SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (SEIS)

FOR THE

Jericho Rise Wind Farm
Towns of Chateaugay and Bellmont
Franklin County, New York

Co-lead Agencies: Town of Chateaugay and Bellmont

Applicant:

Jericho Rise Windfarm, LLC
808 Travis Street, Suite 700
Houston, Texas 77002
Contact: Aron Branam
Phone: (503)-535-1519

Prepared By:

Environmental Design & Research,
Landscape Architecture, Engineering & Environmental Services, D.P.C.
217 Montgomery Street, Suite 1000
Syracuse, New York 13202
Contact: John Hecklau
Phone: (315) 471-0688

Date of DEIS Submittal: February, 2008
Date of DEIS Acceptance: February, 2008
Date of SEIS Submittal: November 10, 2015
Date of SEIS Acceptance: December 7, 2015
Public Comment Period: December 9, 2015 – January 11, 2016

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition/Denotation
AMSL	Above Mean Sea Level
BMPs	Best Management Practices
dBA	A-weighted Decibels
DEIS	Draft Environmental Impact Statement
EAF	Environmental Assessment Form
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FEIS	Final Environmental Impact Statement
GIS	Geographic Information Systems
GPS	Global Positioning System
NRHP	National Register of Historical Places
NYNHP	New York Natural Heritage Program
NYSDEC	New York State Department of Environmental Conservation
NYSOPRHP	New York State Office of Parks, Recreation, and Historic Preservation
SEQR	State Environmental Quality Review Act
SHPO	State Historic Preservation Office
SPDES	State Pollutant Discharge Elimination System
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

FIRMS/ORGANIZATIONS INVOLVED IN THE PREPARATION OF THE SEIS

Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. 217 Montgomery Street, Suite 1000 Syracuse, New York 13202 Patrick Heaton (315) 471-0688	Fisher Associates 135 Calkins Road Rochester, New York 14623 Steven D. Wilkinson (585) 334-1310
Terracon Consultants-NY, Inc. 15 Marway Circle, Suite 2B Rochester, New York 14624 Carl W. Thunberg (585) 247-3471	Western EcoSystems Technology, Inc. 415 West 17th Street, Suite 200 Cheyenne, Wyoming 82001 David Young (307) 634-1756
Hessler Associates 3862 Clifton Manor Place, Suite B Haymarket, Virginia 20169 David M. Hessler (703) 753-1602	ComSearch 197 Janelia Farm Blvd. Ashburn, Virginia 20147 Denise Finney (703) 726-5650
Jericho Rise Wind Farm, LLC 808 Travis Street, Suite 700 Houston, Texas 77002 Aron Branam (503)-535-1519	

EXECUTIVE SUMMARY

This Supplemental Environmental Impact Statement (SEIS) has been prepared for the proposed Jericho Rise Wind Farm (the Project). Jericho Rise Wind Farm LLC (the Applicant), a wholly owned subsidiary of EDP Renewables (EDPR), is proposing to construct a wind energy generation facility (and associated necessary Project infrastructure) in the Towns of Chateaugay and Bellmont in Franklin County, New York (see Figure 1). The potential environmental impacts of the proposed Project are being reviewed under the State Environmental Quality Review Act (SEQRA) with the Towns of Chateaugay and Bellmont serving as Co-Lead Agencies.

The SEQRA review of the Project began in 2007. This SEIS has been prepared to build upon the information and analysis presented in the 2008 Draft Environmental Impact Statement (DEIS) that was previously prepared for the Project. This SEIS addresses all changes to the proposed action that have occurred subsequent to the release of the DEIS, and includes additional studies and analyses. In general, the SEIS does not reiterate information from the previous DEIS that remains accurate and unchanged. In addition, the SEIS is not a comprehensive response to public/agency comments received on the DEIS; however, the SEIS does address substantive issues that were raised in these comments. A comprehensive responsiveness summary, which will specifically respond to all substantive comments received on both the DEIS and SEIS, will be included in the Final Environmental Impact Statement (FEIS) for the Jericho Rise Wind Farm. The FEIS will be prepared and published for public review subsequent to the issuance of this SEIS.

Project Description

The revised Project will consist of up to 37 wind turbine generators (WTG) each with a nameplate capacity of 2.1 megawatts (MW), for a total anticipated nameplate generating capacity of 77.7 MW. However, to allow for flexibility on final site selection, the Applicant is also evaluating and seeking approval for six alternate turbine sites, for a total of up to 43 sites being assessed in this SEIS. The total project size is limited by the interconnection request approved by the New York Independent Systems Operator at 77.7 MW. The WTGs that will ultimately be constructed for the Project have not been determined. However, the largest WTGs presently being considered for the Project are the Gamesa G114-2.1 WTGs. For the purpose of presenting a conservative analysis, the assessment of potential environmental impacts throughout this SEIS assumes that the Project will use Gamesa G114-2.1 WTGs.

The current Project Site is very similar to the Project Site previously identified in the original wind energy permit applications to the Towns and in the DEIS. There is significant overlap between the areas studied/identified in the DEIS as compared with the Project layout described in this SEIS. For example, 18 of the 43 proposed wind turbine

locations are within 500 feet of the wind turbine locations proposed in the DEIS and 32 of the 43 proposed locations are within 1,000 feet of the wind turbine locations proposed in the DEIS.

However, there are some differences between the current Project layout and the DEIS layout. Generally, the changes in the Project since the DEIS relate to the deletion of turbines and the removal of the northeastern area of the Project. Layout changes have been made primarily to accommodate the larger Gamesa G114 2.1 MW wind turbine, but also to accommodate study results and agency and landowner feedback.

Regulatory Process

The regulatory process for the Jericho Rise Project is still generally the same as described in the DEIS. This SEIS has been prepared by Environmental Design & Research, Landscape Architecture, Engineering, & Environmental Services, D.P.C. (EDR) of Syracuse, New York. The SEIS is intended to document changes in the proposed Project since the DEIS. The documentation in the SEIS includes changes in the project design and its potential impacts and benefits in order to provide a basis for informed public comment and decision-making, and to facilitate the Project's environmental review process in accordance with the requirements of SEQRA.

Purpose, Need, and Benefit

The purpose, need and benefit of the Jericho Rise Project are still generally the same as described in the DEIS. This information has been updated relative to the discussion presented in the DEIS due to significant legislative and policy initiatives that have occurred subsequent to the publication of the DEIS in 2008 that further encourage renewable energy projects such as the Jericho Rise Wind Farm. The 2015 State Energy Plan identifies aggressive renewable energy targets, including a 40% reduction in emissions by the energy sector by 2030 and an 80% reduction by 2050. The Plan also sets a target of 50% of all electricity generation to come from renewable sources, and identifies wind power as one of the major renewable energy sources that will help achieve this goal.

Additional mandates for renewable energy are included in the Renewable Portfolio Standard (RPS) for New York. 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 this SEIS, 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 Jericho Rise Wind Farm 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). Policy directives for renewable energy are clear, and the Project will help New York achieve these goals.

Summary of Potential Impacts

In accordance with requirements of the SEQRA process, potential impacts arising from the proposed action were evaluated in the DEIS with respect to an array of environmental and cultural resources. The identified and analyzed potential impacts discussed in detail in the DEIS are very similar for, and still relevant to, the revised Project described in this SEIS.

Construction of the Project will result in disturbance of up to 383 acres of soil and 550 acres of vegetation, most of which is forest land or active agriculture. In addition, approximately 4.33 acres of wetland could be disturbed by Project construction. However, the majority of these impacts will be temporary. A total of up to about 58 acres (including up to 21 acres of forest, 0.18 acres of wetlands, and 33 acres of active agriculture) will be converted to built facilities including turbines and turbine pads, access roads, an expansion of an existing substation, and a meteorological tower. Project construction will also result in some level of temporary disturbance and congestion on area roadways. Most impacts from the revised Project are anticipated to be generally less than those described in the DEIS because only 37 turbines will be constructed instead of the 53 turbines originally proposed.

Project operation is expected to result in some level of avian and bat collision mortality, although impacts to threatened and endangered species are not anticipated. The 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). Only very minor changes in land use within the Project area are anticipated as a result of Project implementation. The region has several existing wind energy generation facilities, so development of the Project is consistent with current regional land use. The Project is expected to generate consistent revenue in PILOT payments to local taxing jurisdictions, while requiring very little in terms of municipal services.

Summary of Mitigation Measures

Various measures will be taken to avoid, minimize and/or mitigate potential environmental impacts. The identified mitigation measures discussed in detail in the DEIS are very similar for, and still relevant to, the revised project described in this SEIS.

Specific measures designed to mitigate or avoid adverse potential environmental impacts during Project construction or operation include:

- Siting the Project away from population centers and areas of substantial residential development.
- Siting turbines and access roads so as to avoid or minimize impacts to wetlands and streams.
- Using the routing of existing logging roads and farm lanes for turbine access whenever possible to minimize disturbance to forest and agricultural land.
- Siting turbines a minimum of 1000 feet from residences in Bellmont and a minimum of 1320 feet from residences in Chateaugay that do not directly receive Project benefits, as outlined in the local laws for the Towns, to minimize noise and visual impacts.
- Utilizing 'best practice' construction techniques that minimize disturbance to vegetation, streams, and wetlands.
- Implementing agricultural protection measures to avoid, minimize, or mitigate impacts on agricultural land and farm operations.
- Limiting turbine lighting to the minimum allowed by the Federal Aviation Administration (FAA) to reduce nighttime visual impacts, and following lighting guidelines to reduce the potential for bird collisions.
- Entering into a PILOT agreement with the local taxing jurisdictions to provide a significant predictable level of funding for the town, county, and school districts for the operational life of the Project.
- Close coordination with local first responders and other relevant community support services.

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 are very similar for, and still relevant to, the revised project described in this SEIS.

Since the preparation of the DEIS, the Applicant has revised the wind turbine model being considered for the Project from the Vestas V-82 to the Gamesa G114-2.1. This SEIS assumes that the Project will use Gamesa G114-2.1 WTGs. The Gamesa G114-2.1 is larger wind turbine than the Vestas V-82 with respect to hub height, rotor diameter, and total height. Assuming use of the Gamesa G114-2.1 turbine, the anticipated tower height for the Project, or "hub height" (height from foundation to the rotor hub), is approximately 93 meters (305 feet). The Gamesa G114-2.1 has a rotor diameter of 114 meters (374 feet), resulting in a total height of 150 meters (492 feet). The Gamesa G114-2.1 also has a higher production capacity than the Vestas V-82. 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 increased visibility and higher rotor swept zones. However, when compared to a larger number of shorter turbines, 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.

Effects on Use and Conservation of Energy Resources

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 are very similar for, and still relevant to, the revised project described in this SEIS. 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 77.7 MW of electricity generation capacity without consuming water or producing toxic emissions on an ongoing basis. This greatly exceeds the energy required to construct and operate the Project. Assuming that the Project generates approximately 32% of its nameplate generating capacity, this is enough power to support between approximately 30,000 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 renewable resource (wind), and over the long term will displace some of the state's older, less efficient, and less environmentally sustainable sources of power and/or the amount of energy imported into the state.

1.0 DESCRIPTION OF PROPOSED ACTION

1.1 PROJECT SUMMARY/INTRODUCTION

This Supplemental Environmental Impact Statement (SEIS) has been prepared for the proposed Jericho Rise Wind Farm (the Project). Jericho Rise Wind Farm LLC (the Applicant), a wholly owned subsidiary of EDP Renewables (EDPR), is proposing to construct a wind energy generation facility (and associated necessary Project infrastructure) in the Towns of Chateaugay and Bellmont in Franklin County, New York (see Figure 1). The potential environmental impacts of the proposed Project are being reviewed under the State Environmental Quality Review Act (SEQRA) with the Towns of Chateaugay and Bellmont serving as Co-Lead Agencies.

The following terms are used throughout this document to describe the proposed action:

Applicant. Refers to Jericho Rise Wind Farm LLC, formerly Burke Wind Power LLC, a wholly owned subsidiary of EDPR.

Project. Refers to all activities associated with the construction, operation, and individual components of the Jericho Rise Wind Farm, including, but not limited to, turbines, electrical collection lines, access roads, laydown areas, and other facilities.

Project Site. Refers to the parcels of land where the Project will be placed. Jericho Rise Wind Farm LLC has obtained consent from all landowners hosting project facilities within the Project Site (See Wind Energy Permit Application Requirement #2 - List of Property Owners, submitted separately).

As described in greater detail below (see Section 1.12 of this SEIS), the SEQRA review of the Project began in 2007. This SEIS has been prepared to build upon the information and analysis presented in the 2008 Draft Environmental Impact Statement (DEIS) that was previously prepared for the Project. This SEIS addresses all changes to the proposed action that have occurred subsequent to the release of the DEIS, and includes additional studies and analyses. In general, the SEIS does not reiterate information from the previous DEIS that remains accurate and unchanged. In addition, the SEIS is not a comprehensive response to public/agency comments received on the DEIS; however, the SEIS does address substantive issues that were raised in these comments. A comprehensive responsiveness summary, which will specifically respond to all substantive comments received on both the DEIS and SEIS, will be included in the Final Environmental Impact Statement (FEIS) for the Jericho Rise Wind Farm. The FEIS will be prepared and published for public review subsequent to the issuance of this SEIS.

The Project will consist of up to 37 wind turbine generators (WTG) each with a nameplate capacity of 2.1 megawatts (MW), for a total anticipated nameplate generating capacity of 77.7 MW. However, to allow for flexibility on final site selection, the Applicant is also evaluating and seeking approval for seven alternate turbine sites, for a total of up to 44 sites being assessed in this SEIS. The total project size is limited by the interconnection request approved by the New York Independent Systems Operator at 77.7 MW. The WTGs that will ultimately be constructed for the Project have not been determined. However, the largest WTGs presently being considered for the Project are the Gamesa G114-2.1 WTGs. For the purpose of presenting a conservative analysis, the assessment of potential environmental impacts throughout this SEIS assumes that the Project will use Gamesa G114-2.1 WTGs. Each WTG consists of three major mechanical components: the tower, nacelle, and rotor. Assuming use of the Gamesa G114-2.1 turbine, the anticipated tower height for the Project, or "hub height" (height from foundation to the rotor hub), is approximately 93 meters (305 feet). The Gamesa G114-2.1 has a rotor diameter of 114 meters (374 feet), resulting in a total height of 150 meters (492 feet). Additional information regarding the physical characteristics of the Gamesa G114-2.1 turbines is included in Section 1.5 of this SEIS.

All of the proposed turbines will be the same make and model. In addition to the WTGs, the Project will include construction and operation of one permanent meteorological (met) tower, a system of gravel access roads, electrical collection and communication cable networks, an operations and maintenance (O&M) facility, a collection system substation, and a point of interconnection (POI) switchyard. The Project will also require a temporary laydown yard and construction work space, including, but not limited to, areas to store Project components (laydown yards), construction vehicle parking areas, and cleared areas for turbine assembly (turbine workspaces). These Project components are described in greater detail below in Section 1.5 of this SEIS. The current Project layout is depicted in Figure 2.

The current Project Site is very similar to the Project Site previously identified in the original wind energy permit applications to the Towns and in the DEIS. There is significant overlap between the areas studied/identified in the DEIS as compared with the Project layout described in this SEIS. For example, 18 of the 44 proposed wind turbine locations are within 500 feet of the wind turbine locations proposed in the DEIS and 32 of the 44 proposed locations are within 1,000 feet of the wind turbine locations proposed in the DEIS.

However, there are some differences between the current Project layout and the DEIS layout. Generally, the changes in the Project since the DEIS relate to the deletion of turbines and the removal of the northeastern area of the Project. These differences are depicted in Figure 3 and summarized below in Table 1. Layout changes have been made primarily to accommodate the larger Gamesa G114 2.1 MW wind turbine, but also to accommodate study results, agency and landowner feedback.

Table 1. Comparison of DEIS and SEIS Project Layouts

Project Component	Current (SEIS) Project Layout	2008 (DEIS) Project Layout
Wind Turbine Model	Gamesa G114-2.1 2.1 MW Hub Height: 93 meters (305 feet) Rotor Diameter: 114 meters (374 feet) Total Height: 150 meters (492 feet)	Vestas V-82 1.65 MW Hub Height: 80 meters (262 feet) Rotor Diameter: 82 meters (269 feet) Total Height: 121 meters (397 feet)
Number of Wind Turbines	37 (+7 alternates = 44)	53
Number of Met Towers	1	4
Length of Access Roads	10.3 miles (+2 miles for alternates)	15 miles
Length of Collection Lines	17.2 miles (+3.7 miles for alternates)	21 miles

As indicated in Table 1, the Applicant is proposing the use of a taller WTG with a larger rotor diameter (relative to what was considered in the DEIS) to maximize energy production based on the site-specific wind resource analyses. Fewer turbines are proposed in the current layout as a result of the increased nameplate capacity of the larger WTG. The Applicant has applied for waivers pursuant to Article V of the Town of Chateaugay Wind Energy Facilities Local Law No. 7 of 2006 and Article V of the Town of Bellmont Wind Energy Facilities Law No. 2 of 2006. These waivers are further discusses in Section 2.13 of this SEIS. 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 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. See Section 4.0 of this SEIS for additional analysis of Project alternatives.

1.2 PROJECT LOCATION

As described in the DEIS, the Project is located in the Towns of Chateaugay and Bellmont in Franklin County, New York (see Figure 1). The current Project Site includes approximately 5,895 acres of leased private lands that are roughly bound by State Route 11 to the north, the Chateaugay River to the east, Brainardsville Road to the south, and the Burke/Chateaugay town boundary to the west (see Figure 2). General physiography and land use within the Project Site remain as described in the DEIS. The current Project Site is largely within the Project Area that was defined for the DEIS.

1.2.1 Project Participation

The Applicant has secured sufficient acreage under lease and easement option agreements to construct the Project. Approximately 55 landowners are participating in the Project. These landowners control the 106 parcels of land that make up the Project Site.

1.3 PROJECT FACILITY OWNER/DEVELOPER/OPERATOR

Jericho Rise Wind Farm LLC, is a wholly owned indirect subsidiary of EDP Renewables (EDPR). EDPR develops, constructs, owns, and operates wind farms throughout the United States. Wind farms developed by EDPR are currently operating in New York, Iowa, Illinois, Indiana, Pennsylvania, Oklahoma, Texas, Oregon, Minnesota, Washington, and Kansas. Operating EDPR assets in New York State include the Marble River Wind Farm in Clinton County (wholly owned by EDPR), the Maple Ridge Wind Farm in Lewis County (50 percent owned by EDPR), and the Madison Wind Farm in Madison County (wholly owned by EDPR). At the end of 2014, EDPR owned approximately 3,805 MW of operating wind energy capacity in North American with an additional 299 MW under construction. In New York State, approximately 400 MW of wind energy projects are currently under development.

1.4 PROJECT PURPOSE, NEED, AND BENEFIT

This section describes the purpose of the Project, how it would help meet economic and environmental needs, and how the proposed action is consistent with goals, objectives, orders, and directives issued by the executive and legislative branches of the United States and New York governments. This information has been updated relative to the discussion presented in the DEIS due to the changes in the proposed Project layout (and wind turbine model) as well as significant legislative and policy initiatives that have occurred subsequent to the publication of the DEIS in 2008 that further encourage renewable energy projects such as the Jericho Rise Wind Farm and explain the need for energy generation from renewable sources such as wind..

1.4.1 Project Purpose

As described in the DEIS, the purpose of the proposed Project is to create an economically viable wind-powered electrical-generating facility that will provide a source of renewable energy to the New York power grid to:

- Satisfy regional energy needs in an efficient and environmentally sound manner;
- Supplement and offset fossil-fuel electricity generation in the region, with emission-free, wind-generated energy;
- Reduce the amount of electricity imported to New York State;

- Realize the full potential of the wind resource at the Project Site;
- Provide energy that is not susceptible to fluctuations in commodity prices;
- Produce electricity without the generation of carbon dioxide or other greenhouse gases that contribute to climate change;
- Promote the long-term economic viability of rural areas in New York; and
- Assist New York State in meeting its proposed Renewable Portfolio Standard and State Energy Plan goals for the consumption of renewable energy in the State (see below).

The Project is expected to have an average annual net capacity factor (NCF) of approximately 31-32%. Annual NCF is a means of measuring the productivity of a wind power project (or another power production facility). This factor provides a comparison between the actual production of a facility over the course of a year and the potential production if the facility was running at full capacity for the full year. A 31-32% NCF means that on average, a facility will generate approximately 31-32% of its potential output over a given year. For a wind project, this does not mean that it will be generating power only 31-32% of the time (the turbines may actually be generating power 65% to 90% of the time, just not always at full capacity), but rather the Project will generate approximately 31-32% of its potential maximum output over the course of each year.

Total net electricity delivered to the existing New York power grid is expected to be approximately 211,002 to 217,809 megawatt hours (MWh) (i.e., 37 turbines x 2.1 MW x 24 hours/day x 365 days x 31-32% NCF). This is enough electricity to meet the average annual consumption of approximately 30,000 households, based on the average annual electric consumption of 7.2 MWh for New York State residences (U.S. Energy Information Administration [EIA], 2015a).

1.4.2 Public Need and Benefits to Be Derived From Project

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 Jericho Rise Wind Farm, 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 that contribute to climate change in the electricity generation industry.

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 45% of New York's electricity needs through improved energy efficiency and clean renewable energy by 2015. (See New York State Executive Order 24). The overwhelming majority of CO2 emissions in New York – estimated at approximately 250 million tons of CO2 equivalent per year- from result fuel combustion. Overall 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). 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 this SEIS, 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 Jericho Rise Wind Farm 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 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).

As mentioned above, in NYSERDA's latest completed RPS solicitation, Jericho Rise Wind Farm was awarded a contract for procurement and the opportunity to contribute to NYSERDA meeting the targets in the RPS.

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 carbon emissions" (NYSEPB, 2015). Jericho Rise Wind Farm 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 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).

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 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) 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.
- **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 (NYSERDA, 2014).

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 other socioeconomic, environmental, and human health benefits, each of which are briefly summarized below.

Socioeconomic Benefits

- Increased revenues to local municipalities, through PILOT and other agreements.
- Employment during the development phase. Where feasible, the Applicant has utilized locally based companies to undertake environmental field work, legal counsel, engineering assessments, etc.
- Short-term employment of construction workers and long-term employment of operations personnel.
- Direct lease payments to participating landowners, who are participating in the Project on a voluntary basis.

- "Direct economic effects" in the form of immediate payments to consultants, contractors, and the labor pool required to develop, build, and operate the Project.
- "Induced effects" in the form of everyday purchases made by the firms and employees working in the vicinity of Project Site (e.g., groceries, gas and supplies, hotel accommodations, patronization of local establishments, etc.).

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).
- 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-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).
- 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).

- 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).
- 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).
- 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).

1.5 PROJECT FACILITY LAYOUT AND COMPONENTS

1.5.1 Facility Layout Criteria

The current Project layout was determined in accordance with the same criteria that were described in Section 1.5.1 of the DEIS, which included wind resource assessment, setbacks from homes and other sensitive land uses, and environmental considerations to avoid sensitive resources (e.g., wetlands, cultural resources, etc.) to the extent practicable. In the few locations that were not previously included in the Project Area during preparation of the DEIS, equivalent studies and or analyses were performed. These additional studies are discussed in detail within the appropriate section of the SEIS, and attached as appendices, where applicable.

1.5.2 Roads and Civil Construction Work

Roads and civil construction work generally remains as described in the DEIS. Where Project layout changes have occurred, information about these changes are provided below.

1.5.2.1 Project Site Roads

Based on the current layout, the Project will include approximately 13 miles of access roads (10.3 miles for the proposed turbine sites and 2 miles for the alternate turbine sites). As described in the DEIS, existing farm lanes and woods roads will be used wherever practical to minimize new ground disturbance and vegetation clearing. The access routes have been redesigned in accordance with the revised turbine layout and size.

1.5.2.2 Road Design

Project access roads will be designed and constructed as described in the DEIS.

1.5.3 Turbine Tower Foundations

The larger turbines will each require approximately 660 cubic yards of concrete. This is approximately twice the amount indicated in Section 1.5.3 of the DEIS due to the larger turbine size currently proposed. Environmental impacts from taller turbines have been factored into the impact analyses presented in Section 2.0 of this SEIS. Otherwise, WTG foundations will be designed and constructed as described in Section 1.5.3 of the DEIS.

1.5.4 Wind Turbine Generators and Central Control System

The WTG currently proposed for this Project is the Gamesa G114-2.1 (or equivalent WTG). Information regarding the characteristics and general operation of this turbine is included in Appendix A. Each WTG consists of three major mechanical components: the tower, nacelle, and rotor. Assuming use of the Gamesa G114-2.1 turbine, the anticipated tower height for the Project, or "hub height" (height from foundation to the rotor hub), is approximately 93 meters (305 feet). The Gamesa G114-2.1 has a rotor diameter of 114 meters (374 feet), resulting in a total height of 150 meters (492 feet). Should the Gamesa G114-2.1 not be available at the time of procurement, the Applicant will use a WTG of similar specifications.

Wind turbine type certification and equipment selection remain as described in the DEIS.

1.5.4.1 Wind Turbine Basic Configuration

The description of wind turbine components provided in this section of the DEIS remains accurate.

1.5.5 Electrical Collection System Infrastructure

Based on the current layout, the Project will include a total of approximately 20.1 miles of collection lines (17.2 miles for the proposed turbine sites and 2.9 miles for the alternate turbine sites). All of these are currently anticipated to be installed underground, except in those limited instances (cumulatively totaling no more than 1 mile in distance) where installation of overhead collection lines would reduce environmental impacts and/or logistical difficulties (e.g., crossing of sensitive wetlands or steep ravines). The infrastructure and installation techniques remain as described in the DEIS.

1.5.6 Interconnection Substation Facilities

Section 1.5.6 of the DEIS described two alternate locations for the substation facilities. Based on feedback from the New York Independent System Operator (NYISO), the site adjacent to the existing Willis Substation has been selected. This site is located along Willis Road in the Town of Chateaugay. The description of the equipment and features to be included within the collection system station and POI switchyard remain as described in the DEIS.

1.5.7 Project Grounding System

The grounding system for the Project remains as described in the DEIS.

1.5.8 Meteorological Monitoring Station Towers

The current Project includes one permanent met tower compared to the four met towers described in the DEIS. The location of the proposed met tower is shown on Figure 2. The met tower will be self-supporting (unguyed) and 93 meters (305 feet) tall. Aside from the height increase (from 80 m to 93 m) necessary to collect meteorological data at the turbine hub height, met tower design remains as described in Section 1.5.8 of the DEIS.

1.5.9 Operations and Maintenance Facility

The O&M Facility for the Project remains as described in the DEIS.

1.6 PROJECT CONSTRUCTION

Project construction information and sequencing generally remain as presented in the DEIS. Project construction is anticipated to occur in a single phase that will begin as soon as possible in 2016 and be completed in 2017. Engineering evaluation and design have been initiated, including public road evaluations, geotechnical testing, civil design, foundation design, and electric system design (collection circuits and collector station/POI switchyard). Table 2 provides an updated preliminary construction schedule.

Table 2. Preliminary Construction Schedule

Task	Duration (Weeks)	Anticipated Start Date
Preliminary Activities		
Reserve Turbines	-	12/1/2015
Order Substation Transformer	-	7/1/2015
Fabricate Turbines	30	5/16/2016
Fabricate Substation Transformer	50	8/1/2015
Grading of Substation Areas/POI Switchyard	6	6/1/2016
Construction		
Estimated Mobilization Date	1	1/10/2016
Environmental and Safety Training	1	1/15/2016
Tree Clearing Operations	12	1/15/2016
Road Construction	15	6/1/2016
Substation and Switchyard Construction	24	6/1/2016
Foundation Construction	11	6/25/2016
Electrical Collection System Construction	23	6/1/2016
Wind Turbine Assembly and Erection	13	8/22/2016
Switchyard and Substation Energization and Commissioning	4	10/5/2016
Energization and Commissioning of Turbines	4	10/18/2016
Final Grading	6	10/18/2016
Projected Substantial Completion Date	-	11/18/2016
Restoration Activities	10	10/18/2016

Table 3 provides the assumptions regarding the area of proposed vegetation clearing and soil disturbance impacts during construction and operation of the Project. These impact assumptions are conservative for the purpose of evaluating potential environmental impacts. The actual areas of vegetation clearing and soil impacts are anticipated to be less than the assumptions presented herein, but the exact areas will not be determined more precisely until Project engineering is complete.

Table 3. Revised Impact Assumptions

Project Components	Typical Area of Vegetation Clearing	Area of Temporary Soil Disturbance	Area of Permanent Soil Disturbance
Wind Turbines and Workspaces	250' radius per turbine	250' radius per turbine	50' radius per turbine and 65' x 100' crane pad
Access Roads	100' wide per linear foot of new road	54' wide per linear foot of road	34' wide per linear foot of road[1]
	50' wide per linear foot (adjacent to existing road)	50' wide per linear foot (adjacent to existing road)	50' wide per linear foot (adjacent to existing road)

Buried Electrical Interconnects	75' wide per linear foot of cable	35' wide per linear foot of cable	none
Overhead Electrical Interconnects	150' wide per linear foot of cable	12 feet wide temporary road within cleared area for construction access	Limited to pole footprint diameter
Permanent Meteorological Towers	1 acre per tower	1 acre per tower	0.1 acre per tower
Laydown Yard	10 acres	10 acres	none
Project Substation	2 acres	2 acres	1.25

[1]In agricultural lands, permanent access roads will be 16 feet wide with a permanent disturbance width of 22 feet per linear foot, as per the Agricultural Protection Measures outlined in Appendix B.

Several of the impact assumptions differ slightly from those presented in Section 1.6 of the DEIS. For example, the crane pads were assumed to be 60 feet by 100 feet in the DEIS, but are assumed to be 65 feet by 100 feet for this revised SEIS. This minor change will accommodate cranes anticipated to be used during maintenance activities. The 12-foot wide temporary road associated with overhead electrical interconnect was not included in disturbance assumptions of the DEIS, however, including this disturbance provides a more accurate estimate of anticipated impacts. The crane paths that were proposed in the DEIS that would walk cranes between turbines sites where access roads were not constructed are no longer proposed. For the revised SEIS Project, turbines will be walked along access roads to eliminate additional impacts from crane paths. An on-site O&M building and a point of interconnect/switchyard are no longer proposed for this Project, so these impacts are not included in Table 3.

Section 2.0 of this SEIS presents detailed resource-specific estimates of Project-related disturbances, calculated based on the current layout and the impact assumptions presented above in Table 3.

1.7 OPERATIONS AND MAINTENANCE

The Gamesa G114-2.1 WTG begins to generate electricity at wind speeds of approximately 2.5 meters per second (m/s) (5.6 mph) and has a normal operational speed of 7.8 to 14.8 revolutions per minute (RPM). The Project is expected to be generating power about 80% of the time and have an average NCF of approximately 31-32%. Total net electricity delivered to the existing New York power grid is expected to be approximately 211,002 to 217,809 megawatt hours (MWh) (i.e., 37 turbines x 2.1 MW x 24 hours/day x 365 days x 31-32% NCF). This is enough electricity to meet the average annual consumption of approximately 30,000 households, based on the average annual electric consumption of 7.2 MWh for New York State residences (EIA, 2015a). Aside from these differences based on improvements in WTG technology, Project operations and maintenance remain as described in the DEIS.

1.8 DECOMMISSIONING

Decommissioning and site restoration activities for the Project will be as described in the DEIS. A formal Decommissioning Plan will be submitted with the updated Wind Energy Permit Application. The anticipated costs of decommissioning have been updated due to the amount of time that has passed since the DEIS was published. As summarized in DEIS Table 1.8-1, the estimated cost of decommissioning was estimated to be approximately $54,000 per turbine in 2007 dollars. Table 4 presents the cost estimate for decommissioning each wind turbine in 2015 dollars, taking into account the current scrap value of the steel and generator components.

Table 4. Estimated Cost of Decommissioning per Wind Turbine

Removal of Tower	270 man hours x $97.55/hour Cranes (2), 5 days x $6,885.58/day	$26,338.5 $34,427.90
Removal of Concrete to 48 inches below grade	150 man hours x $97.55/hour Equipment, 3 days x $2,868.99/day	$14,632.5 $8,606.97
Removal of Collection System	100 man hours x $97.55/hour Equipment, 2 days x$4,016.59/day	$9,755 $8,033.18
Seeding and Re-vegetation (Assumes 2 acres/turbine, including collection system)	3 man hours x $97.55/hour	$292.65
Total Removal Costs Per Turbine		**$102,136.7**
Scrap Value of Tower Steel	200 tons x $172.14/ton	$34,428
Scrap Value of Generator Components	Per turbine	$5,737.98
Total Salvage Value Per Turbine		**$40,165.88**
Estimated Per Turbine Net Cost of Decommissioning (Total Removal Cost Less Estimated Salvage Value)		**$61,970.82**

The decommissioning costs presented herein (and in the DEIS) were determined using a variety of credible industry sources, the *Blue Book of Building and Construction,* current market prices, and current dollar value. However, because the wind turbines are likely to have a salvage value in excess of their pure scrap value, the actual cost of decommissioning is likely to be lower than this estimate. To comply with local laws in the Towns of Chateaugay (Local Law No. 7 of 2006) and Bellmont (Local Law No. 2 of 2006), the costs associated with decommissioning and restoration will be re-estimated by an independent licensed engineer every three years and kept current indexed to inflation.

1.9 PROJECT COST AND FUNDING

The current estimated capital cost to construct the Project ranges from $155 to $160 million dollars. The Applicant has committed to investing millions of dollars of at risk capital to option the land and associated wind rights of area landowners, as well as conduct initial Project feasibility studies. The Project will receive no public funding from the federal, state, or local governments during development or construction. The current federal production tax credit program expired on December 31, 2014. Jericho Rise is qualified for this production tax credit (the PTC) via the safe

harbor rule, because it purchased many of the major project components, and by demonstrating continuous efforts toward construction. The project will receive tax credits worth $23 for each MWh it produces and delivers to the electrical grid for the first 10 years of its operation.

New York State's RPS creates a market for the green energy attributes of wind power that is separate from the market value of the underlying electricity. These attributes, referred to as renewable energy credits (RECs), are generated according to the number of MWh of power the Project produces. Jericho Rise was awarded a contract for its RECs from the New York State Energy Research and Development Authority (NYSERDA) in the State's 9th Main Tier Solicitation. For the 164 MW of total renewables that were awarded contracts, the weighted average price of the all the RECs awarded in this contract was $22.96/REC.

Jericho Rise will monetize the electricity it produces by selling it into the wholesale power market operated by the New York Independent System Operator (NYISO). As an intermittent generator, the Project is also qualified to participate in the Capacity and Ancillary service markets for a portion of its nameplate capacity. For additional price certainty, the Applicant is seeking bilateral contracts for the electricity it produces with offtakers within the State of New York.

1.10 PERMITS AND APPROVALS REQUIRED

The permits and approvals described in Section 1.10 of the DEIS will still be required for the current Project. In addition, the Project also anticipates requiring approvals from the Towns of Bellmont and Chateaugay to allow for the construction of wind turbines taller than 400 feet in total height. The Applicant has applied for waivers pursuant to Article V of the Town of Chateaugay Wind Energy Facilities Local Law No. 7 of 2006 and Article V of the Town of Bellmont Wind Energy Facilities Law No. 2 of 2006. These waivers are further discusses in Section 2.13 of this SEIS. The permits and approvals that are expected to be required are listed below in Table 5.

Table 5. Permits and Approvals for the Jericho Rise Wind Farm

Agency	SEQRA Agency Status	Description of Permit or Approval Required
Towns		
Town of Bellmont Town Board	Co-Lead	Wind Energy Permit and Waivers Approval SEQRA Lead Agency SEQRA Findings Approval of Town Road Agreements Mitigation Host Agreement

Agency	SEQRA Agency Status	Description of Permit or Approval Required
Town of Chateaugay Town Board	Co-Lead	Wind Energy Permit and Waivers Approval SEQRA Lead Agency SEQRA Findings Approval of Town Road Agreements Mitigation Host Agreement
Franklin County		
Highway Department	Involved	Highway Work Permits SEQRA Findings
County of Franklin Industrial Development Agency (IDA)	Involved	Potential Funding through payment-in-lieu of taxes (PILOT) Agreement SEQRA Findings 239-m Review
New York State		
Department of Environmental Conservation (NYSDEC)	Involved	Article 24 Permit for Disturbance to State Jurisdictional Wetlands Article 15 Permit for Disturbance of Protected Streams SPDES General Permit Section 401 Water Quality Certification SEQRA Findings
Department of Transportation (NYSDOT)	Involved	Special Use Permit for Oversize/Overweight Vehicles Highway Work Permit SEQRA Findings
New York State Department of Agriculture and Markets	Interested	Consultation
Public Service Commission (PSC)	Interested	New York Public Service Law § 68 Certificate SEQRA Findings
New York State Energy Research and Development Authority (NYSDERDA)	Interested	Funding through Renewable Portfolio Standard Auction
Office of Parks, Recreation, and Historical Preservation (NYSOPRHP)	Interested	Consultation pursuant to NY, Parks, Recreation and Historic Restoration Law (PRHPL) § 14.09 and § 106 of the National Historic Preservation Act (NHPA)
Federal		
U.S. Army Corps of Engineers	N/A	Section 404 or Nationwide Permit for Placement of Fill in Federal Jurisdictional Wetlands/Waters of the U.S. NEPA Compliance Compliance with Section 106 of the NHPA Compliance with Section 7 of the Endangered Species Act
Federal Aviation Administration	N/A	Lighting Plan and Clearances for Potential Aviation Hazard
U.S. Fish and Wildlife Service	N/A	Consultation Pursuant to Section 7 of the Endangered Species Act, Associated with the Aforementioned Section 404 Permit

1.11 PUBLIC AND AGENCY INVOLVEMENT

The description of public and agency involvement provided in Section 1.11 of the DEIS remains accurate. Additional agency consultation that has occurred since the publication of the DEIS is included in Appendix C and/or included within the resource-specific assessment reports that are appended to this SEIS. Public and agency comments on the DEIS were reviewed by the Lead Agency and the Applicant, and various follow-up investigations were conducted to address those comments as noted where applicable throughout the SEIS. The filing of this SEIS will result in another public comment period. The combined consultation record from the DEIS and SEIS will be provided in the Project's FEIS, along with responses addressing those comments still pertinent to the Project based on changes since the SEIS.

1.12 SEQRA PROCESS

The SEQRA process for the Project is described in the DEIS. That discussion is repeated herein to clarify the sequence of the SEIS within the overall SEQRA review for the Project, and to highlight the subsequent steps necessary to conclude the SEQRA review.

The SEQRA process for the Jericho Rise Wind Farm was initiated in June 2007 with the submission of a Wind Energy Permit Application to the Chateaugay and Bellmont Town Boards. The Wind Energy Permit Application was prepared in accordance with the Wind Energy Facilities Laws of the Towns of Chateaugay (Local Law No. 7 of 2006) and Bellmont (Local Law No. 2 of 2006), and included a Full Environmental Assessment Form (EAF). The EAF was circulated to potential interested and involved agencies with a notification that the Towns intended to serve as Co-Lead Agencies for the SEQRA review. No objections were received and the Towns assumed the role of Co-Lead Agencies. As Co-Lead Agencies, the Town Boards issued a positive declaration requiring preparation of a DEIS in September 2007 and accepted a DEIS Scope in October 2007.

The Applicant prepared a DEIS, which was accepted as complete by the Lead Agency in February 2008. The public comment period for the DEIS (typically, 30 days) was extended through April 2008 and included two public hearings, one each in March and April 2008.

As a result of the increase in turbine height, changes in Project layout, and the time that has passed since preparation of the DEIS, the Applicant has prepared this SEIS. Following the acceptance of the SEIS by the Co-Lead Agencies, SEQRA requires a 30-day public comment period to provide the public and interested/involved agencies an opportunity to comment on the SEIS. This SEIS, along with a copy of the public notice, will be distributed for review and comment to the public and circulated to the agencies and parties that received copies of the DEIS. It will also be

posted on the website (www.edprwindfarms.com). In addition, the Lead Agency will schedule a public hearing, which will likely be held in conjunction with the application for wind energy permits and any waivers (for example, to address the height of the turbines).

Responses to comments on the DEIS and SEIS will be provided in the Project's FEIS. This SEIS largely addresses and provides much of the information requested by comments received on the DEIS, and will be referenced in the FEIS comment responses as appropriate. Comments received in the DEIS/SEIS process that are no longer applicable to the Project will be noted.

The remaining SEQRA process for the Project will include the following actions and anticipated time frames:

- SEIS accepted by Co-Lead Agencies;
- File notice of completion of SEIS and notice of public comment period;
- Applicant will provide updated Wind Energy Permit Application that addresses the changes in the Project since the original 2007 application;
- 30-day public comment period;
- Public hearing on SEIS, Wind Energy Permits, and Waivers;
- Respond to comments received on the DEIS and SEIS and prepare FEIS (as described above);
- FEIS accepted by Co-Lead Agencies;
- File notice of completion of FEIS;
- 10-day public consideration period;
- Co-Lead Agencies issue Findings Statement, completing the SEQRA process;
- Towns' Action on Pending Applications and Waivers; and
- Involved agencies issue Findings Statements and decisions on pending applications.

1.12.1 Agency and Public Review

The SEIS will be made available for agency and public review in a manner similar to that used for the DEIS, and in accordance with the process established by the Co-Lead Agencies. The Applicant has also consulted with federal and state agencies and local municipalities in support of separate permitting processes required by the New York State Department of Environmental Conservation (NYSDEC), New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP), the U.S. Army Corps of Engineers (USACE), and U.S. Fish and Wildlife Services (USFWS), as described in the resource-specific assessments of potential environmental impacts in Section 2 of the DEIS and this SEIS.

2.0 DESCRIPTION OF PROPOSED ACTION

2.1 GEOLOGY, TOPOGRAPHY & SOILS

2.1.1 Geology and Topography

2.1.1.1 Existing Conditions

Most of the information in Section 2.1.1.1 of the DEIS regarding bedrock geology, surficial geology, groundwater, unusual landforms or geologic formations, geologic hazards, and sensitive paleontological resources remains relevant. However, there are some differences due to changes in the Project layout and participating parcels. The revised SEIS Project site has a minimum elevation of approximately 800 feet above mean sea level in the northwest and a maximum elevation of approximately 1,560 feet above mean sea level in the southern most parcel.

Bedrock Geology

All information from Section 2.1.1.1 of the DEIS regarding bedrock geology remains accurate. The majority of the bedrock is Potsdam Sandstone of Cambrian age, and portions of the southeastern part of the Project site are underlain by Precambrian gneisses and metasedimentary rocks.

Surficial Geology

All information from Section 2.1.1.1 of the DEIS regarding surficial geology remains accurate. Glacial till covers most of the Project site, varying in depth from nearly absent to over 100 feet thick. The landscape is crossed by glacially carved, alluvium-filled channels that are oriented in an east-west direction and contain large boulders.

Groundwater

All information from Section 2.1.1.1 of the DEIS regarding groundwater remains relevant. The Glacial Delta Deposits Sand and Gravel Aquifer is a mapped surficial aquifer beneath the northern section of the Project site in the Town of Chateaugay that extends into the Town of Burke (USGS, 1988). The Potsdam Sandstone Aquifer is a deeper bedrock aquifer that underlies much of far northern New York State, including the Project site (Olcott, 1995). Further information regarding groundwater is presented in Section 2.2.1.3 of the DEIS and of this SEIS.

Unusual Landforms or Geologic Formations

Recent database searches using the NYSDEC Environmental Resources Mapper confirmed the conclusion in Section 2.1.1.1 of the DEIS that no unique geologic features or state parks with geologic features exist in, or in the vicinity of, the Project site.

Section 2.1.1.1 of the DEIS refers to four active sand or gravel mines (borrow pits) existing on the Project site. Most recent data from NYSDEC Division of Mineral Resources (DMR) show that there are currently four operating sand/gravel pits in the revised Project site (Figure 4) (DMR, 2015). The closest of these pits is about 380 feet southwest of Alternate Turbine 9.

Geologic Hazards

Since publication of the DEIS, there has been one additional earthquake with a magnitude greater than 5.0 on the Richter Scale, and several with magnitudes between 4.0 and 5.0 in the region (USGS, 2015a). The most recent National Seismic Hazard Maps, published by the USGS in 2014, indicate that far northern New York is in a region of moderate seismic activity, as measured by peak ground acceleration (PGA) expressed as a percent of gravity. The region has a PGA around 10%. This value is the highest found anywhere in New York State, however, it is much lower than areas known for high seismic activity including the mountainous Western United States and the New Madrid Seismic Zone in the South and Midwest (USGS, 2015b).

Sensitive Paleontological Resources

All information in Section 2.1.1.1 of the DEIS regarding sensitive paleontological resources remains accurate. There are currently no designated Critical Environmental Areas in Franklin County.

2.1.1.2 Anticipated Impacts

2.1.1.2.1 Construction

Anticipated impacts of Project construction to geologic resources are as described in Section 2.1.1.2.1 of the DEIS, with the exception that the DEIS stated that blasting in areas of shallow bedrock was unlikely. A preliminary geotechnical engineering survey was conducted in 2015 (see Appendix D) that identified shallow bedrock at a depth of approximately 8 feet at the proposed site of Alternate Turbine 4. Either excavation using hydraulic rams or blasting will likely be required to remove bedrock at this turbine and perhaps other turbines towards the south end of the Project site. Alternate Turbine 4 and the turbines near it are considered as alternates that may be built if any of the proposed turbine sites are not viable. Therefore, although the preliminary geotechnical survey indicated a need for blasting, in the event that the alternate turbines are not built, blasting may not be necessary.

If blasting is determined to be necessary at the site of Alternate Turbine 4 or any other turbine sites within the Project site, a site-specific Blasting Plan will be designed in accordance with all applicable regulatory laws and safety precautions. The Blasting Plan will be developed by an experienced blasting professional and will require approval

from the Town or the Town's Engineer. A Preliminary Blasting Plan is attached as Appendix E and is similar to the blasting plan that would be developed for Jericho Rise Wind Farm should one become necessary. The blasting procedure shall consist of implementing line control to full depth and then the use of controlled blasting techniques in one or more benches to create minimum breakage outside the line control but create maximum rock fragmentation within the target area. There should be no significant blasting-related impacts on wells, foundations, etc., given that there are no permanent residences within 1,200 feet of proposed turbines. Consequently, potential impacts on the groundwater aquifer and water supply wells are not anticipated.

2.1.1.2.2 Operation

As stated in the Section 2.1.1.2.2 of the DEIS, operation of the Project will have no impacts on geological resources, including mining operations. The Project is sited far enough from mining locations so that these features will not be affected by the Project.

