design of the Project facilities. This resulted in the preparation of the SDEIS, which presented a smaller 36 turbine layout that reduced the overall impact footprint of the Project from the DEIS. Subsequent to the preparation of the SDEIS, the Applicant continued the process of revision by conducting additional support studies, continuing negotiations with land owners, and revising the engineering plans for the Project facilities. Furthermore, rapid improvements in

wind turbine technology in recent years have allowed the Applicant to opt for taller, higher output capacity turbines compared to the models considered in the DEIS and SDEIS. Consequently, fewer turbines are required to achieve a similar nameplate capacity to the layouts presented in the DEIS and SDEIS and maintain the positive benefits associated with the original proposed renewable energy output for the Project. The combination of the above mentioned factors has resulted in the 29 turbine layout presented in the FEIS. This represents a significant reduction in both the number of turbines, and the Project impacts footprint when compared to the layouts presented in the DEIS and SDEIS.

With respect to wetlands specifically, the Project layout was repeatedly revised to accommodate new wetland delineations as they were completed. For instance, new turbine locations and access road alignments were developed, then re-delineated, and re-evaluated to further avoid and minimize wetland impacts. Turbines were moved out of wetlands while maintaining the required setbacks. Crane pads and workspaces were rotated and reconfigured to move away from and out of wetlands. Access road alignments were moved to avoid wetlands and where impacts were not avoidable, the roads were moved to impact the narrowest point within a wetland. Where possible, access roads use existing farm lanes and logging trails, existing culvert crossings of streams, and existing gas well access roads. The transmission line alignment and pole locations were modified to avoid and minimize impacts to wetlands. Finally, the operations and maintenance building and project substation were also moved multiple times to avoid and minimize wetland impacts. The Applicant will continue to communicate with the Corps, the NYSDEC and the USFWS during the ongoing development of the Project.

The current Project layout represents significant effort in analyzing the development potential of the site, landowner participation, wind resource assessment and a review of the site's

physical and zoning constraints. The current layout presents a balance between renewable energy production and avoidance of environmental impacts. Significant relocation of any of the turbines to a site other than the one of the identified locations would significantly complicate development across the Project and could potentially create different or new impacts than originally proposed at other locations. Therefore, reduction of environmental impacts through significant modifications of turbine location at a few locations is not feasible. Moreover, in the case of potential visual impacts, reduction in number of turbines by a few is unlikely to have any significant change in Project visibility or visual impact from most locations.

Based on the foregoing, and for the reasons discussed in more detail in the SDEIS, FEIS and this Findings Statement, the Town believes the current Project layout is preferable to other layouts that have been identified and analyzed.

Alternative Substation Site Selection

The proposed substation facility is located in the Town of Hanover in the northern end of the generation portion of the Project. An interconnection request for the Project has been submitted and is currently proceeding through the System Reliability Impact Study with the New York Independent System Operator ("NYISO").

Alternative Energy Production Technologies

An extensive discussion of alternative energy production technologies is provided in the DEIS. It is the Applicant's purpose to generate electricity from wind. Even if the applicant had a more broadly defined purpose, such as to generate renewable energy from any technology that could qualify under the New York State RPS, the alternative technologies available to the Applicant to achieve this purpose are limited, and none are reasonable alternatives given the

capabilities of the Applicant. The Applicant does not operate any coal facilities that can be co-fired with biomass and no portfolio of hydroelectric facilities that can be developed or expanded.

Alternative Turbine Technology

Since the preparation of the DEIS and SDEIS, the Applicant has revised the wind turbine model being considered for the Project from the GE 1.5 MW, to a Vestas 2.0 MW class turbine to the Vestas 3.45 MW class turbine. The FEIS assumes that the Project will use Vestas 3.45 MW class turbines. The Vestas 3.45 MW class is a larger wind turbine than the Vestas 2.0 MW class turbine with respect to hub height, rotor diameter, and total height. Assuming use of the Vestas V-110 turbine, the anticipated tower height for the Project, or "hub height" (height from foundation to the rotor hub), is approximately 87 meters. The Vesta 3.45 MW class turbines have a total height of 150 meters (492 feet). The Vestas 3.45 MW class turbines also have a higher production capacity than the Vestas 2.0 MW class turbines. Fewer turbines are proposed in the current layout as a result of the increased nameplate capacities of the larger wind turbine. Taller turbines can create the potential for impacts due to setback issues, the potential for increased visibility, and higher rotor swept zones. However, when compared to a larger number of shorter turbines, the Lead Agency finds the overall benefits associated with the energy production at the taller height and the net reduction of impacts due to fewer turbines outweigh the relatively minor differences in potential environmental impacts associated with the increased wind turbine dimensions. The substitution of more towers with smaller turbines is neither an environmentally less damaging alternative nor in the Town's best interest.