2.1.1.3 Mitigation Measures

Mitigation measures for reducing impacts to geological resources are as described in Section 2.1.1.3 of the DEIS. If blasting is deemed necessary, all blasting on the Project site will be done in accordance with the site-specific Blasting Plan, as discussed in Section 2.1.1.2.1 of this SEIS.

Mitigation measures for impacts to local mining operations are not required because the Project has been sited to avoid impacts to these resources.

2.1.2 Soils

2.1.2.1 Existing Conditions

Where the current Project site overlaps with the Project Area described in the DEIS, all soils information remains relevant. However, since publication of the DEIS, the boundaries of the Project site have changed, and some parcels included in the Project Area DEIS are not included in the current Project site and vice versa. Therefore, an updated discussion of soil resources within the Project site is provided here.

2.1.2.1.1 Soil Designations

The main soil series (Westbury, Empeyville, and Tughill) and associated soil mapping units identified as most prominent in the Project site in the DEIS remain the most common within the current layout, and the descriptions provided in the

DEIS still apply (Soil Survey Staff, 2015). A map showing each soil map unit within the current Project site is provided in Figure 5. Two updated soil impacts tables are provided below in Section 2.1.2.2.1 of this SEIS. Table 6 shows anticipated soil impacts by Project component and Table 7 shows anticipated soil impacts by soil type.

2.1.2.1.2 Prime Farmland

A discussion of prime farmland within and adjacent to the Project site is presented in Section 2.1.2.1.2 of the DEIS. Prime farmland consists of mapped soil types that are highly productive for agriculture; they produce high yields with minimum expense and with the least damage to the environment. In New York, prime farmland designations include prime farmland and prime farmland if drained. There also are several mapped soil types within the Project site that can be categorized as "farmland of statewide importance." These soils are nearly as productive as prime farmland, and may be as productive under the right conditions. Within the current SEIS Project site, there are 74.7 acres of prime farmland and 10.8 acres of prime farmland soil if drained (Soil Survey Staff, 2015). There are 3050 acres of farmland of statewide importance in the Project site (Soil Survey Staff, 2015). The remaining soil within the Project site is considered not prime farmland. Table 8, in Section 2.1.2.2.1 of this SEIS, provides an updated summary of temporary and permanent impacts to prime farmlands within the Project site.

2.1.2.2 Anticipated Impacts

The proposed Project will have a total of 37 wind turbines at operation, however, six additional alternate wind turbine locations are being considered. In this section, quantifiable impacts (e.g., acres of soil disturbance) are given for the 37 proposed turbines as well as the six alternate turbines and their associated facilities.

2.1.2.2.1 Construction

Temporary impacts from Project construction are similar to those described in Section 2.1.2.2.1 of the DEIS, and include disruption of soils, removal of vegetation, and increased potential for erosion. However, due to changes in the proposed Project layout, impact quantities differ from the DEIS. While the DEIS anticipated 323 surface acres of soil impact with 72 percent restored after construction, under the proposed (37 turbine) SEIS layout approximately 331 acres of surface soil will be disturbed, of which 85% percent will be restored following construction. The alternate turbine locations under consideration would result in approximately 53 acres of surface soil will be disturbed, of which 85% percent will be restored following construction. Table 6 provides updated approximate areas of temporary and permanent soil disturbance by Project component; Table 7 provides updated approximate areas of temporary and permanent disturbance by soil type.

Table 6. Approximate Area of Soil Disturbance by Project Component

Component	Acres Temporary Impact		Acres Permanent Impact	
	Proposed*	Alternate*	Proposed*	Alternate*
Turbines	151.5	24.6	14.8	2.4
Access Roads	35.5	6.4	33.3	5.8
Underground Collection System	72.7	12.4	0	0
Overhead Collection System	0.2	0	0	0
Substation	0.75	0	1.25	0
Laydown Yard	10	0	0	0
Road Improvements	9.3	1.6	0	0
Meteorological Tower	0.9	0	0.1	0
Total	**280.8**	**45**	**49.5**	**8.2**

* Proposed = 37 turbines and associated facilities proposed for the Project. Alternate = 6 turbines and associated facilities considered as alternates for the Project.

Table 7. Approximate Area of Soil Disturbance by Soil Type

Soil Code	Soil Name	Acres Temporary Impact		Acres Permanent Impact	
		Prop.*	Alt.*	Prop.*	Alt.*
Abd	Adams and Colton soils, 8 to 25 percent slopes, severely eroded	1.1	0.0	0.1	0.0
Ace	Adams and Colton soils, 25 to 60 percent slopes	0.3	1.1	0.0	0.1
Bea	Brayton stony loam, 0 to 3 percent slopes	13.4	0.0	2.6	0.0
Beb	Brayton stony loam, 3 to 8 percent slopes	6.2	0.0	1.8	0.0
Bfb	Brayton very stony loam, 0 to 8 percent slopes	0.3	0.0	0.0	0.0
Caa	Colton and Constable gravelly loamy sands, 0 to 3 percent slopes	0.0	0.6	0.0	0.0
Cab	Colton and Constable gravelly loamy sands, 3 to 8 percent slopes	5.1	0.0	0.8	0.0
Cbb	Colton and Constable cobbly loamy sands, 3 to 8 percent slopes	0.5	3.2	0.0	0.6
Ccc	Colton and Constable gravelly and cobbly loamy sands, 8 to 15 percent slopes	2.5	0.1	0.3	0.1
Ccd	Colton and Constable gravelly and cobbly loamy sands, 15 to 25 percent slopes	0.0	0.1	0.0	0.0
Daa	Duane gravelly sandy loam, 0 to 3 percent slopes	0.0	0.2	0.0	0.2
Dab	Duane gravelly sandy loam, 3 to 8 percent slopes	0.0	0.0	0.0	0.0
Dba	Duane cobbly sandy loam, 0 to 3 percent slopes	0.0	0.0	0.0	0.0
Eaa	Empeyville stony very fine sandy loam 0 to 3 percent slopes	12.4	1.4	2.7	0.2
Eab	Empeyville stony very fine sandy loam, 3 to 8 percent slopes	34.8	4.3	6.1	1.3
Eac	Empeyville stony very fine sandy loam, 8 to 15 percent slopes	5.1	0.3	1.0	0.1
Ebb	Empeyville very stony very fine sandy loam, 0 to 8 percent slopes	12.2	1.3	2.1	0.4
Ecd	Empeyville and Moira stony very fine sandy loams, 15 to 25 percent slopes	3.3	0.0	0.6	0.0
Edc	Empeyville and Moira very stony very fine sandy loams, 8 to 25 percent slopes	16.3	1.4	2.8	0.0

Soil Code	Soil Name	Acres Temporary Impact		Acres Permanent Impact	
		Prop.*	Alt.*	Prop.*	Alt.*
GP	Gravel and sand pits	0.0	0.0	0.0	0.0
Mca	Massena stony loam, 0 to 4 percent slopes	0.0	0.0	0.0	0.0
Mea	Moira stony loam, 0 to 3 percent slopes	1.0	0.0	0.1	0.0
Meb	Moira stony loam, 3 to 8 percent slopes	1.2	0.0	0.0	0.0
Mec	Moira stony loam, 8 to 15 percent slopes	1.1	0.0	0.0	0.0
Mfb	Moira very stony loam, 0 to 8 percent slopes	0.0	0.0	0.0	0.0
Saa	Saco and Sloan soils, 0 to 2 percent slopes	0.0	0.1	0.0	0.0
Sea	Scarboro fine sandy loam, 0 to 3 percent slopes	0.0	0.0	0.0	0.0
Sh	Stony land, Hermon and Becket soils	0.2	0.0	0.0	0.0
Sk	Stony land, Worth and Parishville soils	2.6	0.0	0.2	0.0
Sma	Sun stony loam, 0 to 5 percent slopes	4.7	0.0	1.5	0.0
Sna	Sun very stony loam, 0 to 5 percent slopes	0.1	0.0	0.0	0.0
Tab	Trout River gravelly loamy sand, 3 to 8 percent slopes	1.4	0.0	0.2	0.0
Tca	Tughill and Dannemora stony very fine sandy loams, 0 to 3 percent slopes	1.7	4.2	0.3	0.5
Tda	Tughill and Dannemora very stony very fine sandy loams, 0 to 3 percent slopes	12.2	3.8	0.6	1.0
Wca	Walpole sandy loam, 0 to 6 percent slopes	0.3	0.0	0.0	0.0
Wha	Walpole and Au Gres loamy sands, 0 to 6 percent slopes	0.0	0.0	0.0	0.0
Wma	Westbury and Dannemora stony very fine sandy loams, 0 to 3 percent slopes	71.1	5.2	12.2	0.8
Wmb	Westbury and Dannemora stony very fine sandy loams, 3 to 8 percent slopes	31.6	7.7	7.2	1.3
Wna	Westbury and Dannemora very stony fine sandy loams, 0 to 8 percent slopes	23.1	9.5	3.4	1.6
Woc	Westbury and Brayton very stony very fine sandy loams, 8 to 15 percent slopes	0.2	0.0	0.0	0.0
Wqb	Worth stony fine sandy loam, 3 to 8 percent slopes	3.6	0.0	1.0	0.0
Wqc	Worth stony fine sandy loam, 8 to 15 percent slopes	0.0	0.0	0.0	0.0
Wsb	Worth very stony fine sandy loam, 0 to 8 percent slopes	4.7	0.1	1.0	0.0
Wsd	Worth very stony fine sandy loam, 8 to 25 percent slopes	1.4	0.0	0.1	0.0
Wte	Worth and Parishville soils, 25 to 60 percent slopes	1.7	0.0	0.1	0.0

* Prop. = 37 turbines and associated facilities proposed for the Project. Alt. = 6 turbines and associated facilities considered as alternates for the Project.

Materials Sources

As stated in Section 2.1.2.2.1 of the DEIS, sources for roadway aggregate and concrete for foundations have not yet been selected. Additional impacts to the Project site soils could occur if the contractor opts to supply aggregate from on-site borrow areas. These further impacts to soils would be similar to those for other construction activities, and will be quantified in the FEIS if it is determined that on-site sources will be utilized.

Agricultural Soil Impact

Construction of the revised 37-turbine Project would result in a temporary impact of up to 0.3 acres of prime farmland soil. No permanent impacts are anticipated to prime farmland soils. Additionally, construction would temporarily and permanently impact 115 acres and 14 acres, respectively, of farmland soils of statewide importance. Construction of the six alternate wind turbines would result in no temporary or permanent impacts to prime farmland soils, but would result in temporary impact of up to approximately 21 acres and permanent impact of up to approximately 3 acres of impact to farmland soils of statewide significance. These impacts would result primarily from installation of collection line, construction of access roads, turbines, and construction of other Project facilities. Most impacts would be short term and would not affect the potential use of prime farmland for agricultural purposes. These impacts could include interference with agricultural drainage, loss of soil through erosion, mixing of topsoil and subsoil, and compaction. These impacts have been minimized by using existing roads and siting new roads along the edges of agricultural fields wherever possible.

Table 8. Prime Farmland Impacts

Prime Farmland Soils	Acres Temporary Impact		Acres Permanent Impact	
	Proposed*	Alternate*	Proposed*	Alternate*
Prime Farmland Soils				
Wqb	0.3	0	0	0
Total	**0.3**	**0**	**0**	**0**
Prime Farmland Soils When Drained				
Mca	1.7	0	0.1	0
Total	**1.7**	**0**	**0.1**	**0**
Farmland Soils of Statewide Importance				
Bea	0.3	0.0	1.1	0.1
Beb	13.4	2.6	0.0	0.0
Caa	6.2	1.8	0.0	0.0
Cab	0.3	0.0	0.0	0.0
Cbb	0.0	0.0	0.6	0.0
Daa	5.1	0.8	0.0	0.0
Dab	0.5	0.0	3.2	0.6
Dba	2.5	0.3	0.1	0.1
Eaa	0.0	0.0	0.1	0.0
Eab	0.0	0.0	0.2	0.2
Eac	0.0	0.0	0.0	0.0
Mea	0.0	0.0	0.0	0.0
Meb	12.4	2.7	1.4	0.2
Mec	34.8	6.1	4.3	1.3
Saa	5.1	1.0	0.3	0.1
Tab	12.2	2.1	1.3	0.4

Wca	3.3	0.6	0.0	0.0
Wha	16.3	2.8	1.4	0.0
Wma	0.0	0.0	0.0	0.0
Wmb	0.0	0.0	0.0	0.0
Woc	1.0	0.1	0.0	0.0
Wqc	1.2	0.0	0.0	0.0
Total	**114.6**	**20.9**	**14**	**3**

**Proposed = 37 turbines and associated facilities proposed for the Project. Alternate = 6 turbines and associated facilities considered as alternates for the Project.

Soil Contamination

As stated in Section 2.1.2.2.1 of the DEIS, liquid spill risks that could contaminate the soil are relatively minor at wind power generation facilities because they do not utilize cooling towers or generate liquid effluents that require discharge on land. Fluids used during the construction of wind facilities include gasoline, diesel fuel, hydraulic fluid, lubricating oil, and greases. There is some risk for spills of these chemicals during the construction phase, particularly during refueling and equipment breakdown. The Applicant will prepare a Construction SPCC Plan that addresses risks of spills and leaks. (The SPCC Plan for EDPR's Marble River Wind Project is attached as Appendix F and is substantially similar to the Plan that will be prepared for the Project). The final Plan will be submitted to local emergency response teams and the Towns for review prior to initiation of construction.

2.1.2.2.2 Operation

As stated in Section 2.1.2.2.2 of the DEIS, operation will result in minimal land disturbances, so impacts to soils from operation of the Project will be minor. The access roads will be large enough to accommodate normal maintenance vehicles, so turbine maintenance traffic will not impact soils during operation. Repair or replacement of damaged turbine components that requires use of a large crane could require temporary road widening and temporary soil disturbance at the base of the affected turbine(s). Repair of underground lines could cause soil disturbance, however, impacts from this disturbance are readily mitigated. Liquid spills that could contaminate soils during operation are possible, however, the oils used during operation are in a closed system and spills or leaks are generally contained. A maintenance-related spill during fluid replacement or a catastrophic failure are the most likely scenarios for liquid spills.

Decommissioning

The discussion in Section 2.1.2.2.2 of the DEIS regarding impacts to soils from Project decommissioning remain relevant. Decommissioning would result in a similar level of land disturbance to that from the construction phase, although the end result would be removal of above-ground Project components and restoration of soils. Appropriate mitigation, monitoring, and restoration efforts, as described in the DEIS, would be used to minimize impacts.

2.1.2.3 Mitigation Measures

2.1.2.3.1 Temporary Mitigation Measures

A discussion of proposed mitigation for temporary impacts to soils is provided in Section 2.1.2.3.1 of the DEIS. To minimize short-term and long-term impacts on agricultural soils, the Project has been designed, and will be built, in accordance with the New York State Agriculture & Markets Guidelines for Agricultural Mitigation for Windpower Projects (NYSDAM, 2013). The Project will also obtain coverage under a State Pollution Discharge Elimination System (SPDES) general permit. To minimize soil erosion impacts, all work will be conducted in strict compliance with the provisions of the Stormwater Pollution Prevention Plan developed as part of this permit. For a detailed discussion of the provisions and limitations of the permit and associated best management practices, please see Section 2.1.2.3.1 of the DEIS.

2.1.2.3.2 Permanent Mitigation Measures

Proposed permanent measures to avoid, minimize, and mitigate impacts to soils are as described in Section 2.1.2.3.2 of the DEIS, with some changes to the areas of soils to be impacted due in revisions to the Project layout. Based on the current SEIS Project layout and impact assumptions, approximately 281 acres out of 330 acres of disturbed soils will be restored after the completion of construction activities. Construction and operation of the alternate turbines would result in 53 acres of disturbed soils, of which 45 acres would be restored after construction. Areas to be restored include turbine site workspaces, access road work areas, pathways of underground and overhead collection line facilities, meteorological tower workspace, and the Project laydown yard.

2.2 WATER RESOURCES

2.2.1 Existing Conditions

The discussion provided in 2.2.1 of the DEIS existing conditions of Project site water resources remains generally accurate. However, small differences exist between the DEIS Project Area and the revised SEIS Project site. Therefore, an updated discussion of Project water resources is provided below. Although the final Project is proposed to include 37 wind turbines, six additional turbine locations are being considered. The revised Project site includes all 43 locations under consideration.

2.2.1.1 Surface Waters

The discussion of surface waters provided in Section 2.2.1.1 of the DEIS remains accurate, with the exception that large majority of the revised Project site is located within the Little Trout River watershed. Although the Chateaugay River is the largest drainage feature in the Project site, the other major drainage features generally drain west, and only small, local tributaries flow into the Chateaugay River (see Figure 6: Surface Waterbodies). Both the Chateaugay and the Trout Rivers are part of the English/Salmon River drainage basin which in turn drains into the St. Lawrence River. Recent database searches confirm the DEIS finding that surface waters in the Project site are unimpaired or unassessed as defined by EPA's Clean Water Act Section 303(d) List of Impaired Waters (EPA, 2015c) as well as NYSDEC's Waterbody Inventory for English/Salmon Rivers Watershed (NYSDEC, 2014).

The most recent available data from the USGS (2010) identify additional water uses in Franklin County that were not addressed in the DEIS, including mining, use for livestock, and aquaculture. The largest water uses are public or municipal supply (municipal water) and aquaculture, both of which use more surface water than ground water. Total water use in Franklin County is approximately 13.8 million gallons of water per day, about 56% of which is surface water. Table 9 provides a summary of ground water and surface water uses for Franklin County.

Table 9. 2010 Water Usage in Franklin County, New York

	Surface (Million Gallons per Day)	Ground (Million Gallons per Day)
Public Supply	3.27	2.31
Domestic	0	1.74
Industrial	0	0.63
Irrigation	0.29	0.3
Thermoelectric	0	0.21
Mining	0.34	0
Livestock	0.17	0.31
Aquaculture	3.6	0.6
Total	**7.67**	**6.1**

Source: USGS 2010 Water Use Data for Franklin County, New York

Database searches of NYSDEC Wild, Scenic, and Recreational Rivers confirmed the DEIS finding that none of these types of rivers occur within the Project site (NYSDEC, 2015b). However, there are streams within the Project site protected on the basis of their classification pursuant to 6 NYCRR Part 608 Protection of Waters. Streams are assigned a class based on their best use, with classes A and AA ideal for drinking water, class B ideal for swimming and other

contact recreation, class C supporting fisheries, and class D, the lowest class, not suitable for any of the above uses. Additionally, the standard (T) identifies the stream as a trout fishery and the standard (TS) identifies a stream as supporting trout spawning. Protected streams (those that are considered jurisdictional by NYSDEC) are classes C(T) and C(TS) and above. Classes C and D are not protected by NYSDEC. Within the Project site, all protected streams are class C(T) and all unprotected streams are class D. There are also several small streams within the Project site that were identified during the Wetland and Stream Delineation Study that are not mapped or classified by the NYSDEC (see Section 2.2.1.2 of this SEIS for additional information regarding the Wetland and Stream Delineation Study and Appendix G Wetland and Stream Delineation Report).

Protected Streams, pursuant to 6 NYCRR Part 608, within the Project site include Alder Brook, Allen Brook, Collins Brook, the Little Trout River, the Chateaugay River, and several of these streams' tributaries. These streams and other surface waterbodies in the Project site are listed in Table 10 and shown in Figure 6: Surface Water Bodies.

Table 10. Surface Waters Within the Project Site

Stream Name	NYSDEC Class	Linear Feet Within Project Site
Alder Brook	C(T)	11,242
Alder Brook (trib)	D	3,104
Alder Brook (trib)	C(T)	3,746
Alder Brook (trib)	D	2,700
Allen Brook	C(T)	8,186
Allen Brook (trib)	D	5,291
Allen Brook (trib)	D	2,972
Allen Brook (trib)	D	4,391
Chateauguay River	C(T)	4,145
Collins Brook	C(T)	942
Collins Brook (trib)	D	408
Little Trout River	C(T)	4,258
Little Trout River (trib)	D	7,729
Little Trout River (trib)	D	3,870
Little Trout River (trib)	D	4,892
Little Trout River (trib)	D	2,880

2.2.1.2 Wetlands

A discussion of federal and state regulation of wetlands, as well as the ecological significance of wetlands, is provided in Section 2.2.1.2 of the DEIS. Due to changes between the boundaries of what the DEIS defined as the Project Area and the SEIS boundaries of the Project site, as defined in Section 1.1 of this SEIS, some of the wetland areas reported in the DEIS are slightly different from those in the revised Project. Therefore, an updated discussion of existing wetlands within the Project site is provided below.

About 267 acres or 4.5% of the land area within the Project site is represented by wetlands mapped by the NYSDEC or the National Wetland Inventory (NWI) (see Figure 6: Surface Water Bodies). Wetland CG-6, occupying about 11.6 acres, is the only NYSDEC-regulated wetland within the Project site. This wetland extends off the Project site, and includes both wetland forest and scrub/shrub community types. NYSDEC Wetland CG-4, which was discussed in the DEIS, is east of the Chateaugay River and is not located within the revised Project site. There are also a total of 58 NWI wetlands mapped within the Project site, covering a total of about 260 acres. The majority of these are forested wetlands, which cover about 183.9 acres or 71% of the NWI wetlands that occur on the Project site. A summary of the NYSDEC and NWI mapped wetlands is provided in Table 11.

Table 11. NYSDEC and NWI Mapped Wetlands within the Project Site

Mapped Wetland	NYSDEC ID and Class (if applicable)	Cover Type	Area within Project Site (acres)
NYSDEC	CG-6, Class 3	Forested and Scrub/Shrub	11.6
NWI	--	Forested	183.9
NWI	--	Scrub/Shrub	32.8
NWI	--	Forested and Scrub/Shrub	22.5
NWI	--	Riverine	11.8
NWI	--	Emergent	7.9
NWI	--	Pond	1.1

An updated review of the mapped hydric soils within the Project site is provided in Table 12 below. Hydric soils are defined as those with greater than 66% hydric components as indicated by a hydric soil rating on the Franklin County Web Soil Survey (Soil Survey Staff, 2015). These soils often correspond with the locations of wetlands. Although soil series may be generally classified as hydric by the Soil Survey, these designations are for general use and do not supersede specific hydric soil conditions observed in the field. Figure 7 indicates the location of mapped hydric soils within the Project site.

Table 12. Hydric Soils within the Project Site

Map Unit Name	Symbol	% Slopes	Drainage Class*
Saco and Sloan soils	Saa	0-2	VPD
Scarboro fine sandy loam	Sea	0-3	VPD
Sun stony loam	Sma	0-5	VPD
Sun very stony loam	Sna	0-5	VPD
Tughill and Dannemora stony very fine sandy loams	Tca	0-3	VPD
Tughill and Dannemora very stony very fine sandy loams	Tda	0-3	VPD
Walpole sandy loam	Wca	0-6	PD

*Drainage class designations are as follows: VPD = very poorly drained; PD = poorly drained.
Source: NRCS Web Soil Survey for Franklin County.

In addition, there are many wetlands that occur within the Project site that are not mapped by either the NYSDEC or NWI mapping programs. A comprehensive wetland and stream delineation study was conducted during the growing season of 2015 with the purpose of identifying all wetland resources within the disturbance footprint of the Project (see Section 1.6, Table 3 for assumed temporary and permanent soil disturbance impacts from various Project components). The Wetland and Stream Delineation Report is attached as Appendix G. Based on observed vegetation, soils, and hydrological conditions, it is assumed that most of these delineated wetlands are protected under Section 404 of the Clean Water Act, under the jurisdiction of the U.S. Army Corps of Engineers (USACE).

Delineation surveys for wetlands and streams were conducted in the spring and summer of 2015. Identification of wetland boundaries was based on the methodology described in USACE's *Wetland Delineation Manual* (Environmental Laboratory, 1987). Determination of wetland boundaries was also guided by the methodologies presented in the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (USACE, 2012). Attention was given to the identification of potential hydrologic connections between wetlands and areas that could influence their jurisdictional status. For this delineation, the federal methodology was used to define the boundaries of both federal and state jurisdictional wetlands on-site. Wetlands boundaries were determined based on visual inspection of dominant vegetation, hydrology, and soil characteristics. Wetland boundaries were defined in the field with sequentially-numbered pink surveyor's flagging, which was subsequently mapped using a Trimble Pathfinder® Pro XR GPS unit with reported sub-meter accuracy. Data were collected from one or more sample plots in each delineated wetland (depending on the size of the delineated area), and was recorded on USACE's Routine Wetland Determination forms. Delineated areas were characterized according to the *Classification of Wetlands and Deepwater Habitats of the United States* publication used by NWI mapping (Cowardin et al., 1979). Wetlands were generally delineated within a minimum of 250 feet of proposed turbine locations, a 100 foot-wide corridor for proposed

access roads, and a 75 foot-wide corridor along proposed buried collection lines. In many locations, wetlands were delineated beyond these distances in order to site Project components away from wetland locations.

The results of the wetland delineation show that there are 57 wetlands identified within the disturbance footprint of the Project, including the alternate turbine locations and associated Project component locations. Figure 8 shows locations of delineated wetlands within the Project site. Cover classes included palustrine forested (PFO), palustrine emergent (PEM), and palustrine scrub/shrub (PSS), and there were wetland complexes that included combinations of these types. There were also 19 streams, including 10 perennial (RUP) and nine intermittent (RIN) streams.

The majority of the wetlands in the Project site are forested wetlands. Forested wetland communities are dominated by trees that are 20 feet or taller, but also include an understory of shrubs and herbaceous species. In the Project site, forested wetlands typically had a canopies dominated by red maple (*Acer rubrum*), and green ash (*Fraxinus pennsylvanica*), with other tree species such as American elm (*Ulmus americana*), and shagbark hickory (*Carya ovata*) present in lesser quantity. Understory vegetation typically included saplings of the above mentioned species and shrub species such as dogwoods (*Cornus* spp.), or willows (*Salix* spp.), and viburnum (*Virburnum* spp.). Herbaceous species in forested wetlands include sedges (*Carex* spp.), sensitive fern (*Onoclea sensibilis*), manna grasses (*Glyceria* spp.), spotted jewelweed (*Impatiens capensis*), cinnamon fern (*Osmunda cinnamomeum*), and false hellebore (*Veratrum viride*).

Scrub/schrub wetlands encountered during delineations were characterized by dense stands of shrub species less than 20 feet tall, including willows, silky dogwood (*Cornus amomum*), red osier dogwood (*Cornus sericea*), gray dogwood (*Cornus racemosa*), speckled alder (*Alnus incana*), northern meadow-sweet (*Spirea alba*), and nannyberry (*Viburnum lentago*). Herbaceous vegetation in these areas includes sensitive fern, ostrich fern (*Matteuccia struthiopteris*), tearthumb (*Persicaria sagittata*), field horsetail (*Equisetum arvense*), and various sedges.

Emergent wetlands encountered during delineations were generally dominated by graminoids, especially fringed sedge (*Carex crinita*), tussock sedge (*Carex stricta*), owlfruit sedge (*Carex stipata*), woolgrass (*Scripus cyperinus*), softrush (*Juncus* effusus), broadleaf cattail (*Typha latifolia*), and mannagrass (*Glyceria* sp.). Broadleaf flowering species common in these settings included marsh marigold (*Caltha palustris*), American speedwell (*Veronica americana*), willow-herb (*Epilobium* spp.), and true forget-me-not (*Myosotis scorpiodies*). Sensitive fern and cinnamon fern were also common.

2.2.1.3 Groundwater

The predominant source of drinking water in Franklin County is surface water, however, groundwater is the major water source in the immediate vicinity of the Project site. In Franklin County, groundwater is also used for industrial and irrigation purposes as well (see Table 9 in Section 2.2.1.1 of this SEIS). Information from the NYSDEC Water Well Program (NYSDEC, 2015c) indicates that there are 11 water wells in the Town of Chateaugay and eight in the Town of Bellmont; however this dataset is compiled only from completion reports since 2000 and is not comprehensive. There are additional private wells not listed on the NYSDEC Water Well Program website located throughout the Project site (generally in close proximity to occupied homes).

Aquifer locations and conditions within the Project site are generally as discussed in Section 2.1.1.3 of the DEIS. There are two aquifers that underlie the Project site, the Glacial Delta Deposits Sand and Gravel Aquifer and the Cambrian Potsdam Sandstone Aquifer. There are no sole source aquifers (i.e., those that supply greater than 50% of the available drinking water) in Franklin County.

2.2.2 Anticipated Impacts

2.2.2.1 Construction

Consistent with the discussion in Section 2.2.2.1 of the DEIS, the revised Project layout was designed through an iterative process of identifying wetland locations and siting Project components to avoid and minimize impacts to surface waters and wetlands. The revised Project layout achieves this by locating turbines outside of wetlands and by routing access roads and collection lines around wetlands and streams wherever possible. Where such avoidance was not possible (typically where linear wetlands and streams were encountered), narrow and/or previously disturbed portions of the wetlands and streams were chosen for crossing locations. In addition, the revised SEIS Project layout proposes overhead collection line at four wetland and stream crossing locations and underground boring of collection line at 19 wetland crossing sites. At overhead collection sites, the only impact to wetlands is from disturbance from vegetation clearing under the line. At underground bore sites, there are no wetland disturbance impacts.

Surface Waters and Wetlands

Types of direct temporary and permanent impacts to wetlands from Project construction are as described in Section 2.2.2.1 of the DEIS. These impacts typically result from constructing access roads, trenching collection lines, and creating temporary workspaces around turbine locations. Direct impacts would include excavating, placing fill in

wetlands, and clearing wetland vegetation. Indirect impacts to wetlands from construction include increased erosion and sedimentation.

Project construction associated with the 37 proposed turbines locations will result in disturbance of vegetation in approximately 3.70 acres of wetlands and streams. Within this 3.7 acres, a total of about 1.76 acres of soil disturbance is anticipated, of which 1.64 acres would be restored after construction though appropriate wetland restoration techniques. The remaining approximately 0.13 acres would be permanently converted to built facilities. Construction of Project facilities associated with the six alternate turbine sites would result in disturbance of a total of 2.78 acres of wetlands and streams. Within this 2.78 acres, a total of about 1.79 acres of soil would be disturbed, of which 1.73 acres of which would be restored after construction was complete. The remaining approximately 0.05 acres would be permanently lost to built facilities. Therefore, the total possible impact to wetlands for the Project, including all turbine sites and associated facilities under consideration, is about 6.48 acres of vegetation impact, inside of which about 3.37 acres of soil will be temporarily disturbed and 0.18 acres of wetland would be permanently lost. Table 13 compares soil disturbance values from the DEIS to the SEIS.

Table 13. Impacts to Wetlands for DEIS Project Layout and revised SEIS Project Layout

NWI Cover Type[1] by Project Facility	Temporary Soil Disturbance (acres)			Permanent Soil Disturbance and Forested Wetland Conversion (acres)		
	DEIS Layout	*SEIS Layout Proposed*	*SEIS Layout Alternates[2]*	*DEIS Layout*	*SEIS Layout Proposed*	*SEIS Layout Alternates[2]*
Access Roads						
PEM	0	0.025	0	0	0	0
PSS	0.09	0.062	0	0.15	0.084	0
PFO	0.45	0.091	0.063	0.72	0.042	.044
Stream	--	0	0.006	--	0	0.007
Open Water	--	0.003	0	--	0	0
Collection Line						
PEM	0.84	0.000	0.056	0	0	0
PSS	0	0.367	0	0	0	0
PFO	1.89	0.440	0.586	0	0	0
Stream	--	0.024	0.010	--	0	0
Cover Class Conversion[2]	--	--	--	1.49	0.875	0
Public and Private Temporary Road Improvements						
PEM	--	0.023	0	--	0	0
PSS	--	0.228	0	--	0	0
PFO	--	0.001	0.012	--	0	0
Laydown Areas[3]						
All wetland types	0	0	--	0	0	--
Substations						
All wetland types	0	0	--	0	0	--
Turbines						
PEM	0.07	0.23	0.296	0	0	0
PSS	0	0.141	0	0	0	0

NWI Cover Type[1] by Project Facility	Temporary Soil Disturbance (acres)			Permanent Soil Disturbance and Forested Wetland Conversion (acres)		
	DEIS Layout	*SEIS Layout Proposed*	*SEIS Layout Alternates[2]*	*DEIS Layout*	*SEIS Layout Proposed*	*SEIS Layout Alternates[2]*
PFO	5.47	0	0.705	0	0	0
Subtotal by Facility						
Subtotal Access Roads	0.54	0.181	0.069	0.87	0.126	0.051
Subtotal Collection Line	2.73	0.831	0.652	0	0	0
Subtotal Road Improvements	--	0.252	0.012	--	0	0
Subtotal Laydown Area	0	0	0	0	0	0
Subtotal Substation	0	0	0	0	0	0
Subtotal Turbines	5.54	0.371	1.001	0	0	0
Subtotal by Cover Type						
Subtotal PEM	0.91	0.278	0.352	0	0	0
Subtotal PSS	0	0.798	0	0	0.084	0
Subtotal PFO	7.81	0.532	1.366	0.72	0.042	.044
Subtotal Stream	--	0.024	0.010	--	0	0.007
Subtotal Open Water	--	0.003	0	0	0	0
Total Soil Disturbance[4]	**8.81**	**1.64**	**1.73**	**0.87**	**0.13**	**0.05**
Total Cover Class Conversion*				**1.49**	**0.875**	**0**

[1]NWI cover types are abbreviated as follows: PEM = palustrine emergent, PSS = palustrine scrub/shrub, PFO = palustrine forested.
[2] In addition to the 37 turbines proposed in the SEIS, six alternate turbine locations and associated Project components are being considered. The final Project will have 37 turbines.
[2]Cover class conversion for the SEIS layout represents the area of forested wetlands that would be permanently converted to non-forested palustrine wetlands through routine vegetation maintenance practices under overhead collection line.

Even when taking all 43 turbine sites into consideration, anticipated impacts to wetlands are lower for the SEIS Project than they were for the DEIS Project. The DEIS value for total temporary impact wetland impact was 8.81 acres of soil and vegetation disturbance. At 6.48 acres, the total possible impact for all of the 43 turbine sites under consideration is about 74% of the DEIS total temporary wetland impact. At 3.37 acres, the temporary soil disturbance is about 38% of the DEIS temporary soil impact. Permanent wetland impact for all the all 43 turbine sites and associated facilities of the revised SEIS Project layout is only about 21% of the total permanent wetland impact anticipated for the DEIS Project layout. These differences are primarily explained by two factors. The first is that the revised SEIS Project is proposed to have fewer turbines (the DEIS proposed 53 turbines), which results in less space occupied by Project facilities and reduces impacts to wetlands. The second is that the Applicant proposes to shift turbine workspaces away from wetlands as well as using overhead collection line and routing collection line under wetlands and streams through boring. These measures substantially reduce wetland impacts. Project engineers will determine feasibility of reducing access road width to 16 feet where the roads cross wetlands, a measure that would reduce impacts to wetlands further.

Clearing within forested wetlands is also considered a long-term impact because it results in a conversion to emergent or scrub/shrub wetlands. Of the 6.48 acres of wetland vegetation clearing that are possible for the 43 turbine site impact analysis, 2.6 acres (1.01 acres for 37 proposed turbines and 1.59 acres for six alternate turbines) would be to wetland forest that was cleared and allowed to regenerate. This includes areas along buried interconnect, access roads, and

temporary road improvements. An additional 0.88 acres of forested wetland would be permanently converted to emergent or scrub/shrub wetlands through continual clearing under overhead collection line. Many wetlands delineated in the Project site contain multiple cover types (for example, part is forested and part is emergent). In order to conservatively estimate impacts from forested wetland clearing, any wetlands that were even partially forested were included in the calculation of forested wetland impacts.

Table 14. Wetlands Crossed by the Project

Wetland ID	NWI Cover Type[1]	Total Vegetation Disturbance (acres)	Temporary Soil Disturbance (acres)	Permanent Soil Disturbance (acres)
A	PFO/PEM	0.09	0.01	0.00
B	PFO	0.08	0.00	0.00
E	PSS	0.02	0.00	0.00
F	RUP	0.03	0.01	0.00
G	PFO/PEM	0.02	0.00	0.00
J	PFO	0.06	0.02	0.00
L	PFO/PEM	0.07	0.02	0.00
M	PFO/PEM	0.08	0.01	0.00
N	RIN/PSS/PEM	0.05	0.00	0.00
P	RIN/PSS/PEM	0.20	0.06	0.04
R	PFO	0.22	0.05	0.00
S	PSS/PEM	0.20	0.05	0.00
T	PFO	0.23	0.05	0.00
U	PFO	0.26	0.13	0.00
BB	PFO	0.18	0.08	0.00
CC	PFO/PEM	0.42	0.10	0.00
GG	PSS/PEM	0.11	0.02	0.00
KK	RIN/PEM	0.03	0.13	0.00
LL	PFO	0.19	0.06	0.03
NN	RIN/PEM	0.13	0.15	0.05
OO	OW	0.04	0.00	0.00
PP	RUP/PEM/PSS	0.56	0.44	0.00
QQ	PEM	0.32	0.30	0.00
RR	PFO	0.04	0.01	0.00
SS	PFO/RIN	0.35	0.06	0.04
TT	PFO	0.33	0.33	0.00
VV	RUP	0.06	0.02	0.01
WW	PFO/PSS	0.83	0.55	0.00
XX	PSS	0.03	0.02	0.01
YY	PFO/PSS	0.82	0.40	0.00
ZZ	OW/PEM	0.06	0.06	0.00

Wetland ID	NWI Cover Type[1]	Total Vegetation Disturbance (acres)	Temporary Soil Disturbance (acres)	Permanent Soil Disturbance (acres)
AAA	PSS	0.13	0.13	0.00
CCC	RIN/PSS	0.10	0.09	0.00
FFF	PSS/PEM	0.14	0.00	0.00
GGG	RIN	0.02	0.01	0.00
Total		**6.48**	**3.37**	**0.18**

[1]NWI cover types are abbreviated as follows: PEM = palustrine emergent, PSS = palustrine scrub/shrub, PFO = palustrine forested, RIN = riverine intermittent, RUP = riverine perennial.

For the purposes of this SEIS, it is assumed that construction of the wind turbine foundations would require the permanent conversion of lands within a 50-foot radius of the turbine site for Project facilities, and temporary possible disturbance within a 250-foot radius (see Section 1.6, Table 3 for assumed temporary and permanent soil disturbance impacts from Project components). NYSDEC regulated wetlands as well as a 100-foot buffer around them were avoided entirely, and the Project will not have any temporary or permanent impacts to NYSDEC wetlands. Where wetlands occur within 250 feet of a turbine, in most cases work areas have been shifted to avoid wetland impacts. Construction of the 37 proposed turbines will result in temporary disturbance of about 0.37 acres of wetlands and streams. Construction of the six alternate turbines would result in temporary disturbance of about 1.0 acres of wetlands and streams. Construction and operation of turbines will not result in permanent wetland impacts.

It is assumed that construction of access roads would result in temporary vegetation clearing within a 100-foot corridor and a temporary soil disturbance within a 54-foot corridor, with a 34-foot corridor permanently impacted through construction of the access road. Project access roads were sited to reduce impacts to wetlands, although some impacts are unavoidable despite this careful siting. Construction of access roads serving the 37 proposed turbines will result in temporary vegetation disturbance of 0.8 acres, temporary soil disturbance of about 0.18 acres, and permanent loss of about 0.13 acres of wetlands. Construction of access road serving the six alternate turbine locations would result in temporary disturbance of about 0.35 acres of vegetation, temporary disturbance of about 0.07 acres of wetland soils, and permanent loss of about 0.05 acres of wetlands.

The electrical collection system is anticipated to be almost entirely buried, however, it will cross wetlands overhead in four locations. For the purposes of this SEIS, it is assumed that buried collection lines could result in up to 75-foot wide corridors in which the vegetation is cleared and within that, 35-foot wide corridors in which the soil is temporarily disturbed. Buried collection lines result in no permanent soil disturbance. Overhead collection lines result in 150-foot corridors for vegetation clearing through wetlands. Construction of collection line serving the 37 proposed turbines will result in temporary disturbance of about 2.52 acres of wetland vegetation and temporary disturbance of 0.831 acres of wetland soils. Buried collection line will not result in permanent wetland disturbance. However, because the area

under overhead collection line will be periodically cleared, the overhead collection line will result in about 0.9 acres of forested wetland conversion.

The locations for the meteorological tower, the O&M building, the laydown yard, and the Project substation have been sited to avoid all temporary and permanent impacts to wetlands, including forested wetland conversions.

Groundwater

The impact of Project construction on groundwater resources is generally as discussed in Section 2.2.2.1 of the DEIS. Construction of Project components will result in creation of only a small area of impervious surface, which would be too small to have a significant impact on groundwater recharge rates. Residential wells are typically located close to residences, so setbacks from residences (at least 1000 feet in the Town of Bellmont and at least 1200 feet in the Town of Chateaugay) generally maintain setbacks from wells as well.

Project construction activities will have the potential to impact localized groundwater flow paths in areas where excavation (or blasting) occurs below the water table. In these instances, water is anticipated to flow around the disturbance and resume its original flow direction down gradient of the disturbance. Groundwater that infiltrates into the excavation may require removal by pumping, which could have a minor effect on the elevation of the water table. However, this water will be pumped to the surface and allowed to infiltrate back into the water table with negligible loss of volume due to evaporation. Therefore, any effect will be very localized and temporary.

Installation of the concrete foundations could cause a temporary, localized increase in groundwater chemistry (pH) during the curing process. This effect will not extend beyond the immediate area of the foundation and will not adversely affect groundwater quality. In the event that a perched groundwater condition should be encountered at a turbine site, temporary construction dewatering methods would be employed, as described above. Turbine foundations have typically been designed to resist hydrostatic forces, when required, rather than installing permanent drainage systems. Prior to Project construction, soil borings will be conducted to determine groundwater levels (among other factors) at the turbine locations. Should shallow/perched groundwater be encountered, related potential construction impacts are anticipated to be addressed through relatively common engineering measures and construction techniques.

In addition to impacts to groundwater due to turbine foundation installation, minor impacts could result from the installation of buried interconnect lines which may facilitate groundwater migration along trench backfill in areas of shallow groundwater. Due to the decompaction of soils within the trench of the buried interconnect, water could collect in the trench and migrate through the trench to areas of lower elevation, where it is naturally allowed to infiltrate back into the water table with negligible loss of volume.

An additional potential impact to groundwater is the introduction of pollutants to groundwater from the accidental discharge of petroleum or other chemicals used during construction, operations or maintenance. Such discharges could occur in the form of minor leaks from fuel and hydraulic systems, as well as more substantial spills that could occur during refueling or due to mechanical failures and other accidents.

2.2.2.2 Operation

Surface Waters and Wetlands

Types of impacts to surface waters and wetlands from Project operation are as discussed in Section 2.2.2.2 of the DEIS. While routine maintenance and operation is not expected to have any impacts to wetlands and waterbodies, emergency repairs, access road and culvert repairs, and accidental fuel spills could result in occasional adverse impacts to wetlands and streams. Some forested wetlands along overhead collection line would experience impacts for the life of the Project through periodic vegetation thinning; these impacts are accounted for in the forested wetland conversion impacts discussion in Section 2.2.2.1 of this SEIS. Wetlands filled for construction of access roads during the construction phase represent a loss of wetlands for the life of the Project; these impacts are accounted for the permanent loss of wetlands discussion in Section 2.2.2.1 of this SEIS.

Groundwater

Impacts to groundwater from Project operation are as discussed in Section 2.2.2.2 of the DEIS. Most Project impacts to groundwater are associated with Project construction, however, it is possible that Project operation could have minor impacts to groundwater, including changes to rates and patterns of shallow groundwater movement in the vicinity of Project components and changes to flow patterns where groundwater encounters backfilled trenches.

2.2.3 Mitigation Measures

Mitigation measures for impacts from Project construction and operation are generally as discussed in Section 2.2.3 of the DEIS. Project components have been sited to avoid wetland impacts where practicable. Directional drilling/boring of collection line under wetlands and streams is proposed at nineteen locations, and overhead collection line is proposed at four locations. These measures greatly reduce anticipated wetland impacts and the need for additional mitigation. Project engineers will determine feasibility of reducing access road width to 16 feet where the roads cross wetlands, an additional measure that would reduce impacts to wetlands further.

However, some adverse impacts to wetlands are unavoidable, and additional mitigation measures would be employed to compensate for these impacts. The Applicant is proposing compensatory mitigation in accordance with the Wetland Compensation Plan that is being developed through consultation with state and federal permitting agencies (NYSDEC

and USACE). This Plan will ensure "no net loss" of wetlands. Wetland mitigation typically includes in-kind replication or restoration of impacted wetlands with a mitigation ratio to impact ratio of 1:1 for emergent wetlands, 1.5:1 for scrub-shrub wetlands, and 2:1 for forested wetlands. The Plan will identify suitable mitigation sites and address the following issues: selection of mitigation sites, mitigation types, groundwater data, micro-environments, stream impacts, and temporary impacts.

Additional mitigation measures will be utilized on-site to reduce impacts to wetland and groundwater resources. These measures are discussed in detail in Section 2.2.3 of the DEIS, and they include the Applicant employing an environmental inspector to oversee on-site compliance with environmental permits and regulations, setting up "No Equipment Access Areas," and restricting the use of chemicals and pesticides in proximity to wetlands. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared in accordance with NYSDEC guidelines that will include measures to minimize erosion and sediment impacts to surface waters and wetlands and submitted as part of the FEIS. (The SWPPP from EDPR's Marble River Wind Farm is attached as Appendix H and is similar to the SWPPP that will be completed for the Project.) Measures include using silt fence, seeding and mulching as soon as possible after disturbance is complete, and treating fugitive dust with water or dust suppressant. All groundwater pumped out of excavation sites will be sent through a velocity dissipating and sediment control device to improve the quality of the water discharged to the ground surface. The SWPPP will provide additional details regarding control and mitigation measures that will be implemented to avoid impacts to surface waters and wetlands and will be prepared in accordance with the NYSDEC Stormwater Design Manual and Standards and Specifications for Erosion and Sediment Control. Prior to construction, a final Project specific SWPPP will be prepared and submitted as required to obtain the State Pollutant Discharge Elimination Systems (SPDES) General Permit for Stormwater Discharges during Construction Activities. A Construction Spill Prevention, Control, and Countermeasure (SPCC) Plan will be implemented to mitigate the impact of any construction-related spills or leaks that could contaminate groundwater (The SPCC Plan for EDPR's Marble River Wind Project is attached as Appendix F and is substantially similar to the Plan that will be prepared for the Project). The final Plan will be submitted to local emergency response teams and the Towns for review prior to initiation of construction.

Post-Construction Monitoring Plan

The Post-Construction Monitoring Plan for the Project is as discussed in Section 2.2.3 of the DEIS. This Plan outlines measures that will be taken to assure that wetlands temporarily impacted by Project construction are properly restored and redeveloped in functional wetlands following restoration.

2.3 BIOLOGICAL, TERRESTRIAL & AQUATIC ECOLOGY

2.3.1 Existing Conditions

2.3.1.1 Vegetation and Ecological Communities

The on-site vegetation and ecological communities within the Project site are generally as described in Section 2.3.1.1 of the DEIS. Land use within the Project site has not changed substantially since the DEIS was released in 2008, and there have been no major changes to on-site vegetation and ecological communities. An updated analysis of vegetation within the Project site is provided here due to updates in the boundaries defining the study area (DEIS Project Area versus revised SEIS Project site). This analysis utilized recent aerial imagery and on-site ground truthing in 2015 to categorize all lands into ecological communities, or land cover classes. Table 15 lists acreage and percent of each cover class within the Project site. Also see Figure 9 for results of the updated ecological community mapping. Section 2.2 of this SEIS contains additional information regarding wetland and stream communities within the Project site.

Table 15. Land Cover Classes within the Project Site

Land Cover Class	Acres	Percent Cover (%)
Forested	3294.3	56
Successional Shrubland/Old Field	391.1	7
Agriculture	2079.8	35
Open Water	17.9	<1
Disturbed/Developed	111.3	2

Approximately 3294 acres (56%), within the Project site (defined as all participating parcels) is forested. The majority of these forests are successional northern hardwood forests (as defined by Edinger et al., 2014), that were once logged or cleared for agriculture. They typically have a diverse mix of tree species including quaking aspen (*Populus tremuloides*), black cherry (*Prunus serotina*), red maple (*Acer rubrum*), gray birch (*Betula populifolia*), eastern hemlock (*Tsuga canadensis*), white ash (*Fraxinus americana*), green ash (*Fraxinus pennsylvanica*), balsam fir (*Abies balsamea*), and American beech (*Fagus grandifolia*). These successional forests are variable with respect to tree age and size, and often grow in association with successional shrubs such as common blackberry (*Rubus alleghaniensis*).

Also common in less disturbed areas within the Project site are beech maple mesic forests, which are dominated by sugar maple (*Acer saccharum*) and beech, with occasional yellow birch (*Betula alleghaniensis*), basswood (*Tilia americana*), black cherry, and hemlock. The understory supports few shrubs but does support a diverse herbaceous

layer, including blue cohosh (*Caulophyllum thalictroides*), trout lily (*Erythronium americanum*), Canada mayflower (*Maianthemum canadense*), violet (*Viola* spp.), wild leek (*Allium tricoccum*), wild sarsaparilla (*Aralia nudicaulis*), and common wood-sorrel (*Oxalis montana*). Commercial sugar bush operations within the Project site occur in these types of forests, which typically occur on mid to upper slopes.

Lower slopes in the Project site also include hemlock-northern hardwood forests, which are dominated by eastern hemlock and can also have red maple, yellow birch, or beech as codominants. The understory is variable in these forests; places where hemlocks completely dominate have very little understory, but where there is a hemlock and deciduous mix, hobble bush (*Viburnum lantanoides*) is often present in the shrub layer. The herbaceous layer often includes partridge berry (*Mitchella repens*), jack-in-the-pulpit (*Arisaema triphyllum*), wild sarsaparilla, intermediate wood fern (*Dryopteris intermedia*), and Christmas fern (*Polystichum acrostichoides*). As hemlock-northern hardwood forests typically occur in steep ravines and lower slopes, they are often adjacent to wetlands in the Project site. Forested wetlands within the Project site are typically dominated by red maple and green ash (see additional discussion of Project site wetlands in Section 2.2.1.2 of this SEIS).

There are also several conifer plantations scattered throughout the Project site. According to Edinger et al. (2014), a conifer plantation is "a stand of softwoods planted for the cultivation and harvest of timber products, or to provide wildlife habitat, soil erosion control, windbreaks, or landscaping." Conifer plantations in the Project site are most commonly monocultures of red pine (*Pinus resinosa*), with white pine (*P. strobus*) and Scots pine (*P. sylvestris*) plantations occurring less frequently. There are also several sites once used as Christmas tree farms that are planted in balsam fir and spruce (*Picea* spp.).

Early successional communities account for about 391 acres (7%) of the Project site. This includes successional old fields and successional shrublands. According to Edinger et al. (2014), these communities occur on sites that have been cleared and plowed for farming or development, and then abandoned. Successional old fields are typically mowed periodically and have less than 50% shrub cover, while successional shrublands have greater than 50% shrub cover. They occur in both upland and wetland environments, and often have a diverse set of shrubs and herbaceous species, including blackberry, red raspberry (*Rubus ideaus*), hawthorn (*Crateagus* spp.), and highbush cranberry (*Viburnum opulus* var. *americanum*) in drier places, with meadowsweet (*Spirea alba*), willows (*Salix* spp.), and dogwoods (*Cornus* spp.) in wetter areas. Common herbaceous species in early successional communities include goldenrods (*Solidago* spp.), asters (*Symphyotrichum* spp.), old field cinquefoil (*Potentilla simplex*), wild strawberry (*Fragaria virginiana*), and Queen-Anne's lace (*Daucus carota*). Vines such as wild grape (*Vitis* spp.) and black bindweed (*Fallopia convolvulus*) are common in these communities as well.

Agricultural fields account for about 2080 acres (35%) of the land cover within the Project site. Cultivated fields are primarily planted in corn and hay. The hayfields and pasture lands typically have abundant orchard grass (*Dactylis glomerata*), smooth brome (*Bromus inermis*), Kentucky blue grass (*Poa pratensis*), meadow timothy (*Phleum pretense*), white bedstraw (*Gallium mollugo*), red clover (*Trifolium pretense*), dandelion (*Taraxacum officinale*), autumn hawkbit (*Leontodon autumnalis*), and cow vetch (*Vicia cracca*).

2.3.1.2 Significant Ecological Communities and Rare Plant Species

The New York Natural Heritage Program (NYNHP) tracks rare, threatened, and endangered (RTE) plant and animal species that occur throughout the state, as well as ecological communities that are unique or of special ecological significance. Site-specific correspondence with NYNHP indicated that there are no known RTE plant species within the Project site, nor are there any previously-documented significant natural communities (see Appendix C). Site-specific correspondence with U.S. Fish and Wildlife Service (USFWS) through their Information for Planning and Conservation (IPAC) database also indicated that there are no federally-listed threatened, endangered, or candidate plant species within the Project site (see Appendix C. These agency databases, however, only track known occurrences of these species. As noted in the DEIS, absence of a species from the list does not necessarily mean that that species does not occur within the area. Therefore, a rare plant survey was conducted in 2015 targeting RTE plants known from Franklin County that have suitable habitat within the Project site (Weldy et al., 2015). Plant species on the RTE list and their state ranks continually change as more data regarding species distributions and rarity come to light. Therefore, the RTE plant species list in Table 2.3-3 of the DEIS has been updated below, in Table 16. Targets for the rare plant survey are those species with suitable habitat within the Project site.

Rare plant surveys took place between July 27 and August 12, a period during which all target rare plant species would be in flower or fruit. Rare plant surveys were conducted in accordance with methods recommended by NYNHP (NYNHP, 2015). The area surveyed consisted of the footprint of disturbance of Project components in areas where suitable habitat occurred. Areas without suitable habitat (e.g., plowed agricultural fields, buildings, yards) were not surveyed. Full methodology and results from the rare plant survey are described in Appendix I.

No RTE plant species were identified within the Project site during rare plant surveys. A total of 350 species of plants were observed on the Project site during the rare plant surveys and other site visits. A list of all plant species documented on the Project site is included in Appendix I.

Table 16. Rare, Threatened and Endangered Plants Known from Franklin County.

Scientific Name	Common Name	Global Rank[1]	State Rank[2]	State Legal Status[3]	Wetland Indicator[4]
Potentially Suitable Habitat Present					
Boechera stricta	rock cress	G5	S2	T	FACU
Calamagrostis pickeringii	Pickering's reed bentgrass	G4	S3	R	FACW
Calamagrostis stricta ssp. inexpansa	New England northern reedgrass	G5T5	S2	T	FACW
Carex arcta	northern clustered sedge	G5	S1	E	OBL
Carex cryptolesis	northeastern sedge	G4	S3	R	OBL
Carex haydenii	cloud sedge	G5	S1	E	OBL
Carex houghtoniana	Houghton's sedge	G5	S2	T	NL
Carex merritt-fernaldii	Fernald's sedge	G5	S2S3	T	NL
Carex wiegandii	Wiegand's sedge	G4	S1	E	OBL
Ceratophyllum echinatum	prickly hornwort	G4?	S3	R	OBL
Cyperus echinatus	globose flatsedge	G5	S1	E	FAC
Diphasiastrum sitchense	Sitka clubmoss	G5	S1	E	NL
Dracocephalum parviflorum	American dragonhead	G5	S1	E	FACU
Eleocharis ovata	ovate spikerush	G5	S1S2	E	OBL
Hedeoma hispida	mock-pennyroyal	G5	S2S3	T	NL
Hippuris vulgaris	common mare's-tail	G5	S1	E	OBL
Huperzia selago	fir clubmoss	G5	S1	E	FACU
Lycopus rubellus	stalked bugleweed	G5	S1	E	OBL
Myriophyllum farwellii	Farwell's water-milfoil	G5	S2	T	OBL
Piptatherum canadense	Canada ricegrass	G5	S2	T	NL
Podostemum ceratophyllum	riverweed	G5	S2	T	OBL
Potamogeton alpinus	northern pondweed	G5	S2	T	OBL
Potamogeton diversifolius	water-thread pondweed	G5	S1	E	OBL
Pyrola asarifolia var. *asarifolia*	pink wintergreen	G5T5	S2	T	FACW
Rhynchospora fusca	brown beak-rush	G4G5	S3S4	R	OBL
Rhododendron canadense	rhodora	G5	S2	T	FACW
Salix pyrifolia	balsam willow	G5	S3	R	FACW
Schoenoplectus heterochaetus	slender bulrush	G5	S1	E	OBL
Sparganium natans	small bur-reed	G5	S2	T	OBL
Subularia aquatica vs. americana	American water awlwort	G5T5	S1S2	E	OBL
Symphyotrichum boreale	boreal aster	G5	S2	T	OBL
Symphyotrichum ontarionis	bottomland aster	G5	S3	R	FAC
Utricularia geminiscapa	hiddenfruit bladderwort	G4G5	S3	R	OBL
Suitable Habitat Not Present					
Arethusa bulbosa	dragon's mouth orchid	G4	S2	T	OBL
Betula pumila	swamp birch	G5	S2	T	OBL
Carex oligosperma	few-seeded sedge	G5?	S3	R	OBL
Dryopteris fragrans	fragrant cliff fern	G5	S1	E	NL
Eriophorum angustifolium spp. angustifolium	narrow-leaved cottongrass	G5T5	SH	E	OBL
Kalmia procumbens	alpine azalea	G5	S1	E	FACW
Oclemena nemoralis	bog aster	G5	S3	R	OBL
Scheuchzeria palustris	American scheuchzeria	G5	S3	R	OBL
Solidago leiocarpa	alpine goldenrod	G4	S2	T	NL
Spinulum canadense	*northern bristly clubmoss*	G4G5	S1S2	E	NL
Vaccinium boreale	high-mountain blueberry	G4	S2	T	NL
Viola nephrophylla	northern bog violet	G5	S1	E	FACW

[1]Global ranks refers to the NatureServe Conservation Status for the species range. Ranks range from G1 (critically imperiled) to G5 (demonstrably secure). T refers to Taxa and is indicates that the rank refers to the variety or subspecies.

[2]State rank is applied with the same criteria as global rank, but refers to the status of the plant within the state. SH refers to historic species that have not been verified in the past 20-40 years, with some effort made to locate the species.

[3]State Legal Status is the status assigned on the New York Rare Plant Status List (Young, 2010). E= Endangered, T= Threatened, R = Rare. These plants are protected under New York State Environmental Conservation Law section 9-1503.

[4]Wetland indicator status designates a plant species' preference for occurrence in a wetland or upland. OBL = obligate wetland plant, almost always occurs in wetlands. FACW = facultative wetland plant, usually occurs in wetlands. FAC = Facultative plant, occurs in wetlands and non-wetlands. FACU = facultative upland plant, usually occurs in wetlands. UPL = obligate upland plant, almost never occurs in wetlands.

2.3.1.3 Wildlife and Terrestrial Habitat

In general, the discussion of wildlife and terrestrial habitat within the Project site provided in Section 2.3.1.3 of the DEIS remains relevant to the revised Project. However, an updated discussion of these resources is provided here that incorporates the most recent data included in the New York State Breeding Bird Atlas, the New York State Amphibian and Reptile Atlas, and site-specific avian and bat studies conducted by Western EcoSystems Technology (WEST). Site-specific wildlife inventories conducted for the DEIS in 2007 are still relevant. However, supplemental surveys for breeding birds, eagles, and northern long-eared bats were conducted by WEST in 2015. Results of those surveys are described in this section and in Section 2.3.1.4 of this SEIS.

Birds

The discussion of birds within the Project site provided in the DEIS remains relevant. Because habitat conditions have remained relatively unchanged, species documented in 2007 are still considered likely to occur within the Project site at some time, even if they were not documented in 2015.

Breeding Bird Survey

As discussed in Section 2.3.1.3 of the DEIS, the New York State Breeding Bird Atlas (BBA) blocks in the vicinity of the Project site were reviewed to generate a list of possible breeding bird species. The BBA for northern New York was most recently published in 2007 with data collected between 2000 and 2005. BBA survey blocks 5697C, 5697D, 5696A, and 5696B contain records for 100 species, with 17 of these confirmed as breeders, 55 indicated as probable breeders, and the remaining 28 identified as possible breeders (NYSDEC, 2007b). Within the BBA list, there were six birds also listed on the NYNHP rare animal list; these are listed in Table 17 in Section 2.3.1.4. Most of the birds documented in the area by the BBA are protected by the Migratory Bird Treaty Act (MBTA).

The on-site breeding bird survey conducted by WEST in 2015 supplements the BBA data and the results of the breeding bird survey that was conducted in 2007. Surveys took place from May to July of 2015, in accordance with

methods described in the current NYSDEC Guidelines (NYSDEC, 2009). Twenty-two 300-meter transects were established within the Project site near proposed turbine locations and in reference areas where no turbines are proposed. Transects were located to avoid cultivated (plowed agriculture) fields and were selected to broadly cover the various habitat types present within the Project site (see Appendix J for additional details about survey methodology). Each transect was surveyed four times between May 29 and July 8, 2015, during the period from one half-hour before, to four hours after, sunrise on days without inclement weather.

The on-site breeding bird surveys documented a total of 75 different bird species. The most abundant species observed were red-eyed vireo (*Vireo olivaceus*), ovenbird (*Seiurus aurocapilla*), bobolink (*Dolichonyx oryzivorus*), savannah sparrow (*Passerculus sandwichensis*), and chestnut-sided warbler (*Setophaga pensylvanica*). These species occupy a variety of habitats characteristic of uplands in the Project site. For example, bobolink and savannah sparrow are grassland species, while ovenbird and red-eyed vireo prefer mature forests. Chestnut-sided warbler prefers successional shrubland environments. No federally-listed species were observed, and only one New York State-listed species was observed: the sharp-shinned hawk (*Accipiter striatus*), a species of special concern. The presence of sharp-shinned hawk is addressed below, and also in Section 2.3.1.4 of this SEIS.

Migratory Raptors

The discussion of migratory raptors presented in Section 2.3.1.3 of the DEIS remains relevant. There are two Hawkwatch sites near the Project site (Hawk Migration Association of North America, 2015). The Montreal West Island Hawkwatch, approximately 35 miles north of the Project site, continues to document migratory raptors during the fall migration. Between 1980 and 2013, a total of 17 raptor species were documented at the Montreal West Island Hawkwatch, the most common including broad-winged hawk (*Buteo platypterus*) (average of 2519 individuals observed per fall season), red-tailed hawk (1218) (*Buteo jamaicaensis*), sharp-shinned hawk (405), and turkey vulture (*Cathartes aura*) (162). The Eagle Crossing Hawkwatch, approximately 20 miles north of the Project site, also continues to report similar numbers for the spring migration, from March through early June (Hawk Migration Association of America, 2015). Between 1980 and 2013, a total of 18 raptor species have been documented here, the most common including broad-winged hawk (average of 877 individuals observed per spring season), red-tailed hawk (805), rough-legged hawk (*Buteo lagopus*) (232), and turkey vulture (166). These locations are relatively close to the Project site, and given the long distances raptors travel during migration, it is possible that individuals documented at these Hawkwatch sites occasionally move through the Project site.

Field surveys for bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) to supplement data obtained during the 2007 on-site studies for the DEIS are being conducted on the Project site by WEST from January to December, 2015. The results of this study will be provided to the USFWS, with jurisdiction over eagles, and the

NYSDEC upon completion. The surveys are being conducted according to recommendations of the USFWS in their *Eagle Conservation Plan Guidance* (USFWS 2013) and to inform the need for further federal action related to bald eagles. Six point count locations, each of which cover an area of about 2 square kilometers, were identified within the Project site. These locations are being surveyed approximately twice per month from November to February and three times per month from April to October. The study will also provide information on the potential occurrence of other sensitive grassland raptor species that may use the Project site. These types of observational surveys are consistent with the USFWS *Eagle Conservation Plan Guidance for Land-Based Wind Energy* for characterizing levels of eagle use and calculating risk to eagles (USFWS, 2013).

At release of this SEIS, eagle surveys are on-going. However, survey results are available for the period from January 6 to August 28, 2015. During this time period, only three bald eagles were observed. These low numbers indicate that bald eagle occurrence within the Project site is rare. Other raptor species observed from the January to August survey period included American kestrel (*Falco sparverius*) (49 individuals), broad-winged hawk (21), northern goshawk (*Accipiter gentilis*) (1), northern harrier (*Circus cyaneus*) (8), rough-legged hawk (2), red-tailed hawk (38), and sharp-shinned hawk (2), and Cooper's hawk (*Accipiter cooperii*) (1). One additional northern harrier was observed incidentally while conducting the study. The northern harrier and bald eagle are both listed by New York State as threatened, while the sharp-shinned hawk, Cooper's hawk, and northern goshawk are New York State species of special concern. These species are discussed further in Section 2.3.1.4.

Nocturnal Migrants

The discussion of nocturnal migrants in the vicinity of the Project site, as described in Section 2.3.1.3 of the DEIS, remains relevant. However, due to the proposed use of taller turbines for the modified Project (374 feet for the DEIS to 492 feet for the SEIS), and additional radar study results that have been published for the region since 2008, the NYSDEC and USFWS requested that an updated analysis of potential impacts to nocturnal migrants from the Project be prepared. Therefore, an updated review of the literature was conducted by WEST, with the purpose of characterizing the magnitude of potential nocturnal migration over the Project site compared with other windfarms in New York (data from 21 wind farms reviewed) and the Northeastern United States (data from an additional 10 wind farms in Vermont, New Hampshire and Pennsylvania reviewed).

The current proposal is for a turbine model that would be approximately 149 meters (492 feet) tall with a blade extending straight up. This would be approximately 118 feet taller than the zone of risk analyzed for the DEIS and for most of the studies in the review. The taller turbines suggest that, on average, a slightly higher percent of nocturnal migrants would be within the zone of collision risk when compared to the DEIS turbine model. However, the mean flight height for all the studies summarized was 400 meters in the spring and 442 meters in the fall, well above the 149 meter collision

zone for the modified Project. Two radar studies conducted within approximately 8 miles of the center of the Project site documented mean flight heights well above the zone of collision risk for the modified Jericho Rise Wind Farm. A study at the Marble River Wind Farm indicated mean flight heights of 422 meters and 438 meters, respectively, during the spring and fall of 2005. A study at the Noble Clinton Windpark documented mean flight heights of 338 and 333 meters, respectively, during the spring and fall of 2005. Passage rates documented at these nearby radar study locations also show that the passage rate of nocturnal migrants in the vicinity of the Project site are relatively low when compared to other wind farms throughout the Northeastern United States. Average spring passage rates were 110 and 254 t/km/hr at the Noble Clinton and Marble River facilities, respectively, compared to an average of 322 t/km/hr for all of the studies reviewed. Similarly, fall passage rates were below average, with measured passage rates of 197 and 152 t/km/hr at the Noble Clinton and Marble River facilities, respectively, compared to an average of 321 t/km/hr for all of the studies reviewed.

Mammals

Since on-site wildlife studies were conducted for 2008 DEIS, white-nose syndrome (WNS) has decimated bat populations in the New York. The disease, one symptom of which is a fungus that appears on the muzzle and wings, changes bat behavior during hibernation in the winter months. The fungus causes mortality by altering behavior that then leads to bats leaving the hibernaculum early and using up their fat reserves before winter is over. The disease affects several bat species, including the big brown bat (*Eptesicus fuscus*), little brown bat (*Myotis luifugus*), and eastern pipistrelle (*Periomyotis subflavus*) that were identified on the Project site during 2007 acoustic and netting surveys. The disease has also been devastating to the northern long-eared bat (*Myotis septentrionalis*), whose populations in New York State have declined by 98% since onset of WNS (NYSDEC, 2012). This once-common bat was assigned a federal status of threatened, effective May 4, 2015 (USFWS, 2015b), following five years of review, analysis, and public comment (also see additional discussion of threatened species provided in Section 2.3.1.4 of this SEIS). The northern long-eared bat was not documented on the Project site during 2007 surveys, however, given its threatened status, additional surveys were completed in 2015. Results of the surveys are included in Appendix K. The surveys were conducted according to the USFWS guidance for presence/absence surveys. Three northern long-eared bat calls were confirmed from two surveyed sites within the Project area. Additional mist-net surveys were conducted at those sites, but no northern long-eared bats were captured. See additional detail regarding 2015 northern long-eared bat presence/absence surveys in Section 2.3.1.4 of this SEIS.

<u>Migratory Bats</u>

A discussion of the presence of migratory bats within the Project site is provided in Section 2.3.1.3 of the DEIS. Acoustic surveys were conducted for migratory bats from early August through mid-October 2007. The acoustic surveys measured the number of bat calls per night as recorded by AnaBat detectors that pick up calls from echo-

locating bats. Call activity varied by location within the Project site, ranging from 9 to 68 calls/night. Eastern red bats (*Lasiourus borealis*) and little brown bats were the most common calls identified in the Anabat data. Marine radar surveys were also conducted in August of 2007 to detect passage rates of nocturnal migrants (birds and bats). The radar surveys showed that passage rates of migrants though the Project site averaged between 11 targets per kilometer per hour (t/km/hr) and 59 t/km/hr. These rates varied greatly by night, but in comparison to studies conducted at other wind farm sites throughout the Northeast, passage rates are relatively low for the Project site. See Appendix E of the DEIS and Section 2.3.1.3 of the DEIS for additional discussion of survey methodology and results.

Resident Bats

A discussion of resident bat presence within the Project site is provided in Section 2.3.1.3 of the DEIS. AnaBat acoustic surveys and mist-netting surveys were conducted in 2007 in order to determine resident bat species present within the Project site. The most common bats encountered through the AnaBat acoustic surveys were eastern red bat, little brown bat, and big brown bat, with hoary bat (*Lasiurus cinereus*) and the eastern pipistrelle present, but occurring less frequently. Silver-haired bats (*Lasionycteris noctivagans*) may have been present, however, their calls are difficult to distinguish from big brown bat calls. Mist-netting surveys confirmed that little brown bat, and eastern red bat were common on the Project site in 2007. Neither of the 2007 survey methods identified Indiana bat (*Myotis sodalis*), northern long-eared bat, or eastern small-footed bat (*Myotis leibii*), which is a species of special concern. See Appendix E of the DEIS and Section 2.3.1.3 of the DEIS for additional discussion of methodology and results.

Due to the effect of WNS, and because northern long-eared bat has been federally listed as a threatened species (USFWS, 2015b), additional acoustic and mist-netting surveys were conducted in 2015 in order to assess the presence or absence of this species on the Project site. Three northern long-eared bat calls were confirmed from two surveyed sites within the Project area. Additional mist-net surveys were conducted at those sites, but no northern long-eared bats were captured. Potential eastern small-footed bat calls were also identified in the acoustic data from the northern long-eared bat survey by the acoustic analysis software, however further review of the acoustic data could not confirm the presence of this species. See additional detail regarding 2015 northern long-eared bat presence/absence surveys in Section 2.3.1.4 of this SEIS.

Other Mammals

A discussion of other mammals likely present within the Project site is provided in Section 2.3.1.3 of the DEIS. Mammals (or signs of their occurrence) observed during field surveys conducted by EDR included: whitetail deer (*Odocoileus virginianus*), coyote (*Canis latrans*), porcupine (*Erethizon dorsatum*), North American beaver (*Castor canadensis*), American red squirrel (*Tamiasciurus hudsonicus*), and eastern chipmunk (*Tamias striatus*). The Project site also provides suitable habitat for a variety of other common mammals including black bear (*Ursus americanus*),

eastern cottontail (*Sylvilagus floridanus*), gray squirrel (*Sciurus carolinensis*), raccoon (*Procyon lotor*), red fox (*Vulpes vulpes*), muskrat (*Ondatra zibethicus*), skunk (*Mephitis mephitis*), mice (*Mus* spp.), voles (*Microtus* spp.), and shrews (*Sorex* spp.).

Reptiles and Amphibians

A discussion of reptiles and amphibians that could occur on the Project site is provided in Section 2.3.1.3 of the DEIS. The updated Project site includes parts of four USGS 7.5 minute quadrangle maps (Brainardsville, Burke, Chasm Falls, and Chateaugay) and the State Amphibian and Reptile Atlas identifies 23 species known to occur in these quads, including eight salamander species, four snake species, two turtle species, and six frog species (NYSDEC, 2007a). These species are listed in Table 2.3-2 of the DEIS. In addition to those species reported in the DEIS, the common mudpuppy (*Necturus maculosus*) is also currently indicated by the Amphibian and Reptile Atlas as occurring in the vicinity of the Project site.

Fish

The discussion of the fish and the streams that support fisheries in the Project site provided in Section 2.3.1.3 of the DEIS remains relevant, except the Chateaugay River is no longer included within the boundaries of the Project site. Information on stocked streams remains relevant as well, except that currently Alder Brook is stocked with brook trout (*Salvelinus fontinalis*) rather than brown trout (*Salmo trutta*) (NYSDEC, 2015d).

Wildlife Habitats

A discussion of wildlife habitat within the Project site is provided in Section 2.3.1.3 of the DEIS. The Project site contains the following habitat types: agricultural land, successional shrublands and old field, forestland, emergent marsh, scrub/shrub wetlands, forested wetlands, and open water.

2.3.1.4 Threatened and Endangered Species

The discussion of threatened and endangered wildlife species within the Project site provided in Section 2.3.1.4 of the DEIS generally remains relevant. However, species being added to and removed from state and federal lists is a continual process and new information comes to light over time regarding species distributions, threats, and recovery. Therefore, an updated discussion of the threatened and endangered wildlife species that could occur within the Project site is provided below. Threatened and endangered plant species are addressed in Section 2.3.1.2 of this SEIS.

Site-specific correspondence and database review with NYNHP and USFWS identified several threatened, endangered, candidate, and sensitive wildlife species that could potentially occur within the Project site (see Appendix

C). Additionally, the BBA, New York State Amphibian and Reptile Atlas, and results of site-specific wildlife studies conducted during 2015 were consulted in order to identify any additional listed species documented in the area. Table 17 indicates the status of each of the listed species documented in the area, and indicates whether the species is expected based on agency correspondence, BBA consultation, observation on the Project site, or any combination of these. No critical habitat for any USFWS listed species occurs within the Project site.

Table 17. New York State Listed Wildlife Potentially Occurring on Project Site.

Species	NYS Legal Status	Source[1]	Comments
Birds			
Golden Eagle *Aquila chrysaetos*	Endangered	OS-07	Prefers remote mountainous areas with open habitat. Nests in cliffs or occasionally in very tall white pines. Very little suitable habitat in Project site. One individual observed in 2007 Project site surveys; none in 2015 Project site surveys.
Peregrine Falcon *Falco peregrinus*	Endangered	OS-07 NHP	Breeds in Adirondack Mountains, Hudson River, and on tall buildings in cities. Little suitable habitat present in Project site. One individual observed in 2007 Project site surveys, none in 2015 surveys.
Bald Eagle *Haliaeetus leucocephalus*	Threatened	OS-07 OS-15 BBA	Breeding habitat is large rivers, lakes, and other bodies of water where prey such as fish, waterfowl, and seabirds are abundant. Builds large nests in tall coniferous or deciduous trees near water. Little suitable habitat present in Project site. One individual observed in 2007 Project site surveys; three individuals in 2015 Project site surveys.
Least Bittern *Ixobrychus exilis*	Threatened	NHP	Often breed in shallow or deep emergent marshes, freshwater tidal marshes, or brackish tidal marshes. Prefer stands of cattails or bulrush with bur-reed, sedges, or common reed. Little suitable habitat present. Not observed during Project site surveys.
Northern Harrier *Circus cyaneus*	Threatened	OS-07 OS-15 NHP BBA	Found in marshes, meadows, grasslands, and cultivated fields. Perches on ground or on stumps or posts. Nests on the ground, commonly near low shrubs, in tall vegetation, sometimes in bogs, or on top of low bush above water. Forages on small birds and mammals. Habitat for breeders and migrants is prevalent in the Project site. Fifteen spring and eight fall migratory individuals and one breeding individual were observed in 2007 Project site surveys. Eight individuals were observed in 2015 Project site surveys.
Pied-billed Grebe *Podilymbus podiceps*	Threatened	NHP	Preferred habitat includes quiet marshes, marsh shorelines of ponds, shallow lakes, and slow-moving streams with vegetated banks. More common in open water habitats created by beavers than of glacial origin. Not observed during Project site surveys.
Upland Sandpiper *Bartramia longicauda*	Threatened	NHP	Preferred habitat includes large areas of short grass for feeding and courtship with interspersed or adjacent taller grasses for nesting and brood cover. Feeds on insects. Little suitable habitat present. Not observed during Project site surveys.
American Bittern *Botaurus lentiginosus*	Special Concern	BBA	Breeds in freshwater marshes where cattails, sedges, or bulrushes are plentiful, with access to open water and aquatic beds. Feeds on fish, amphibians, and crayfish. There is little suitable habitat available in the Project site. Not observed in Project site surveys.
Common Loon *Gavia immer*	Special Concern	NHP	Breeds in lakes containing deep and shallow waters, nests in marshy margins of shallow lakes. Feeds on aquatic species like invertebrates, fish, and amphibians. There are no lakes present within the Project site, therefore the species is not expected for the Project site. Not observed during on-Project site surveys.

Species	NYS Legal Status	Source[1]	Comments
Cooper's Hawk *Accipiter cooperi*	Special Concern	OS-07	Forest raptor that preys on birds. Breeds in deciduous and coniferous forests, creating nests in tall trees. Occasionally found in urban areas. Suitable habitat is present within Project site. Three individuals observed in 2007 surveys, one observed in 2015 surveys.
Grasshopper sparrow *Ammodramus savannarum*	Special Concern	BBA	Prefers grasslands far from human made disturbances like cultivated fields or fences. Nests in grass. Recent declines of the species due to declines in agriculture. Suitable habitat is present on the Project site. None observed in Project site surveys.
Northern Goshawk *Accipiter gentilis*	Special Concern	OS-15	Prefers mature coniferous and deciduous forests with little disturbance. Often nest in large trees with gaps for hunting below. Suitable habitat is present on the Project site. One observed during Project site surveys in 2015.
Osprey *Pandion haliatus*	Special Concern	OS-07 BBA	Found along rivers, lakes, reservoirs, and seacoasts, where fish are abundant. Prey is almost exclusively fish. Nests in tall trees, snags, utility poles, and cliffs. Little suitable habitat present, however, transient individuals expected. Two individuals observed in 2007 surveys; none observed in 2015 surveys.
Sharp-shinned Hawk *Accipiter striatus*	Special Concern	OS-07 OS-15	Woodland raptor typically found in deciduous or mixed woodlands. Common breeder in forests throughout New York. Suitable habitat present within Project site. Four individuals observed in 2007, one was observed in 2015 breeding bird surveys, and two were observed during 2015 eagle observation surveys.
Vesper sparrow *Pooecetes gramineus*	Special Concern	BBA	Inhabits grasslands and fields. Makes open cup nests on the ground. Ground forager that eats insects and seeds. Suitable habitat present in the Project site. Not observed during on-Project site surveys.
Mammals			
Eastern Small-footed Bat (Eastern Small-footed Myotis) *Myotis leibii*	Special Concern	NHP	In the winter, hibernates in caves and mines, often with fewer individuals than is typical for other species. In the summer, forages in deciduous forests. Likely forms maternal colonies in rock fractures and ledges. WNS has negatively affected populations of this species. No suitable hibernaculum caves or mines are known on the Project site, however, there is marginal summer habitat on the Project site. Not observed in 2007 on-Project site surveys; fifteen possible calls were recorded in 2015 on-Project site surveys.
Northern Long-eared Bat *Myotis septentrionalis*	Threatened[2]	NHP FWS	In the winter, hibernates in dense populations in caves and mines with stable temperatures and humidity. During summer, roosts in large trees and snags with fissured bark. Generally prefers mature interior forests although sometimes utilizes trees near canopy gaps. This species has been decimated due to WNS. No suitable hibernaculum caves or mines are known on Project site, although there is one hibernaculum within 40 miles. Suitable summer roost tree habitat present on Project site. None observed in 2007 surveys three observed in 2015 surveys.
Amphibians			
Blue-spotted Salamander	Special Concern	ARA	Associated with lowland swamps and marshes, vernal pool wetlands, and forested wetlands. Breed in habitats with water pooling long enough for eggs to mature in summer. Most active on warm rainy nights. Suitable habitat present within the Project site.

[1] Source: OS-07 = observed on-site in 2007 (includes breeding bird survey and raptor migration surveys); OS-15 = observed on-site in 2015; NHP = Natural Heritage Program correspondence (species identified as occurring within the 10 miles of the Project site for birds or within 40 miles for bats); FWS = US Fish & Wildlife Service consultation website, BBA = identified in BBA blocks 5697C, 5697D, 5696A, of 5696B. ARA = New York State Amphibian and Reptile Atlas for Brainardsville, Burke, Chasm Falls, or Chateaugay USGS 7.5 minute quadrangles.

[2] Also federally-listed as threatened.

The USFWS did not identify any bird species that are federally protected under the Endangered Species Act (ESA) likely to occur on the Project site. NYNHP identified six bird species (common loon (*Gavia immer*), peregrine falcon (*Falco peregrinus*), least bittern (*Ixobrychus exilis*), pied-billed grebe (*Podilymbus podiceps*), upland sandpiper (*Bartramia longicauda*), and northern harrier) occurring within 10 miles of the Project site. The BBA identified five New York State-listed special status bird species (bald eagle, osprey (*Pandion haliaetus*), American bittern (*Botaurus lentiginosus*), vesper sparrow (*Pooecetes gramineus*), and grasshopper sparrow (*Ammodramus savannarum*)) that have been documented near the Project site. Of the all these species, four special status species have been observed within the Project site (northern harrier, peregrine falcon, bald eagle, and osprey). An additional four special status species (Cooper's hawk, northern goshawk, golden eagle, and sharp-shinned hawk) were observed that had not been documented by existing databases.

Surveys for bird species of concern were conducted in 2007, and numbers of individuals documented in those surveys are provided in Section 2.3.1.4 of the DEIS and in Table 17, above. Sensitive species were also documented during eagle observation studies and breeding bird surveys conducted in 2015. Results from breeding bird surveys are presented in Appendix J, and included in Table 17. In 2015, one sharp-shinned hawk was observed during breeding bird surveys and two were observed during eagle observation surveys. Other listed species documented during the eagle observation surveys included northern harrier (eight individuals observed during surveys and an additional individual observed outside of the formal survey period), bald eagle (three individuals), Cooper's hawk (one individual) and northern goshawk (one individual).

According to the USFWS, there is one threatened bat species, the northern long-eared bat, with potential habitat within the study area. NYNHP also lists eastern small-footed bat (a species of special concern) in addition to northern long-eared bat as having habitat within 40 miles of the Project site. On-site surveys did not identify either of these bats in 2007, although the acoustic data were not definitive with respect to eastern small-footed bat. On-site surveys for northern long-eared bat were conducted in accordance with methods described in *Northern Long-eared Bat Interim Conference and Planning Guidance* (USFWS 2014) and the *2015 Rangewide Indiana Bat Summer Survey Guidelines* (USFWS, 2015a), the protocols in which also apply to northern-long eared bats. Because suitable northern long-eared bat habitat is present on the Project site and development of the Project could result in adverse impacts to this species if it was present, a Phase 2 – Presence/Absence acoustic survey was conducted. The acoustic surveys found three calls from two survey sites that belonged to the northern long-eared bat, so a Phase 3 – Mist-Netting survey was conducted at those sites in an effort to catch individuals for radio telemetry surveys. No northern long-eared bats or eastern small footed bats were captured through these mist-netting surveys. Fifteen possible eastern small-footed bat calls were identified in the acoustic data at one station from the northern long-eared bat surveys, however, after further review of these calls the presence of this species could not be confirmed.

Section 2.3.1.4 of the DEIS states that according to the New York State Amphibian and Reptile Atlas, blue-spotted salamander (*Ambystoma laterale*) occurs in the vicinity of the Project site (NYSDEC, 2007a). This species of special concern prefers habitat consisting of marshes, vernal pools, and forested wetlands, which are common within the Project site.

2.3.1.5 Other Sensitive Wildlife Resources

Section 2.3.1.5 of the DEIS identified birds listed in the USFWS *Birds of Conservation Concern* (BCC) 2002 that could occur within the Project site. However, because this publication was updated in 2008 (USFWS, 2008), a revised list is presented below. Because the Project site is located in the transition area between Bird Conservation Region (BCR) 13 (Lower Great Lakes/St. Lawrence Plain) and BCR 14 (Atlantic Northern Forests), both lists were checked. The discussion of wood thrush (*Hylocichla mustelina*), chestnut-sided warbler, and bay-breasted warbler (*Setophaga castanea*) provided in Section 2.3.1.5 of the DEIS remains relevant. There were 16 wood thrush and 57 chestnut-sided warbler individuals observed in 2015 surveys, although no bay-breasted warblers were observed. Additionally, olive-sided flycatcher (*Contopus cooperi*), Canada warbler (*Cardellina canadensis*), and rusty blackbird (*Euphagus carolinus*) were on the BCC 2008 list and also identified in BBA blocks encompassing the Project site. Black-billed cuckoo *(Coccyzus erythropthalmus*) was on the BCC list and observed during Project site surveys. Although these species are not state- or federally-listed, inclusion on the BCC list warrants a discussion, as follows:

Olive-sided Flycatcher – This species prefers coniferous forests, particularly burns and other clearings. It is a northern species associated with boreal forests of northern regions and mountains. Prefers edge habitat with openings, such as at bogs, ponds, and clearings. Mostly nests in coniferous trees, but will occasionally build nests in deciduous trees. The BBA indicates that olive-sided flycatcher is a possible breeder in the vicinity of the Project site. However, this species was not observed during Project site surveys in 2007 or 2015.

Canada warbler – This species breeds in northern forests, and prefers moist thickets, usually from ground level to about six feet in height. This bird spends little time in its northern breeding grounds, arriving later in spring and leaving earlier in fall than many other songbirds. The BBA indicates that this is a probable breeder in the vicinity of the Project site. Canada warbler was not observed in Project site surveys in 2007, but four individuals were observed during surveys conducted in 2015.

Rusty blackbird – This species breeds in northern boreal forests and overwinters in the Eastern United States. It is often found in flooded woods, edges of ponds, forested wetlands, and edges of marshes. During breeding

season they most often inhabit wet areas, such as bogs, beaver ponds, and wet woods. The BBA indicates that rusty blackbird is a probable breeder in the vicinity of the Project site, however, it was not observed in Project site surveys conducted during 2007 or 2015.

Black-billed cuckoo – This species inhabits thickets and woodlands, generally preferring deciduous woods over coniferous woods. They feed on large insects such as caterpillars, katydids, cicadas, and grasshoppers. The black-billed cuckoo was not identified on the BBA for the blocks encompassing the Project site, however, one individual was observed during Project site surveys in both 2007 and 2015.

The discussion regarding wildlife management areas and game species within the Project site provided in Section 2.3.1.4 of the DEIS remains relevant. There are no wildlife management areas within the Project site.

The discussion of fish hatcheries and private fishing reserves in the vicinity of the Project site provided in Section 2.3.1.4 of the DEIS remains relevant; the hatcheries and preserves listed in Table 2.3-5 of the DEIS are all still in operation, but are located outside of the Project site.

2.3.2 Potential Impacts

2.3.2.1 Construction

Vegetation

The discussion of potential impacts of Project construction to vegetation provided in Section 2.3.2.1 of the DEIS remains relevant, other than the specific acreage of disturbance anticipated. Based on the revised 37-turbine Project layout, Project construction is now anticipated to affect up to approximately 473 acres of vegetation, including active agricultural lands and other disturbed communities. Construction of the six alternate turbines and their associated Project components would result in up to 58 acres of disturbance of vegetation (total for proposed turbines and alternates = 551 acres). Within the Project site (including the 37 proposed turbines as well as the six alternates), natural communities including forests, successional shrublands, and successional old fields account for about 46% of this disturbance while agriculture accounts for about 53% of total disturbance. A small portion, about 1%, is disturbance to ecological communities that are already disturbed or developed (e.g., existing yards and roads). Approximately 424 acres (90%) of construction impacts from the proposed layout are temporary, as the affected areas will be allowed to revegetate to their pre-existing condition following completion of construction. The remaining approximately 49 acres of impact will result in permanent loss or conversion of the affected community. Permanent impacts to vegetation are discussed in Section 2.3.2.2 of this SEIS. Impacts to wetland communities are addressed in Section 2.2.2 of this DEIS.

Table 18. Approximate Area of Disturbance by Vegetation Type

Land Use Class	Temporary Impact				Permanent Impact			
	Proposed*		Alternate*		Proposed*		Alternate*	
	Acres	% Cover	Acres	% Cover	Acres	% Cover	Acres	% Cover
Active Agriculture	222.4	53	34.0	49	27.7	56	5.0	61
Disturbed/Developed	3.2	1	0.4	<1	0.7	1	0	0
Forested	170.8	40	33.8	49	17.5	36	3.1	38
Successional Shrubland/Old Field	27.0	6	1.4	2	3.5	7	0	0
Open Water	0.2	<1	0	0	0	0	0	0
Total[2]	**423.6**		**69.6**		**49.4**		**8.2**	

[1]Proposed = 37 turbines and associated facilities proposed for the Project. Alternate = 6 turbines and associated facilities considered as alternates for the Project.
[2]Percentage totals do not always add up to 100% due to independent rounding.

Rare Plants

As discussed in Section 2.3.1.2 of this SEIS, no RTE plant species were observed on the Project site during a comprehensive survey of suitable habitat within the disturbance footprint of the Project. Therefore, Project construction is not expected to adversely impact any listed or special concern plant species.

Fish and Wildlife

The discussion of anticipated direct impacts from Project construction to fish and wildlife provided in Section 2.3.2.1 of the DEIS remains relevant. The Project has been sited to utilize degraded and disturbed areas where possible so as to minimize direct impacts to fish and wildlife or their habitat. However, some level of wildlife displacement, incidental mortality, habitat loss and fragmentation, and degradation of aquatic habitats due to siltation are unavoidable. Most individuals will be able to disperse to nearby non-disturbed areas within the Project site and return to the area following construction. The wildlife species that will experience these impacts are for the most part common species that occur throughout New York State.

Birds and Bats

The discussion of anticipated direct construction-related impacts to birds and bats provided in Section 2.3.2.1 of the DEIS remains relevant. None of these impacts will be significant enough to affect local populations of any resident or migratory wildlife species. In addition, all tree clearing is anticipated to be conducted during the winter, which will avoid or minimize impact to roosting bats and nesting birds.

Indirect impacts to birds and bats from Project construction are also as described in Section 2.3.2.1 of the DEIS. Birds and bats will be able to move to undisturbed vegetation, which is abundant within the Project site. A permanent loss of less than 1% of the forested cover that exists within the Project site is anticipated.

Fish, Reptiles, and Amphibians

The discussion of anticipated impacts to aquatic systems and the fish, reptiles, and amphibians that occupy those habitats provided in Section 2.3.2.1 of the DEIS remains relevant. Siltation and warmer water from increased solar radiation following vegetation loss are possible impacts to aquatic habitats. However, these impacts will generally be minor and of short-term duration. Boring under streams and crossing with overhead collection lines are two strategies proposed by the Applicant to further avoid stream and wetland impacts. The use of these techniques and locations they will be employed is described in detail in Section 2.2 of this SEIS. The use of these techniques will greatly reduce impacts to aquatic and palustrine wildlife habitats.

Threatened and Endangered Species

The discussion regarding bald eagle presence and nesting habitat in Section 2.3.1.4 of the DEIS remains relevant. In 2007 one individual was observed during eagle surveys, and from January through August 2015 three individuals were observed. Additionally, one golden eagle was observed in 2007, although none were documented on-site from January to August of 2015. Suitable nesting habitat was not found in the Project site, and bald and golden eagle use of the Project site is low. Therefore, these two species are not likely to be affected by construction of the Project.

In addition to bald and golden eagles, there were 13 bird species observed or possibly occurring within the Project site that are listed as endangered, threatened, or of special concern by NYNHP (see Table 17). The birds on this list have variable habitat preferences, ranging from open grassland to vegetated wetlands to open water habitats. Project construction will occur within and adjacent to all of these habitats, so impacts including mortality to eggs and young, displacement and disturbance due to noise, and direct loss are possible. Minimizing impacts to grasslands, forests, wetlands, and open water habitats will reduce impacts to these species, as will limiting forest clearing to the winter months.

Northern long-eared bat and eastern small-footed bat were noted by NYNHP as potentially occurring in the vicinity of the Project site. Acoustic surveys conducted in 2015 documented three northern long-eared bat calls from the Project site. Neither species was captured during mist-netting surveys conducted in 2015. In addition, no caves, mines, cliffs, or large rock outcrops that could provide hibernation and roost sites for these species are known within the Project site. Consequently, impacts of Project construction on these species are not expected.