Alternative Project Scale and Magnitude

A discussion regarding alternative scales and magnitudes considered for the Project is provided in Section 1.3 of the SDEIS. Since the preparation of the SDEIS, the Applicant has reduced the size of the Project from 36 wind turbines to 29 turbines as presented in the FEIS. The current FEIS layout of the Project is considered by the Applicant to achieve the optimal balance between economic viability, limited impacts to environmental resources, and electricity production goals, and the Lead Agency agrees.

Alternative Project Timing

A discussion of the factors and events that dictate the timing of the development of the Project is provided in Section 1.3.1 of the SDEIS. These factors are both external and internal in nature, with external factors including securing sufficient equipment, and acquiring regulatory approvals, while internal factors include decisions by the applicant to prioritize where to focus its available resources. A preliminary construction schedule for the Project is presented in the SDEIS. The Applicant believes the proposed construction schedule is optimal from both an environmental impact and a construction logistics perspective, and the Lead Agency agrees.

## CERTIFICATION

The respective members of the Town of Villenova Town Board, as the Lead Agency under SEQRA, and its legal and technical consultants and experts collectively have spent hundreds of hours in the review of the Draft, Supplemental, and Final Environmental Impacts Statements and accompanying permit applications including amended applications. During the Application review over many months, the Lead Agency has reviewed hundreds of pages of written submissions and received hours of oral comments. It has carefully reviewed,

questioned and analyzed the various impacts of, alternatives to and potential mitigation measures for the respective Project.

The Lead Agency has relied upon numerous experts and State agencies in their review. The Lead Agency recognizes that qualified experts on any topics may differ in their conclusions, and in particular, may differ in the judgments employed during analysis, particularly on such subjective matters as visual or aesthetic impacts. The Lead Agency also understands that while wind energy projects are a developing industry in those areas in New York State bestowed with wind resources, and that opinions vary widely over the advantages and disadvantages of this new form of energy production, the Lead Agency has been careful to make its decision based on documented benefits and impacts.

Board members are familiar with areas of the Town where Project elements will be sited as well as areas surrounding the Project Site. Based on their significant review and their work with the Applicant, the Lead Agency believes that the potential significant adverse environmental impacts have been either avoided or mitigated to the maximum extent practicable as outlined in earlier sections of these Findings. The Applicant has been flexible in its design, seeking to avoid impacts wherever possible, and agreeing to reasonable mitigating conditions that affect both construction and operation identified by the Lead Agency, their consultants, as well as other agencies and members of the public.

The Lead Agency also notes that while the public benefits from the Project achieve important State and federal policies promoting clean, renewable energy sources, there are very real local benefits in the form of increased revenues for the municipalities, school, and local landowners, as more fully outlined in the Public Benefits section of these Findings.

On balance, and after careful consideration of all relevant documentation and comments, the Lead Agency believes that it has more than adequate information to evaluate all of the benefits and potential impacts of this Project, as a basis for considering the pending permit applications and associated agreements.

Therefore, in accordance with 6 NYCRR § 617.11, SEQRA's required balancing of potential for significant adverse environmental impacts against social, economic and other essential considerations, the Town of Villenova Town Board hereby certifies:

1. They have fully considered the relevant environmental impacts, facts and conclusions disclosed in the Final Environmental Impact Statement prepared for the Ball Hill Wind Project;
2. They have weighed and balanced the relevant environmental impacts with social, economic and other essential considerations;
3. That the requirements of 6 NYCRR 617 have been met, including the preparation and adoption of the DEIS, SDEIS and FEIS and these Findings; and
4. That consistent with social, economic and other essential considerations from among the reasonable alternatives available, the proposed action will avoid or minimize adverse environmental impacts to the maximum extent practicable, by incorporation as conditions to the permits or agreements, those mitigating measures which were identified.