Blue spotted salamander is a species of special concern documented by the New York State Amphibian and Reptile Atlas (NYSDEC, 2007a) as occurring in the vicinity of the Project site. Ecological and wetland surveys conducted by EDR indicate that suitable habitat (upland and breeding) occurs on-site, and that construction-related impacts could occur. These impacts include incidental injury and mortality of adults and young, as well as disturbance and loss of habitat. However, these impacts are being minimized by avoiding areas of mature forest and wetlands to the extent practicable.

2.3.2.2 Operation

Vegetation

Development of the Project would result in the permanent conversion of up to 56.9 acres of vegetated lands to developed Project components, such as access roads, turbines and turbine pads, crane pads, and a substation. A total of 48.7 acres of vegetation would be converted permanently to built facilities associated with the 37 turbine Project layout, while 8.2 acres of vegetation would be permanently converted to built facilities associated with the alternate turbines. Within the Project site (which includes the 37 proposed turbines as well as the six alternates), natural communities including forests, successional shrublands and old field habitats account for about 43% of this loss while agricultural lands accounts for about 57% of total vegetation loss. Up to an additional 85.5 acres of forest communities will be converted to early successional communities for the life of the operating Project (70.8 acres for the 37 proposed turbines and 14.7 acres for the six alternates). Table 18 provides anticipated permanent impacts to vegetation from Project construction and operation. Development of the Project and the six alternate turbines would also result in permanent loss of 0.18 acres of wetlands, which is discussed in greater detail in Section 2.2.2 of this SEIS. 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.

Rare Plants

As discussed in Section 2.3.1.2 of this SEIS, no RTE plant species were observed on the Project site during a comprehensive survey of suitable habitat within the disturbance footprint of the Project. Once the Project is built, additional soil disturbance from routine maintenance activities that could impact plants will generally take place within the disturbance footprint for Project construction. Therefore, Project operation will not adversely impact RTE plant species.

Fish and Wildlife

As discussed in Section 2.3.2.2 of the DEIS, the Project has been sited to minimize impacts to fish and wildlife by avoiding high quality habitats, such as forests and wetlands, where possible. However, some impacts to wildlife are likely due to collision with turbines, loss of habitat, habitat fragmentation, and displacement due to disturbance caused by presence of operating wind turbines and occasional maintenance and repair. These impacts are as described in Section 2.3.2.2 of the DEIS, with the exception that operation of the revised Project with 37 turbines would result permanent loss of 21 acres of wildlife habitat, including 17.5 acres of forest (see Table 18). The six alternate turbines would result in permanent loss of up to 3.1 acres of wildlife habitat, all of which would be forested. Active agricultural lands, which generally have limited wildlife habitat value, would experience 27.7 acres of permanent loss (not including an additional loss of up to 5.0 acres from operation of the six alternate turbines). Impacts to wildlife from forest fragmentation and displacement/disturbance are as described in Section 2.3.2.2 of the DEIS.

Birds

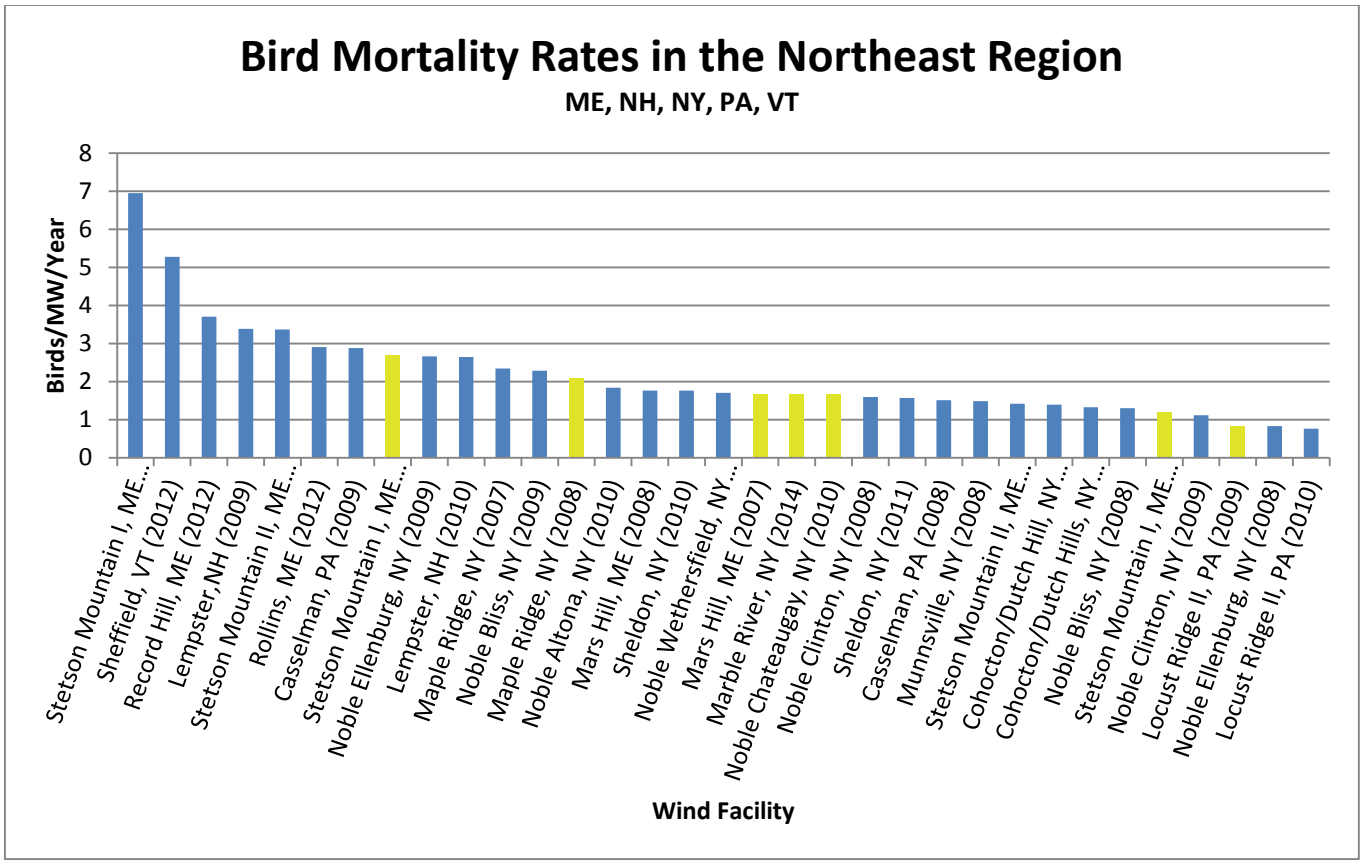
Since release of the DEIS in 2008, there have been additional studies of operating wind projects in the Northeastern United States that provide helpful data for assessing potential impacts from Project operation. While much of the assessment related to potential bird impacts in Section 2.3.2.2 of the DEIS remains accurate, additional information has become available for a number of wind projects in the Northeast region and within the immediate vicinity of the Jericho Rise Project site (Tables 19 and 20). Results from operational (post-construction) monitoring studies at nearby wind projects are generally the best predictor of collision mortality at a proposed wind power site. Data from existing projects within 50 miles suggest that impacts to birds resulting from operation of the Jericho Rise Wind Farm would be in the range of approximately 1-2 birds per MW per year (Table 19). This would be consistent with the level of mortality documented at existing wind projects that are near the Jericho Rise Site, which have generally seen low to average impacts to birds based on comparison with studies throughout the northeast region (Table 20, Graph 1).

Table 19. Bird and Bat Mortality Rates at wind facilities within 50 miles of the proposed Jericho Rise Wind Farm.

Wind Facility	Bird Fatality/MW/Year	Bat Fatality/MW/Year	Reference
Marble River, NY (2014)	1.67	0.71	Bay et. al 2015
Noble Altona, NY (2010)	1.84	4.34	Jain et al. 2011a
Noble Chateaugay, NY (2010)	1.66	2.44	Jain et al. 2011b
Noble Clinton, NY (2008)	1.59	3.14	Jain et al. 2009
Noble Clinton, NY (2009)	1.11	4.50	Jain et al. 2010b
Noble Ellenburg, NY (2008)	0.83	3.46	Jain et al. 2009
Nobel Ellenburg, NY (2009)	2.66	3.91	Jain et al. 2010c
Mean	**1.62**	**3.21**	

Table 20. Bird and Bat Morality Rates at wind facilities in Maine, New Hampshire, New York, and Pennsylvania.

Wind Facility	Bird Fatality/MW/Year	Bat Fatality/MW/Year	Reference
Casselman, PA (2008)	1.51	12.61	Arnett et al. 2009
Casselman, PA (2009)	2.88	8.6	Arnett et al. 2010
Cohocton/Dutch Hill, NY (2009)	1.39	8.62	Stantec 2010
Cohocton/Dutch Hills, NY (2010)	1.32	10.32	Stantec 2011
Lempster, NH (2009)	2.64	3.11	Tidhar et al. 2010
Lempster, NH (2010)	3.38	3.57	Tidhar et al. 2011
Locust Ridge II, PA (2009)	0.84	14.11	Arnett et al. 2010
Locust Ridge II, PA (2010)	0.76	14.38	Arnett et al. 2010
Maple Ridge, NY (2007)	2.34	6.49	Jain et al. 2009a
Maple Ridge, NY (2008)	2.07	4.96	Jain et. al 2009d
Marble River, NY (2014)	1.67	0.71	Bay et. al 2015
Mars Hill, ME (2007)	1.67	2.91	Stantec 2008b
Mars Hill, ME (2008)	1.76	0.45	Stantec 2009
Munnsville, NY (2008)	1.48	1.93	Stantec 2009
Noble Altona, NY (2010)	1.84	4.34	Jain et al. 2011a
Noble Bliss ,NY (2008)	1.3	7.8	Jain et al. 2009
Noble Bliss, NY (2009)	2.28	3.85	Jain et al. 2010a
Noble Chateaugay,NY (2010)	1.66	2.44	Jain et al. 2011b
Noble Clinton, NY (2008)	1.59	3.14	Jain et al. 2009
Noble Clinton, NY (2009)	1.11	4.5	Jain et al. 2010b
Noble Ellenburg, NY (2008)	0.83	3.46	Jain et al. 2009
Noble Ellenburg, NY (2009)	2.66	3.91	Jain et al. 2010c
Noble Wethersfield, NY (2010)	1.7	16.3	Jain et al. 2011c
Record Hill,ME (2012)	3.70	2.96	Stantec 2013
Rollins, ME (2012)	2.90	0.18	Stantec 2013
Sheffield, VT (2012)	5.27	5.86	Martin et al. 2013
Sheldon, NY (2010)	1.76	2.33	Tidhar et al. 2012
Sheldon, NY (2011)	1.57	1.78	Tidhar et al. 2012
Stetson Mountain I, ME (2009)	2.68	1.40	Stantec 2009
Stetson Mountain I, ME (2011)	1.18	0.28	Normandeau Associates 2011
Stetson Mountain I, ME (2013)	6.95	0.18	Stantec 2014
Stetson Mountain II, ME (2010)	1.42	1.65	Normandeau Associates 2010
Stetson Mountain II, ME (2012)	3.37	2.27	Stantec Consulting 2013
Mean	**2.17**	**4.89**	



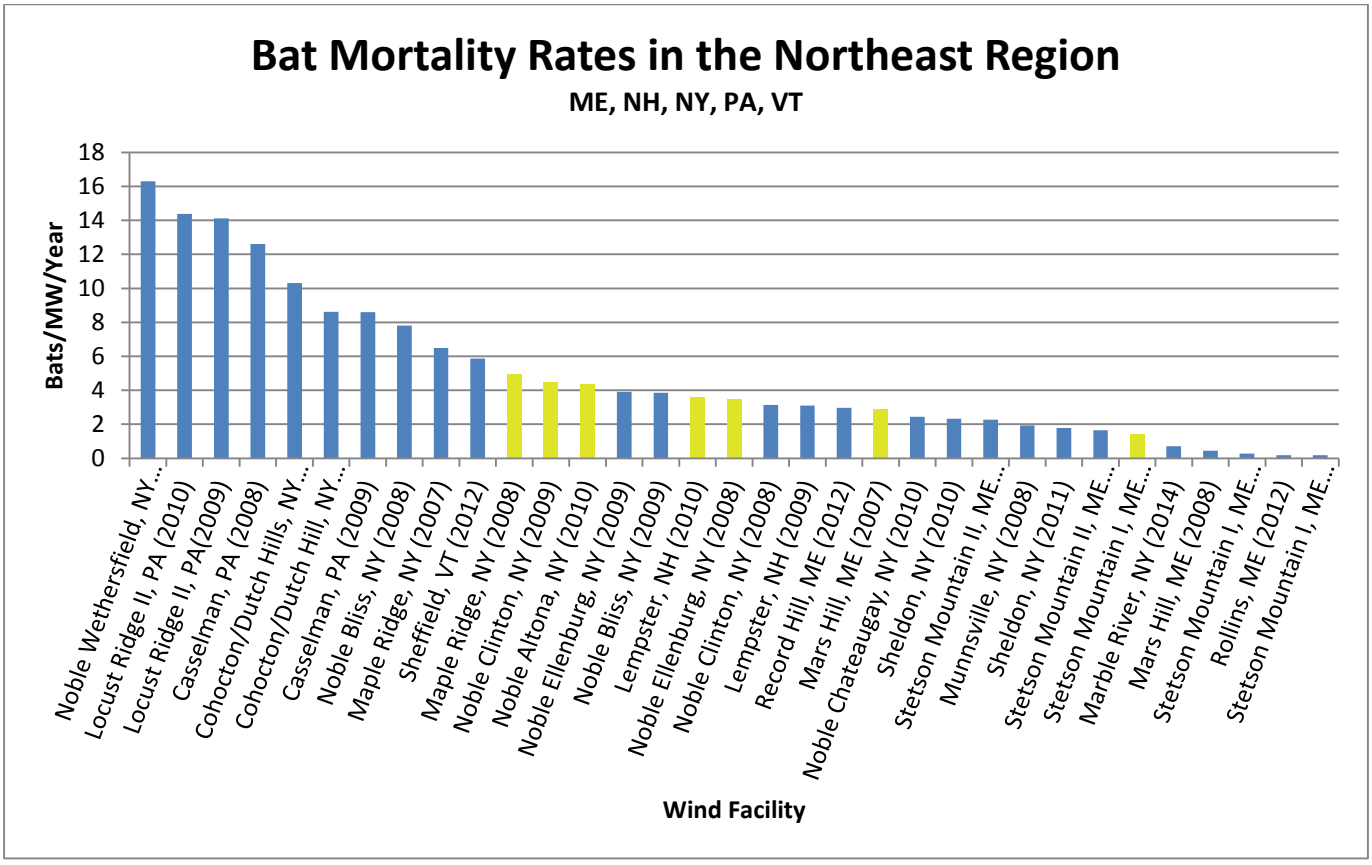
Graph 1. Bird mortality rates for wind projects in Northeastern U.S. Yellow bars indicate facilities within 50 miles of the Jericho Rise site.

Recent studies looking at the effects of wind turbine caused mortality on a cumulative basis, regionally and nationally, on passerines shows that this level of mortality does not have a significant effect on songbird populations (Erickson et al. 2014). A detailed discussion of cumulative impacts from the Project is provided in Section 7 of this SEIS.

Post-construction breeding bird surveys and collision mortality studies will be conducted after the Project becomes operational, and a Before/After – Control/Impact (BACI) analysis will be conducted to assess displacement for breeding birds. A gradient analysis (Morrison et al., 2008) also will be used to determine the relationship between density of avian species and distance from turbines. These measures will confirm the impact of the Project to bird species and assist in guiding adaptive management decisions for the Project, if necessary.

Bats

Since release of the DEIS in 2008, there have been additional studies of operational wind projects in the Northeastern United States that provide helpful data for assessing potential impacts from proposed projects. While much of the assessment related to potential bat impacts that was presented in the 2008 DEIS remains accurate, new information suggests that, as with birds, the best predictor of potential impacts bats is results from nearby or regional wind projects. Results from operational (post-construction) monitoring studies at nearby wind projects suggest that impacts to bats would be in the range of average approximately 1-4 bats per MW per year (Table 19). The existing wind projects that are near the Jericho Rise Site have generally seen low to average impacts to bats based on comparison with studies throughout the northeast region (Table 20, Graph 2). As stated above, the Applicant will conduct post-construction bird and bat mortality monitoring to determine the extent of collision mortality due to Project operation, and the need for adaptive management responses.



Graph 2. Bat mortality rates for wind projects in Northeastern U.S. Yellow bars indicate facilities within 50 miles of the Jericho Rise site.

Threatened and Endangered Species

As discussed in Section 2.3.2.2 of the DEIS, bald eagle use in the Project site is very low, and it appears as if only transient individuals may utilize the Project site. Golden eagles are also rare within the Project site, with only one migratory individual observed in 2007 surveys and none observed in 2015 surveys from January to August. Therefore, these two species are unlikely to be adversely affected from operation of the Project.

Correspondence with NYNHP and a search of the BBA for the Project site show that 13 additional bird species listed as threatened, endangered, or of special concern could occur in the vicinity of the Project site. Of these, six were observed within the Project site in 2007 and/or 2015. Four of these six were found in such low numbers within the Project site they are not anticipated to be adversely affected by Project operation. These include the peregrine falcon, which is listed as endangered, and sharp-shinned hawk, Cooper's hawk, northern goshawk, and osprey, all of which are listed as of special concern. Observations of no more than two individuals of these species were observed in 2007 or from January to August 2015 (see Table 17 for summaries of occurrences of these species in Project site surveys).

The northern harrier, a state-listed threatened species, was observed both the 2007 and 2015 Project site surveys. The northern harrier exhibits moderate use of the Project site, however, harrier behavior makes it unlikely to experience collision mortality. Literature cited in the DEIS indicates that breeding harriers are likely to stay close to the ground (except perhaps during courtship displays) out of the turbine collision zone, and that northern harrier mortality has consistently been documented as low at operating wind farms. More recent studies confirm these findings. Garvin et al. (2011) found through pre- and post-construction surveys that northern harriers avoid wind turbine sites and that mortality due to collision is unlikely. An additional literature review not cited in the DEIS (Madders and Whitfeild, 2006), concluded that northern harriers experience low vulnerability to collision from wind farms due to low flight altitudes and active avoidance. Therefore, although this species is present within the study area, Project operation is not expected to have adverse impacts, other than possible displacement due to avoidance of wind turbines.

The sharp-shinned hawk is listed as a species of special concern in New York State. It was observed in relatively low numbers during Project site surveys, however, breeding does occur within the Project site. The sharp-shinned hawk favors forested habitats, and typically hunts in dense vegetation. Therefore, although displacement from forested habitats is possible due to forest clearing, collision fatalities resulting from Project operation are unlikely for the sharp-shinned hawk.

Two species of bat were identified by NYNHP as of concern for the Project site: the northern long-eared bat (threatened) and the eastern small-footed bat (special concern). Through acoustic and mist-netting surveys conducted in 2007 and

2015, three calls of northern long-eared bat were identified within the Project site indicating that this species may be present but in very low numbers. The acoustic survey also recorded 15 possible calls of eastern small-footed bat, however, after further review by bat acoustic experts, it could not be confirmed that these calls were made by this species. Given that the density of these species in the project is very low, no impacts to the species are anticipated as a result of Project operation.

The blue-spotted salamander, a species of special concern, was identified by the New York Amphibian and Reptile Atlas as occurring in the vicinity of the Project site, and suitable upland and wetland habitat for this species occurs on-site. Impacts will be minimized by avoiding areas of mature forest and wetlands to the extent practicable.

2.3.3 Mitigation

2.3.3.1 Vegetation

Mitigation measures for vegetation are as described in Section 2.3.3.1 of the DEIS. These measures include the Applicant preparing a stormwater pollution prevention plan (SWPPP) to be followed during construction activities, seeding and restoration of sites disturbed during construction immediately following the disturbance, and employing an environmental inspector to insure that construction stays within the anticipated limits of disturbance. Stabilization and restoration of disturbed areas (other than agricultural lands) will utilize a native seed mix that includes species that provide food and cover for wildlife. The SWPPP for EDPR's Marble River Wind Project is attached as Appendix H and is substantially similar to the Plan that will be prepared for the Project. The Applicant will also adhere to an Invasive Species Control Plan to reduce spread of invasive plants throughout the Project (see Appendix L). Throughout the life of the Project, periodic vegetation management will be conducted along collection line corridors, road shoulders, and turbine sites. Clearing would be conducted after October 1 and before April 1 unless otherwise approved by NYSDEC and USFWS in order to minimize impact to breeding birds, bats and small mammals in these areas. No pesticides or herbicides would be applied during this clearing.

2.3.3.2 Fish and Wildlife

As discussed in Section 2.3.3.2 of the DEIS, the Project has been designed to avoid disturbance to fish and wildlife and their preferred habitats to the extent practicable. The mitigation measures described in Section 2.3.3.2 of the DEIS, including employment of an environmental inspector during construction and restoration of disturbed areas, adhering to the SWPPP and SPCC (Spill Prevention, Containment, and Countermeasure) plans (see Appendix F for the SPCC Plan and Appendix H for the SWPPP). These documents were prepared for EDPR's Marble River Wind Project and are similar to the plans that will be prepared for Jericho Rise Wind Farm), and avoiding stream impacts during trout

spawning season, remain relevant as well. It is not anticipated that impacts to bird and bats will be biologically significant based on the studies conducted in the DEIS and for this SEIS. Although there has been enough data provided by the studies conducted to date to conclude that the Project is not likely to result in a significant adverse impact to birds and bats, the Applicant will continue to assess the potential for post-construction bird and bat mortality through studies conducted with input from the NYSDEC and USFWS. Following post-construction bird and bat collision mortality monitoring studies, if mortality is found to be contrary to what is predicted by the studies to date, adaptive management measures, including possible operational modifications, may be implemented to reduce the mortality in accordance with guidance from the State and federal agencies.

2.4 CLIMATE & AIR QUALITY

2.4.1 Existing Conditions

The following discussion updates the discussion of existing climate and air quality presented in Section 2.4.1 of the DEIS.

2.4.1.1 Climatic Conditions

The U.S. National Climatic Data Center (NCDC) maintains climate data collected at numerous weather measurement station locations throughout the United States, including a station in Malone, New York, which is located approximately 8 miles southwest of the Project Site. The NCDC data for Malone are representative of the surrounding area and include normal value averages for the measurement period 1981 through 2010. Based on these 30-year means, the average annual mean temperature is 42.3°F, average annual daily maximum temperature is 51.9°F, and average annual daily minimum temperature is 32.8°F. Historically, January is the coldest month with an average daily temperature of 13.6°F, and July is the warmest month with an average daily temperature of 67.7°F. The 30-year average precipitation in Malone is 38.86 inches per year. August is historically the wettest month of the year, with an average precipitation of 4.41 inches, while February is historically the driest, with an average of 1.84 inches. The average annual snowfall in Malone is 95.3 inches. Historically, January is the snowiest month with 22.0 inches on average (NCDC, 2015).

2.4.1.2 Air Quality

Since the release of the DEIS, an updated air quality data report for New York State has been published by the NYSDEC Division of Air Resources. The most recent summary of air quality data available for the state is the New York State Ambient Air Quality Report for 2013: 2013 Data Tables (NYSDEC, 2013). Along with the most recent ambient air quality data, this report also includes 10-year annual air quality trends derived from data collected from

various monitoring stations across the state. These data are organized by NYSDEC region (the Project Site is located in NYSDEC Region 5). Air quality sampling points for Region 5 occur at five locations, including one location in Franklin County in the hamlet of Paul Smiths. Data collected from all sampling points in Region 5 were within the acceptable levels established by the National Ambient Air Quality Standards (NAAQS) for sulfur dioxide, inhalable particulates, and ozone level.

At the federal level, the U.S. Environmental Protection Agency (EPA) publishes the Green Book, which lists nonattainment areas for criteria pollutants including 1-hour O_3 and 8-hour O_3, CO, NO_x, SO_2, $PM_{2.5}$, PM_{10}, and lead. At the time the DEIS was published in 2008, all criteria pollutants were in attainment. Most recent data shows that the whole of Franklin County, including the Project Site, remains in attainment as of 2015 (EPA, 2015a).

All other information in the DEIS regarding air quality remains relevant.

2.4.1.2.1 Conventional Power Plants and Air Pollution

Despite recent developments in clean and renewable energy, conventional power plants still comprise the majority of the United States' energy generation. As of 2014, fossil fuel combustion was responsible for about 66% of total electricity generation, while wind energy was only around 4%. Of the fossil fuels used for electricity generation, coal is still the most prevalent, representing about 58% of overall fossil fuel combustion (USEIA, 2015b).

There have been some reductions in SO_2 and NO_x emissions by coal combustion since publication of the 2008 DEIS. Much of the reduction has been due to regulations imposed by the EPA for coal emissions, first under the Clean Air Interstate Rule (CAIR) of 2005 and later under the Cross-State Air Pollution Rule (CSAPR) of 2011. These regulations were passed in order to reduce emissions that contribute to ozone and fine particle pollution, which negatively impact human health. The target of CSAPR is to reduce SO_2 and NO_x emissions by 73% and 54%, respectively (EPA, 2011). Despite these reductions, the coal industry is still a major polluter and adverse impacts to human health from air pollution are well documented (Burt et al., 2013).

Climate change, and the significance of human influence on climate change, have become more certain since release of the DEIS. State, federal, and international agencies agree that the scientific evidence for the existence of climate change is unambiguous and that society will experience adverse impacts from it. The NYSDEC determined that "air and water quality, forests, fish and wildlife habitats, and people and communities, are at risk from climate change" (NYSDEC 2015). In the Commissioner's Policy on Climate Change and DEC Action, NYSDEC outlined a strategy containing climate change mitigation objectives, including curbing greenhouse gas emissions, so that New York can

play its part in reducing the severity of global warming (NYSDEC, 2015a). On an international level, the Intergovernmental Panel on Climate Change (IPCC), a consortium of experts on climate change from around the world, agree that "Continued emission of greenhouse gases will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive and irreversible impacts for people and ecosystems" (IPCC, 2014). 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. Although efforts have been made to reduce greenhouse gas emissions, current levels are about six percent higher than they were in 1990 (EPA, 2015b).

All other information in the DEIS regarding conventional power plants and air pollution remains relevant.

2.4.2 Potential Impacts

2.4.2.1 Construction

Impacts to air quality with respect to Project construction are as described in section 2.4.2.1 of the DEIS, and will consist primarily of exhaust from construction equipment and fugitive dust.

2.4.2.2 Operation

The operating Project will generate up to 77.7 MW of electricity without any fossil-fuel emissions. As discussed in Section 1.1 of this SEIS, the Project is expected to have an average annual net capacity factor (NCF) of approximately 31-32%. Therefore, the total net electricity delivered to the existing New York power grid is expected to be in the range of 211,002 to 217,809 MWh (i.e., 37 turbines x 2.1 MW x 24 hours/day x 365 days x 31-32% NCF), or enough electricity to meet the average annual consumption of approximately 29,300 to 30,250 households (based on average annual electric consumption of 7.2 MWh per household in New York; USEIA, 2015a). Table21 summarizes anticipated emission displacements for CO_2, NO_x, and SO_2 for the Project, based on EPA's most recent Emissions and Generation Resource Integrated Database (eGRID) data from 2010 (EPA, 2014). Displacement of mercury and lead compounds is reported from the Abraxus Emissions Calculator (Abraxus Energy, 2015) since eGRID lacks data for these pollutants.

Table 21. Estimated Annual Emission Displacements from the Project

Pollutant	Estimated Annual Displacement in Tons (211,002 MWh, 31% NCF)	Estimated Annual Displacement in Tons (217,809 MWh, 32% NCF)
CO_2 (carbon dioxide, tons)	57,582	59,440
NO_x (nitrogen oxides, tons)	44.9	46.0
SO_2 (sulfur dioxide, tons)	117.7	121.5
Mercury Compounds (lbs)	5.3	5.4
Lead Compounds (lbs)	2,895	2,989

Source for CO_2, NO_x, and SO_2: EPA eGRID 2010. Source for mercury and lead: Abraxus Energy, 2015.

Emissions displacement values for CO_2, NO_x, and SO_2 are 35%, 59%, and 74% lower than those reported in the DEIS, respectively. This decrease is primarily due to two factors, one of which is the reduction in the Project's nameplate generating capacity from 87.45 MW when the DEIS was written to 77.7 MW for the current proposal. Although the lower capacity of the current proposed Project leads to less reduction in greenhouse gases and air pollution, its smaller footprint also results in fewer impacts to natural resources such as wetlands, forest land, agricultural land, and soils (see Sections 2.2, 2.3, 2.13, and 2.1, respectively). The current Project capacity balances the beneficial impact on climate and air quality with adverse impacts to other natural resources. The other reason annual displacements of pollutants are reported as lower in this SEIS than were reported in the DEIS is that fossil fuel combustion has become cleaner with the increased use of natural gas as opposed to oil and coal, as well as clean coal technologies that scrub some of the pollutants from coal emissions (USEIA, 2015). These developments have led to a decrease in average emissions rates (tons of emissions per MWh) from these non-renewable technologies (EPA, 2014). Although these displacement values are lower than they would have been in 2008, they still represent substantial reductions in pollution levels and indirect positive impacts to air quality that will result from operation of the Project.

As mentioned previously, 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. The Renewable Portfolio Standard (RPS, NYSERDA 2015) set a target of a 30% reduction in greenhouse gas emissions by 2015. This program is divided into tiers, with the Main Tier being those greenhouse gas sources that are from large scale energy producers, such as wind farms and coal power plants. As of 2014, Main Tier emissions reductions were only at 53% of the target; there is clearly still a need for more clean, renewable energy. By displacing between 57,582 and 59,440 tons of CO_2 annually, the Project will contribute to goals set by New York State for greenhouse gas emissions and will ultimately have a small, positive impact on reducing the severity of climate change.

All other information in the DEIS regarding potential impacts from operation remains relevant.

2.4.3 Proposed Mitigation

Except for minor, short-term impacts to air quality from construction vehicles, the Project will have no adverse impacts on local or regional air quality. As described in Section 2.4.3 of the DEIS, proposed mitigation will include implementation of a Dust Control Plan and proper vehicle maintenance. Overall, the Project will have a significant long-term beneficial impact on climate by producing power without greenhouse gas emissions and air quality by reducing emissions of air pollutants. These benefits can be viewed as mitigation for other environmental impacts associated with the Project.

2.5 AESTHETIC & VISUAL RESOURCES

The revised SEIS Project has a slightly different layout and a different turbine model than the DEIS. As such, an updated discussion of impacts to aesthetic and visual resources in the vicinity of the Project is provided here. Two studies were prepared in support of this SEIS discussion: a Supplemental Visual Impact Analysis (SVIA) (Appendix M) and a Shadow Flicker Report (Appendix N). Throughout this section, the term VIA refers to the original Visual Impact Assessment Report attached to the DEIS as Appendix F.

2.5.1 Existing Conditions

Consistent with the original VIA, the revised visual study area is defined as the area (within the U.S.) that is within 7.5 miles of the proposed wind turbines. Based on the SEIS layout of 37 proposed and six alternate turbine sites, the revised visual study area totals approximately 267 square miles. The location and extent of the visual study area is illustrated in Figure 4 of the SVIA. Section 3.1 of the VIA provides an accurate a description of the visual setting within this area.

2.5.1.1 Landscape Similarity Zones

Landscape similarity zones are as described in Section 2.5.1.1 of the DEIS. These include Rural Residential/Agriculture, Forested, Village/Hamlet, and Adirondack Park Zones.

2.5.1.1.1 Zone 1 – Rural Residential/Agricultural Zone

This zone in the visual study area is as described in Section 2.5.1.1.1 of the DEIS. It is characterized by open agricultural land with widely dispersed farms and rural residences along a network of state, county, and local roads.

2.5.1.1.2 Zone 2 – Forested Zone

This zone in the visual study area is as described in Section 2.5.1.1.2 of the DEIS. It is characterized by a dominance of native forested vegetation in various stages of forest regeneration/maturity.

2.5.1.1.3 Zone 3 – Village/Hamlet Zone

This zone in the visual study area is as described in Section 2.5.1.1.3 of the DEIS. This zone consists of areas where buildings, usually about two to three stories high, dominate the viewshed.

2.5.1.1.4 Adirondack Park Zone

This zone in the visual study area is as described in Section 2.5.1.1.4 of the DEIS. It could be considered part of the Forested Zone, but because it is characterized by hillier, more rugged terrain with more continuous forest, it is separated from Zone 2 in the analysis. Sensitivity to visual impact is high in the Adirondack Park Zone due to its abundance of residential development and designation as an area for recreation.

2.5.1.2 Viewer/User Groups

2.5.1.2.1 Local Residents

The discussion of local residents provided in Section 2.5.1.2.1 of the DEIS remains accurate. Local residents generally view the visual study area from their homes and property, and are likely to be stationary and have frequent or prolonged views of the landscape.

2.5.1.2.2 Commuters/Travelers

The discussion of commuters and travelers provided in Section 2.5.1.2.2 of the DEIS remains accurate. These viewers typically have a narrow focus and are destination oriented, so the frequency and duration of their landscape views are shorter than local residents. They are most likely to view the landscape and Project from the major roads in the visual study area, including U.S. Highway 11, New York State Highway 374, and County Route 24.

2.5.1.2.3 Tourists/Recreational Users

The discussion of tourists and recreational users provided in Section 2.5.1.2.3 of the DEIS remains accurate. This viewer group includes both local and seasonal residents engaged in outdoor activities as well as tourists visiting the

area. Some members of this group are sensitive to visual impacts because scenery may be an important part of their recreational experience.

2.5.1.3 Viewer Group Exposure and Sensitivity

A discussion of viewer group exposure and sensitivity, and the factors that affect these parameters, is provided in Section 2.5.1.3 of the DEIS. Viewer group exposure depends on the number of people who might view the Project and the duration of their views while viewer sensitivity depends on how these people react to the view.

2.5.1.4 Visually Sensitive Resources

As stated in Section 2.5.1.4 of the DEIS, Section 3.5 of the VIA provides a discussion of visually sensitive resources found within the visual study area. Due to the revised boundaries of the visual study area, there have been some changes to the resources of statewide and local significance, as shown in Figure 10 of this SEIS. For example, Chazy Highlands Wild Forest is now included as a resource of statewide significance. The inventory of local resources has been expanded considerably to include local parks and playgrounds, lakes and rivers, trails, schools, libraries, cemeteries, hospitals, and churches. A list of inventoried visually sensitive resources within the revised visual study area, and an indication of whether they fall within the revised Project's viewshed, is presented in Table 4 of the SVIA. A map of sensitive sites overlaid with the revised Project viewshed is included in Appendix A of the SVIA.

As discussed in Section 2.6 of this SEIS, the New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP) regulations define the area of potential effect (APE) with respect to historical architectural resources as those areas within 5 miles of proposed turbines which are within the potential viewshed (based on topography) of a given project. Since release of the DEIS, virtually all of the five-mile historical architectural APE was surveyed more than once for other wind farms. On June 17, 2015, the Applicant's cultural resources consultant (EDR) conducted research concerning the previous architectural resources surveys in the vicinity of the Project at NYSOPRHP's office in Waterford, NY. During that research visit, EDR met with NYSOPRHP staff to review and discuss the previous historic architectural surveys, as well as the proposed historic architectural resources survey for the revised Jericho Rise Wind Farm study area. During this discussion, it was agreed upon by NYSOPRHP and EDR that due to the considerable amount of recent historic resources surveys that have occurred within the Project APE, no additional survey of buildings located within the APE would be required as part of the current review of the Jericho Rise Wind Farm. In lieu of an new historic resources survey, a field review of previously identified historic resources was proposed, where previously identified historic resources would be photographed and given updated recommendations of National Register of Historic Places (NRHP) eligibility (where applicable).

2.5.1.5 Visual Impact Assessment Methodology

The visual assessment procedures and analyses utilized in the preparation of the SVIA are generally consistent with those described in Section 2.5.1.5 of the DEIS. However several of the analyses conducted for the SVIA included some variation from the methodologies used in the original VIA. Consequently, all SVIA methodologies are described in the following section.

2.5.1.5.1 Viewshed Analysis

Topographic viewshed maps for the Project were prepared using 10-meter resolution USGS digital elevation model (DEM) data, the location and height of all proposed and alternate turbines, and ESRI ArcGIS® software with the Spatial Analyst extension. Because alternate turbine sites are included in this analysis, the viewshed evaluates the potential visibility of turbines at 43 potential sites rather than only the 37 that will be ultimately be built. Two 7.5-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 Federal Aviation Administration [FAA] obstruction warning light height of approximately 100 meters (328 feet) above existing grade, and the conservative assumption that all turbines could be lit). Additional detail on the methodology is presented in the SVIA.

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. Topographic viewshed maps assume that no trees exist, and therefore are very accurate in predicting where visibility will not occur due to topographic interference. However, they are less accurate in identifying areas from which the Project would actually be visible. Trees and buildings can limit or eliminate visibility in areas indicated as having potential Project visibility in the topographic viewshed analysis.

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). Based on standard visual assessment practice, the mapped locations of the forest land was assigned an assumed height of 40 feet and added to the DEM. Field review of the study area indicated that much of the forest vegetation within the study area is significantly higher than 40 feet, making this a very conservative assumption. The viewshed analysis was then re-run, as described above. 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 150 meters above existing grade) and the other to illustrate potential visibility

of turbine lights (based on an FAA warning light height of 100 meters above existing grade and the conservative assumption that all turbines could be equipped with FAA warning lights). Once the viewshed analysis was completed, the areas covered by the forest vegetation layer were designated as "not visible" on the resulting data layer.

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 important to note that because screening provided by buildings and street/yard trees, as well as characteristics of the proposed turbines that influence visibility (color, narrow profile, distance from viewer, etc.), are not taken into consideration in the viewshed analyses, being within the viewshed does not necessarily equate to actual Project visibility. It is also worth reiterating that the viewshed analysis also overestimates Project visibility because it evaluates the potential visibility of 43 turbines (37 proposed plus six alternate locations) rather than the 37 turbines that will actually be built.

2.5.1.5.2 Cross Section Analysis

The cross-section analyses described in the DEIS were not updated for this revised SEIS layout because, as indicated in the VIA, they essentially confirm the results of viewshed analysis. In addition, because they do not account for the potential visibility of all proposed turbines, their value in assessing potential Project visibility from specific resources/locations is limited.

2.5.1.5.3 Field Investigation

A field review of the study area was conducted on May 7, 2015, in order to obtain updated photos for the development of computer-generated visual simulations. Photos from the same nine viewpoints used in the original VIA (or nearby viewpoints that offered better views of the currently proposed Project) were obtained during the 2015 field review. In a few instances, the direction of view captured from these viewpoints was shifted slightly to best capture a view of the revised turbine layout. Unlike the photos utilized in the VIA, the updated photos were obtained under clear and sunny sky conditions that enhanced baseline scenic quality and improved the potential for Project visibility. Additional detail regarding the field investigation methodology is provided in the SVIA.

2.5.1.5.4 Viewpoint Selection

As stated in Section 2.5.1.5.3 of this SEIS, views from nine viewpoints comparable to those evaluated in the VIA were selected for the development of updated simulations. Table 22 below updates Table 2.5-2 of the DEIS.

Table 22. Viewpoints Selected for Simulation

DEIS Viewpoint Number	SEIS Viewpoint Number	Visually Sensitive Resource or Landscape Context	Viewing Distance	View Orientation[1]
3	17	Cemetery	1.8	NE
10	28	Adirondack Park	3.6	NW
14	32	Cemetery	1.3	SW
15	6	Rural Residential/Agricultural	2.7	W
19	36	High Falls Park	0.5	SW
20	37	Agricultural and Forest	0.5	W
26	9	Village/Hamlet	2.1	E
31	7	Rural Residential/Agricultural	3.7	S
34	39	Adirondack Trail Scenic Byway	8.4	NE

[1]N = North, S = South, E = East, W = West

2.5.1.5.5 Existing Visual Quality Rating

Evaluation of existing visual quality, as described in Section 2.5.1.5.5 of the DEIS, was not conducted as part of the SVIA. See Section 2.5.1.5.6 of this SEIS for a description of the impact evaluation methodology used in the SVIA.

2.5.1.5.6 Impact Evaluation Criteria

As described in Section 2.5.1.5.6 of the DEIS, the visual impact of the original Project was evaluated by determining the existing scenic quality of the nine selected views, and comparing that to the scenic quality of the same view with the Project in place, allowing for a comparison of "before" Project construction and "after" Project construction landscape views. The visual impact was determined based on the change in perceived visual quality, and was characterized as either low, moderate or high.

2.5.1.5.7 Visual Simulations

To determine how visual impact would change from the DEIS to the SEIS, EDR prepared updated visual simulations based on revised locations, dimensions, and numbers of turbines (43 total turbines included in the analysis, although only 37 will be built in the final Project) for the revised Project. These simulations were then compared to the simulations prepared for the original DEIS Project.

As described in Section 2.5.1.5.7 of the DEIS, to show anticipated visual changes associated with the revised Project, high-resolution computer-enhanced image processing was used to create realistic photographic simulations of the completed turbines from each of the nine previously evaluated viewpoints. The photographic simulations were

developed by constructing a three-dimensional computer model of the proposed turbine and turbine layout. For the purposes of the simulations, it was assumed that all turbines would be Gamesa G-114 machines with a hub height of 93 meters, and a rotor diameter of 114 meters (total maximum blade tip height of 150 m or 492 feet). The turbine model used in the simulations is white in color, and has the rotor oriented to the southwest, which is the prevailing wind direction in this area. Additional detail regarding the visual simulation methodology is provided in Section 4.2.4 of the SVIA.

2.5.2 Anticipated Impacts

2.5.2.1 Construction

Impacts from construction are as described in Section 2.5.2.1 of the DEIS, and include the addition of construction material to and removal of vegetation from the existing viewshed. Visual impacts from Project construction are generally short-term in nature.

2.5.2.2 Operation

Impacts to visual resources resulting from Project operation were evaluated through application of the methods described in Section 2.5.1.5 of this SEIS. The SVIA provides full documentation of the results of the analysis.

2.5.2.2.1 Visibility Analysis

The results of the revised viewshed analysis are depicted in Figure 11 of this SEIS and presented in Table 23, below. As indicated in Table 23, turbines will be fully screened from view by intervening topography from approximately 23.1% of the visual study area. These areas are concentrated in the southern portion of the visual study area, which is characterized by greater topographic relief than the northern portion of the study area (see Figure 11, Sheet 1). Once the screening effects of mapped forest vegetation are factored into the analysis, visibility is greatly reduced and that figure increases to 77.3% of the visual study area that is anticipated to be fully screened from view (see Figure 11, Sheet 2). Very similar results are reported for nighttime visibility viewshed analysis, with 27.2% of the visual study area fully screened from view by topography alone and 80.6% fully screened when mapped forest vegetation is factored into the analysis (see Figure 11, Sheets 3 and 4).

Table 23. Summary of SVIA Viewshed Results for 7.5-Mile Study Area

Number of Turbines Visible	7.5-Mile-Radius Study Area Viewshed Results[1]							
	Blade Tip Topography Only		Blade Tip Topography and Vegetation		FAA/Nacelle Topography Only		FAA/Nacelle Topography and Vegetation	
	Square Miles	% of Study Area	Square Miles	% of Study Area	Square Miles	% of Study Area	Square Miles	% of Study Area
0	61.6	23.1	206.3	77.3	72.6	27.2	215.0	80.6
1-10	15.8	5.9	18.8	7.0	19.6	7.4	20.7	7.7
11-20	13.4	5.0	12.3	4.6	19.3	7.2	12.1	4.5
21-30	15.9	6.0	9.8	3.7	18.3	6.9	7.3	2.7
31-40	21.6	8.1	9.0	3.4	27.2	10.2	6.5	2.4
41-43	138.5	51.9	10.7	4.0	109.8	41.2	5.3	2.0
Total Visible	**205.2**	**76.9**	**60.5**	**22.7**	**194.2**	**72.8**	**51.8**	**19.4**

[1]The SVIA visual study area totals 266.8 square miles. Due to rounding to the 10th of a square mile and a 10th of a percentage, the sum of the individual turbine count group categories may not precisely equal the size of the study area or 100%.

The SVIA viewshed results are compared with the results of the VIA viewshed analysis in Table 24. With respect to viewshed results, the most influential differences between the VIA and SVIA turbine layouts include a decrease in the number of possible turbines proposed from 53 to 37 (plus six alternates) and the increase in turbine height from 397 feet to 492 feet. As shown in Figure 11, Sheet 1, the SVIA blade tip topographic viewshed shows a similar pattern of potential visibility to the viewshed maps presented in the VIA. However, due to the increase in turbine height, areas of potential turbine visibility have expanded further down hillsides and valleys throughout the visual study area, into areas that were formerly outside of the VIA viewshed. Many areas that formerly were anticipated to have potential views of 1-10 turbines may now have views of 11-20 turbines and a similar shift has occurred with each of the turbine groups. As indicated in Table 24, many of the turbine count groups have expanded slightly in size as well, i.e. the percentage of the visual study area where more than 41 turbines may potentially be visible has increased from 1.6% to 4.0%. Although the current viewshed analysis includes 10 fewer turbines than the VIA analysis, the turbines that are no longer proposed were primarily located in the central portion of the Project, surrounded by turbines that remain in the current layout, therefore the removal of those 10 turbines has minimal effect on the viewshed results.

With respect to nighttime visibility, it is anticipated that approximately 21 of the proposed turbines will be equipped with an FAA obstruction warning lights. However, since the FAA lighting plan has not yet been finalized, the SVIA viewshed analysis is based on the conservative assumption that all turbines could be lit. The VIA viewshed analysis was based on a preliminary lighting plan that included FAA obstruction warning lights on 22 turbines. The difference in viewshed results between the VIA and SVIA are primarily due to this difference in assumptions. However, the increase in anticipated FAA warning light height from 80 meters to 100 meters would also have the effect of increasing nighttime

visibility to some extent. Nonetheless, actual nighttime visibility/visual impact will be reduced from what is presented in Table 24 and Figure 11, Sheets 3 and 4 with the use of a lighting plan that lights only a portion of the turbines.

Table 24. VIA/SVIA Viewshed Results Comparison

Number of Turbines Visible	7.5-Mile-Radius Study Area Viewshed Results Considering Topography and Vegetation[1]							
	Daytime Visibility				Nighttime Visibility			
	VIA		SVIA		VIA[2]		SVIA	
	Square Miles	% of Study Area	Square Miles	% of Study Area	Square Miles	% of Study Area	Square Miles	% of Study Area
0	237.4	86.8	206.3	77.3			215.0	80.6
1-10	16.6	6.1	18.8	7.0			20.7	7.7
11-21	7.4	2.7	12.3	4.6			12.1	4.5
21-30	4.5	1.6	9.8	3.7			7.3	2.7
31-40	3.3	1.2	9.0	3.4			6.5	2.4
41-53	4.4	1.6	10.7	4.0			5.3	2.0
Total Visible	**36.1**	**13.2**	**60.5**	**22.7**	**25.8**	**9.4**	**51.8**	**19.4**

[1] The VIA nighttime visibility viewshed analysis was based on a preliminary lighting plan assuming that 22 turbines would be lit. The results were presented as a total rather than broken down by the number of turbine lights potentially visible. The SVIA nighttime visibility viewshed analysis was based on the conservative assumption that all turbines could be lit.
[2] The VIA 7.5-mile visual study area totaled 273.5 square miles. The SVIA visual study area totals 266.8 square miles. Due to rounding to the 10th of a square mile and a 10th of a percentage, the sum of the individual turbine count group categories may not precisely equal the size of the study area or 100%.

2.5.2.2.2 Visual Quality Impacts at Key Viewpoints

As discussed in Section 2.5.2.2.2 of the DEIS, the impact of the Project at key viewpoints within the visual study area varies greatly by viewpoint based on the landscape setting, the extent of natural screening, and presence of other man-made features in the viewshed, proximity to the Project site, and viewer sensitivity to the Project. Figure 12 (Sheets 1-9) show the existing view, the VIA simulation view prepared for the DEIS in 2008, and the SVIA simulation view prepared for the SEIS in 2015. While the analysis in the VIA for the DEIS included a visual quality rating that assigned a numeric visual quality rating to "before" and "after" views at each viewpoint, the SVIA prepared for this SEIS used a set of impact evaluation criteria that characterized the quality of existing as low, moderate, or high and ranked impacts to these existing views as a result of the simulated Project as minimal, low, moderate, or high. All viewpoints were found to have existing view quality ranked as moderate.

Table 25. VIA/SVIA Viewpoint Analysis Comparison

DEIS Viewpoint Number	SEIS Viewpoint Number	Existing View Quality (Low, Moderate, High)	Impact Level: VIA and DEIS	Impact level: SVIA and SEIS	Figure 12 Sheet #
3	17	Moderate	Moderate	Low	1
10	28	Moderate	Low	Minimal	2
14	32	Moderate	High	High	3
15	6	Moderate	Low	Low	4
19	36	Moderate	High	Moderate	5
20	37	Moderate	Moderate	Moderate	6
26	9	Moderate	Low	Low	7
31	7	Moderate	Low	Low	8
34	39	Moderate	Low	Low	9

Impacts to the nine viewpoints selected for visual simulation of the Project are generally similar to (viewpoints 14, 15, 20, 26, 31, 34) or less than (viewpoints 3, 10, and 19) impacts reported in the VIA and DEIS. Only Viewpoint 14 is anticipated to have high visual impact level as a result of the Project. One reason for the reduced impacts is that the Noble Chateaugay Windpark, which became operational in 2009 (NYSDEC, 2015e), is visible in many places throughout the viewshed, so additional turbines in the viewshed do not change it drastically. Another reason for reduced impacts is that the number of turbines has been reduced from 53 in the DEIS to 37 for the revised SEIS Project. Due to fewer turbines and alternative siting, fewer turbines impact the view at Viewpoints 14 and 19. A detailed summary of the each of the nine viewpoints with respect to impact evaluation criteria is provided in Section 5.2 of the SVIA.

2.5.2.2.3 Impacts of Other Project Facilities

As discussed in Section 2.5.2.2.3 of the DEIS, visual impacts from other Project facilities are minimal. An on-site O&M facility is no longer proposed as part of the revised Project, and Project access roads will generally take on the appearance of farm access roads within a few years following completion of construction. Electrical collection lines will be buried except in a few instances where overhead crossings of streams and wetlands are proposed. In those instances, the poles and overhead conductors will be well removed from public vantage points and screened by adjacent forest vegetation. The proposed substation will be located adjacent to the existing Willis substation. Consequently the visibility and visual impact of Project components other than the turbines is expected to be minimal.

2.5.2.2.4 Impacts to Visually Sensitive Resources

As discussed in Section 2.5.2.2.4 of the DEIS, a number of the visually sensitive resources within the visual study area are anticipated to have views of the proposed wind turbines. Although many are the same as those presented in Table 2.5-1 of the DEIS, all of the resources that would be affected by the Project are presented in Table 4 of the SVIA.

Additionally, a large-format map of these resources overlaid with viewshed results is presented in Appendix A of the SVIA. While the discussion of impacts to visually sensitive resources presented in Section 2.5.2.2.4 of the DEIS remains largely accurate, the increase in proposed turbine height will have the effect of increasing visual impact for some of the identified resources.

Out of the ten resources of statewide significance within the visual study area, only one, the Adirondack Park Scenic Vista 1, is anticipated to be fully screened from views of the Project. Viewshed analysis indicates that topography and forest vegetation will provide at least partial screening for the remainder of the sites, with the exception of the NRHP-Listed US Inspection Station in Chateaugay. However, it is likely that the landscaping trees surrounding the property (which are unaccounted for in the viewshed analysis) will provide some level of screening from this historic resource and the effects of distance (5.5 miles to the nearest turbine) will diminish the visual impact as well. Resources of statewide significance that may have foreground views of wind turbines include the Chateaugay River (included in the National Rivers Inventory) and the Military Trail Scenic Byway. Resources of statewide significance that will likely have views of turbines at midground distances include the Adirondack Forest Preserve, Chazy Highlands Wild Forest, and State Routes 374 and 190. In addition to the previously mentioned U.S. Inspection Station, the Almanzo Wilder Homestead also has the potential for background views of proposed turbines, although only a small portion of the property is indicated as having potential Project visibility. As described in Section 2.6 of the SEIS and Appendix O of this SEIS, there are at least 90 previously identified NRHP-eligible resources located within 5 miles of the Project.

2.5.2.3 Impact Summary

The visual impact from the revised SEIS Project is anticipated to be similar to or slightly less than that described in in Section 2.5.2.3 of the DEIS. The revised SEIS Project is proposed to have fewer, taller turbines than the DEIS Project; the increased impact of taller turbines is generally offset by the reduced impact from fewer turbines.

Viewshed analysis, considering the screening provided by both topography and mapped forest vegetation, indicates that some portion of one or more proposed wind turbines may potentially be visible from approximately 22.7% of the visual study area, an increase in about 5% from the DEIS. However, the increased height of the currently proposed turbines is essentially imperceptible, and to the extent that it has any effect, it is offset by the wider spacing and reduced number of turbines currently proposed. The revised evaluation of the updated simulations presented in the SVIA indicates that the revised Project would have a low impact on visual quality at six of the selected viewpoints, a moderate impact at two viewpoints and a high impact at one viewpoint.

As discussed in Section 2.5.2.3 of the DEIS, areas with potential visibility generally consist of agricultural fields/open areas in the central and northern portions of the visual study area. Project visibility in the southern portion of the visual study area is very limited due to the extent of forestland, with the exception of Lower Chateaugay Lake and a few small open areas that are anticipated to have views of the Project. Viewshed results indicate that potential nighttime visibility of FAA obstruction warning lights will have a very similar pattern and extent to that of daytime visibility, covering approximately 19.4% of the visual study area.

In addition, viewshed analysis suggests that views of the Project are likely to be fully screened from approximately one third of the identified visually sensitive resources that occur within the visual study area. However, open or partially screened views will be available from many of the identified resources, including the following visually sensitive resources of statewide significance: the Adirondack Forest Preserve, Almanzo Wilder Homestead, US Inspection Station in Chateaugay, Chazy Highlands Wild Forest, Chateaugay River, Military Trail Scenic Byway and State Routes 374 and 190. Adirondack Park Scenic Vista 1 also occurs within the visual study area, but views of the Project from this resource are anticipated to be fully screened by intervening topography.

The following overall conclusions presented in the VIA remain valid:

1. Locations with foreground (less than 0.5 mile) views of the Project turbines would likely experience moderate to high visual impacts. Even with some tree screening in the immediate foreground, turbines would likely be visible and would create strong contrast with the existing landscape. Project impacts would be higher at locations where the existing visual quality is high and the viewer exposure/sensitivity is high, and would tend to be moderate elsewhere.

2. Impacts at locations with mid-ground (0.5 to 3.5 miles) views of Project facilities would typically range from low to moderate, depending on the degree of screening and the existing level of visual quality.

3. The Project would have low to negligible impact on visual quality in areas with background (greater than 3.5 miles) views of the Project facilities because at such distances the turbines would typically be well screened, blend in with the sky, and/or not be prominent features of the landscape.

4. The predominant visual character of the area is that of a working agricultural and forest landscape. While there are localized exceptions, the proposed Project generally appears to be visually compatible with this type of a visual setting.

2.5.2.4 Assessment of Shadow Flicker

The general description of shadow flicker and its causes provided in Section 2.5.2.4 of the DEIS remains accurate. Although the DEIS Project proposed to use the Vestas V-82, the wind turbine generators that are proposed to be constructed for the revised SEIS Project are the Gamesa G114-2.1 MW wind turbines, which have a three-blade, 114-meter diameter rotor, with a hub height of approximately 93 meters. The normal operating speed is about 7.8 to 14.8 revolutions per minute, which results in blade pass frequency between 0.13 and .25 Hz. This range is substantially less than that reported in the DEIS and is well under the most conservative threshold (3 Hz) of sensitivity for people with epilepsy.

Due to changes from the DEIS Project to the SEIS Project layout, size, and operating speed of the turbines, an updated shadow flicker analysis was performed using the specifications of the Gamesa 114-2.1 turbine and latitude and longitude coordinates of all of the 37 proposed and six alternate turbine locations of the revised SEIS Project layout (see the updated Shadow Flicker Report, attached as Appendix N). A list of 364 potential shadow flicker receptors (residences) were evaluated for the analysis.

The shadow flicker study area covered a radius around each turbine of 10 rotor diameters, or about 1140 meters (3,739 feet), a distance that is typical for shadow flicker effects analysis. As noted in Section 2.5.2.4 of the DEIS, shadow flicker effects diminish greatly and are "barely noticeable" beyond 1,000 meters due the diffuse quality of light at this distance. Therefore, although the shadow flicker analysis prepared for the DEIS used a study area of 1500 meters from turbines, the 1140-meter radius used in the shadow flicker analysis prepared for this SEIS is sufficient to capture all anticipated shadow flicker effects that could result from Project operation.

The analysis used *WindPRO 2.8.579* software and associated Shadow module. The model assumed no screening effect of trees and buildings adjacent to the receptors. To account for the occurrence of cloudy conditions, the average monthly percent of available sunshine for the nearest NOAA weather station in Burlington, Vermont was used. Additional detail on methodology and assumptions of the model are presented in the Shadow Flicker Report.

Because the shadow flicker analysis conducted for the proposed Project was based on the conservative assumptions that 1) 43 turbines are operating, when in actuality no more than 37 will be built, 2) the turbines are in continuous operation during daylight hours, and 3) that shadow flicker can be perceived at a receptor structure regardless of the presence or orientation of windows or the screening effects of surrounding trees and buildings, the analysis presented herein is a conservative projection of the shadow-flicker effects at ground level.

Shadow-flicker effects on receptors are expressed in terms of predicted frequency (hours per year). Shadow isolines (i.e., contours indicating total number of hours of shadowing per average year) were calculated based on the data and assumptions outlined above. These isolines define the theoretical number of hours per year that shadow flicker would occur at any given location within a 1,140-meter radius of all proposed turbines (see Figure 13). A threshold of 30 hours per year was established in Section 2.5.2.4 of the DEIS and Appendix G of the DEIS as the level of impact for requiring additional analysis and possible mitigation measures. Further elaboration regarding the rationale for this 30 hours per year threshold is provided in the Shadow Flicker Report.

Table 26 provides a summary of predicted shadow flicker impacts from the revised SEIS Project layout and compares these impacts to the DEIS Project layout. Most (76%) of the receptors will likely experience shadow flicker under the 30 hour/year impact threshold, and some of the receptors (16%) in the analysis are predicted to experience no shadow flicker at all. There were 88 receptors (24%) that were predicted to experience shadow flicker in excess of 30 hours/year, before the screening effects of vegetation and topography were taken into account. At most receptor locations shadow flicker will occur primarily in the early morning or late afternoon and will generally last less than 1 hour per day. Table 27 provides a list of all receptors predicted by the model to experience over 30 hours of shadow flicker per year.

Table 26. DEIS/SEIS Shadow Flicker Effects Comparison

Predicted Shadow Flicker	DEIS Layout		SEIS Layout	
	53 turbines		37 turbines	
	359 receptors within 1,500 meters of turbines		364 receptors within 1,140 meters of turbines	
	Receptors (count)	**% of Receptors**	**Receptors (count)**	**% of Receptors**
0 hours	98	27	60	16
0-1 hour/year	188	52	1	<0.5
1-10 hours/year	41	11	80	22
10-20 hours/year	22	6	79	22
20-30 hours/year	6	2	56	15
30+ hours/year	4	1	88	24

Table 27. Receptors Predicted to Exceed 30 Hours of Shadow Flicker

Receptor ID	Project Status	Predicted Shadow Flicker (days/year)	Predicted Annual Shadow Flicker (hh:mm/year)	Predicted Max Daily Shadow Flicker (hh:mm/day)
5 [a]	Non - Participant	175	31:16:00	0:49
72	Non - Participant	211	43:05:00	0:53
74	Non - Participant	158	37:40:00	1:07
76	Non - Participant	134	30:01:00	1:05
82	Non - Participant	220	42:55:00	0:58
83 [b]	Non - Participant	225	43:27:00	0:58
84	Non - Participant	205	51:54:00	1:05
87	Non - Participant	224	60:47:00	1:08
105	Non - Participant	132	38:06:00	0:51
106	Non - Participant	163	39:11:00	0:56
114	Non - Participant	170	31:30:00	0:46
150	Non - Participant	179	32:20:00	0:44
151 [c]	Non - Participant	236	60:45:00	1:11
154	Non - Participant	201	30:34:00	0:44
155	Non - Participant	232	32:18:00	0:34
156	Non - Participant	201	30:31:00	0:34
174	Non - Participant	257	66:29:00	1:07
176	Non - Participant	238	81:56:00	1:47
179	Non - Participant	266	72:16:00	1:31
181	Non - Participant	161	32:49:00	1:14
186	Non - Participant	274	63:19:00	1:17
187	Non - Participant	212	41:07:00	1:02
188	Non - Participant	198	50:02:00	1:06
189	Non - Participant	213	54:24:00	1:07
190	Non - Participant	239	37:25:00	0:43
191	Non - Participant	229	47:54:00	0:50
257	Non - Participant	203	32:05:00	0:39
258	Non - Participant	244	36:39:00	0:35
314	Non - Participant	145	34:38:00	1:07
315	Non - Participant	150	32:55:00	1:01
325	Non - Participant	283	79:00:00	1:31
596	Non - Participant	176	36:25:00	1:06
12	Participant	173	37:42:00	0:59

Receptor ID	Project Status	Predicted Shadow Flicker (days/year)	Predicted Annual Shadow Flicker (hh:mm/year)	Predicted Max Daily Shadow Flicker (hh:mm/day)
86	Participant	93	33:40:00	1:11
109	Participant	117	31:15:00	1:05
112	Participant	150	30:05:00	1:03
113	Participant	187	52:36:00	1:09
116	Participant	175	54:00:00	1:32
153	Participant	206	31:24:00	0:40
170	Participant	130	59:10:00	1:11
175	Participant	168	35:40:00	1:09
177	Participant	214	39:45:00	1:30
208 - 225, 227 - 250 [d]	Participant	170 - 258	30:53:00 - 64:11:00	00:37 - 01:24
251 [c]	Participant	218	35:13:00	1:04
317	Participant	195	37:50:00	0:56
329	Participant	100	44:38:00	1:06
471	Participant	172	44:28:00	1:05

[a] This receptor is a commercial maple products establishment.

[b] These receptors are unoccupied.

[c] These receptors are only predicted to exceed 30 hours per year of shadow flicker because of the inclusion of the alternate turbine sites (i.e., the shadow flicker model analyzed 43 turbines rather than the 37 that will actually be built). Without the alternate turbines, these receptors will receive less than 30 hours of shadow flicker per year.

[d] These receptors consist of various trailers, cabins, and campsites at the Ponderosa Campsite campgrounds.

Although modeled shadow flicker at some receptors exceeds the 30-hour per year impact 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 trees and/or buildings. Further, this analysis assumes turbine rotors are continuously in motion. 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).

Of the 88 receptors that would experience greater than 30 hours of shadow flicker per year, only 32 are on non-participating residences. A viewshed analysis was prepared for the SVIA for the revised SEIS Project that shows areas

that are screened from view of the turbines through mapped topography and vegetation (see Section 2.5.1.5.1 of this SEIS for a description of the viewshed analysis). The viewshed analysis indicates that 15 of the 32 non-participant receptors predicted to experience over 30 hours of shadow flicker will not have views of the Project due to screening provided by mapped topography and vegetation (see Table 28). The remaining 17 receptors were checked on a case-by-case basis for screening by vegetation or existing buildings, and 12 of the 17 were found to be have nearby trees or buildings that would at least partially screen shadow flicker effects. Therefore, only five receptors (receptors 106, 155, 189, 191, and 596) could experience shadow flicker effects similar to those predicted by the model due to their lack of screening by topography, mapped vegetation, or on-site trees or buildings.

Table 28. Project Visibility from Non-Participating Receptors Predicted to Exceed 30 Hours of Shadow Flicker

Receptor ID	Project Status	Residential Type	Vegetation Viewshed Analysis Results	Screening Observed in Field Reconnaissance	Figure in Shadow Flicker Report
5	Non - Participant	Occupied	Turbine Screened	Confirmed	N/A
72	Non - Participant	Occupied	Turbine Screened	Confirmed	N/A
74	Non - Participant	Occupied	Turbine Screened	Confirmed	N/A
76	Non - Participant	Occupied	Turbine Screened	Confirmed	N/A
82[1]	Non - Participant	Occupied	Turbine Screened	Partial tree screening	Figure 4 - Sheet 3
83[1]	Non - Participant	Garage/Shed	Turbine Screened	Partial tree screening	Figure 4 - Sheet 3
84	Non - Participant	Occupied	Turbine Screened	Confirmed	N/A
114	Non - Participant	Occupied	Turbine Screened	Confirmed	N/A
150	Non - Participant	Occupied	Turbine Screened	Confirmed	N/A
151	Non - Participant	Occupied	Turbine Screened	Confirmed	N/A
181	Non - Participant	Occupied	Turbine Screened	Confirmed	N/A
186	Non - Participant	Occupied	Turbine Screened	Confirmed	N/A
257	Non - Participant	Occupied	Turbine Screened	Confirmed	N/A
258	Non - Participant	Occupied	Turbine Screened	Confirmed	N/A
314	Non - Participant	Occupied	Turbine Screened	Confirmed	N/A

Receptor ID	Project Status	Residential Type	Vegetation Viewshed Analysis Results	Screening Observed in Field Reconnaissance	Figure in Shadow Flicker Report
315	Non - Participant	Occupied	Turbine Screened	Confirmed	N/A
87	Non - Participant	Occupied	Turbine Visible	Partial tree screening	Figure 4 - Sheet 1
105	Non - Participant	Occupied	Turbine Visible	Partial tree screening	Figure 4 - Sheet 4
106	Non - Participant	Occupied	Turbine Visible	No Screening	Figure 4 - Sheet 4
154[2]	Non - Participant	Occupied	Turbine Visible	Partial tree screening	Figure 4 - Sheet 8
155[2]	Non - Participant	Occupied	Turbine Visible	No Screening	Figure 4 - Sheet 8
156[2]	Non - Participant	Occupied	Turbine Visible	Partial tree screening	Figure 4 - Sheet 8
174	Non - Participant	Occupied	Turbine Visible	Partial tree screening	Figure 4 - Sheet 6
176	Non - Participant	Occupied	Turbine Visible	Partial tree screening	Figure 4 - Sheet 6
179	Non - Participant	Occupied	Turbine Visible	Partial tree screening	Figure 4 - Sheet 5
187	Non - Participant	Occupied	Turbine Visible	Partial building and tree screening	Figure 4 - Sheet 2
188	Non - Participant	Occupied	Turbine Visible	Partial tree screening	Figure 4 - Sheet 7
189	Non - Participant	Occupied	Turbine Visible	No Screening	Figure 4 - Sheet 7
190	Non - Participant	Occupied	Turbine Visible	Partial tree screening	Figure 4 - Sheet 7
191	Non - Participant	Occupied	Turbine Visible	No Screening	Figure 4 - Sheet 7
325	Non - Participant	Occupied	Turbine Visible	Partial tree screening	Figure 4 - Sheet 5
596	Non - Participant	Appears Unoccupied	Turbine Visible	No Screening	Figure 4 - Sheet 5

[1] Vegetation Viewshed Analysis based on NLCD dataset predicts screening of turbines, however field review found that screening may not occur in all areas of the property.
[2] Extent of screening was determined by overhead aerial interpretation.

2.5.3 Mitigation Measures

Mitigation for Visual Impact

As discussed in Section 2.5.3 of the DEIS, mitigation measures to reduce the visual impact are limited due to the size and siting requirements of the Project. The mitigation measures and their limitations discussed in the DEIS remain generally relevant, but differences from the DEIS to this SEIS are discussed under the section headings below.

Screening

Mitigation from screening is as described in Section 2.5.3 of the DEIS. Screening with vegetation, fencing, and/or berms will generally not reduce visibility of the turbines, but can be effective for reducing impacts from shadow flicker. In addition, landscaping to provide screening is not anticipated at the proposed substation. Given the proposed location of the substation more than 750 feet from Willis Road, and adjacent to the existing NYPA Willis substation, its visual impact is expected to be minimal in the context of the existing visual character of this location. Therefore, no screening or landscaping plan for the substation is proposed.

Relocation

As discussed in Section 2.5.3 of the DEIS, relocation of the Project is not feasible due to siting requirements that dictate that turbines are placed in high elevation locations in order to harness the wind resource.

Camouflage

As discussed in Section 2.5.3 of the DEIS, the white or off-white turbine colors are preferred for aviation safety and these colors generally blend in with the sky under most conditions. Camouflaging turbines to look like some other landscape feature is generally ineffective. Therefore, beyond constructing turbines that are white, camouflage is generally not a viable mitigation option.

Low Profile

The currently proposed turbines are substantially taller than those evaluated in the DEIS. However, this taller height allows for a Project with 30% fewer turbines. As noted in Section 2.5.3 of the DEIS, several studies have concluded that people tend to prefer fewer larger turbines to a greater number of smaller ones (Thayer and Freeman, 1987; van de Wardt and Staats, 1988). The visual impact of the electrical collection system has been minimized by placing almost all of the collections lines underground rather than on overhead poles.

Downsizing

As noted above the Project has been downsized from its originally proposed size of 53 turbines to the currently proposed total of 37 turbines (a 30% reduction). While further reduction in the number of turbines could potentially reduce the visual impact from certain viewpoints, the loss of generating capacity would reduce the desirable economic and environmental benefits of the Project, and would likely provide only a marginal reduction of the visual impact of the Project.

Alternate Technologies

The Project site was chosen, among other reasons, for its sufficient wind resource. The presence of other nearby wind projects makes the Project site a good candidate for wind development because wind farms are consistent with existing regional land use. 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.

Nonspecular Materials

The discussion of the use of nonspecular materials in wind turbine construction in Section 2.5.3 of the DEIS remains accurate. Use of nonspecular materials or earth-tone finishes is not consistent with standard industry practice or aviation safety objectives.

Lighting

Turbine warning lights will be kept to the minimum number and will utilize the longest allowable off-cycle allowed by the FAA. As noted above, it is anticipated that approximately 21 of the proposed turbines will be equipped with FAA obstruction warning lights. The Applicant is currently working with FAA to determine the final approved lighting plan. In addition, no daytime warning lights are proposed for the turbines. Lighting at the substation will be kept to the minimum necessary for facility safety and security. No other Project facilities (e.g. access roads, collection lines) require lighting.

Maintenance

As discussed in Section 2.5.3 of the DEIS, wind turbines are perceived more favorably when the rotors are turning. Turbines will be maintained in order to ensure that they are operational as often as possible.

Offsets

As noted in Section 2.5.3 of the DEIS, correction of an existing aesthetic problem within the viewshed is a viable mitigation strategy for projects that result in significant adverse visual impacts. As noted previously in Section 2.5.2.2.4 of this SEIS, the Applicant is undertaking additional consultation with NYSOPRHP regarding the Project's potential visual effects on historic resources. Mitigation for impacts to historic properties typically consists of projects that benefit historic properties and/or enhance 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 resource preservation and 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. In the event that it is determined that cultural resources mitigation is necessary, the Applicant will work with NYSOPRHP and the Lead Agencies to define appropriate mitigation projects that will benefit the local community. Visual impacts and potential mitigation measures are further discussed in Section 2.6 of this SEIS.

Complaint Resolution Procedure

The Complaint Resolution Procedure described in Section 2.5.3 of the DEIS and attached to the DEIS as Appendix N remains valid. The Complaint Resolution Procedure is also attached as Appendix P to this SEIS.

Mitigation for Shadow Flicker

As described in Section 2.5.2.4, the current shadow flicker analysis presents a worst case scenario, particularly considering the Project Applicant will only construct and operate 37 wind turbines of the 43 potential turbine locations included in the 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 32 non-participant receptors are predicted to receive more than 30 hours per year of shadow flicker. Comparison with the viewshed analysis indicates that 15 of the 32 receptors predicted to experience over 30 hours of shadow flicker will not have views of the Project. Additionally, field verification determined that of the 17 remaining receptors not excluded by the viewshed analysis, 12 would most likely have no or limited visibility of the Project due to on-site screening by vegetation or buildings. These receptors would experience either no shadow flicker or far less shadow flicker than predicted by the model. Therefore, only five receptors within the study area have the potential to receive more than 30 hours of shadow flicker per year.

In order to avoid the potential for annoyance or other impacts to non-participating landowners, the Applicant will pursue neighbor agreements with the remaining 5 potentially affected property owners. Prior to finalization of the FEIS, the Applicant will evaluate what opportunities exist for mitigating impacts to the five residence predicted to receive more than 30 hours per annum (i.e., receptors 106, 155, 189, 191, and 596). Possible mitigations could include screen plantings or the installation of blinds or curtains at the impacted windows.

2.6 HISTORIC, CULTURAL & ARCHEOLOGICAL RESOURCES

2.6.1 Existing Conditions

2.6.1.1 Archaeological Resources

The Project's area of potential effect (APE) for archaeological resources is defined as those areas where soil disturbance is proposed to occur during construction. Subsequent to the release of the DEIS, a previous Phase 1B archaeological survey was conducted for an earlier layout of the Project (Tetra Tech, 2008a), which at that time consisted of a total of 47 proposed wind turbines. The Phase 1B survey was conducted subsequent to the completion of the DEIS for the Project, and the survey report was never submitted to the New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP) for review. Based on the proposed Project layout at the time the Phase 1B survey was conducted, Tetra Tech calculated the archaeological area of potential effect (APE) of the SEIS Project Layout to be 211 acres. The 2008 Phase 1B survey was adequate to evaluate 217 acres of potential ground disturbance, and included the excavation of 3,455 shovel test pits and pedestrian surface survey of 0.67 acres. This initial 2008 archaeological survey effort resulted in the identification of five historic-period archaeological sites (NYSOPRHP Sites A03303.000041, A03308.000053, A03308.000054, A03308.000055, and A03308.000056). All of these sites were recommended as not eligible for listing on the National Register of Historic Places (NRHP) and Tetra Tech recommended no additional archaeological investigations of these sites (Tetra Tech, 2008a). However, the Phase 1B survey report was not submitted to NYSOPRHP for review and comment. Although the layout and archaeological APE for SEIS Project's layout are similar to the Project layout evaluated in the 2008 Phase 1B survey, additional archeological studies were completed for the SEIS layout as discussed below.

2.6.1.2 Architectural Resources

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

> *The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:*
>
> *(A) that are associated with events that have made a significant contribution to the broad patterns of our history; or*

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

The *New York State Historic Preservation Office Guidelines for Wind Farm Development Cultural Resources Survey Work* (the *SHPO Wind Guidelines*; NYSOPRHP, 2006) define the (APE relative to historic-architectural resources for wind energy projects in New York as those areas within 5 miles of proposed turbines which are within the potential viewshed (based on topography) of a given project. A 5-mile historic-architectural resources survey for the proposed Project was previously conducted in 2008 (Tetra Tech, 2008b), subsequent to the publication of the DEIS. In addition, previous historic resources surveys were conducted in support of the SEQRA review for the nearby Noble Clinton and Ellenburg Windparks and the Marble River Wind Farm (all of which are now built) as well as the proposed Noble Chateaugay Windpark, which was previously proposed but never constructed (Ecology & Environment, 2006a, 2006b; John Milner Associates, Inc. [JMA], 2007; PanAmerican Consultants, Inc. [PCI], 2006). A summary of the results of these studies is included in Appendix O of this SEIS.

As described in Appendix O, virtually all of the five-mile study area for the Project has previously been surveyed for historic resources as part of the environmental reviews for these nearby existing and proposed wind projects. The eastern portions of the five-mile study area for the Project have been surveyed more than once, with those results summarized in the previous Jericho Rise Wind Farm five-mile survey in 2008. As part of the 2008 five-mile survey for the Jericho Rise Wind Farm, resources previously determined NRHP-eligible were identified and photographed, and only those portions of the APE that had not previously been surveyed were surveyed for historic architectural resources.

The 2008 historic-architectural resources survey report for the Jericho Rise Wind Farm (Tetra Tech, 2008b) was submitted to NYSOPRHP on March 26, 2008, and included the identification of 90 individual NRHP-eligible historic properties, including a 27-acre portion of the National Historic Landmark Adirondack Park. (Note: the locations of all of these resources were confirmed in the field to determine if due to changes in the Project layout, some of these properties are no longer included in the APE for the Project). In a June 10, 2008 letter from NYSOPRHP to the Public Service Commission (PSC), NYSOPRHP indicated its concurrence with the recommendations of NRHP eligibility contained within the 2008 survey report, and identified three key loci where visual impacts should be carefully assessed: the Chateaugay Village Historic District, Burke village, and the north end of Lower Chateaugay Lake. In addition, NYSOPRHP noted that several rural agrarian properties and other identified historic resources would be located within the viewshed of the proposed wind turbines, and recommended that visual simulations be prepared in the areas identified above, as well as the Adirondack Park (Bonafide, 2008).

2.6.2 Anticipated Impacts

2.6.2.1 Construction

2.6.2.1.1 Archaeological Resources

Because construction of the Project will include ground disturbance, the Project has the potential to result in adverse impacts to archaeological resources. Impacts associated with archeological resources, which are identified through the Phase 1B survey work, are typically avoided though careful siting of the Project and construction planning. It is worth noting that the previous Phase 1B survey conducted in 2008 (Tetra Tech, 2008a) evaluated a preliminary Project layout that has subsequently been revised. The 2008 survey resulted in the identification of five archaeological sites. The current SEIS Project layout has been sited to avoid impacts to those sites.

The Applicant's cultural resources consultant (EDR) prepared a comparison of the SEIS Project layout with the earlier Project layout that was evaluated in the 2008 Phase 1B survey (see Appendix Q). Based on the SEIS Project layout, the archaeological APE for the current Project layout is 383 acres. The archaeological APE for the preliminary layout at the time the Phase 1B survey was conducted was estimated to be 211 acres; however, Tetra Tech (2008a) surveyed a total of 217 acres for the Project. It is worth noting that the Project has not actually increased in size since 2008. Rather, the 2008 Phase 1B survey was based on the level of detail concerning the proposed Project layout at that time.

As described in Appendix Q, EDR is currently consulting with NYSORPHP staff to evaluate the SEIS Project Layout's potential effect on archaeological resources. Because the SEIS Project layout is more detailed (and has been revised) since the 2008 Phase 1B survey, an updated archaeological resources survey was determined to be necessary. The supplemental archaeological survey work for the Project was conducted in accordance with the *New York State Historic Preservation Office Guidelines for Wind Farm Development Cultural Resources Survey Work* (the *SHPO Wind Guidelines*; NYSOPRHP, 2006) and applicable portions of NYSOPRHP's *Phase 1 Archaeological Report Format Requirements* (NYSOPRHP, 2005), which specify an archaeological testing methodology that intensively samples selected areas within the larger Project Area. Per these guidelines, the required amount of archaeological survey work (i.e., the number of shovel tests excavated) was determined based on the total area of anticipated ground disturbance (archaeological APE). The *SHPO Wind Guidelines* are based on the assumption that additional archaeological survey work is not necessary if Project components move around during the Project development process, as long as the total area of ground disturbance for the Project does not increase. Relative to the areas that were evaluated in the 2008 Phase 1B survey, cases, the portion of the archaeological APE for the SEIS Project layout that requires archaeological survey is approximately 166 acres.

A work plan detailing the proposed level of effort and methodology for the Phase 1B archaeological survey was submitted to NYSOPRHP on September 4, 2015 (see Appendix Q). In correspondence dated September 15, 2015, NYSOPRHP concurred with EDR's recommendations for the Phase 1B archaeological survey presented in the Work Plan (Bonafide, 2015). The Phase 1B archaeological survey fieldwork for the SEIS Project layout was conducted between June 2 and August 21, 2015. EDR personnel excavated a total of 1,721 shovel tests and conducted pedestrian survey (of agricultural fields with ground surface greater than 80%) over approximately 623.1 acres during the course of Phase 1B fieldwork. The locations of areas selected for intensive archaeological survey were selected based on the work plan that was submitted to and approved by NYSOPRHP. A detailed Phase 1B archaeological survey report, which describes the methodology and results of the survey in accordance with NYSOPRHP's *Phase 1 Archaeological Report Format Requirements* (NYSOPRHP, 2005), is currently being prepared for submission to NYSOPRHP.

The 2015 Phase 1B survey resulted in the identification of 14 historic-period archaeological sites (Table 29). No prehistoric (Native American) archaeological sites were identified within the Project site. For the most part, the identified archaeological sites included foundation remains and/or artifacts associated with nineteenth-century farmstead sites, as well as a family plot cemetery, and a portion of the berm or embankment associated with the former Ogdensburg and Lake Champlain Railroad. Following completion of the Phase 1B archaeological survey, minor modifications to the Project layout were made to avoid impacts to archaeological resources (per the measures summarized in Table 29).

Table 29. Summary of Archaeological Sites Identified During the Phase 1B Survey

Site Name	Description	Potential Impacts	Avoidance Measures
Bigelow Cemetery	19th Century Cemetery	None (currently outside of Project Site and APE)	None/avoid
Bilow Holding Site 1	Historic Debris Scatter	None (within Project site but outside Project APE)	None/avoid
Bilow Holding Site 2	Historic Debris Scatter	None (within Project site but outside Project APE)	None/avoid
Bilow Holding Site 3	Historic Debris Scatter	None (near collection line between WTG 10 and Substation)	None
Bridge Site 1	Historic Bridge Abutment	None (within Project site but outside Project APE)	None/avoid
Jerdon Road Site 1	Possible Historic Foundation	None (near access road/collection line to WTG 4)	None
Mary Carey Road Site 1	Historic Farmstead (two foundations, two standing structures)	None (within Project site but outside Project APE)	None/avoid
Mary Carey Road Site 2	Historic Farmstead (two foundations and historic debris scatter)	Intersected by Project APE (access road to WTG 15)	Avoid: Access road to WTG 15 will be shifted to avoid the site.
Ogdensburg and Lake Champlain Railroad	Historic Railroad Grade	Intersected by Project APE (collection line between WTGs 2 and 5)	Avoid: Collection line will be bored underground to avoid disturbance to site.
River Road/Cemetery Site 1	Historic Farmstead (two foundations and historic debris scatter)	Intersected by Project APE (access road to WTG 12)	Avoid: Access road to WTG 12 will be relocated to avoid the site.
Substation Site 1	Historic Barns (two foundations)	Intersected by Project APE (collection line between WTG 9 and Substation	Avoid: Collection line will be bored underground to avoid disturbance to site.

Town Line Road Site 1	Historic Farmstead (two foundations and historic debris scatter)	Intersected by Project APE (alternate collection line to alternate WTGs 2 and 3	Avoid Collection line will be bored underground to avoid disturbance to the site.
Tracy Site 1	Historic Debris Scatter	None (within Project site but outside Project APE)	None/avoid
Tracy Site 1	Historic Debris Scatter	None (within Project site but outside Project APE)	None/avoid

2.6.2.1.2 Architectural Resources

Construction of the Project will not require the demolition or physical alteration of any buildings or other potential historic resources. No direct physical impacts to historic-architectural resources will occur as a result of the Project. Therefore, Project construction is not anticipated to have any effect on historic-architectural resources.

2.6.2.2 Operation

2.6.2.2.1 Archaeological Resources

Once the proposed Project has been constructed, no significant earth-disturbing activities associated with operation and maintenance of the Project will occur. Therefore, Project operation will not have any impacts on archeological resources.

2.6.2.2.2 Architectural Resources

The Project's potential effect on a given historic property would be a change (resulting from the introduction of wind turbines) in the property's visual setting. As it pertains to historic properties, *setting* is defined as "the physical environment of a historic property" and is one of seven aspects of a property's *integrity*, which refers to the "ability of a property to convey its significance" (NPS, 1990:44-45). The other aspects of integrity include location, design, materials, workmanship, feeling, and association (NPS, 1990). The potential effect resulting from the introduction of wind turbines into the visual setting for any historic or architecturally significant property is dependent on a number of factors including distance, visual dominance, orientation of views, viewer context and activity, and the types and density of modern features in the existing view (such as buildings/residences, overhead electrical transmission lines, cellular towers, billboards, highways, and silos).

As described in Appendix O, the Applicant is currently consulting with NYSORPHP staff to evaluate the SEIS Project Layout's potential effect on historic-architectural resources. On June 17, 2015, the Applicant's cultural resources consultant (EDR) conducted research concerning the previous architectural resources surveys in the vicinity of the Project at NYSOPRHP's office in Waterford, NY. During that research visit, EDR met with NYSOPRHP staff to review and discuss the previous historic architectural surveys, as well as the proposed historic architectural resources survey for the revised Jericho Rise Wind Farm study area. During this discussion, it was agreed upon by NYSOPRHP and

EDR that due to the considerable amount of recent historic resources surveys that have occurred within the Project APE, no additional survey of buildings located within the APE would be required as part of the current review of the Jericho Rise Wind Farm. In lieu of an new historic resources survey, a field review of previously identified historic resources was proposed, where previously identified historic resources would be photographed and given updated recommendations of NRHP eligibility (where applicable). The plan for this historic architectural resources survey as discussed by NYSOPRHP and EDR is described in greater detail in Appendix O, which was submitted to NYSOPRHP for review on July 10, 2015. On August 6, 2015, NYSOPRHP staff replied that they concurred with EDR's proposed methodology to re-evaluate historic resources and the potential visual effect of the Project (Pierpont, 2015).

EDR conducted a field review of historic properties within the 5-mile study area between August 12 and August 14, 2015. The historic resources review included site visits to 120 properties. As described in EDR's work plan (see Appendix O), photographs and notes were collected to allow for re-evaluation of each property's potential eligibility for the NRHP. This information is being provided directly to NYSOPRHP via their Cultural Resources Information System (CRIS) website.

In their review of the 2008 historic resources Survey for the Project (Bonafide, 2008), NYSOPRHP stated that the Project would result in an indirect (visual) adverse effect on historic properties and that mitigation measures need to be considered:

> *OPRHP believes that sufficient information does exist to determine that under Section 14.09, I(c) of New York State Parks and Recreation Law, the undertaking will have an Adverse Impact on cultural resources. The introduction of the sleek, ultramodern, approximately 390 foot tall kinetic wind turbines (up to 53 proposed) throughout this scenic landscape forever alters and changes the rural setting, which itself is a significant element in much of the survey area and serves as the backdrop for the architectural, cultural and scenic tourism heritage of these communities.*
>
> *We would recommend that the applicant utilize the visual analysis as a tool to aid in the exploration of feasible and prudent alternatives that avoid the adverse impact(s). The assessment of potential impact avoidance options may include a reduction in turbine numbers and/or height, relocation of turbine units, and various screening options. We would recommend that only after an assessment of avoidance options has been established should potential mitigation options be discussed. All consultation regarding avoidance options and potential later mitigation options should involve those state/federal agencies directly associated with the permitting/approval process for this project* (Bonafide, 2008).

Relative to the Project layout that was evaluated in the DEIS and presented in the 2008 report to NYSOPRHP, the reduction of the number of proposed turbines and corresponding reduced size of the visual study area does serve to reduce the potential visual impact of the Project. However, as described in Section 2.5, the overall visual effect of the Project is not anticipated to be significantly different than that described in the DEIS. As described above, the Applicant is continuing to consult with NYSOPRHP regarding the condition of integrity and condition of historic resources within the study area. In correspondence dated September 15, 2015 (Bonafide, 2015), NYSOPRHP restated their determination of an adverse effect for the current configuration of the Project.

2.6.3 Proposed Mitigation

2.6.3.1 Construction

2.6.3.1.1 Archaeological Resources

The archeological sites identified within the Project site will be avoided during Project construction. The Project layout is currently being reviewed and if necessary minor modifications will be made to ensure that impacts to significant archaeological resources are avoided. In the event that a potentially significant archaeological resource is located within the APE, and Project facilities cannot be relocated to avoid impacts to the resource, then a Phase 2 archaeological site investigation (in consultation with NYSOPRHP) will be conducted. However, the Project layout is being intentionally sited to avoid archaeological resources so no Phase 2 site investigations are anticipated to be necessary. The mapped locations of identified archeological sites will be included on Project construction maps surrounded by a 100-foot (minimum) buffer, identified as "Environmentally Sensitive Areas" or similar, and marked in the field by construction fencing with signs that restrict access. These measures should be adequate to ensure that impacts to archeological resources are avoided.

In the event that unanticipated archeological resources are encountered during construction, the environmental monitoring plan will include provisions to stop all work in the vicinity of the archeological finds until those resources can be evaluated and documented by a Registered Professional Archaeologist.

2.6.3.1.2 Architectural Resources

There are no anticipated impacts to architectural resources resulting from Project construction. Therefore, no mitigation is necessary.

2.6.3.2 Operation

2.6.3.2.1 Archaeological Resources

There are no anticipated impacts to archaeological resources resulting from Project operation. Therefore, no mitigation is necessary.

2.6.3.2.2 Architectural Resources

The Applicant will continue to consult with NYSOPRHP and the Lead Agencies to define appropriate mitigation projects that will benefit the local community. Mitigation options (such as viewshed screening) are limited, given the nature of the Project (tall structures placed at high elevations to access the wind resource and spread out across many acres of land) and constraints on siting locations. Mitigation for impacts to historic properties therefore typically consist of projects that benefit historic properties and/or enhance 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 resource preservation and 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.

To mitigate the Project's potential adverse effect on historic resources, the Applicant intends to enter into an agreement with the Towns of Bellmont and Chateaugay to fund historic preservation projects that will benefit historic resources within the Project's APE. A preliminary list of potential cultural resources mitigation projects was presented in the 2008 historic resources survey (Tetra Tech, 2008b). These suggested potential mitigation projects included (Tetra Tech, 2008b:20):

Record cultural resources

- *Create GIS based map of cultural resources within the APE*
- *Conduct a thematic survey of architecture within the APE, identifying specific architectural styles and types of buildings, structures and landscapes, e.g. a detailed survey of barns within the APE*
- *Identify, conduct necessary research, and prepare a NRHP nomination form for an appropriate property within the APE*
- *Identify and document a historic resource for recordation in either the Historic American Buildings Survey, Historic American Engineering Record, or Historic American Landscape Survey*
- *Prepare Cultural Resource Management Plans for the Towns of Chateaugay and Bellmont*

Contribute to the preservation of cultural resources

- *Create a fund for the restoration and maintenance of cemeteries within the APE*

- *Create a fund for providing technical assistance to those within the APE who seek to restore historic buildings*
- *Create a fund to support the planning for a Rail to Trail program along stretches of the Ogdensburg and Lake Champlain Rail Road within the APE*

Promote heritage tourism

- *Create audio driving/walking tour highlighting the areas cultural resources*
- *Sponsor a brochure for one of the area's cultural attractions to be placed at rest areas along highways in the area*
- *Create a web page on the Franklin County Tourist Board's web site, adirondacklakes.com, highlighting the heritage tourism opportunities in the area*

Educate people about the area's vibrant history

- *Prepare grade-appropriate local history/archeology curricula for use by local schools*
- *Create historic markers*
- *Sponsor oral history project*
- *Prepare outdoor signboards to explain the important role of the Ogdensburg and Lake Champlain Rail Road or the Old Military Road in the area*

As noted above, the Applicant will continue to consult with NYSOPRHP and the Lead Agencies to define appropriate mitigation projects that will benefit the local community.

2.7 SOUND

As discussed in Section 2.7 of the DEIS, a noise study was conducted during the winter of 2007 to evaluate the potential impact of the Project on local noise levels. Because the number of turbines, turbine locations, and proposed turbine model have changed, Hessler Associates, Inc. (Hessler) prepared an updated *Environmental Sound Survey and Noise Impact Assessment* (Hessler Associates, Inc., 2015). This document is included as Appendix R. The two primary phases of the study consisted of 1) ambient sound level surveys 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 ordinances and NYSDEC guidelines. Conservatively, Hessler evaluated all 43 turbine-site locations, although only a maximum of 37 turbines will be constructed and operated. Noise contour maps visually representing the results of the modeling were completed to determine whether the Project will operate in compliance with the applicable state and local guidelines and standards.

Acoustical terms used in this section are defined as follows:

- *Ambient noise level*: The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.

- *Decibel (dB*): A unit describing the amplitude of sound.
- *A-weighted sound pressure level (dBA)*: The sound pressure level in decibels as measured on a level meter using the A-weighted filter network. The A-weighted filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
- *Equivalent Sound Level (L_{eq})*: The L_{eq} integrates fluctuating sound levels over a period of time to express them as a steady-state sound level. Equivalent Sound Level is considered to be related directly to the effects of sound on people since it expresses the equivalent magnitude of the sound as a function of frequency of occurrence and time.
- *Residual Sound Level (L90)*: The L90 (residual) sound level is a generally conservative measure of background sound levels as it excludes short-duration, sporadic noise events that do not provide consistent and continual masking noise to obscure potential turbine noise. Instead, L90 represents the quieter, momentary lulls that occur between short-duration sound events, such as passing cars. While the L90 sound level effectively provides a metric for the lowest level of masking sound, the L90 level occurs only a small fraction of the time (10% of the time), and it is not a long-term or continuous phenomenon.

2.7.1 Existing Conditions

To account for potential changes to the sound environment that may have occurred subsequent to the publication of the DEIS in 2008, the baseline noise monitoring was performed again. Measurements were collected at eight monitoring sites over a 15-day period in from May 13 to May 28, 2015.

2.7.1.1 Measurement Locations

As described in the DEIS and in Section 2.13 of this SEIS, land use in the vicinity of the Project Site is dominated by agricultural use, with scattered farmsteads and single-family rural residences, typically located along roadway frontage. The eight noise monitoring locations were selected to represent the existing acoustic environments at residences nearest to turbines, and to provide adequate coverage of the Project Site. A variety of settings were chosen to determine whether background sound levels were uniform or variable over the site area. The monitors were placed in open fields, wooded areas, near homes, and in remote settings. Figures in Section 2.2 of Appendix R include photographs of each measurement position, and Graphic A of Appendix R shows these locations on the Project site map.

2.7.1.2 Instrumentation

The sound level meters used in this study are described in Appendix R. The sound level meters were set to continuously record a number of statistical parameters in 10 minute increments including the average (L_{eq}), minimum, maximum, and residual (L_{90}) sound levels. In addition to the sound level meters, wind speed data were obtained from an existing meteorological tower that measured wind speeds at 58 meters above ground level throughout the duration of the study. These were normalized to a standard 10 meter elevation through a standard equation used to extrapolate wind speeds.

2.7.1.3 Sound Survey Results

Review of the L_{90} sound levels recorded during the survey shows that residual sound levels are similar throughout the Project site. Monitoring Position 5, near the Ponderosa Campsite, had higher background sound levels starting around 10 pm at night due to frogs in nearby ponds. Other than this, the monitoring positions had similar L90 sound levels, and their average is considered a reasonable representation of the sound level at any point within the Project site at any given time. Consequently, the average sound level over all of the monitoring stations was taken as a representative measure of the site-wide L90 sound level, and was utilized as the "conservative" design level. When the relationship between wind speed and L90 sound level was plotted, there was a positive correlation between wind speed and background sound level. This is important because when the Project is operational during windy periods, background noise levels are higher. The average L90 sound level throughout the Project site ranged from about 28 dBA at a wind speed of 3 meters/second (m/s) to about 45 at 10 m/s.

Leq levels are more susceptible to "contamination" by short-term noise than the L90 levels. Leq levels were fairly consistent among the eight monitoring stations as well. During windier periods, the Leq data were even more similar between monitoring locations, due to the global effect of wind producing noise. On calm days, differences between Leq levels at monitoring stations was more random, and likely due to temporary, man-made noise. Leq levels ranged from about 36 dBA at 3 m/s wind speed to 48 dBA at 10 m/s wind speed.

2.7.1.4 Regulatory Standards and Guidelines

As described in Section 2.7.1.4 of the DEIS, there are no federal noise guidelines, and the NYSDEC noise guidance criteria remain applicable. However, the Towns of Bellmont and Chateaugay noise ordinances have been amended since release of the DEIS, as described below.

2.7.1.4.1 Chateaugay and Bellmont Noise Bylaws

As discussed in Section 2.7.1.4.1 of the DEIS, the Towns of Bellmont and Chateaugay have identical noise ordinances for wind projects. In both Towns, the laws were first established in 2006 and set a threshold that noise from a wind

project could not exceed L10 – 50 dBA sound level at the nearest non-participating residence. Both Towns have subsequently amended these laws in order to use L90 rather than L10 sound levels (Town of Chateaugay Local Law # 1 of the Year 2008 entitled "Amendments to Wind Energy Facilities Law" and for Bellmont, Resolution 25: Resolution for the Proposed Local Law No. 1 of 2007 to Amend Local Law No. 2 of 2006). L90 is a more commonly used standard, and the amendments were passed because L90 sound levels are a better indicator of background noise levels. Therefore, the current laws in both the Town of the Bellmont and the Town of Chateaugay states that a wind project cannot exceed L90 – 50 dBA at the nearest non-participating residence. As discussed in Section 2.7.1.4.1 of the DEIS, there are stricter sound level requirements if a wind turbine will emit a steady pure tone.

2.7.1.4.2 NYSDEC Noise Guidelines

The NYSDEC noise guidelines are as described in Section 2.7.1.4.2 of the DEIS. The 2001 guidelines in the document Assessing and Mitigating Noise Impacts (NYSDEC, 2001) is still the applicable guidance on methodology for evaluating potential community impacts from any new noise source. The guidelines essentially state that there is a 6 dBA threshold below which increases in noise as a result of a project are essentially imperceptible. Therefore, because decibels are measured on a logarithmic scale, a project could exceed ambient sound levels by 5 dBA without resulting in adverse impacts.

2.7.1.4.3 New York State Department of Transportation Construction Noise Guidelines

The discussion of NYSDOT New York State Noise Analysis Policy provided in Section 2.7.1.4.3 of the DEIS remains relevant, however, the New York State Noise Analysis Policy was written specifically for transportation projects. Although road improvements are proposed as a part of the Jericho Rise Wind Farm Project, the Project is an energy project and these guidelines were not intended for this kind of project.

2.7.2 Anticipated Impacts

Predicted sound levels associated with Project construction and operation were assessed as part of the 2015 Noise Impact Assessment (Hessler Associates 2015). The full results of this study are presented in Appendix R. A summary of study methodology and results is presented below.

2.7.2.1 Construction Noise Impacts

Impacts from Project construction on sound levels is as discussed in Section 2.7.2.1 of the DEIS, with the exception that this section of the DEIS does not address the potential for blasting. Blasting may be necessary for this Project, as

shallow bedrock was encountered during the Preliminary Geotechnical Survey (Appendix D). 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). Any blasting-related noise will be temporary and infrequent.

2.7.2.2 Operational Noise Impacts

Section 2.7.2.2 of the DEIS indicated that the Project was likely to use Vestas V-82 model. However, the Applicant has reviewed several models and selected the Gamesa G114-2.1 for the revised Project. The 2015 Noise Impact Analysis is based on the specifications associated with this turbine model.

2.7.2.2.1 Turbine Source Data

The Gamesa G114-2.1 General Characteristics Manual GD229761 (Gamesa, 2014) gives a range of sound levels for various operating speeds, but does not specify the average operating sound level at these speeds. Therefore, the loudest noise level for each wind speed indicated in the manual was used in the analysis. Table 30 presents the sound power levels at various wind speeds as indicated in the manual. These data were scaled to the 93 meter hub height for the model proposed. Values are similar to those reported in the DEIS for the 80-m Vestas V-82 turbine model.

Table 30. Sound Power Levels vs. Wind Speed for Gamesa G114 2.1 MW Wind Turbine

Wind Speed at 10 m Height (m/s)	Sound Power Level, dBA re 1 pW*
3	95.8
4	96.8
5	101.9
6	105.0
7	106.6
>7	106.6

*Sound power level is a function of sound pressure level and effective radiating surface area at the point of the pressure level measurement. This term is often used for acoustical modeling and design analyses as an alternative to simple sound pressure. The units of power levels are denoted as decibels with reference to 1 pico Watt or 10^{-12} W.

2.7.2.2.2 Defining WTG Worst Case Operational Acoustic Condition

Worst case incremental increase in noise as a result of the operation of the Project is variable with respect to wind speed. At higher wind speeds, the sound of the wind provides ample background noise such that the turbine sound is masked. At lower wind speeds, turbines are either not operational or turn more slowly thereby producing less noise.

However, there is a critical wind speed somewhere in the middle range of wind speeds where the difference between the turbine power level and the background sound level is greatest. Based on the sound level monitoring survey results, this speed was determined to be 6 m/s. Therefore, the worst-case operational acoustic condition is when the wind speed is 6 m/s. This is the same wind speed that was calculated for the worst-case scenario for the DEIS.

2.7.2.3 Acoustic Modeling Methodology

Sound level contour plots for the site were calculated using the Cadna/A®, ver. 4.4.145 noise modeling program developed by DataKustik, GmbH (Munich). This software enables the Project site and its surroundings, including terrain features, to be realistically modeled in three-dimensions. Each turbine is represented as a point noise source at a height of 93 m above the local ground surface (design hub height). The receptor height is set at a standard elevation of 1.2 m above local grade; this keeps the predicted levels comparable with the background measurements, which were measured at a similar elevation. The analysis examined the potential sound impacts of all 43 turbines, including both the proposed turbines and the alternates.

In order to be as conservative as possible with respect to the assumptions of the model, sound emissions from each turbine are assumed to be the downwind sound level in all directions simultaneously. Although physically impossible, an omni-directional 6 m/s is assumed. Using this approach produces a contour plot that effectively shows the maximum possible sound level at any given point. This approach also shows sound levels that cannot possibly occur in some cases – such as between two or more adjacent turbines, since the model effectively assumes that the wind is blowing in two opposing directions. At any given receptor point, the model also assumes the following conservative assumptions:

- Wind Speed – only a 6 m/s wind nominally produces the plotted contours; under all other wind conditions the impact threshold contour lines would contract closer to the turbines
- Low Ground Porosity – normally wooded areas and farm fields are more absorptive than assumed in the model
- Observer outside – the plotted sound levels occur outside; sound levels inside of any dwelling will be 10 to 20 dBA lower.

2.7.2.4 Noise Impact Analysis Results

There are three ways to evaluate predicted noise from the Project and thereby determine whether any adverse environmental impacts might result from it. The first is through a set of noise assessment guidelines published by the NYSDEC (NYSDEC, 2001). The second method for evaluating impacts measures predicted Project sound increases

in comparison to local regulatory noise limits imposed by local laws for the Towns of Bellmont and Chateaugay (see Section 2.7.1.4.1 of this SEIS). The third way to evaluate noise impacts from the Project is referred to as a modified Composite Noise Rating (CNR). CNR analysis assigns complaint ratings likely for Project-related noise. It is based on case studies of reactions to new noise sources. CNR methodology dates back to 1955 and has been used by various federal agencies, including the EPA. For each of these three methods, the 37 proposed turbines as well as the six alternate turbines were assessed; impacts are reported for the combination of all 43 turbines being considered for the Project. A summary of impacts through these three methods is provided below.

Impact Assessment – NYSDEC Guidelines

The NYSDEC guidelines operate under the 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 dBA at a given point of interest is required before the new sounds begins to be clearly perceptible or noticeable to most people. What this essentially says is that cumulative increases in the total ambient sound level of 6 dBA or less are unlikely to constitute an adverse community impact. Because decibels add logarithmically, this threshold means that noise from the Project could exceed the existing background level by up to 5 dBA. For example, a background level of 40 dBA plus a Project-only sound level of 45 dBA would equal a total cumulative level of 46 dBA –or 6 dBA above the ambient level. The method is fundamentally based on the perceptibility of the new source above the existing background sound level.

Plots depicting predicted sound contours for conservative and typical impact thresholds were created to determine the sound impacts at residences within the Project site. See Appendix R, Plots 1 and 2.

Plot 1 – Conservative Impact. In Plot 1 the sound emissions of the Project are shown out to 40 dBA, which is the NYSDEC 6 dBA increase threshold if the background sound level is taken to be the near-minimum L90 level of 35 dBA measured during 6 m/s wind conditions. This is the background sound level that occurs for only a small percentage of the time during lulls in the wind and when all sources of man-made noise are at a temporary minimum. Under these specific circumstances Project noise may be clearly perceptible at most of the homes in the immediate Project site and some degree of adverse reaction is theoretically possible, although it is important to note that this increase in sound level occurs outside rather than inside homes. Table 3.5.1 of Appendix R lists all non-participating residences by map ID number and address where an increase of more than 6 dBA is anticipated based on a conservative background level of 35 dBA.

Plot 2 – Average Impact. Plot 2 shows the Project sound levels out to a level of 46 dBA, which represents the 6 dBA cumulative increase threshold recommended by the NYSDEC based on the measured average, or Leq, sound level of 41 dBA during a 6 m/s wind. The region inside the threshold line represents the area where turbine noise might result in an adverse impact relative to the "typical" background level. In this instance, all homes (including the structures in the Ponderosa Campsite) are outside the 46 dBA threshold line, which occurs fairly close to each turbine and short of the minimum 1200-foot setback in the Town of Chateaugay and minimum 1000-foot setback in the Town of Bellmont. This plot indicates that no significant adverse impact might be expected under average conditions.

In general, these plots suggest that the Project is unlikely to generate sound levels above the NYSDEC 6 dBA cumulative impact threshold at residences in the Project site during "typical" or average conditions, but that some adverse reaction is possible from time to time – theoretically 10% of the time – during moderate (6 m/s) wind conditions. The potential audibility of the Project is less likely during all other wind conditions. During the winter the sound emissions from the Project are also less likely to be noticeable, since people are inside most of the time.

However, it is also important to note that in the particular case of wind turbines, a cumulative increase in sound level of less than 6 dBA does not indicate that the Project will be inaudible. Operational sound emissions from wind turbines are often unsteady and variable with time largely because the wind does not always blow in a completely smooth and ideal manner. When unsettled air or gusty winds interact with the rotor, or the airflow is not perfectly perpendicular to the rotor plane, a temporary increase in turbulence and noise results. On top of this, turbines often (although not always) produce a periodic swishing sound. These temporal characteristics make operational noise more perceptible than it would be if it were always continuous in nature. Consequently, wind turbines can commonly be discerned at fairly large distances even though the actual sound level may be relatively low and/or comparable to the magnitude of the background level; therefore the possibility of impacts at residences beyond the impact thresholds shown in the plots certainly cannot be ruled out.

The modeled results presented above by Hessler represent a worst-case scenario that is based on conservative assumptions. Additionally, considering that the Project Sponsor will only construct and operate 37 wind turbines of the overall evaluated 43 turbine sites, it is anticipated that residences near alternate turbine sites experiencing sound levels in the range of 40 to 45 dBA under worst-case scenario impact assumptions will be less than modeled.

Apart from the turbines, the only other potential source of noise associated with the Project is the step up transformer in the electrical substation where output from the Project is connected to an existing transmission line. This substation is located to the southwest of the intersection of Hartnett and Willis Roads in an area that is fairly remote from any homes. The sound emissions from the step up transformer, the only sound source of any potential consequence in the

substation, have been conservatively calculated from the MVA rating of 92 using the empirically derived EEI Noise Guide methodology, and included in the overall project noise model. This estimate yields an overall sound power level of 98 dBA re 1 pW. Considered independently from the surrounding wind turbines, transformer noise would die down to an insignificant sound level of 35 dBA, which is comparable to the existing near-minimum background level, at a distance of just over 1000 ft. taking into account distance spreading, air absorption and moderate ground absorption. Any tonal character to the noise would also dissipate over this distance because ground absorption losses occur mainly in the same region of the frequency spectrum (200 to 500 Hz) where the core magnetostriction tones occur (120 Hz to 480 Hz). Since the nearest residences are on the order of 1500 ft. away the sound emissions from the substation transformer are not expected to be of any consequence at any potentially sensitive receptors.

Impact Assessment – Local Law Compliance

The laws established by the Towns of Bellmont and Chateaugay set a project-only noise threshold of 50 dBA as measured at the exterior of any non-participating residence. A plot depicting predicted sound contours for this threshold was created to determine whether there were any non-participating residences that would experience noise levels above this threshold (see Appendix R, Plot 3). Under normal weather and wind conditions, a Project-only sound level of 50 dBA or more will not occur at any non-participating (off site) homes or other sensitive receptors within the Project site. Consequently, even with various conservative assumptions applied, the Project is anticipated to be in full compliance with the local wind energy facility laws for the Towns of Bellmont and Chateaugay.

Impact Analysis – Modified CNR Method

A modified CNR method was also utilized to further assess potential community noise impacts associated with the Project. This method takes into account the frequency content of both the background and Project sound levels, and is based on histories of reaction to new noise sources (though not specifically wind turbines). Details of this methodology are described in Appendix R, but the general procedure for this methodology involves the following steps:

1. Obtain a baseline rating classification, from the predicted sound pressure level spectrum of the new noise source at the point of reception.
2. Determine a background (masking noise) correction based on the average measured background sound level spectrum under comparable conditions.
3. Apply a number of correction factors related to when the source is in operation, the character of the noise and the general attitude of the receiver.

4. Determine a final rating classification (a letter, A to I with A no reaction and I vigorous action) that defines the residents' expected reactions to the new source.

Results of the CNR analysis are presented in Table 31. They indicate that little or no reaction is expected under most conditions, since the CNR rating is C (sporadic complaints) or lower in most instances. The potential for complaints and some dissatisfaction essentially begins with a D rating, which equates to a sound level of 45 dBA during "typical" conditions and 41 dBA during "conservative" conditions. This conclusion agrees remarkably well with the NYSDEC relative increase assessment discussed in the previous section, since the thresholds derived using the ambient-plus-5 dBA approach were 46 dBA for typical conditions and 40 dBA for conservative conditions.

Table 31. CNR Ratings Associated with Predicted Sound Project Levels

Predicted Project-only Sound Level (dBA)	CNR Rating – Typical*	CNR Rating – Conservative*
46	D	E
45	D	E
44	C	D
43	C	D
42	C	D
41	C	D
40	B	C
39	B	C
38	B	C
37	B	C
36	B	C
35	A	B

*CNR Ratings refer to a level of predicted reactions of residents to new noise. Ratings range from A to I, with A indicating no predicted reaction and I indicating vigorous action is expected. Level C indicates predicted sporadic complaints and Level E indicates widespread complaints or a single threat of legal action. Levels B and D are levels of complaint intermediate between the defined levels.

All non-participating residences where a Project sound level of 45 dBA is calculated are tabulated in Table 3.6.5 of Appendix R, along with the CNR ratings for each design case.

Modeling of the predicted sound impacts with respect to thresholds set in the local laws indicates that the Project will not exceed thresholds established therein. However, the NYSDEC guidelines impact assessment and the modified CNR impacts assessment independently point to the possibility of some complaints where the Project sound level exceeds 40 dBA. However, it should be noted that the analyses are conservative in the following ways:

- Minimal background masking noise, which occurs infrequently, is assumed in the conservative case.

- All of the turbines are assumed to be operating at a near-maximum sound power level of 105 dBA despite the fact momentarily calm conditions are implicit in the L90 background sound level.
- A critical wind speed of 6 m/s is assumed to be blowing – at all other wind speeds the potential intrusiveness of Project noise would be less.
- Any given point is assumed to be simultaneously downwind of every turbine in the Project and therefore experiencing a theoretical maximum Project sound level.
- The predicted sound levels occur outside; interior sound levels would be substantially lower.
- An essentially neutral (rather than positive) public attitude is assumed in the CNR calculation.
- A total effect of 43 turbines was evaluated, although only 37 will actually be built.

Therefore, levels of complaints anticipated based on these analyses is likely to be lower than predicted due to conservative parameters used in modeling.

Cumulative Noise Impacts

The Noble Chateaugay Windpark is an operating wind farm located to the east of the proposed Jericho Rise Project. The shortest distance between the Turbines of the Noble Chateaugay Windpark and any residence in the vicinity of a proposed Jericho Rise turbine location is approximately one mile. In most instances, the distances from residences in the eastern part of the Jericho Rise Project vicinity to any of the Noble Chateaugay turbines is considerably further than one mile. At approximately one mile away, the sound emissions from the existing Noble Chateaugay Windpark would be approximately 30 dBA, or less, and non-additive at any potentially sensitive receptor within the proposed Jericho Rise Project vicinity. With respect to the various noise thresholds described above, and throughout Appendix R, these sound levels would be inconsequential, and no adverse impact from cumulative noise is anticipated.

Low Frequency Noise Concerns

Although concerns are often raised with respect to low frequency or infrasonic noise emissions from wind turbines, modern pitch-regulated wind turbines of the type proposed for this Project do not generate low frequency noise to any significant extent. No impact of any kind, whether related to annoyance or health, is expected from Project-related low frequency noise. Early wind turbines (designed with the blades downwind of the support tower) were prone to producing a periodic thumping noise each time a blade passed the tower, and the widespread belief that wind turbines generate excessive or even harmful amounts of low frequency noise likely originated with this phenomenon. While modern wind turbines have been re-configured with blades arranged upwind of the tower, and therefore no longer produce the same magnitude of thumping noises, the myth of excessive low-frequency noise may have perpetuated

due to confusion of low frequency sound with the amplitude modulation typical of wind turbines (i.e., the periodic swishing sound with a frequency of about 1 Hz). However, 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; Hessler et al., 2008).

In addition, in response to concerns that sounds emitted from wind turbines cause adverse health consequences, American Wind Energy Association and Canadian Wind Energy Association established a scientific advisory panel to conduct a review of current literature pertaining to the perceived health effects of wind turbines (Colby et al., 2009). The multidisciplinary panel was comprised of medical doctors, audiologists, and acoustical professionals from the United States, Canada, Denmark, and the United Kingdom. The objective of the panel was to provide an authoritative reference document for legislators, regulators, and anyone who wants to make sense of the conflicting information pertaining to wind turbine sound. The panel evaluated peer-reviewed literature on sound and health effects, as well as sound produced by wind turbines. The panel concluded that there is no evidence that the audible or sub-audible sounds produced by operating wind turbines have any direct adverse physiological effects and the ground-borne vibrations from wind turbines are too weak to be detected by, or to affect, humans. In addition, based on the levels and frequencies of the sounds produced by operating wind turbines and the panel's experience with sound exposures in occupational settings, the sounds produced from operating wind turbines are not unique and therefore do not likely cause direct adverse health consequences (Colby et al., 2009).

The Chief Medical Officer of Health (CMOH) of Ontario also reviewed existing scientific evidence on the potential health impact of noise generated by wind turbines. The report concluded, "…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" (CMOH of Ontario, 2010).

In addition, the Massachusetts Department of Environmental Protection (MassDEP) and Massachusetts Department of Public Health (MDPH) assembled a team of independent experts to identify any documented or potential health impacts or risks that may be associated with exposure to wind turbines and discuss public health effects relating to wind turbines, based on scientific findings. To do this, the independent, expert panel conducted a literature review, including peer-reviewed scientific studies, other reports, and popular media, as well as reviewed public comments received by the MassDEP and/or MDPH. According to the report, there is insufficient evidence that the noise from wind turbines is directly causing health problems or disease (Ellenbogen et al., 2012).

A more recent study (Tonin, 2015) demonstrated a psychosomatic origin for symptoms associated with low frequency sounds. In this double-blind study, the study participants were exposed to inaudible, infrasonic sound through headphones, and afterwards, reported their reactions. Half of the participants had been given articles about the detrimental health effects of exposure to low frequency sounds, while the other group was given articles concluding that there is no evidence of health consequences from exposure to low frequency sounds. The former group reported statistically significant adverse effects while the latter did not. This study adds to the existing body of literature suggesting that low frequency tones do not adversely affect health.

2.7.3 Mitigation

2.7.3.1 Project Construction

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).
- Pursuant to Section 12(A)(14) of the Towns' Wind Energy Facilities Laws, Project construction will generally be limited to the hours of 7 AM to 7 PM. However, a waiver will likely be requested to allow certain activities to occur outside these hours. Such activities will not be conducted without advanced notice and approval by the Towns (see also discussion of waivers below).
- Implementing a complaint resolution procedure to assure that any complaints regarding construction sound are adequately investigated and resolved (see Section 4.1 of this DEIS for additional information).

2.7.3.2 Project Operation

While the possibility of adverse reactions from some residents in the vicinity of the Project site cannot be ruled out, actual Project sound levels are expected to be lower than those predicted by the 2015 Noise Impact Assessment. Sound modeling indicates overall increases of less than 6 dBA at the majority of receptors in the Project site during most of the year. Furthermore, the modeling analysis indicates full compliance with noise limits mandated by local laws relating to wind energy facilities. The maximum allowable sound level of 50 dBA is predicted to occur well short of any residence or potentially sensitive receptor. 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:

- Offering a good neighbor agreement to landowners with occupied residences, which would fall within the 46 dBA typical impact threshold line (Plot 2 of Appendix R), based on the final wind turbine layout as presented in the Project FEIS.
- Implementing the complaint resolution program (Appendix P) whereby neighboring residents (or others) can contact the Applicant with their concerns. Such complaints will be logged and investigated in order to resolve the identified issue.
- Complete post-construction monitoring after commissioning to ensure wind turbines are in compliance with local law requirements. The protocols for conducting post-construction compliance monitoring will likely be a component of the Host Community Agreement with the Towns.

2.8 TRAFFIC & TRANSPORTATION

Traffic and transportation within the region and the Project site are generally as reported in Section 2.8 of the DEIS because road and traffic conditions have not changed substantially since the DEIS was released. However, because the revised Project layout does not extend east of the Chateaugay River, some of the roads that are proposed to be used in the DEIS will not be used for the revised Project. This section is updated to reflect the existing conditions, impacts, and mitigation measures for the roads and transportation within the revised Project. A copy of the updated Transportation Route is provided in Appendix S.

2.8.1 Existing Conditions

The existing condition of the network of roads in the vicinity of the Project site is generally as described in Section 2.8.1 of the DEIS. The revised Project site is bounded by U.S. Highway 11 to the north, Cemetery Road, River Road, Healy Road, and Chase Road to the east, County Route 24 to the south, Ketcham Road and Selkirk Road to the northwest, and portions of County Road 33 and County Highway 36 to the southwest. The DEIS layout was bounded by State Route 374 to the east, however, the revised Project site does not extend east of the Chateaugay River. The roads identified in the DEIS as the network of roads in the Project site remain accurate, with the exception that Sancomb Road, Cassidy Road, and State Route 374 are no longer located within the Project site. Cemetery Road, under the jurisdiction of the Town of Chateaugay, was not proposed for use in the DEIS, but is proposed for use in the revised Project. Beyond these exceptions, Table 2.8-1 of the DEIS remains accurate.

As discussed in Section 2.8.1 of the DEIS, U.S. Route 11 is a viable route into and out of the Project site that can accommodate large/oversized delivery vehicles and is anticipated to be used as the main delivery route to the Project site. No proposed turbines in the revised Project are located east of the Chateaugay River so access information for

those sites described in Section 2.8.1 of the DEIS is no longer relevant. Due to scheduled bridge work on Route 11 east of the Project site, the proposed delivery route to the Project site vicinity is from the west rather than from the east as described in the DEIS. The final delivery route will be confirmed by the hauling company retained to deliver the turbine components prior to Project construction. Delivery of Project components will require special hauling permits from NYSDOT which will be obtained by Gamesa, the turbine manufacturer, prior to initiation of construction. As noted in the DEIS, Project access routes may be revised upon selection of a construction contractor and turbine delivery company in order to minimize impact to the community.

The on-site construction delivery and routing plan is generally as discussed in Section 2.8.1 of the DEIS, however, as there are some minor changes, an updated Transportation Route Sheet is provided in Appendix S. As this plan shows, deliveries will arrive on-site from the west on U.S. Route 11. Once on site, the main north-south travel routes will be county Route 33 and Mahoney/Jericho/Titus Roads. The major east-west travel corridors will be Jerdon Road, Toohill/Hartnet Roads, Town Line/Ponderosa Roads, and County Route 24. The Project will be constructed in one continuous phase anticipated to commence in early 2016 and finish in early 2017.

The physical characteristics assessment completed as part of the 2007 Transportation Study included a review of roadway widths, drainage structures, bridges, intersection geometry, and roadway alignments. The majority of the roads investigated within the Project site are paved. U.S. Route 11 has two travel lanes with a pavement width of 24 feet with 10 to 11 feet wide asphalt shoulders. The county roads (County Routes 23, 24 and 33) have pavements widths between 23 feet and 35 feet with 1 to 3 feet wide asphalt/gravel shoulders. Town roads range in width from 16 to 27 feet. Along the proposed transportation route, Jerdon Road, Mary Carey Road, Ponderosa Road, and Healy Road have unpaved (dirt/gravel) surfaces. The drainage structure inventory identified 17 culverts and two bridges along roadways within the Project site. Table 32 provides a summary of the existing road conditions in the study area.

Table 32. Summary of Road Conditions in the Project Site

Roadway Capacity	No existing traffic capacity or congestion problems.
Roadway Widths	Roads are between 16 and 35 feet wide, excluding shoulders.
Drainage structures	17 culverts in the Project site (suitability to be determined as part of the implementation of the Road Use Agreement prior to construction).
Bridges	Two bridge structures in the Project site. (The suitability and ability of all bridges will be confirmed by a licensed New York PE Civil Engineer, in consultation with the affected Town/County and NYSDOT, prior to construction).

2.8.2 Anticipated Impacts

As discussed in Section 2.8.2 of the DEIS, temporary impacts to area roadways and traffic conditions will occur as a result of Project construction, and some long term impacts may occur as a result of operation and maintenance of the Project.

2.8.2.1 Construction

Anticipated impacts from Project construction are generally as reported in the DEIS. Temporary public road improvements proposed as part of the current transportation plan are listed in Table 33.

Table 33. Temporary Intersection Improvements

Road	Location	Type of Improvement
County Route 33	Intersection with Route 23	Intersection Widening
County Route 33	Intersection with U.S. Route 11	Intersection Widening
County Route 33	Intersection with Jerdon Road	Intersection Widening
Jerdon Rd	Intersection with Cemetery Road	Intersection Widening
Cemetery Road	0.1 mile north of entrance to High Falls Park	Curve Widening
County Route 33	Intersection with Hartnet/Toohill Road	Jug Handle and Intersection Widening
Mahoney Road	Intersection with Mary Carey Road	Intersection Widening
Healy Road	Intersection with Ponderosa Road	Jug Handle
County Route 33	Intersection with Town Line Road	Intersection Widening
Hartnet Road	Intersection with Mahoney Road	Intersection Widening
County Route 33	Curve south of Chateaugay/Bellmont Town Line	Curve Widening
County Route 24	Intersection with Chase Road	Intersection Widening

All of the proposed improvements are proposed to be removed as part of site restoration following completion of construction. Construction and removal of these improvements could result in temporary traffic delays and detours, but will generally be of limited duration. While in place, these temporary public road improvements will not adversely affect traffic within the Project Site.

2.8.2.2 Operation

The discussion of impacts to traffic and transportation provided in Section 2.8.2.2 of the DEIS remains accurate, with the exception that the Project is expected to employ about five to six permanent employees rather than the 10-15 anticipated in the DEIS. This will result in slightly less traffic and transportation impact overall, however, the nature of

the impacts is the same. The Applicant will be responsible for maintenance of all access roads leading to the turbine sites. The Applicant plans to plow the access roads to turbines as needed for technicians to work on turbines. All access road entrances will be designed to provide safe access of emergency vehicles. The Applicant will ensure emergency vehicles will be able to access turbine sites while technicians are working.

2.8.3 Mitigation Measures

2.8.3.1 Construction

The general discussion of mitigation measures provided in Section 2.8.3.1 of the DEIS remains accurate. The Applicant will obtain all necessary permits from the town, county, and state highway departments for activities related to road improvements and delivery of Project components to the Project site. All improvements to existing public and private roads will be done at the Applicant's expense.

Any changes to the mitigation measures described under these headings in the DEIS are discussed below.

Traffic Flow and Capacity

As described in Section 2.8.3.1 of the DEIS, short delays in local traffic flow due to construction traffic will be mitigated by avoiding school bus routes, especially during pick-up and drop-off times, and by using an electronic vehicle messaging system to notify drivers of construction activities.

Safety

As described in Section 2.8.3.1 of the DEIS, the limited site distances in some locations could increase the potential for accidents with slow-moving construction vehicles. This risk will be mitigated by following permit conditions for oversized vehicles, which include restrictions against early morning and late night deliveries, as well as deliveries in poor weather conditions. Additionally, construction signage will warn drivers of general construction traffic in limited sight distance locations.

Roadway Type

As described in Section 2.8.3.1 of the DEIS, damage caused to roadways due to heavy construction traffic will be mitigated by post-construction restoration of roads completed in accordance with terms negotiated in the Road Agreement(s).

Roadway Width

As stated in Section 2.8.3.1 of the DEIS, road widths are adequate to accommodate construction traffic, and no road-widening is anticipated.

Intersections

As described in Section 2.8.3.1 of the DEIS and Section 2.8.2.1 of this SEIS, there are several intersections that will need to be modified to accommodate a 150 feet turning radius. The specific intersections where widenings are proposed are indicated in Table 33. All temporary roads and jug handles at these intersections will be removed, and pre-construction conditions are re-established in these locations. Where intersections have simply been widened, the Applicant will coordinate with the County and local highway departments, and adjacent landowners to determine whether improvements will need to be returned to pre-construction condition or left in place.

Weight

Impacts and mitigation are as described in Section 2.8.3.1 of the DEIS. No bridges or roads are posted with weight limits for the area, except during spring thaw conditions. Construction activities that take place during the spring thaw will comply with all posted road weight limits. No additional mitigation measures with respect to weight are necessary.

Vertical curvature

As described in Section 2.8.3.1 of the DEIS, possible impacts to roads due to improvements made to accommodate the vertical curvature requirements for OS/OW vehicles will be mitigated by the Applicant in coordination with NYSDOT, local highway departments, and adjacent landowners to determine whether improvements will need to be returned to pre-construction condition or left in place.

Height

As described in Section 2.8.3.1 of the DEIS, impacts to wire crossings that will be caused as a result of OS/OW construction vehicle traffic will be mitigated by coordination with NYPA, NYSEG, telephone and cable companies, and NYSDOT in order to obtain the necessary permits to raise wires and traffic signals. Solutions may include permanently raising wires or traffic signals, temporarily raising them for the duration of construction, or raising each wire or traffic signal as a vehicle passes under.

Post construction mitigation measures, including removal of temporary intersection widening and associated culverts, are as discussed in Section 2.8.3.1 of the DEIS.

2.8.3.2 Operation

A discussion of impacts to traffic and transportation from Project operation is provided in Section 2.8.3.2 of the DEIS. The Project will likely employ about five to six permanent employees for operation and maintenance of the Project. The traffic caused by these employees and their routine visits to Project facilities is negligible and therefore, no mitigation measures are necessary. Project operation and maintenance staff will coordinate with the appropriate highway department for emergency/major repair activities that require road improvements or traffic control.

2.9 SOCIOECONOMICS

2.9.1 Existing Conditions

2.9.1.1 Population and Housing

Since the release of the DEIS, new census data has been made available, and slight changes in population and housing have occurred. Therefore, an updated assessment of demographics within the region of the Project site is provided here.

The estimated population of Franklin County in 2014 was 51,262. Between April, 2010 and July, 2014, the population of Franklin County decreased by 0.6%. (U.S. Census Bureau, 2015b). As of 2014, the Towns of Chateaugay (including the Village of Chateaugay) and Bellmont had populations of 2,063 and 1,438, respectively, for a combined population of 3,501. From the 2000 census to the 2010 census, population in Chateaugay increased 5.8% while that in Bellmont increased just 0.7% (U.S. Census Bureau, 2015a).

Housing data for Franklin County and for each municipality within the Project site are presented in Table 34. The Town of Chateaugay had the highest number of housing units, and the Town of Bellmont's total housing units were just slightly lower. The Town of Bellmont had the highest vacant housing rate, which, at 47.5%, is substantially higher than average for the Franklin County which has an average vacancy rate of 23.8%. This is due to the high proportion of properties that are for seasonal, recreational, or occasional use; about 83% of vacant properties fall into this category in Bellmont.

Table 34. County and Municipality Housing Units, 2013

County and Town/Village	Occupied Housing		Vacant Housing		Rental Vacancy	Total Housing Units
	Number	Percentage	Number	Percentage	Percentage	Number
Franklin County	19,238	76.2	6,021	23.8	5.4	25,259
Town of Bellmont	650	52.5	587	47.5	0	1237
Town of Chateaugay	684	78.1	192	21.9	9.9	876

Village of Chateaugay	306	84.8	55	15.2	4.4	361

Source: U.S. Census Bureau, 2009-2013 5-year American Community Survey

2.9.1.2 Property Values

Property value data for the State of New York, Franklin County, and each municipality within the Project site for 2013 are presented in Table 35. From these data, the median value of housing units in the Town of Bellmont ($95,000) was similar to that of Franklin County ($97,100). The Town of Bellmont has some higher-value homes as measured by the median housing value for homes valued in the upper quartile, which is about $47,000 higher than the average for the Franklin County. The median value of housing units in the Town of Chateaugay ($79,000) and the Village Chateaugay ($68,200) were considerably lower than that of Franklin County. All of these values are substantially lower than the median value of housing units in New York State as a whole, which was $288,200 in 2013.

Table 35. State, County, and Municipality Median Housing Values, 2013

State, County, and Town/Village	Median Housing Value	Median Housing Value, Upper Quartile
State of New York	$288,200.00	$486,800
Franklin County	$97,100.00	$165,100
Town of Bellmont	$95,000	$212,500
Town of Chateaugay	$79,000	$113,500
Village of Chateaugay	$68,200	$102,200

Source: U.S. Census Bureau, 2009-2013 5-year American Community Survey

2.9.1.3 Economy and Employment

According to the U.S. Census Bureau (2015a), the largest industry in Franklin County in 2000 was educational, health, and social services, with 31.4% of all workers employed in this sector. The second largest industry is retail trade (18%) and the third largest is arts, entertainment, and recreation (11%). In the Town of Bellmont, as well and in the Town and Village of Chateaugay, the largest industry is educational services, health care and social assistance, with this industry comprising 28%, 35%, and 21% for each municipality, respectively. In these municipalities, public administration and retail trade occupy the second and third largest industries. The unemployment rate for Franklin County was 7.3% in 2014, compared with an overall unemployment rate of 5.5% in New York State (Bureau of Labor Statistics, 2015).

According to the U.S. Census Bureau, agriculture, forestry, fishing and hunting accounted for only about 0.5% of all employment in Franklin County in 2013. These industries are slightly more prevalent in the municipalities of the Project site than in the rest of Franklin County, and they accounted for about 2.0%, 7.4% and 5.7% of the industry in the Town

of Bellmont, the Town of Chateaugay, and Village of Chateaugay, respectively (US Census Bureau, 2015a). According to the USDA Census of Agriculture (2012), as of 2012 there were 688 farms in Franklin County encompassing 145,023 acres or about 13% of the land area. The number of farms in operation and the number of acres under cultivation has increased slightly since 2007, when there were 604 operating farms and 103,852 acres under cultivation (USDA Census of Agriculture, 2007). However, there is still a long-term trend away from agriculture in the region. In 1987, there were 157,189 acres in farms which was down from 173,450 acres in 1978 (USDA Census of Agriculture, 1987, 1978). In 2012, the estimated average market value of land and buildings per farm was $354,043 in Franklin County and $525,587 in New York State (USDA Census of Agriculture, 2012).

2.9.1.4 Municipal Budgets and Taxes

Tax revenues collected by municipalities that include the Project site come from two sources: sales tax and real property tax. The local taxing jurisdictions in the Project site include Franklin County, the Towns of Bellmont and Chateaugay, the Village of Chateaugay, and the Chateaugay Central School District.

According to the New York State Office of Real Property Tax Services (NYSORPTS) Municipal Profile data, the total 2013 real property tax levy for Franklin County was $15,242,724, with $309,702 coming from the Town of Chateaugay and $715,532 from the Town of Bellmont. The municipal real property tax levies for taxing jurisdictions in the Project site are summarized in Table 36.

Table 36. Taxing Jurisdictions, 2013

Taxing Jurisdiction	Real Property Tax Levy
Franklin County	$15,242,724
Town of Bellmont	$805,201
Town of Chateaugay	$363,274
Village of Chateaugay	$133,740
Chateaugay Central School District*	$2,704,582

Source: New York State Office of Real Property Services, 2015
*Most recent data available are for levy year 2012

The 8% sales tax rate for Franklin County has not changed since release of the DEIS; the tax includes a 4% state tax and a 4% local share (New York State Office the State Comptroller, 2015b). Franklin County received about $21,795,000 in sales tax revenue in 2014; the municipalities do not receive sales tax revenue (New York State Office of the State Comptroller, 2015a).

The County, Towns, Village, and Chateaugay Central School District face the yearly challenge of bearing the costs associated with the services that they provide through the collection of sales and/or real property taxes, as well as other sources of revenue such as state aid. As with most taxing jurisdictions in upstate New York, loss or lack of commercial and industrial tax base, in combination with rising labor and material costs, make it increasingly difficult for municipalities and school districts to meet their budgets without significantly raising taxes. All of the taxing jurisdictions of the Project site are facing some level of debt. Table 37 summarizes budgets for the taxing jurisdictions that include the Project site.

Table 37. County and Municipal Budgets, 2013

Taxing Jurisdiction	Total Revenue	Total Expenditure	Total Indebtedness
Franklin County	$96,597,390	$100,642,745	$ 9,905,000
Town of Bellmont	$1,209,313	$1,384,981	$170,380
Town of Chateaugay	$1,654,406	$1,474,476	$156,242
Village of Chateaugay	$604,682	$575,234	$925,000
Chateaugay Central School District	$11,904,142	$14,328,124	$10,395,001

Source: New York State Office of the State Comptroller, 2015

2.9.2 Anticipated Impacts

A discussion of general anticipated impacts is provided in Section 2.9.2 of the DEIS. The Project would have direct and indirect positive effects on municipalities in the region and on landowners participating in the Project. Short term effects would begin with construction and would include additional employment and economic activity associated with Project expenditures. Long term benefits of the project would include additional revenue through a host community fee to the Towns of Bellmont and Chateaugay, a payment in lieu of taxes (PILOT) agreement, increased purchases of goods and services, and lease payments to participating landowners.

An economic impact analysis of the Project was prepared using the Job and Economic Development Impact (JEDI) model (Version 12.13.14), which was developed by the National Renewable Energy Laboratory (NREL), a facility of the Unites States Department of Energy. The JEDI model requires project-specific data input (such as year of construction, size of project, turbine size and location), and then calculates the impacts described above through the use of state-specific multipliers. These multipliers account for the anticipated change in jobs, earnings, and output likely to occur throughout the local, regional, and statewide economy as a result of Project-related expenditures. The resulting data are paired with industry standard values (e.g., wage rates) and data reflecting personal spending patterns (e.g., percent of household income dedicated to housing expenditures) to calculate on-site, supply chain, and induced impacts (USDOE NREL, 2015). This model allows impacts to be estimated for both the construction and operation

phases of the proposed development. The economic impact analysis that was performed for the Jericho Rise Project evaluated the likely effects of a commercial wind farm scheduled to begin construction in 2016 with a rated capacity of 77.7 MW and an assumed 37 turbines sized at 2.1 MW. The results of this analysis are provided in Table 38 and summarized in the narrative that follows.

Table 38. Local Economic Impacts

During Construction Period	**Jobs**	**Earnings ***	**Output***
Project Development and Onsite Labor Impacts	--	--	$5.04
Construction and Interconnection Labor	58	$4.46	--
Construction Related Services	3	$0.44	--
Turbine and Supply Chain Impacts	156	$12.31	$16.09
Induced Impacts	86	$6.51	$10.58
Total Construction Impacts	**303**	**$23.72**	**$50.54**
During Operating Years (Annual)	Jobs	Earnings	Output
Onsite Labor Impacts	5	$0.42	$0.42
Local Revenue and Supply Chain Impacts	4	$0.35	$1.24
Induced Impacts	4	$0.32	$0.52
Total Annual Operational Impacts	**13**	**$1.09**	**$2.18**

* Earnings and Output values are in 2015 dollars.
Source: NREL JEDI Model (Version W10.13.14) (USDOE NREL, 2015). Results are based on model default values.

2.9.2.1 Construction

2.9.2.1.1 Population and Housing

As stated in Section 2.9.1.1, there have been minor increases in population over the past 10 years, and it is likely that changes in population will continue to occur independently of the Project. The JEDI model predicts that this project would create a total of 303 jobs during the construction phase, 61 of which would be construction related jobs located locally. While 61 jobs is a significant number for the region, the jobs are short term and it is unlikely that construction workers would relocate to the region on a permanent basis. The duration of construction is anticipated to be about nine months, during which time the need for temporary housing could increase slightly. Given the relatively high housing vacancy rates for municipalities in the Project region (Table 34), this increased demand for temporary housing should be easily accommodated by existing housing. Beyond this positive, short-term impact, Project construction would not have a significant impact on population and housing.

2.9.2.1.2 Property Values

As discussed in Section 2.9.2.1.2 of the DEIS, no direct impacts from construction of the Project on local property values are anticipated. Since release of the DEIS, additional study regarding the effect of wind farms on property values has been conducted, and much of this study has focused on potential indirect effects that could occur after a wind farm project is announced. A full review of recent literature is provided in Section 2.9.2.1.2 of this SEIS, as many of these studies analyze impacts both before and after construction. The literature suggests that once a wind farm is operational, any negative impact to property values associated with the announcement of the project and related uncertainly disappears and property values return to pre-announcement values or more (e.g., Hinman et al. 2010, Hoen et al. 2014).

2.9.2.1.3 Economy and Employment

Impacts to the economy and employment from Project construction are as described in Section 2.9.2.1.3 of the DEIS, with the exception of the number of construction workers necessary. While the DEIS stated that Project construction would require about 125-200 workers, the NREL JEDI model estimates that there would be about 303 temporary jobs created across the country, 61 of which would be temporary construction-related jobs located locally. These would be created as a result of Project development and on-site labor (58 from construction labor and about three jobs from construction-related services). The 156 jobs created by turbine manufacturing and its supply chain would be located elsewhere, in the communities where turbine manufacturing and the raw materials generation takes place. The 86 jobs created by increased demand through spending of wages earned by workers employed by the Project would be located both locally and in the communities where turbine manufacturing and raw materials generation takes place. Therefore, the total number of temporary jobs created in the Project region is estimated to be between about 62 and 100.

At 7.3%, current unemployment is relatively high in the region, and is up from its 2006 level of 6% reported in the DEIS. Given the relatively high unemployment rate in the region, there should be enough available workers in the North Country to meet the increased demand for construction workers. The majority of the labor would be in the construction trades, including equipment operators, truck drivers, laborers, and road construction workers. There would also be a demand for workers with specialized skills, including electricians, crane operators, turbine assemblers, specialized excavators, and high voltage electrical workers. It is anticipated that the majority of these workers would come from outside the region and stay for the duration of the construction phase of the Project.

2.9.2.1.4 Municipal Budgets and Taxes

Impacts of construction on municipal budgets and taxes are as discussed in Section 2.9.2.1.4 of the DEIS. Construction workers will not create demand for municipal and school services because they are unlikely to stay in the area long

enough to need such services. Although the Project could result in impacts to the local road system, the Applicant will pay for the cost of construction-related road repairs and/or improvements, and local municipal budgets will not experience adverse impacts (see discussion of local road agreements in Section 2.8.3.1).

Temporary construction workers would patronize local gas stations, hotels, and grocery stores, thereby generating additional sales tax revenue. This small, positive, indirect impact would last for the duration of the construction phase of the Project.

2.9.2.2 Operation

2.9.2.2.1 Population and Housing

A discussion of the impact of Project operation on population and housing in the area is provided in Section 2.9.2.2.1 of the DEIS. However, the JEDI model for the revised Project predicts about 13 new full-time jobs would be necessary to support the operating Project, with only about five to six of these being local. These five to six jobs may cause a few families to relocate to the area. The vacant housing rate indicates that this very modest potential increase in population would be easily accommodated with existing housing facilities. The long-term employment associated with the Project is not large enough to have a significant impact on local population or housing characteristics.

2.9.2.2.2 Property Values

A discussion of the effect of operation on local property values is provided is Section 2.9.2.2.2 of the DEIS. Since release of the DEIS, many more wind projects have been developed in New York and rest of the United States, and more studies on the effect of wind farms on property values have been conducted. Conclusions regarding the effect of wind development on property values vary. There appears to be a perception in the public that wind farms can decrease property values, and occasional testimony by real estate appraisers confirms this perception (e.g., McCann, 2010). Despite this perception, there is a large body of statistical evidence that suggests wind farms have no impact on property values, and a handful of studies that suggest just the opposite. A review of the recent literature is provided below.

Heintzelman and Tuttle (2012) examined 11,331 property transactions (including agricultural property) over nine years in Lewis, Franklin, and Clinton Counties, New York to explore the effects of new wind facilities on property values. The study was a hedonic pricing analysis model, which decomposes properties being valued into their component parts and estimates how these components contribute to the total value of the property. This is a very common method for real estate valuation studies, and this methodology was used in many of the other studies reviewed here. In this study,

461 transactions occurred within 3 miles of a wind turbine. The study examined 194 turbines in Lewis County, 85 turbines in Franklin County, and 186 turbines in Clinton County. Similar to results of numerous other hedonic analysis studies (Hoen, 2006; Hoen et al., 2009; Hinman, 2010; and Carter, 2011; see review below), the study found that in Lewis County, wind farms appear to have had little to no effect on property values, or in some instances a positive effect. In contrast, property values in Clinton and Franklin Counties were negatively affected by nearby wind energy facilities, with the magnitude of this effect dependent on the distance between homes and the nearest turbine. For Franklin and Clinton Counties, properties within 0.5 mile experienced an 8.8% to 15.8% decline. At a range of 3 miles the decline was between 2% and 8%. The study states that in Lewis County, landowners appear to be receiving sufficient compensation to prevent a decline in property values. The apparent difference may also be due to the fact that the Clinton and Franklin County projects became operational in 2008 and 2009, at the very end of the nine year study period, while the Lewis County project became operational in 2006, resulting in a much larger set of property sales, and thus, a more robust analysis for the Lewis County properties (Heintzelman & Tuttle, 2012).

Another hedonic analysis study demonstrating that wind farms have a negative effect on property values was sponsored by the Spatial Economics Research Centre of the London School of Economics (Gibbons, 2014). This study measured changes in house prices in regions of England and Wales when wind farms became visible. Visual impacts were isolated from other impacts in this study because they compared properties where the turbines were visible with those that were at a similar distance but in which the turbines were hidden from view. The study found that within 2,000 feet of turbines, a viewshed that included turbines reduced property values about 5 to 6%. For larger wind facilities, the reduction in property value was even greater, around 12%. These results, although significant, were based on real estate data from communities in the United Kingdom and may not be consistent with results from wind projects in northern New York.

Despite the evidence presented above, there is also strong statistical evidence that property values are not adversely impacted by wind farms. A 2009 study sponsored by the Lawrence Berkeley National Laboratory focused specifically on impacts of wind facility projects on residential property values. The report *The Impact of Wind Power Projects on Residential Property Values in the United States: A Multi-Site Hedonic Analysis,* was released in December 2009 (Hoen et al., 2009). This study was considered the "most comprehensive and data-rich analysis to date in the U.S. or abroad on the impacts of wind projects on nearby property values" as of 2009 (Hoen et al., 2009). This study's analysis is based on information from 10 communities surrounding 24 existing wind power facilities spread across nine states. The study included the Fenner Wind Farm in Madison County, New York, a facility that is comparable in terms of land use and rural condition to the Jericho Rise Wind Farm. While the Fenner Wind Farm is a smaller project with 20 turbines rather than 37, the region is similar in terms of land use and composition. Homes included in the study were located from 800 feet to over five miles from the nearest wind energy facility. This study used a methodology based

on a hedonic pricing model to identify the marginal impacts of different housing and community characteristics on residential property values. Analysis of possible impacts on property values was undertaken by dividing the impacts into three non-mutually exclusive categories: area stigma, scenic vista stigma, and nuisance stigma. Area stigma may occur regardless of whether the wind facility is within view of the home. Area stigma addresses the concern that the mere fact that a wind facility is generally nearby may adversely affect a home's value. Scenic vista stigma is based on the concern that a home may be devalued because a wind facility is within view and/or interrupts an existing scenic vista. A nuisance stigma can occur because of the potential for extenuating factors from a nearby wind facility, such as noise or shadow flicker (regardless of whether they actually occur). Exploration of the effects of all three stigmas resulted in finding no persuasive evidence that either the view of the wind facilities or the distance of the home to the facilities has any significant effect on home sales prices. The study recognizes the possibility that the value of an individual home (or small numbers of homes) has been or could be negatively impacted by a nearby wind facility (Hoen et al., 2009). However, even if such occurrences do exist "they are either too small or too infrequent to result in any widespread, statistically observable impact" (Hoen et al., 2009).

As mentioned above, Hoen et al. (2009) categorized three types of wind turbine stigmas that could affect property values. In a site-specific study conducted in Ford and McLean Counties, Illinois, Hinman (2010) formalized a fourth stigma, wind farm anticipation stigma. This stigma addresses the concern that decreases in property value could occur due to the uncertainty surrounding where turbines will be placed and what effect the wind facility will have on area residents when the development is initially proposed. The study examined 3,851 residential property transactions from 2001 through 2009 (Hinman, 2010). The study found that when the 240-turbine wind facility was initially announced, property values near the prospective wind facility decreased compared to elsewhere in the county. However, after the wind facility entered the operational stage, property values near the wind facility increased faster than those located elsewhere in the county.

A property value study in the vicinity of the Mendota Hills Wind Farm (62 wind turbines), GSG 1 Wind Farm (40 wind turbines), and Lee-Dekalb Wind Center (145 wind turbines) within Lee County, Illinois also examined the wind farm anticipation stigma (Carter, 2011). The study examined 1,298 real estate transactions from 1998 to 2010. The study suggests that following announcement of the wind project, property values near the proposed wind facility initially declined. However, the analysis indicates that once the facility was constructed, the value of residential properties located near wind turbines in Lee County were not negatively affected by presence of a wind energy facility over the long term. Assuming the wind facility is appropriately sited using modern industry-standard setbacks, property values eventually rebound once the uncertainty surrounding how homeowners are affected by the development disappears. The study acknowledges one shortcoming of property value studies, which is that the results presented are not able to state anything about whether being in close proximity to a wind facility affects the ease of selling a home. It could be

that homes near wind turbines are not for sale or selling and consequently would not be included in the studies evaluating real estate transaction data (Carter, 2011). However, the Hoen et al. (2009) study estimated a sales volume model and concluded that sales volumes did not decrease with wind energy development.

In 2014, a joint report by the University of Connecticut and the Lawrence Berkley National Laboratory was published that sought to address gaps in the literature that had yet to be addressed regarding the effect of wind turbines and residential property values (Atkinson-Palombo and Hoen, 2014). While some of the research questions addressed the effect on property values in more densely populated areas, one research question relevant for rural areas was whether there is evidence that fewer houses are sold after announcement of the wind farm and after construction than before a wind farm is announced. In other words, does announcement of a wind farm reduce the rate of sales in the area? Like the other studies by Hoen et al. (2006, 2009), this study utilized a hedonic pricing model. The dataset included over 122,000 home sales between 1998 and 2012 in Massachusetts. The study found that rates of sales of houses located between 0.5 mile and 1.0 mile from a wind farm did not drop after announcement or construction of turbines. Results were similar for sales of homes between 0.25 and 0.5 miles, as well as those within 0.25 mile of the turbines, although sample size was low for these subsets. The researchers concluded that there is "an absence of evidence to support the claim that sales rate was affected by turbines" (Atkinson-Palombo and Hoen, 2014). A large body of evidence suggests that property values are not affected by nearby wind farms, and this study finds that in addition, proximity of wind farms also does not affect the ability of homeowners to sell their property.

Evidence on the impact of wind farms on residential property values is conflicting. There is a body of literature, including a study from the North Country, suggesting that wind facilities have deleterious effects on property values of nearby residential homes (e.g., Heintzelman and Tuttle, 2012; Gibbons, 2014). However, the evidence is not conclusive. The Heintzelman & Tuttle study showed that while property values decreased due to wind development at some wind farms, at another wind farm property values were not affected. There is also a large body of evidence demonstrating that operation of wind farms does not have an adverse impact on property values (e.g., Hoen et al. 2009; Hinman 2010; Carter 2011; Atkinson-Palombo and Hoen, 2014). Although there is some public perception that wind farms can reduce property values, statistical data do not show that this is the case. Given the numerous studies that show property values are not adversely impacted by wind farms, impacts to local property values in the Project site are not anticipated due to operation of the project.

2.9.2.2.3 Economy and Employment

A discussion of the impact to the local economy and employment from operation of the Project is provided in Section 2.9.2.2.3 of the DEIS. The JEDI model estimates that the operation of the revised Project would generate five full-time,

local jobs with wages totaling $420,000 dollars annually. These five jobs comprise the Project's long-term local employment impact, and will include a Site Manager, Turbine Technicians, and administrative personnel. Project wage rates are consistent with statewide averages, and are estimated to range from $13 to $20 for administrative personnel, to around $32 per hour for facility management. Additionally, four jobs are anticipated as a result of local revenue and supply chain spending, as well as four jobs created from induced impacts as a result of increased spending from the aforementioned jobs created. Some of these jobs may be located in the local area and some will be located elsewhere.

The DEIS refers to a potential for increased tourism to the region by tourists wanting to view the wind turbines. During the interval that has passed between the 2008 DEIS and this SEIS, wind facilities have become more common in New York and Canada, and are no longer the novelty they were in 2008. As the Jericho Rise Wind Farm would be neither the first of its kind nor the largest of its kind, it is unlikely that the Project will have a positive impact on tourism to the region. Discussion in Section 2.9.2.2.3 of the DEIS regarding negative impacts to tourism remain relevant; negative impacts to tourism are not anticipated as a result of operation of the Project.

As stated in the DEIS, wind energy has the potential to create positive outcomes for economies in rural communities. Agriculture has experienced a downward trend in the region over the past several decades, and often farms find it difficult to generate enough profit to stay in business. Wind power presents an opportunity for farms to diversify incomes and remain in operation during low-profit years. A report by the USDA Office of Energy Policy and New Uses (2011) states that agricultural communities are well suited to wind power facilities because these facilities increase tax revenue, increase and diversify farm income, and have a relatively small footprint, allowing for most of the area around the turbines to still be used for farming.

2.9.2.2.4 Municipal Budgets and Taxes

Given that the Project's current configuration would require negotiating with four taxing jurisdictions, the Applicant intends to pursue a PILOT agreement with the Franklin County Industrial Development (FIDA). The Project would have a beneficial impact on municipal budgets since the taxing jurisdictions would receive PILOT revenues and, in the case of the Towns, revenues from host/mitigation payments.

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 site.

2.9.3 Mitigation Measures

As indicated in the preceding discussion, the Project is anticipated to have limited, and generally beneficial, impacts on socioeconomic conditions in the host communities and surrounding region. The need for additional mitigation is described below.

2.9.3.1 Construction

2.9.3.1.1 Population and Housing

As described in Section 2.9.2 of the DEIS and Section 2.9.2.1.1 of this SEIS, Project construction would not have an impact on local population and housing. Therefore, no mitigation measures are necessary.

2.9.3.1.2 Property Values

As described in Section 2.9.3.1.2 of the DEIS and Section 2.9.2.1.2 of this SEIS, Project construction is not anticipated to directly impact property values in the host communities. Any impacts to property values that are experienced as a result of anticipation stigma will likely subside during Project operation. Therefore, no mitigation measures are necessary.

2.9.3.1.3 Economy and Employment

As described in Section 2.9.3.1.3 of the DEIS, Project construction would have a beneficial impact on the local economy and employment. Therefore, no mitigation measures are necessary.

2.9.3.1.4 Municipal Budgets and Taxes

As described in Section 2.9.3.1.4 of the DEIS and Section 2.9.1.1.4 of this SEIS, the only potential negative consequence to municipal budgets would be the impact of Project construction on local roads and the need to repair or upgrade these roads to accommodate construction vehicles and increased activity. To mitigate this impact, local road agreements will be established to assure that repairing of road damage would be the responsibility of the Applicant and would be undertaken with no expense to the Towns, Village, or County. See additional discussion in Section 2.8.3.1.

2.9.3.2 Operation

2.9.3.2.1 Population and Housing

As stated in Section 2.9.3.2.1 of the DEIS and in Section 2.9.2.2.1 of this SEIS, Project operation is not anticipated to have adverse impacts on population and housing availability in the local towns or surrounding area. Therefore, mitigation measures to address population and housing impacts are not necessary.

2.9.3.2.2 Property Values

As described in Section 2.9.3.2.2 of the DEIS and Section 2.9.2.2.2 of this SEIS, Project operation is not anticipated to adversely impact property values in the host communities. Any impacts to property values that are experienced as a result of anticipation stigma will likely subside during Project operation. Therefore, no mitigation measures are necessary.

2.9.3.2.3 Economy and Employment

As described in Section 2.9.3.2.3 of the DEIS and Section 2.9.2.2.3 of this SEIS, Project operation would have a beneficial impact to the local economy and employment. The Project would both create new jobs and increase spending through the additional income of employees and landowners receiving lease payments. Population increases due Project operation would be so small as to be negligible, and increased demands for public services are not anticipated. Therefore, mitigation measures are not necessary to address either loss of jobs or increased demand for municipal services.

2.9.3.2.3 Municipal Budgets and Taxes

As described in Section 2.9.3.2.3 of the DEIS and Section 2.9.2.2.4 of this SEIS, because operation of the proposed Project would not create a significant demand for municipal or school district services and facilities, it would not have adverse impacts on municipal or school budgets. The Applicant proposes to negotiate a PILOT agreement with FIDA through which affected taxing jurisdictions would receive revenues.

After the PILOT 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., slight increased road maintenance costs). Because the wind facility would generate a predictable source of revenue for all of the affected municipalities and the Chateaugay Central School District, over the next 20 years and beyond, the Project will positively impact municipal and school district revenues. This will enhance the type and level of services these jurisdictions are able to provide to local residents for the duration of the Project's operational life.

2.10 PUBLIC SAFETY

2.10.1 Existing Conditions and General Information

The scope of existing public health and safety conditions considered in this section remains as described in Section 2.10.1 of the DEIS.

2.10.1.1 Transportation

Existing transportation routes within and adjacent to the Project site, and typical public use of these roads, are as described in Section 2.10.1.1 of the DEIS. See also Section 2.8 (Traffic and Transportation) of this SEIS for additional information.

2.10.1.2 Electrical

Existing conditions of electrical infrastructure with respect to the Project site are as described in Section 2.10.1.2 of the DEIS. Overhead electrical collection lines are proposed for the Project and will be used primarily to span geographic features such as ravines and to minimize environmental impacts where possible.

2.10.1.3 General Wind Energy Facility Concerns

Wind generated power is in many ways safer than other forms of electricity generation. Unlike conventional power plants, wind farms produce energy without emitting pollutants that decrease air quality. This is a major public health benefit since the effects of air pollution are widespread. Power generation with wind also largely avoids risks associated with leaks and explosions of flammable, hazardous materials that are inherent with fossil fuel combustion. Use of hazardous materials is minor at wind farms, so spills of toxic liquids are likely to be both rarer and smaller than at conventional power plants.

Production of power from wind farms, however, is not completely without risk to the public. Unlike fossil fuel power plants that have one central location, wind farms are designed with turbines spread over a larger area. Although the wind turbines will be located on leased private land, this configuration provides more opportunity for the public to access the turbines, and the probability of accidents increases with increased public access. Ice shedding, tower collapse, blade failure, stray voltage, and fire in the turbines are all possible, though setbacks from dwellings, roads, and other facilities make injuries from these types of accidents more rare.

Since publication of the DEIS in 2008, more recent statistics regarding fatalities from wind energy projects have been compiled. Whereas in 2008 there had been 18 recorded deaths in the United States, as of 2013 there had been 27. Most of these fatalities were workers involved with construction or maintenance and operation. Falls from turbines and accidents involving vehicles around the construction site have been the most common. For example, in 2010 a construction worker was killed when a bulldozer rolled over on him. In 2011, a man died when he fell to the ground after the rotor started turning and snagged the crane boom that held the basket he was in. In the United States, accidents involving members of the public have been rare. In one unfortunate case, a high school student was killed when he fell from a turbine after climbing it as a prank. In another incident, also reported in the DEIS, a crop duster pilot struck a guy wire on a meteorological tower. There have been no incidents of ice shedding causing fatalities in the United States (Gipe, 2013).

Wind energy has become safer to workers and the general public in the years since the DEIS. Death per terawatt hour (TWh) is a measure of how safe a given form of energy production is; from 2008 to 2012, deaths per TWh from wind farms has decreased from 0.045 to 0.032 (Gipe, 2013).

Other information in the DEIS regarding general wind energy facility concerns is as described in Section 2.10.1.3 of the DEIS.

2.10.2 Anticipated Impacts

2.10.2.1 Construction

2.10.2.1.1 General Construction Activity

As described in Section 2.10.2.1.1 of the DEIS, Project construction has the potential to result in injuries to workers and the general public from 1) the movement of construction vehicles, equipment, and materials; 2) falling overhead objects; 3) falls from atop equipment or into open excavations; 4) electrocution; and 5) contamination or fires resulting from improper handling of hazardous or combustible materials. Injuries have ranged from minor to serious, and there have been several fatalities. The DEIS reported that of the 18 wind energy deaths recorded in the United States, 12, or 67% of them, occurred during the construction phase. Newer data indicate that approximately 55% of wind energy related deaths occur during the construction phase (Gipe, 2013). Safety measures and devices have slightly reduced risks associated with construction of wind energy facilities; however, some risk during construction is still present. None of the changes to the Project since the DEIS alter the potential for impacts to workers or the public during construction of the Project.

2.10.2.1.2 Release or Potential Release of Hazardous Materials

Anticipated potential impacts to public safety resulting from the release or potential release of hazardous materials from Project construction are as described in Section 2.10.2.1.2 of the DEIS, which indicates that 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 potential impacts have not changed with the revised Project. These fuels are associated mainly with the construction vehicles and also with the turbines themselves. Spills could result from equipment malfunction, vehicle accidents, human error, terrorism, sabotage, vandalism, or aircraft impact. The Applicant will prepare a Construction Spill Prevention, Control, and Countermeasure (SPCC) Plan that addresses risks of spills and leaks. (The SPCC Plan for EDPR's Marble River Wind Project is attached as Appendix F and is substantially similar to the Plan that will be prepared for the Jericho Rise Project). The final Plan will be submitted to local emergency response teams and the Towns for review prior to initiation of construction.

2.10.2.1.3 Transportation

Anticipated potential impacts to public safety with respect to transportation are as described in Section 2.10.2.1.3 of the DEIS, which indicates that risk to the public from transportation is mainly from potential for accidents as equipment and materials are transported to the Project site. Specific potential transportation impacts associated with the Project changes since the DEIS (i.e. transportation of larger components) is addressed in Section 2.8.

2.10.2.2 Operation

2.10.2.2.1 Ice Shedding

Anticipated potential impacts to public safety resulting from ice shedding from Project turbines are as described in Section 2.10.2.2.1 of the DEIS. Since release of the DEIS, additional information has been published that indicates impacts related to ice shedding are unlikely because any ice shedding that could occur is likely to fall within established setbacks. The turbines proposed for the Project are equipped with features that pause operation when icing occurs.

The European Union Wind Energy in Cold Climates research collaborative has studied ice throw at operational wind farms throughout Europe. The data gathered show that ice fragments typically land within 410 feet (125 meters) of the wind turbine (Seifert et al., 2003). Ice throw observations are also available from a wind turbine near Kincardine, Ontario, where the operator conducted approximately 1,000 inspections between December 1995 and March 2001. Thirteen of these inspections noted ice build-up on the turbine. No ice pieces were found on the ground further than 328 feet from the base of the turbine, with most found within 164 feet (Garrad Hassan, 2007). Studies conducted in

the Swiss Alps found that the maximum throwing distance was 302 feet. Almost fifty percent of the ice fragments weighed 0.1 pounds or less and the heaviest ice fragment weighed nearly four pounds (Cattin et al., 2008).

The facilities' current setback distances from permanent residences and adjacent property lines are in compliance with local laws and will adequately protect the public from falling ice. Local laws in Chateaugay require setbacks of 1,320 feet and 1,200 feet from non-participating and participating residences, respectively, as well as 1,200 feet from US Route 11, State Route 374 and County Route 52, and 600 feet from other public roads. Town of Bellmont local laws require setbacks of 1,000 feet from any residence, as well as 500 feet from public roads. As currently sited, the setback distances for all turbines comply with these local laws. Because of the turbine setback distances to structures and public roads, risk from ice throw is considered minimal in the Project site. Turbine 3 is located within 176 feet of an established snowmobile trail. Following the completion of construction, the Applicant will inform local snowmobile clubs of the potential risk of ice throw and will support the efforts of the snowmobile club to relocate the trail if required. Ice shedding in the proposed Project site presents more a concern with respect to snowmobile traffic that may depart from authorized trails and access turbine bases. The Applicant will provide Project contact information to the local snowmobile clubs and at the request of local snowmobile clubs will meet to explain the risks of ice shedding and proper safety precautions.

Most recent data collected by the Global Wind Energy Council indicate that worldwide there were more than 225,000 turbines in operation by the end of 2012, and more have been constructed since. It is important to note that even with all of these turbines in operation, there has been no reported injury caused by ice being thrown from a turbine. However, occasional ice shedding does occur, and remains a potential safety concern.

2.10.2.2.2 Tower Collapse/Blade Failure

It is unlikely that a tower collapse or blade failure incident should occur at the Jericho Rise Project as this is a rare and unexpected occurrence with wind turbine infrastructure. However, health and safety is a top priority for the Applicant and in the event of an incident, as with any health and safety risk identified at an EDPR project, the Applicant would take measures to identify the root cause of the issue and work with the service provider to mitigate any risk. Mitigation measures for tower collapse and blade failure are further described in Section 2.10.3.2.2 below and section 2.10.3.2.2 of the DEIS. The Vestas wind turbine proposed for the Project at the time the DEIS was released would automatically shut down at wind speeds over 45 mph. The Gamesa G114-2.1 has a wider range of operating conditions, and does not need to shut down to avoid damage until wind reach 25 m/s (56 mph). Otherwise, the anticipated potential impacts to public safety resulting from tower collapse/blade failure are as described in Section 2.10.2.2.2 of the DEIS.

2.10.2.2.3 Stray Voltage and Electrical Shock

Anticipated potential impacts to public safety resulting from stray voltage and electrical shock are as described in Section 2.10.2.2.3 of the DEIS, which indicates that there is potential for stray voltage associated with wind farms when the system is poorly grounded and in close proximity to underground or poorly grounded metal objects such as fences, pipelines, and buildings. These potential impacts have not changed with the revised Project. Although small electrical shocks from low levels of stray voltage are possible, conditions allowing for larger shocks significant enough to harm human health would trip the circuit breaker and shut down operation.

2.10.2.2.4 Fire

Anticipated potential impacts to public safety resulting from fire are as described in Section 2.10.2.2.4 of the DEIS, which indicates that fires in the tower or nacelle are possible but would likely not last for very long since the quantities of flammable materials are limited. These potential impacts have not changed with the revised Project. Although local fire departments are not equipped to respond to fires within the turbines due to their height, it is anticipated that they would be able to respond to ground fires in accordance with their hazardous materials and electrical fire training.

2.10.2.2.5 Lightning Strikes

Anticipated potential impacts to public safety resulting from lightning strikes are as described in Section 2.10.2.2.5 of the DEIS, which indicates that although lightning can strike a wind turbine nacelle or tower, there is no evidence that presence of turbines increases risk to humans from lightning strikes. Turbine performance analysts have confirmed that an increase in turbine height from about 400 feet proposed in the DEIS to 492 feet for the revised Project poses no increased risk of lightning strikes.

2.10.2.2.6 Electromagnetic Fields

Anticipated potential impacts to public safety resulting from electromagnetic fields are as described in Section 2.10.2.2.6 of the DEIS, which indicates that electromagnetic currents will be relatively low. These potential impacts have not changed with the revised Project. The electrical collection system will operate at 34.5 kV in all places and 115 kV near the point of interconnection with the 115 kV transmission lines. There are no significant impacts from EMF are expected as a result of the Project.

2.10.2.2.7 Vibration

Anticipated potential impacts to public safety resulting from vibration are as described in Section 2.10.2.2.7 of the DEIS, which indicates that turbine vibration will be minimal. These potential impacts have not changed with the revised Project. If vibration does occur, sensors will recognize it and cease turbine operation. Design standards take into account potential vibration from seismic activity, and adherence to the standards would prevent turbine collapse in the event of vibration from mechanical problems.

2.10.2.2.8 Health Effects

Anticipated potential public health effects resulting from Project operation are as described in Section 2.10.2.2.8 of the DEIS. These potential impacts have not changed with the revised Project. In addition, since the release of the DEIS, additional information has been published that indicates impacts related to health effects, specifically low frequency noise, are not anticipated.

Early wind turbines (designed with the blades downwind of the support tower) were prone to producing a periodic thumping noise each time a blade passed the tower, and the widespread belief that wind turbines generate excessive or even harmful amounts of low frequency noise likely originated with this phenomenon. While modern wind turbines have been re-configured with blades arranged upwind of the tower, and therefore no longer produce the same magnitude of thumping noises, the myth of excessive low-frequency noise may have perpetuated due to confusion of low frequency sound with the amplitude modulation typical of wind turbines (i.e., the periodic swishing sound with a frequency of about 1 Hz). However, 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; Hessler et al., 2008).

In addition, in response to concerns that sounds emitted from wind turbines may cause adverse health consequences, the American Wind Energy Association and The Canadian Wind Energy Association established a scientific advisory panel to conduct a review of current literature pertaining to the perceived health effects of wind turbines (Colby et al., 2009). The multidisciplinary panel was comprised of medical doctors, audiologists, and acoustical professionals from the United States, Canada, Denmark, and the United Kingdom. The objective of the panel was to provide an authoritative reference document for legislators, regulators, and anyone who wants to make sense of the conflicting information pertaining to wind turbine sound. The panel evaluated peer-reviewed literature on sound and health effects, as well as sound produced by wind turbines. The panel concluded that there is no evidence that the audible or sub-audible sounds produced by operating wind turbines have any direct adverse physiological effects and the ground-borne vibrations from wind turbines are too weak to be detected by, or to affect, humans. In addition, based on the

levels and frequencies of the sounds produced by operating wind turbines and the panel's experience with sound exposures in occupational settings, the sounds produced from operating wind turbines are not unique and therefore do not likely cause direct adverse health consequences (Colby et al., 2009).

The Chief Medical Officer of Health (CMOH) of Ontario also reviewed existing scientific evidence on the potential health impact of noise generated by wind turbines. The report concluded, "…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" (CMOH of Ontario, 2010).

In addition, the Massachusetts Department of Environmental Protection (MassDEP) and Massachusetts Department of Public Health (MDPH) assembled a team of independent experts to identify any documented or potential health impacts or risks that may be associated with exposure to wind turbines and discuss public health effects relating to wind turbines, based on scientific findings. To do this, the independent expert panel conducted a literature review, including peer-reviewed scientific studies, other reports, and popular media, as well as reviewed public comments received by the MassDEP and/or MDPH. According to the report, there is insufficient evidence that the noise from wind turbines is directly causing health problems or disease (Ellenbogen et al., 2012).

2.10.3 Mitigation Measures

2.10.3.1 Construction

Proposed mitigation measures with respect to Project construction are as described in Section 2.10.3.1 of the DEIS.

2.10.3.1.1 Fire and Explosion Risk

Proposed mitigation measures for fire or explosions relating to Project construction are as described in Section 2.10.3.1.1 of the DEIS, and include measures to minimize risk of damaging underground gas facilities. These proposed mitigation measures have not changed with the revised Project. Measures include construction contractors reviewing location of facilities with site personnel, adherence to federal and state safety regulations, and training for construction workers with respect to best practices for protection of underground facilities. Additionally, the contractor on site will stake and mark underground facilities and stop work if facilities marks are missing or no longer visible. Contractors will comply with OSHA Subpart P-Excavation Standard 29 CFR 1926.651(b) for safety regarding excavation near underground facilities.

2.10.3.1.2 Transportation

Proposed mitigation measures pertaining to transportation are as discussed in Section 2.10.3.1.2 of the DEIS, which include planning construction routes to avoid densely populated areas and requiring oversized vehicles to travel with escort vehicles or flagmen. These proposed mitigation measures have not changed with the revised Project. The Transportation Route Sheet Plan has been included in Appendix S of this SEIS. It will be deemed finalized once it is agreed upon with the township and county road commissioners and upon the execution of the HCA/RUA.

2.10.3.2 Operation

2.10.3.2.1 Ice Shedding

Proposed mitigation measures pertaining to ice shedding are as described in Section 2.10.3.2.1 of the DEIS. These proposed mitigation measures have not changed with the revised Project. The revised SEIS turbine layout adheres to the safety setbacks for roads and residences as described in the DEIS and Section 2.10.2.2.1 of this SEIS. In addition to measures described in the DEIS, the Applicant will provide Project contact information to local snowmobile clubs and if requested, will meet with local snowmobile clubs to explain the risk of ice shedding and proper safety precautions.

2.10.3.2.2 Tower Collapse/Blade Failure

Proposed mitigation measures pertaining to tower collapse/blade failure are as described in Section 2.10.3.2.2 of the DEIS. These proposed mitigation measures have not changed with the revised Project. These measures include technological safeguards, such as brakes, pitch controls, and sensors that shut down turbines when equipment malfunctions. Siting turbines with adequate setbacks from residences and public roads is another important mitigation measure that insures safety in the event of a tower collapse or blade failure. As noted in Section 2.10.2.2.2 above, although tower collapse and blade failure instances are a rare and unexpected occurrence, in any incident the root cause would be identified and the risk would be mitigated as needed in coordination with internal and external stakeholders including the turbine service provider. The current SEIS turbine layout adheres to the zoning and safety setbacks as described in the DEIS and in Section 2.10.2.2.2 of this SEIS.

2.10.3.2.3 Stray Voltage

Proposed mitigation measures pertaining to stray voltage and electrical shock are as described in Section 2.10.3.2.3 of the DEIS. These proposed mitigation measures have not changed with the revised Project. These include proper grounding, installation, and maintenance practices that eliminate or reduce stray voltage at the Project site. If a resident suspects stray voltage at their agricultural operation, the Applicant will conduct tests to quantify the existing voltage

potential before the Project starts and then again during operation to determine whether the Project has added additional stray voltage to the site.

2.10.3.2.4 Fire

Proposed mitigation measures pertaining to fire are as described in section 2.10.3.2.4 of the DEIS. These proposed mitigation measures have not changed with the revised Project. These measures include built-in safety features of the turbines that minimize fire risk by sensing and reporting equipment malfunctions to the Project control center. In the event of a fire, power to the turbines would be cut off. The transformers at the substation will be equipped with fire suppression systems as well. Additionally, maintenance personnel will adhere to a Fire Protection and Emergency Response Plan that includes a fire prevention program that mandates regular inspections of turbine components, properly maintaining fire-fighting equipment, and coordination with local fire departments for ongoing fire safety awareness.

2.10.3.2.5 Lightning Strikes

Proposed mitigation measures pertaining to lightning are as described in Section 2.10.3.2.5 of the DEIS. These proposed mitigation measures have not changed with the revised Project. Turbine lightning protection systems will be utilized to safely channel and ground any lightning strikes.

2.10.3.2.6 Electromagnetic Fields

As described in the Section 2.10.3.2.6 of the DEIS, no impacts from EMF are anticipated, and therefore, no mitigation is required. The Applicant will adhere to the electric field strength interim standards established in the New York State PSC Opinion No. 78-13 and the magnetic field strength interim standards established in the PSC's Interim Policy on Magnetic Fields, issued September 11, 1990.

2.11 COMMUNITY FACILITIES & SERVICES

2.11.1 Existing Conditions

This chapter updates information on community facilities and services provided in Section 2.11 of the DEIS. Although the Project has been scaled back slightly since publication of the DEIS in 2008, impacts to community facilities and services are similar because the number of employees required, and the nature of the work proposed, have not changed substantially. Because the number of permanent, full-time employees that will be needed over the long term is only about five to six (some of which will be drawn from the existing population, see Section 2.9.2 of this SEIS for

anticipated impacts to the economy and employment) significant population growth is not anticipated and demand for community facilities and services should not increase substantially.

2.11.1.1 Public Utilities and Private Energy Infrastructure

Since release of the DEIS in 2008, natural gas infrastructure has been introduced in the area. The Enbridge/St. Lawrence Gas Company's Norfolk to Chateaugay Gas Transmission Line spans northern St. Lawrence and Franklin Counties, with its eastern terminus in the Town of Chateaugay. The portion of this pipeline which runs through the Project site is a four inch diameter, high pressure main. Near the Project site, the pipeline delivers natural gas to the Village and Town of Chateaugay and the Town of Burke. Although distribution of natural gas does not occur within the Project site, the gas transmission line runs through the Project site along County Route 23.

As indicated in Section 1.4 of this SEIS, the New York State Energy Plan has been updated since the release of the DEIS in 2008 (NYSEPB, 2009; 2015). The 2015 State Energy Plan identifies aggressive renewable energy targets, including a 40% reduction in emissions by the energy sector by 2030 and an 80% reduction by 2050. The Plan also sets a target of 50% of all electricity generation to come from renewable sources, and identifies wind power as one of the major renewable energy sources that will help achieve this goal. Additional mandates for renewable energy are included in the Renewable Portfolio Standard (RPS) for New York. The most recent targets of the plan call for renewable energy to comprise 30% of New York's overall energy usage by 2015. As of the most recent Annual Performance Report, New York was at 53% of this target for Main Tier (i.e. large, utility scale) energy projects (NYSERDA, 2015). Development of onshore wind facilities has been identified as a way to bring New York closer to the 2015 targets set by the RPS (Morris et al., 2013). Policy directives for renewable energy are clear, and the Project will help New York achieve these goals.

Other public utilities infrastructure in the Project site, including electric distribution lines, telephone lines, and communications towers is generally as described in Section 2.11.1.1 of the DEIS.

2.11.1.2 Police Protection

Police protection is as described in Section 2.11.1.2 of the DEIS.

2.11.1.3 Fire Protection and Emergency Response

Fire protection and emergency response services are as described in Section 2.11.1.3 of the DEIS.

2.11.1.4 Health Care Facilities

Health care facilities are as described in Section 2.11.1.4 of the DEIS.

2.11.1.5 Educational Facilities

Educational facilities are as described in Section 2.11.1.5 of the DEIS.

2.11.1.6 Parks and Recreation

Parks and recreation facilities are as described in Section 2.11.1.6 of the DEIS, with one exception. The DEIS refers to a "proposed transmission line" (overhead collection line) that would cross the Chateaugay River at a public fishing right (PFR). The current SEIS layout does not have collection lines crossing the Chateaugay River and consequently, the Project does not intersect any PFRs.

2.11.2 Anticipated Impacts

Generally, revisions to the Project are not of a nature that they would change the type or magnitude of potential impacts to community facilities and services as described in the DEIS. Each of these impact areas is discussed below.

2.11.2.1 Construction

2.11.2.1.1 Public Utilities and Private Energy Infrastructure

Anticipated potential impacts to public utilities and private energy infrastructure resulting from Project construction are generally as described in Section 2.11.2.1.1 of the DEIS, and include minor increases in the demand for fossil fuels as a result of construction personnel traveling to the Project site and new connections to local utilities for the operation of construction trailers. Additionally, construction will be planned to avoid impacts to the St. Lawrence Gas Transmission Line where it crosses the Project site. Construction of one underground collection line and one access road that serves Turbines 1 and 5 is planned occur in the vicinity of the St. Lawrence Gas pipeline. The Applicant will enter into an Encroachment Agreement with Enbridge/St. Lawrence Gas that specifies how the Project's facilities will be installed by the construction contractors when crossing the existing gas line and implement gas line protection measures as necessary.

2.11.2.1.2 Police Protection

Consistent with the conclusions presented in in Section 2.11.2.1.2 of the DEIS, beyond the very small chance of some vandalism or trespass incidents that could involve local police, the Project is not anticipated to significantly increase demand for police protection during the construction period.

2.11.2.1.3 Fire Protection and Emergency Response

Anticipated demand for fire protection and emergency response services resulting from Project construction are as described in Section 2.11.2.1.3 of the DEIS. The Project will not significantly increase demand for fire protection and emergency response services during the construction period. It is possible that temporary road closures during construction may block emergency vehicle access to rural residences for short periods of time. However, the availability of alternate access routes, the small size of the populations these roads serve, and coordination between construction managers and New York State Police make it unlikely that blocked emergency access will be a problem.

2.11.2.1.4 Health Care Facilities

Anticipated demand for health care facilities resulting from Project construction are as described in Section 2.11.2.1.4 of the DEIS. Beyond the small chance that a construction worker would need to utilize routine health care services, the Project will not have significant adverse impacts on health care facilities during the construction period.

2.11.2.1.5 Educational Facilities

As described in Section 2.11.2.1.5 of the DEIS, because Project construction will not result in a substantial number of new families moving to the area, the Project will not have significant adverse impacts on educational facilities during the construction period. Potential impacts to school bus transportation during Project construction are described in Section 2.8 of this SEIS.

2.11.2.1.6 Parks and Recreation

Since publication of the DEIS, the Project layout has changed such that no overhead collection lines will cross the Chateaugay River and its associated PFRs. Therefore, no adverse impacts to PFRs or other parks and recreation facilities are anticipated to result from Project construction.

2.11.2.2 Operation

2.11.2.2.1 Public Utilities and Private Energy Infrastructure

Anticipated potential impacts to public utilities and private energy infrastructure resulting from Project operation are generally as described in Section 2.11.2.2.1 of the DEIS. The Project will not have any adverse effects on the availability, reliability, or physical condition of existing infrastructure in the area. However, with the reduction of turbines from 53 in the DEIS to 37 for the current SEIS, the Project will provide 77.7 MW, rather than 87.45 MW, of new generation capacity for the New York State Grid. Although less than originally anticipated, the Project will still be a significant new source of renewable energy for New York. The clean energy generated by the Jericho Rise Wind Farm will contribute to New York's progress in achieving renewable energy goals established by the 2014 Draft State Energy Plan (NYSEPB, 2014) and the RPS (NYSERDA, 2015). The Project will have a substantial positive impact on the goal of increasing the development of clean, renewable energy infrastructure in New York.

2.11.2.2.2 Police Protection

Potential impacts on police facilities and services resulting from Project operation are as described in Section 2.11.2.2.2 of the DEIS. Other than occasional responses to vandalism or trespass complaints, Project operation will not significantly increase demand for police protection.

2.11.2.2.3 Fire Protection and Emergency Response

Anticipated potential impacts on the demand for fire protection and emergency response services resulting from Project operation are as described in Section 2.11.2.2.3 of the DEIS. As local fire departments are not equipped nor expected to respond to fires within the turbines, increased demand for fire protection is only associated with ground level fires that could occur at the Project site. There is a low probability of these types of fires, so significant increased demand for fire protection services is not anticipated. It is likely that non-fire related accidents or injuries resulting from operation would be rare. Such accidents would be responded to by local emergency service providers who have experience in responding to accidents in remote locations.

2.11.2.2.4 Health Care Facilities

Anticipated potential impacts on health care facilities resulting from Project operation are as described in Section 2.11.2.2.4 of the DEIS. Project operation is not anticipated to increase demand at local health care facilities because of the low number of permanent employees the Project will bring to the region.

2.11.2.2.5 Educational Facilities

Potential impacts to educational facilities resulting from Project operation are as described in Section 2.11.2.2.5 of the DEIS, and are anticipated to include small increases in the need for bus service if full-time employees move to the region from out-of-town and have children who would utilize the public schools. As there will be about five to six full-time, local employees, the number of additional students would probably be relatively low, and would not likely require the hiring of additional educational or administrative staff. However, the small increase in students that are expected to attend local school districts may help offset declining enrollment. According to the Federal Education Budget Project (2015), total enrollment in the Chateauguay Central School District has declined from 590 pupils in 2008 to 561 pupils in 2012, a decrease of approximately 4.9%. Additional school taxes or PILOT payments to schools could also enhance educational facilities and programs.

2.11.2.2.6 Parks and Recreation

The limited number of new employees to be employed by the operating Project will not adversely affect existing parks and recreation facilities, nor create demand for additional such facilities. Payments to local taxing jurisdictions could increase the funds available to maintain parks and recreation facilities. Since publication of the DEIS, the Project layout has changed such that no overhead collection lines will cross the Chateaugay River and its associated PFRs. Therefore, no adverse impacts to PFRs or other parks and recreation facilities are anticipated to occur as a result of Project operation.

2.11.3 Proposed Mitigation

2.11.3.1 Construction

2.11.3.1.1 Public Utilities and Private Energy Infrastructure

Mitigation measures for potential impacts to public utilities and private energy infrastructure are generally as described in Section 2.11.3.1.1 of the DEIS. Various mitigation measures will be undertaken to protect existing overhead electric and telephone lines and underground natural gas lines. Mitigation measures will include construction management personnel meeting and coordinating with local utility companies, developing utility relocation plans, and identifying buried utilities using the Protection of Underground Facility procedures (16 NYCRR Part 753) in accordance with the Dig Safely New York Program. Construction managers will coordinate with Enbridge/St. Lawrence Gas via an Encroachment Agreement to identify crossing methodologies for intersection of the gas main and the underground collection lines proposed for the Project in order to avoid impacts to the gas line.

2.11.3.1.2 Police Protection

As indicated in Section 2.11.3.1.2 of the DEIS, Project construction will not have a significant adverse impact on demand for police protection. Therefore, no mitigation measures are needed.

2.11.3.1.3 Fire Protection and Emergency Response

Mitigation measures for potential impacts to fire protection and emergency response services are as described in Section 2.11.3.1.3 of the DEIS. These include maintaining preparedness and equipment for rescue operations involving the nacelle and tower, consultation with local emergency service providers, including planning and notification of any road closures/detours, and developing a Fire Protection and Emergency Response Plan to help insure safety of employees, local residents, visitors, and their property.

2.11.3.1.4 Health Care Facilities

As indicated in Section 2.11.3.1.4 of the DEIS, Project construction will not have a significant adverse impact on health care facilities. Therefore, no mitigation measures are needed.

2.11.3.1.5 Educational Facilities

Mitigation measures for potential impacts to educational facilities are as described in Section 2.11.3.1.5 of the DEIS, and include transportation planning and coordination with the local school district to make sure delays and interference with school bus routes are minimized. For more information on Project impacts and mitigation relative to bus routes, see Section 2.8 on Traffic and Transportation.

2.11.3.1.6 Parks and Recreation

No adverse impacts to parks and recreation facilities are anticipated from Project construction. Therefore, no mitigation measures are necessary.

2.11.3.2 Operation

2.11.3.2.1 Public Utilities and Private Energy Infrastructure

Adverse impacts to public utilities and private energy infrastructure are not anticipated as a result of Project operation. Beneficial impacts include increasing the generating capacity of the New York State Grid and contributing to the

achievement of State renewable energy goals. Because these impacts are positive, no mitigation measures are necessary.

2.11.3.2.2 Police Protection

As described in Section 2.11.3.2.2 of the DEIS, Project operation will not have a significant adverse impact on demand for police protection. Therefore, no mitigation measures are necessary.

2.11.3.2.3 Fire Protection and Emergency Response

Mitigation measures for potential impacts to the demand for fire protection and emergency response services resulting from Project operation are as described in Section 2.11.3.2.3 of the DEIS, and include the Applicant maintaining an appropriate level of preparedness for emergencies, including having a Fire Protection and Emergency Response Plan in place, and maintaining equipment necessary for rescue operations involving the nacelle and tower.

2.11.3.2.4 Health Care Facilities

As described in Section 2.11.3.2.4 of the DEIS, Project operation will not have a significant adverse impact on healthcare facilities. Therefore, no mitigation measures are necessary.

2.11.3.2.5 Educational Facilities

As described in Section 2.11.3.2.5 of the DEIS, Project operation will likely have a beneficial impact on educational facilities and programs. Therefore, no mitigation measures are necessary.

2.11.3.2.6 Parks and Recreation

No adverse impacts to parks and recreation facilities are anticipated from Project operation, and therefore, no mitigation measures are proposed.

2.12 COMMUNICATION FACILITIES

General information about communications technologies remains as described in Section 2.12 of the DEIS.

The Microwave and Off-Air Television studies appended to the DEIS have been updated for the revised Project (see SEIS Appendix T). In addition, a new Communication Tower Study has been prepared to identify all communication

signal towers and their owners, within the Project Site (see Appendix T). This updated and new information is discussed below.

2.12.1 Existing Conditions

2.12.1.1 Microwave Analysis

Comsearch (2015a) identified five microwave paths within the Project Site (see Figure 2 and Table 1 in the Microwave Study, Appendix T). Path 1 is licensed to New Cingular Wireless PCS, LLC, and crosses the Project Site from the northeast to the southwest. The remaining microwave paths originate from a communication tower located within the existing Willis Substation along Willis Road. Paths 2 extends west, while Path 3 extends east; both are licensed to the New York Power Authority. Paths 4 and 5, licensed to New York Power Authority and Hydro-Quebec, respectively, are co-located and extend northeast from the communication tower.

2.12.1.2 Television Analysis

Comsearch (2015b) reviewed Federal Communication Commission (FCC) data to compile a list of all off-air television (TV) stations in the vicinity of the Project Site. Figure 2 in the Off-Air Television Analysis, (Appendix T) depicts the locations of the 55 stations within 93 miles (150 kilometers [km]) of the Project Site. Thirty-four of these stations are located in the U.S. and 21 in Canada. Information about these stations is summarized in Tables A and A-2 of the Off-Air Television Analysis in Appendix T.

Most users of off-air television get reception from stations at a distance of 46.6 miles (75 km) or less. There are a total of 19 database records for stations within this distance, nine in the U.S. and 10 in Canada. Characteristics of the off-air station most likely to provide coverage to the Project Site are summarized in Tables 1 and 2 of the Off-Air Television Analysis in Appendix T. Two stations in the U.S. and three in Canada have been authorized, but are not yet operational. The remaining 14 stations are currently licensed and operational, three of which are low-power stations or translators. Translator stations are low-power stations that receive signals from distant broadcasters and retransmit the signal to a local audience. These stations serve local audiences and have limited range, which is a function of their transmit power and the height of their transmit antenna.

2.12.1.3 Communication Tower Analysis

Comsearch (2015c) identified communication towers within the Project Site from a variety of sources including the FCC's Antenna Structure Registration database, Universal Licensing System, national and regional tower owner

databases, and the local planning and zoning boards. Five active communication antennas were identified within the Project Site. These antennas are licensed to New York Power Authority and Franklin County, and all are located on a single lattice tower structure within the existing Willis Substation, along Willis Road south of the intersection with Hartnett Road (see Figures 1 and 2 in the Communication Tower Study of Appendix T).

2.12.2 Anticipated Impacts

2.12.2.1 Construction

It is not anticipated that construction of the revised Project will have any additional or different impacts on communication facilities than those described in Section 2.12.2.1 of the DEIS. Cranes used during construction activities can cause temporary degradation to television and radio signals. These impacts would be of short duration, since the cranes are only used at any given site for turbine assembly and erection, which is typically completed in one to two days per turbine.

2.12.2.2 Operation

2.12.2.2.1 Microwave Communication Systems

To assure an uninterrupted line of communications, a microwave link should be clear, not only along the axis between the center point of each antenna, but also within a mathematical distance around the center axis known as the Fresnel Zone. Comsearch (2015a) calculated the Fresnel Zone for each of the five microwave paths identified within the Project Site. Turbine 18 was found to possibly intersect the Fresnel Zone of Path 3. Comsearch performed a cross sectional analysis that concluded that the turbines blades have a clearance of 12.52 meters from the Fresnel Zone of Path 3. Therefore, Turbine 18 will not intersect this microwave path and will not interfere with communications. None of the other revised Project turbines are located in proximity to a Fresnel Zone (see Figure 15). Therefore, the proposed Project will not interfere with microwave communications from existing towers.

2.12.2.2.2 Television Communication Systems

In June 2009, high-power television broadcast stations ceased analog operations and began broadcasting exclusively in digital format. Low-power TV broadcasters and translators were exempt from the FCC's digital requirement, and may still broadcast analog signals. Since translator stations rebroadcast high-power stations to a limited local audience, their programming is typically in digital format as well. Analog television broadcast signals are subject to variations in signal level by the motion of wind turbine blades, which may result in distortions in the contrast, brightness, and clarity of the video. In addition, changing reflections produced by the motion of wind turbine blades may cause

ghosting. Digital television signals are also subject to level variations and reflections, but as long as the signal remains above the operational threshold of the receiver, the video produced is unaffected. Wind turbines can cause signal attenuation in both analog and digital signals. However, because they require a much lower signal level to produce excellent video, digital signals can withstand the attenuation effect to a greater extent. For analog television, as the signal is degraded by external effects, video quality is reduced in a sliding scale of performance. For digital television, as the signal is degraded, the video quality remains excellent until the signal level falls below the operational threshold of the receiver. Since the conversion to digital broadcast, there has been an improvement in television reception in the vicinity of wind energy facilities (Polisky, 2011).

Two of the licensed full-power stations, WCFE-TV (U.S.) and CJOH-TV-8 (Canada), may have their reception disrupted in and around the Project Site. These impacts are most likely in locations on the opposite side of the Project, relative to the station antennas. Consequently, after the wind turbines are installed, communities and homes to the north and west of the Project may have degraded reception of station WCFE-TV, which is located southeast of the Project Site. Similarly, communities and homes to the south and east may have diminished reception of Canadian station CJOH-TV-8, which broadcasts from northwest of the Project Site.

However, based on the low number of full-power TV channels available in the immediate vicinity of the Project Site, it is unlikely that off-air television stations are the primary mode of television service for the local communities. TV cable service, where available, and direct broadcast satellite service (DBS) are more likely the dominant modes of service delivery. Cable and DBS TV services will be unaffected by the operation of the Project.

2.12.2.2.3 Military Radar

Comsearch was also contracted to send written notification of the proposed Project to the National Telecommunications and Information Administration (NTIA) of the U.S. Department of Commerce. Upon receipt of notification, the NTIA provides plans for the proposed Facility to the federal agencies represented in the Interdepartment Radio Advisory Committee (IRAC), which include the Army, Navy, Air Force, Coast Guard, Department of Homeland Security, Department of Transportation, Broadcasting Board of Governors, National Aeronautics and Space Administration, National Science Foundations, and Federal Aviation Administration (FAA). The NTIA then identifies any Project-related concerns detected by the IRAC during the review period. If the Project had the potential to interfere with military radar systems, this conflict would be identified during IRAC review. The notification letter was sent to NTIA on January 27, 2015. A response letter from NTIA was received on April 1, 2015 (see Appendix C). No concerns regarding blockage of military radar or other federal government communication systems were identified. Due to changes in the Project layout during Project siting, an updated notification letter depicting the final Project layout will be sent to NTIA. Because

the layout included in the original letter is similar to that of the revised SEIS Project layout, it is unlikely that NTIA will have concerns regarding the impact of the Project to military radar or other federal government communication systems. The NTIA response to the revised SEIS layout will be included as an appendix to the FEIS.

As described in the DEIS, additional consultation with the FAA and Department of Defense (DOD) will occur through the Aviation Hazard review process.

2.12.2.2.4 Other Forms of Communication

For the reasons described in the DEIS, the operation of the revised Project will not impact other forms of communication (e.g., mobile phones, land mobile radio systems, AM or FM radio).

2.12.3 Mitigation Measures

2.12.3.1 Construction

The Project changes have not altered potential impacts from construction activities to communication facilities. Therefore, mitigation measures for impacts to communications as a result of Project construction remain as described in Section 2.12.3.1 of the DEIS. Turbine erection will be performed as quickly and efficiently as possible to reduce the duration of potential minor, temporary impacts.

2.12.3.2 Operation

2.12.3.2.1 Microwave Communication Systems

As described in Section 2.12.3.2.1 of the DEIS and confirmed by the updated microwave study described above and attached as a part of Appendix T, interference with microwave communications as a result of Project operation is not anticipated. Turbines were sited to avoid Fresnel zones. Beyond this, additional mitigation is not necessary or proposed.

2.12.3.2.2 Television Communication Systems

Since the DEIS was released, the broadcast system has converted from analog to digital, resulting in an improvement in off-air television reception in the vicinity of wind energy facilities (Polisky, 2011). The Project changes have not altered potential impacts to off-air television coverage. Therefore, mitigation measures for impacts to off-air television coverage as a result of Project operation remain as described in Section 2.12.3.2.2 of the DEIS. Should any impacts

occur, the Applicant will address and resolve each on an individual basis using the Complaint Resolution Plan (Appendix P). Mitigation options could include adjusting existing antennas, upgrading antennas, or providing cable or satellite systems to affected households.

2.12.3.2.3 Military Radar

Potential mitigation measures for impacts to military radar as a result of Project operation remain as described in Section 2.12.3.2.3 of the DEIS. No impacts are currently anticipated based on the April 1, 2015 letter from NTIA, although an updated response from NTIA regarding the revised Project layout is forthcoming. Should Project revisions necessitate additional coordination with the FAA or DOD for Aviation Hazard review, the Applicant will resolve potential conflicts with military radar to the satisfaction of the involved federal agencies prior to construction. Possible resolutions could involve engineering, software, or hardware options, or in extreme cases, individual turbines could be eliminated.

2.12.3.2.4 Other Communication Systems

As described in Section 2.12.3.2.4 of the DEIS, no impacts to other communication systems are anticipated. The Project changes have not altered the potential impacts to other communication systems and therefore no specific mitigation measures are proposed. However, if an issue should arise after the turbines become operational, the Complaint Resolution Plan (Appendix P) will be used to address such concerns.

2.13 LAND USE & ZONING

2.13.1 Existing Conditions

2.13.1.1 Regional and Local Land Use

A discussion of the regional location of the proposed Project is provided in Section 2.13.1.1 of the DEIS. While predominantly in the same location, the revised Project site extends further north and not as far east as the Project Area described in the DEIS; it is bordered by U.S. Route 11 to the north and by the Chateaugay River to the east. While the DEIS Project Area was approximately 5,040 acres of land, the revised Project site is approximately 5,895 acres, including those parcels where seven alternate turbine sites are located. The description of the general Project location within the region and information about the Adirondack Park presented in the DEIS remain accurate.

Residential areas are generally concentrated in the villages and hamlets. When considering land use by parcel, residential properties account for about 57% of all parcels in Franklin County. This pattern is similar for the Towns of Bellmont and Chateaugay, where residential properties comprise 53% and 45% of all parcels, respectively. Vacant

properties account for 35% and 26% of parcels in the Towns of Bellmont and Chateaugay, respectively. At just 2%, agricultural properties comprise a smaller portion of parcels in the Town of Bellmont than the Town of Chateaugay, where agricultural properties comprise about 17% of the parcels (NYSORPTS, 2015).

Since release of the DEIS in 2008, several wind farms have become operational in the region, and wind power generation is now a common land use locally. The closest wind facility is the Noble Chateaugay Windpark, located just east of the Project site in the Town of Chateaugay. Other wind projects nearby include EDPR's Marble River Windfarm as well as Noble's Clinton, Ellenburg, and Altona facilities in Clinton County. Consistent with the goals and policies of the use provisions of the various community local laws, wind power generation is an established land use in the region, and now contributes to the existing community character in the area.

Agriculture is an important land use in the region. The most recent available data indicate that there are 688 operational farms in Franklin County encompassing 145,023 acres or about 13% of the total land area (Census of Agriculture, 2012). In 2012, Franklin County produced and sold at market value over $84,000,000 worth of agricultural goods. About 23% of these sales were from crops while about 77% were from livestock, including dairy. Dairy production is still the most common agricultural use in the area. Franklin County ranks 17th in New York for dairy production, which comprises 68% of all agricultural products sold in the County. Other important agricultural products include hay (9% of all sales), grains, oilseeds, dry beans and dry peas (8%), and cattle and calves (6%). In terms of land area for crops, forage land used for hay, grass silage and greenchop has by far the most acreage, totaling 42,870 acres or 70% of cropland in Franklin County. Corn for grain and corn for silage together occupy 18,700 acres or 30% of the county's cropland. In Franklin County, there are about 409 farm operators whose primary occupation is farming (USDA Census of Agriculture, 2012). The region has experienced a slight increase in acres farmed since release of the DEIS, with a 13% increase in acres farmed from 2007 to 2012, likely due to higher commodity prices during that time period.

In addition to farmland that is used for row crops and hay, the region also has managed forests that are used for maple sugar production. Maple syrup is a high-value, locally important agricultural product, although profits from maple syrup/sugar in the area are typically supplemental and in most cases do not represent a sole income source for farms in the region.

Within the Project site, active agricultural lands used for row crops, field crops, and pastureland occupy about 2080 acres or 35% of total land area. There are also several working sugar bush facilities. During Project siting, two sugar bush facilities were identified near proposed sites for Project facilities that were about 6 acres and 7.7 acres. Both are located in upland forested stands with mature sugar maple (*Acer saccharum*) adjacent to agricultural fields. Within the Project site, vegetative cover is generally as described in Section 2.13.1.1 of the DEIS, with the majority of land within

the Project site consisting of natural communities including forest (56%) and successional shrubland (7%). About 2% of the land area is occupied by existing development.

2.13.1.2 Zoning and Other Applicable Local Laws

As discussed in Section 2.13.1.2 of the DEIS, neither the Town of Bellmont nor the Town of Chateaugay have zoning or comprehensive plans, but both have local wind energy ordinances whose purpose is to promote the effective and efficient use of the Town's wind energy resources. The process by which the Applicant will apply for a permit with the Towns, and the Towns' review of the permit application, is as described in the DEIS. However, both towns passed limited amendments to the wind ordinances that are not addressed in the DEIS (Town of Chateaugay Local Law # 1 of the Year 2008 entitled "Amendments to Wind Energy Facilities Law" and for Bellmont, Resolution 25: Resolution for the Proposed Local Law No. 1 of 2007 to Amend Local Law No. 2 of 2006). The amendments corrected two errors in the original wind laws, regarding the proper measurement for the noise standard and an amendment to the setbacks from certain roads.

A review of required setbacks for wind turbines (referred to as Wind Energy Conversion Systems or WECS in the local laws) described in the local wind energy laws and amendments is provided in Table 39. Other design standards in the local laws outlined in the DEIS remain accurate, including a maximum height of 400 feet total height for each turbine.

Table 39. Wind Turbine Setback Requirements for the Towns of Bellmont and Chateaugay

Setback Requirement	Town of Bellmont	Town of Chateaugay
Site Boundaries^	500 feet from all Project site boundaries, of which the first 100 feet will be a green buffer zone to provide natural screening. Cutting and clearing within the green buffer zone is prohibited except in connection with agricultural uses or as necessary to construct and maintain wind turbine access roads and electric lines.	600 feet from all Project site boundaries, of which the first 100 feet will be a green buffer zone to provide natural screening. Cutting and clearing within the green buffer zone is prohibited except in connection with agricultural uses or as necessary to construct and maintain wind turbine access roads and electric lines.
Residences	1000 feet from all residences, including those on the Project site, those not participating in the Project, and those not in Bellmont.	1320 feet from residences outside of the Project site, measured from the exterior of the residence. Also 1200 feet from any residence, whether or not the residence is in Chateaugay.
US Route 11, NYS Route 374, County Road 52	500 feet from all public roads.	1200 feet.
Other Public Roads	500 feet from all public roads.	600 feet.
Property Line of Church*	1200 feet.	1320 feet.

Setback Requirement	Town of Bellmont	Town of Chateaugay
School, Hospital, or Nursing Facility	1200 feet.	2500 feet.
Non-Wind Turbine Structure or Aboveground Utility	1.5 times the Total Height of the wind turbines from any existing non-wind turbine structure or any existing aboveground utilities, unless otherwise approved by the Town Board.	1.5 times the Total Height of the wind turbines from any existing non-wind turbine structure or any existing aboveground utilities, unless otherwise approved by the Town Board.
Noise Related	Adequate distance from existing residences such that turbines are located outside a L_{90} – 50 dBA noise level zone. In the event a turbine emits a steady pure tone, the threshold is reduced to L_{90} – 45 dBA.	Adequate distance from existing residences such that turbines are located outside a L_{90} – 50 dBA noise level zone. In the event a turbine emits a steady pure tone, the threshold is reduced to L_{90} – 45 dBA.

^Site refers to participating parcels, which is any property which has a Wind Energy Facility, as defined in the local laws, or has entered an agreement for said Facility or a setback agreement.
*Not including a church-owned cemetery.

2.13.1.3 Agricultural Districts

As discussed in Section 2.13.1.3 of the DEIS (under the heading Agricultural Land Use) New York Department of Agriculture and Markets (NYSDAM) designates Agricultural Districts by county. The purpose of the districts is to support farms and farmland through a combination of incentives and protections intended to forestall the conversion of farmland to non-agricultural uses. Franklin County has one Agricultural District (District #1) which covers about 9% of total land in the county (NYSDAM, 2014). Approximately 38%, or 2243 acres, of the land within the Project site is located in Agricultural District #1 (see Figure 16).

2.13.1.4 Future Land Use

Future land use patterns for the Project site are not expected to change significantly, other than the additional acreage of land that would accommodate wind power generation as a result of the Jericho Rise Wind Farm and other possible wind power projects in the area. There are several additional wind farms proposed for the area. As of June 2015, the New York State Independent Systems Operator (NYISO)[1] queue list includes EDPR's North Slope Wind Project in Franklin County and Invenergy Wind Development's Bull Run Wind Project in Clinton County as additional proposed future wind projects in the area (NYISO, 2015). Together, these projects represent somewhere in the neighborhood of

[1] NYISO is responsible for operating the high-voltage transmission network that distributes energy generated by wind facilities. In order to eventually connect to these high-voltage transmission lines, proposed wind power facilities secure a place on NYISO's interconnection queue by submitting an application, including a substantial monetary deposit. Because securing a place on the queue represents a financial investment, the NYISO represents a list of projects that have a high probability of getting built.

400 additional MW of wind generation. Wind energy has rapidly become a major land use in the region and future land use may include additional wind energy generation.

2.13.2 Anticipated Impacts

2.13.2.1 Construction

2.13.2.1.1 Regional and Local Land Use

As discussed in Section 2.13.2.1.1 of the DEIS, the Project will be developed on privately owned land. A small amount of residential property could be temporarily impacted by noise, dust, and traffic delays associated with the Project construction. However, these impacts would generally be confined to the properties of participating landowners, and would be temporary in nature (i.e., limited to the duration of construction activity).

Construction will generally not impact regional and local land use, however, see Section 2.13.2.1.3 for a discussion of construction-related impacts to agricultural lands and Section 2.3.2.1 for impact to forest land. Pursuant to Section 12(A)(14) of the Towns' Wind Energy Facilities Laws, Project construction will generally be limited to the hours of 7 AM to 7 PM. However, a waiver will likely be requested to allow certain activities to occur outside these hours. Such activities are anticipated to be limited, and will not be conducted without advanced notice and approval by the Towns (see also discussion of waivers below).

2.13.2.1.2 Zoning and Other Applicable Laws

Construction activity would be conducted in compliance with local wind energy facility requirements in the Towns of Bellmont and Chateaugay and in compliance with any conditions appearing in the local wind energy permits acquired for the Project. However, turbine height (height to blade tip) for the revised Project is 492 feet, which is taller than the 400 foot maximum height requirement set forth in regulations for both of the Towns (Chateaugay Local Law No. 7 of 2006, Article II Wind Energy Conversion Systems §12. Standards for WECS and Bellmont Local Law No. 2 of 2006, Article II Wind Energy Conversion Systems §12. Standards for WECS). When the local laws were passed in 2006-2007 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 taller turbines. For example, EDPR's Marble River Project in nearby Clinton County was constructed in 2011 and utilizes the 492-foot Vestas V112 turbine, which is comparable in height to the turbine currently proposed for the Jericho Rise Project.

A process for requesting waivers is outlined in Article V of the local laws. The regulations state that the Town Boards may, after a public hearing, grant a waiver if the provisions of that waiver are in the best interest of the Towns. The Town Boards would take into account, among other considerations, issues such as the effect the changes would have on the neighborhood or community and whether there are means to achieve the changes other than through issuing a waiver.

The Project has an approved interconnection agreement with NYISO for a 77.7 MW project. The proposed use of taller, 2.1 MW turbines allows the Applicant to maximize the energy generation potential of the proposed Project within the constraints of their approved interconnection agreement, while minimizing the number of proposed wind turbines, thereby minimizing potential environmental impacts associated with the construction and operation of a larger number of turbines. As part of the local wind energy permit applications, the Applicant has requested a waiver that would allow turbine heights of 492 feet. The basis for this request is that the taller turbines generate substantially more electricity than shorter turbines, with only a minor increase in the footprint of disturbance associated with each turbine. In general, wind speeds increase at higher altitudes above the earth's surface. Analyses performed by the Applicant show an approximate 4% increase in wind velocity from 262 feet about ground to 305 feet above ground at the Jericho Rise site. Because of higher wind speeds at higher altitudes, this modest increase in turbine height from 400 feet to 492 feet is likely to result in up to an 8-10% increase in gross energy production. The increased generation capacity allows for fewer turbines to be constructed without reducing electrical output. Fewer turbines result in not only less impact from the turbine footprint itself, but also less area of impact resulting from the reduced number of required access roads and collection lines. This results in less impact to wetlands, forest land, agricultural land, and soils than would be expected from a project with a larger number of shorter turbines. The revised Project's proposed layout with fewer turbines would also benefit the community because turbines would be less dense on the landscape, and in proximity to fewer individual residences. Fewer taller turbines are also considered preferable from a visual impact perspective (Thayer and Freeman, 1987; van de Wardt and Staats, 1998), and can reduce noise impacts by increasing the distance between the source of the noise and the reception locations. Moreover, based on the distance of the turbines from off-site public vantage points, the difference of approximately 92 feet from the height assessed in the DEIS is unlikely to be perceptible to the ordinary viewer from ground level (see comparative visual simulations in Appendix M). Additional discussion of potential visual impacts is discussed in Section 2.5 of this SEIS. The ability to maximize the wind resource with taller turbines is consistent with the stated purpose of the Towns' local laws and is in the best interests of the Town.

The Applicant examined other alternatives and concluded that the revised Project layout, with 37 turbines at 492 feet blade tip height maximizes the benefits of the Project while generally reducing adverse environmental impacts to the greatest extent practicable. Please see Section 4 of this SEIS for a more detailed discussion of alternatives.

2.13.2.1.3 Agricultural Land Use

The revised 37 turbine Project layout will result in construction-related disturbance of approximately 473 acres of active agricultural lands, including impacts to vegetation and soils. Of this area, approximately 424 acres (90%) would be restored. Project construction associated with the six alternate turbine locations would result in impacts to about 78 acres of active agricultural lands, of which about 70 acres (90%) would be restored. Along with this direct impact to agricultural land, movement of equipment and material could result in temporary removal or damage to fences and gates, inadvertent damage to subsurface drainage systems, and temporary blockage of farmers' access to agricultural fields or local roads. However, the proposed wind turbines and associated facilities have been located to minimize loss of active agricultural lands and interference with agricultural operations. Additionally, the Project has been sited to minimize impacts to maple sugar operations/facilities. To minimize adverse impacts on agricultural land use, construction activities will be conducted in compliance with the NYSDAM Guidelines for Agricultural Mitigation for Windpower Projects (NYSDAM, 2013).

2.13.2.1.4 Future Land Use

As stated in Section 2.13.2.1.4 of the DEIS, Project construction is not anticipated to impact future land use, other than continuing the trend of increased development of wind energy in the region.

2.13.2.2 Operation

2.13.2.2.1 Regional and Local Land Use

As discussed in Section 2.13.2.2.1 of the DEIS, the Project is generally consistent with land use patterns in the Towns of Bellmont and Chateaugay. Although the revised Project would alter the appearance of the landscape, this effect will be less than anticipated in the DEIS, as the area already hosts several working wind farms. Beyond an incremental increase in the abundance of wind turbines, the agricultural and rural nature of the landscape will not change as a result of Project operation. More information on impacts to agricultural land specifically are included in Section 2.13.2.2.3 of this SEIS.

2.13.2.2.2 Zoning and Other Applicable Laws

The discussion of zoning and other applicable laws provided in Section 2.13.2.1.2 applies to both the operation and construction phase of the Project. The Project complies with setbacks and other requirements of the local ordinances, other than the 400-foot height limit. As discussed previously, a waiver is being requested that would allow turbine blade

tip to reach 492 feet. Fewer taller turbines can maintain Project benefits while reducing impacts associated with Project operation, including visual impacts, noise impacts, and long-term conversion of agricultural land and natural communities to built/developed facilities. The change in the height of the turbines approximately 92 feet from what is permitted currently under the local laws will not produce an undesirable change in the character of the neighborhood or a detriment to nearby properties. As discussed in Section 2.10 of this SEIS, even at the taller turbine height, the setbacks for the Project are fully protective of human health and public safety. Moreover, the potential visual impact associated with the increase in turbine height is unlikely to be perceptible from most public vantage points (see Section 2.5 and Appendix M). Given current market realities, it is not feasible for the Project to pursue development with a shorter turbine. Lastly, the proposed waiver will not have an adverse effect or impact on the physical or environmental conditions in the neighborhood or nearby community.

2.13.2.2.3 Agricultural Land Use

As discussed in Section 2.13.2.2.3 of the DEIS, the Project could have a long-term positive impact on agricultural land use, because presence of the wind turbines can help keep the land in agricultural use. This happens in several ways. Agricultural use can coexist with wind power facilities on the same property, with only small portions of land taken out of production. In addition, lease agreements with landowners provide an additional source of income that can help bolster farm incomes in years of poor profits. This diversified income may allow family farms to stay in operation in difficult economic times. Finally, the presence of wind farms can discourage subdivision of agricultural properties and the encroachment of non-agricultural land uses onto farm land. Wind farms are an economic development opportunity for rural communities that is consistent with agricultural use.

Permanent impacts to agricultural land that would result from wind facility operation of the proposed 37-turbine Project would include the permanent conversion of approximately 50 acres of productive agricultural land to non-agricultural use for Project facilities, such as access roads and turbines. Construction and operation of the Project at the six alternate turbine locations would result in up to approximately 8 acres of conversion of agricultural lands to Project facilities. These impacts have been minimized through siting facilities along the edges of agricultural fields when possible and adhering to the Agricultural Protection Guidelines set forth by NYSDAM. The layout of Project components was revised specifically to avoid loss or long-term impacts to existing sugar bushes and maple syrup operations.

During operation, adverse impacts would be minor, and would include temporary disturbances to agriculture fields to accommodate repair activities, and associated temporary dismantlement of fences or gates. Routine operation and maintenance of the Project would not interfere with ongoing farming operations, and Project access roads may serve to facilitate equipment access to fields for planting and harvesting.

2.13.2.2.4 Future Land Use

Impacts to future land use are as described in Section 2.13.2.2.4 of the DEIS, however, as the region already hosts several wind energy generation facilities, the Project will not initiate a change in likely future use but rather will be consistent with recent and ongoing land use trends. As mentioned in Section 2.13.1.4 above, there are other wind facilities proposed for the region, so it is likely that the region will become even more devoted to renewable energy production. Impacts to other future uses are anticipated to be minor. Additional turbines in the viewshed may change the way some people perceive the rural character of the landscape, and the presence of turbines may place constraints on residential development due to setback requirements. However, there is ample land within and adjacent to the Project site that is located outside of these setbacks that would be appropriate for residential development, should there be demand. See Section 2.5 for an assessment of the Project's visual impacts.

2.13.3 Mitigation Measures

The revised Project has been sited to avoid adverse impacts to land use and to comply with local land use laws other than the waiver provision for height, so additional mitigation is not necessary.

2.13.3.1 Construction

2.13.3.1.1 Regional and Local Land Use

As discussed in Section 2.13.3.1.1 of the DEIS, Project construction will not result in adverse impacts to regional and local land use. The minor noise, dust and traffic delays that could temporarily affect residential properties will be mitigated through various on-site measures. See discussions of mitigation measures for dust, noise, and traffic delays cause by Project construction in Sections 2.4.3, 2.7.3, and 2.8.3, respectively.

2.13.3.1.2 Zoning and Other Applicable Laws

As discussed in Section 2.13.3.1.2 of the DEIS, Project construction would comply with local laws and permit conditions in the Towns of Bellmont and Chateaugay. The Applicant is seeking a waiver to allow turbines with a blade tip of 492 feet. This waiver will preserve the Project's energy production benefits while reducing overall adverse environmental impacts. Therefore, no additional mitigation is required.

2.13.3.1.3 Agricultural Land Use

Mitigation measures for impacts to agricultural land use are as described in Section 2.13.3.1.3 of the DEIS. Project construction will result in temporary and permanent impacts to agricultural land. Mitigation measures to reduce the impacts to active agricultural land and farming operations include compliance with the current version of the NYSDAM Guidelines for Agricultural Mitigation for Wind Power Projects (NYSDAM, 2013, see Appendix B). A qualified Agricultural Inspector will be present during construction activities that take place on agricultural land. Additionally, a Notice of Intent to Undertake an Action within an Agricultural District will be filed with NYSDAM and the Franklin County Agriculture and Farmland Protection Board.

2.13.3.1.4 Future Land Use

As discussed in Section 2.13.3.1.4 of the DEIS and in Section 2.13.2.1.4 of this SEIS, Project construction will not adversely affect future land uses within or adjacent to the Project site. Any impacts associated with construction will be short-term and temporary. Therefore, no mitigation measures are necessary.

2.13.3.2 Operation

2.13.3.2.1 Regional and Local Land Use

As discussed in Section 2.13.3.2.1 of the DEIS and Section 2.13.2.2.1 of this SEIS, the Project is consistent with existing land uses in the area and is generally compatible with the agricultural land use that dominates the Project site. Therefore no mitigation measures are necessary, beyond Project operation and maintenance staff working with local landowners to coordinate maintenance activities in order to reduce impacts to seasonal agricultural activities.

2.13.3.2.2 Zoning and Other Applicable Laws

As discussed in Section 2.13.3.2.2 of the DEIS and Section 2.13.2.1.2 of this DEIS, Project operation would comply with local laws of Bellmont and Chateaugay and conditions of waivers, if granted by the Towns. The Applicant is requesting a waiver to allow turbines with a total height of 492 feet at blade tip. Project operation and maintenance staff will work closely with local authorities to ensure that all conditions of permits and waivers are met during Project operation. Beyond these measures, no additional mitigation measures are proposed or necessary.

2.13.3.2.3 Agricultural Land Use

As discussed in Section 2.13.3.2.3 of the DEIS and Section 2.13.2.2.3 of this SEIS, the Project could result in positive impacts to agricultural land use, because wind farms can co-exist with agricultural activities, and represent an additional income source for farms hosting turbines on their properties. Maintenance of turbine access roads may also benefit farmers because it enhances equipment access to working fields, and the cost of this maintenance will be the responsibility of the Applicant. The Project will result in some permanent loss of agricultural land, but this has been minimized by following NYSDAM siting guidelines (NYSDAM, 2013).

2.13.3.2.4 Future Land Use

As discussed in Section 2.13.3.2.4 of the DEIS and Section 2.13.2.2.4 of this DEIS, Project operation is consistent with future land uses anticipated within the Project site and surrounding area. Therefore, no mitigation measures are necessary.

3.0 UNAVOIDABLE ADVERSE IMPACTS

The discussion provided in Section 3.0 of the DEIS with respect to the purpose and need for the Project remains relevant, with the exception that the Project is anticipated to generate up to 77.7 MW of electric power, rather than 87.45 MW.

3.1 GENERAL MITIGATION MEASURES

The discussion provided in Section 3.1 of the DEIS with respect to the agency review and approval process remains relevant. The Project will be developed in accordance with the State Environmental Quality Review Act (SEQRA), as well as other laws and ordinances established by various federal, state, and local agencies, including NYSDOT, Franklin County Highway Department, NYSDEC, OSHA, NYSDAM, FAA, and USACE. Compliance with these regulations will minimize adverse environmental impacts of the Project.

As a supplement to the DEIS, this SEIS will provide the primary means by which Project costs and benefits are described and can be evaluated in a public forum. As part of the SEQRA process, public and agency comments to both the DEIS and this SEIS will be solicited and addressed. Responses to these comments and preparation of a FEIS will provide the information necessary for the lead agency and other reviewing agencies to draw conclusions regarding the Project's environmental impacts.

3.2 PROPOSED MITIGATIONS MEASURES FOR LONG-TERM UNAVOIDABLE ENVIRONMENTAL IMPACTS

The discussion provided in Section 3.2 regarding mitigation measures for unavoidable adverse environmental impacts remains generally relevant. The Project will have an overall positive impact on the environment and local economy, and these positive impacts offset the adverse impacts associated with the Project. With the exception of visual impacts, most adverse Project impacts are related to the disturbance caused during the period of construction, which is anticipated to last approximately nine months. Table 3.2-1 of the DEIS, which lists long-term unavoidable adverse impacts, remains generally relevant, with the exception that turbines proposed for the Project are 492 feet tall, rather than 400 feet. The Applicant is seeking a waiver for height restriction in the local laws. These taller turbines have a generation potential of 2.1 MW each, rather than 1.65 MW, allowing the Project to construct fewer total turbines (53 turbines were proposed in the DEIS, while 37 are proposed in this SEIS). Construction of fewer turbines will reduce the visual impact of the Project as well as reducing impacts associated with soil disturbance, such as loss of agricultural lands and wetland impacts.

At release of the DEIS, wetland delineations for the Project had not yet taken place. However, a routine wetland delineation was conducted in 2015. Results of the wetland delineation were used to inform the placement of Project components so as to minimize wetland disturbance. Turbine locations, access roads, and interconnect lines have been shifted in order to avoid wetlands entirely or cross at narrow points. A Joint Wetland Permit is being sought through the NYSDEC and the USACE; conditions of this permit may require the Applicant to improve on-site wetlands or construct new wetlands in the vicinity of the Project site to mitigate for any unavoidable adverse impacts to wetlands.

As discussed in Section 3.2 of the DEIS, the Applicant conducted extensive studies to inventory the wildlife and plant resources found within the vicinity of the Project site. Several of these were updated in 2015, including a breeding bird survey, eagle observation surveys, acoustic and mist-netting bat surveys, and a rare plant survey. The results of these surveys showed that no threatened or endangered species will be harmed by development and operation of the Project. However, during its operation the Project will cause some mortality to bird and bat species through turbine and blade collision. Use by birds and bats in the Project site is similar to use at other wind farms throughout New York and the Northeastern United States. In order to determine the effect of the Project on avian and bat species, the Applicant will conduct post-construction bird and bat mortality monitoring in accordance with the *Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects* (NYSDEC, 2009). The results of the mortality monitoring will be reviewed by USFWS and NYSDEC. Based upon the results of consultations with these agencies, the need for additional mitigation measures, such as development of an adaptive management plan, will be determined.

As discussed in Section 3.2 of the DEIS and Section 2.7 of this SEIS, residual noise impacts have been conservatively estimated and are in compliance with limits established under local law. Average noise increase as calculated by methods recommended in the NYSDEC guidelines (NYSDEC, 2001) indicated that no significant adverse noise impacts will be expected under average operating conditions, although some adverse noise impact is possible from time to time. Following setbacks established in the local ordinances has minimized these noise impacts. Shadow flicker impacts have also been conservatively estimated, and most receptors of shadow flicker fall under the 30 hour per year impact threshold. For those residences that exceed this threshold, the applicant will evaluate mitigation measures with concerned landowners. Mitigation measures could include screen plantings, installation of blinds or curtains at the affected windows, or, in extreme cases, scheduled curtailment of turbines at sensitive times of day during the summer months to reduce the exposure to below 30 hours.

As discussed in Section 3.2 of the DEIS, the Applicant will develop and offer a neighbor agreement to adjacent, non-participating property owners within 2,500 feet of a turbine.

It is anticipated that impacts to archaeological resources during construction will be avoided through relatively minor modifications to the Project layout. In the event that a potentially significant archaeological resource is located within the potential area of effect, and Project facilities cannot be relocated to avoid impacts to the resource, then a Phase 2 archaeological site investigation (in consultation with NYSOPRHP) will be conducted. The mapped locations of identified archeological sites will be included on Project construction maps surrounded by a 100-foot (minimum) buffer, identified as "Environmentally Sensitive Areas" or similar, and marked in the field by construction fencing with signs that restrict access.

Mitigation during operation for potential visual impacts on architectural resources is limited, due to the nature of the Project and its siting criteria. However, mitigation measures that benefit historic properties or the public's appreciation of historic resources could be employed in the event that cultural resources mitigation is determined to be necessary. To mitigate the Project's potential adverse effect on historic resources, the Applicant intends to enter into agreements with the Towns of Bellmont and Chateaugay to fund historic preservation projects that will benefit historic resources within their communities.

As discussed in Section 3.2 of the DEIS, a Complaint Resolution Procedure, provided as Appendix P, will be established that will allow residents to document and seek solutions to problems that may arise during construction or operation of the Project.

3.3 ENVIRONMENTAL COMPLIANCE AND MONITORING PROGRAM

As discussed in Section 3.3 of the DEIS, a formal environmental compliance and monitoring program will be developed and an environmental inspector will be employed to ensure compliance with the program. Program components including planning, training, preconstruction coordination, construction and restoration inspection, ecological resource monitoring, agricultural resource monitoring, and restoration of public roads are as described in Section 3.3 of the DEIS.

4.0 ALTERNATIVES ANALYSIS

4.1 NO ACTION

Most of the information in Section 4.1 of the DEIS regarding the no action alternative remains relevant. However, there are some differences due to changes in the Project nameplate capacity from 87.5 MW to the 77.7 MW capacity that is now proposed. 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.

If the no action alternative is pursued, the following positive environmental impacts associated with adding 77.7 MW of new renewable energy capacity to the NYISO electric power system would not occur:

- A reduction of air emissions, specifically the displacement of up to 46 tons of NO_x and 121 tons of SO_2 during Project operation
- A reduction in the emission of greenhouse gases, specifically the displacement of up to 59,440 tons of CO_2 during Project operation
- A displacement of 5.4 pounds of mercury
- A displacement of 2,989 tons of lead compounds
- Loss of opportunity to develop wind resource in Project Area consistent with State Energy Plan and policies promoting the development of renewable energy projects.

Furthermore, if the no action alternative is pursued, the lack of economic development resulting from Project construction and operation would result in undesirable economic impacts. These would include loss of income from local operating and maintenance jobs of over $420,000 per year, loss of income from approximately 73 local construction jobs, loss of lease revenues for participating landowners, loss of increased revenues of local taxing jurisdictions, and loss of payments to Project neighbors.

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.

4.2 ALTERNATIVE PROJECT LOCATION

The discussion of the process by which the Applicant determined the site for the proposed Project is as described in Section 4.2 of the DEIS. 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. These factors generally include the following:

- adequate wind resource
- adequate access to the bulk power transmission system, from the standpoints of proximity and ability of the system to accommodate the interconnection and accept and transmit the power from the Project
- contiguous areas of available land
- compatible land use
- willing land lease participants and host communities
- limited population/residential development
- limited sensitive ecological issues
- compliance with local, state, and federal laws and regulations

All of the above listed factors were considered during the process of selection the location of the Project. Consequently, the current location of the Proposed Project reflects the best possible combination of these factors and is largely within the same Project Area that was defined for the DEIS.

4.3 ALTERNATIVE PROJECT DESIGN/LAYOUT

In the process of arriving at the Project layout presented in this SEIS, the Applicant has developed a number of different configurations, including those presented in the DEIS. 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. The primary criteria that are utilized in the process of siting Project facilities are listed below:

- Exposure to adequate wind resources
- Adherence to setbacks from homes, structures, roads, and property lines
- Sufficient spaces between turbines to maximize production and minimize turbulence
- Adherence to agricultural protection measures
- Setbacks from gas wells
- Avoidance of environmental, cultural, and other sensitive resources

- Avoidance of unstable land forms and other engineering constraints
- Landowner preferences
- Sensitivity to viewshed and noise issues

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 53 turbine layout of the Project presented in the DEIS.

Subsequent to the preparation of the DEIS, the applicant has continued the process of revision by conducting additional support studies 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 (which were proposed in 2008). Consequently, fewer turbines are required to achieve a similar nameplate capacity to the layouts presented in the DEIS 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 37 turbine layout presented in this SEIS. This layout represents a significant reduction in both the number of turbines, and the Project impacts footprint when compared to the layout presented in the DEIS. Most notably, two of the turbine locations proposed in the DEIS layout, which were to be located east of the Chateaugay River, have been eliminated. Otherwise, the proposed turbine locations in SEIS layout remain for the most part in close proximity to the turbine locations that were previously evaluated in the SEIS. Table 40 below presents the differences between the Project layouts evaluated in the DEIS and SEIS, with respect to Project facilities and temporary and permanent impacts. Further detail regarding these impacts is provided in Sections 2.1, 2.2, 2.3 and 2.13 of this SEIS.

Table 40. Soil Disturbance Impacts by Project Component from DEIS to SEIS[1]

	DEIS		SEIS	
	Temporary (acres)	**Permanent (acres)**	**Temporary (acres)**	**Permanent (acres)**
Turbines	226	9	151.5	14.8
Access Road	90	61	35.5	33.3
Road Improvements	No data	No data	9.2	0
Underground Collection Line	43	0	72.7	0
Overhead Collection Line	<1	0	<1	0
Substation	0	16	0.75	1.25

	DEIS		SEIS	
	Temporary (acres)	**Permanent (acres)**	**Temporary (acres)**	**Permanent (acres)**
Laydown Yard	20	0	10.0	0
O&M Building	5	5	0	0
Meteorological Tower	No data	No data	0.9	0.1
Total	**384[3]**	**91**	**281**	**50**

1The impact acreages in this table apply to the 37 turbine proposed layout. Six alternate turbine locations and associated facilities have been studied as well, although the final Project will be built with 37 turbines.
[3]The text of the DEIS in Section 2.1.2.2.1 states that of the total 323 acres proposed to be disturbed, 232 acres would be restored, indicating that 232 acres would have been the temporary impact to soils. However, totaling the DEIS impact numbers in table 2.1-4 indicates that 384 acres would have been disturbed through the DEIS Project.

Table 41. Natural Resources Impacts from DEIS to SEIS[1]

	DEIS		SEIS	
	Temporary (acres)	**Permanent (acres)**	**Temporary (acres)**	**Permanent (acres)**
Soil Disturbance[2]	384	91	280.6	49.4
Vegetation	426.5	88.6	432.6	49.5
Agricultural Land Use	400	100	265	29.6
Prime Farmland Soil	7.48	3.28	3.6	1.0
Wetlands	8.81	0.87	3.70	0.13

[1]The impact acreages in this table apply to the 37 turbine proposed layout, including associated facilities. Six alternate turbine locations and associated facilities have been studied as well, although the final Project will be built with 37 turbines.

As shown in Table 1, if the Project were to continue to use smaller turbines as proposed in the DEIS, the number of turbines required to meet the Project's stated purpose, need and benefits would increase. The use of a greater number of smaller turbines may have the effect of reducing visibility, but as discussed in Section 2.5 of this SEIS, this impact is expected to be negligible. Also, smaller turbines would require more participating parcels of land, which results in additional impacts to other resources due to ground and vegetation disturbance and particularly more wetland disturbance and impacts (more project roads, more electrical lines and additional land disturbance).

As noted above, the layout represents significant effort in analyzing the development potential of the site, landowner participation, wind resource assessment and a review of the site's zoning constraints. The current layout represents 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.

Finally, the Applicant has proposed 43 turbine sites but ultimately proposes to develop 37 turbines. The alternative turbine sites were identified based on the siting constraints and factors discussed in this section. The Applicant selected more sites than proposed turbines to provide additional flexibility in choosing sites that balance the Applicant's goals with respect to energy generation, but also avoiding and minimizing potential environmental impacts. The final selection of the 37 turbines to be constructed from the 43 turbine locations evaluated herein will be determined prior to construction. It is also worth noting that the Applicant has proposed 2.1 MW turbines to maximize potential energy production within the constraints of their approved interconnection agreement while minimizing the number of proposed wind turbines.

4.4 ALTERNATIVE ENERGY PRODUCTION TECHNOLOGIES

An extensive discussion of alternative energy production technologies is provided in Section 4.4 of the DEIS and is still fully relevant to this SEIS. 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 currently operate any coal facilities that can be co-fired with biomass and no portfolio of hydroelectric facilities that can be developed or expanded. Furthermore, the tidal energy, biofuel, utility-sized solar, and biogas sectors are not well developed and not necessarily suitable for power generation in New York.

4.5 ALTERNATIVE TURBINE TECHNOLOGY

A discussion of the various wind turbine technologies considered by the Applicant for the Project is provided in Section 4.5 of the DEIS and is still fully relevant to this SEIS. A variety of wind turbine technologies such as vertical axis turbines, two-bladed turbines, and significantly smaller turbines have been evaluated. However, the three-bladed, upwind, horizontal axis, propeller-type wind turbine has been determined to be the most reliable and commercially viable technology for the application of utility scale electrical power generation.

Since the preparation of the DEIS, the Applicant has revised the wind turbine model being considered for the Project from the Vestas V-82 to the Gamesa G114-2.1. This SEIS assumes that the Project will use Gamesa G114-2.1 WTGs.

As shown in Table 1 in Section 1.0 (Project Description) of this SEIS, the Gamesa G114-2.1 is larger wind turbine than the Vestas V-82 with respect to hub height, rotor diameter, and total height. Assuming use of the Gamesa G114-2.1 turbine, the anticipated tower height for the Project, or "hub height" (height from foundation to the rotor hub), is approximately 93 meters (305 feet). The Gamesa G114-2.1 has a rotor diameter of 114 meters (374 feet), resulting in a total height of 150 meters (492 feet). The Gamesa G114-2.1 also has a higher production capacity than the Vestas V-82. 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 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. To address the fact that the installation of the Gamesa G114-2.1 would exceed local height restrictions, the Applicant has applied for waivers pursuant to Article V of the Town of Chateaugay Wind Energy Facilities Local Law No. 7 of 2006 and Article V of the Town of Bellmont Wind Energy Facilities Law No. 2 of 2006 (See Section 2.13.2.1.2 of this SEIS).

4.6 ALTERNATIVE PROJECT SCALE AND MAGNITUDE

A discussion regarding alternative scales and magnitudes considered for the Project is provided in Section 4.6 of the DEIS and is still relevant. Since the preparation of the DEIS, the Applicant has reduced the size of the Project from 53 wind turbines to 37 turbines as presented in this SEIS. Because the currently proposed Gamesa G114-2.1 turbine has a higher power output than the previously proposed Vestas V-82, the project power output will remain at a similar scale to that described in the DEIS. The current SEIS layout of the Project is considered by the Applicant to achieve a desirable balance between economic viability, limited impacts to environmental resources, and electricity production goals.

4.7 ALTERNATIVE PROJECT TIMING

The discussion of the factors and events that dictate the timing of the development of the Project provided in Section 4.7 of the DEIS remains generally relevant, with the exception that the earliest date Project construction may begin is early 2016. Constraints on the timing of Project construction include that clearing is expected to take place in the winter in order to avoid and minimize impacts to birds and bats that inhabit the trees in the summer. Therefore, Project construction is expected to begin in the winter of 2016. Factors determining when the Project can begin 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.

As stated in the DEIS, the Jericho Rise Project cannot be constructed until this SEQR process is complete and the applicable federal, state and local permits have been obtained. A preliminary construction schedule for the Project is provided in Table 2 in Section 1.6 of this SEIS.

4.8 ALTERNATIVE MITIGATION STRATEGIES

A discussion regarding alternative mitigation strategies considered for the Project is provided in Section 4.8 of the DEIS, and further detailed in Section 4.8 of this SEIS. In addition, Section 2.0 of this SEIS describes the anticipated impacts and corresponding proposed mitigation measures for each environmental resource based on the currently proposed Project layout. The Applicant has paid close attention to defining each environmental resource and land use constraint and siting the Project facilities so as to avoid or minimize impacts to them. For any resource or land use constraint areas that cannot avoided, mitigation measures have been developed by the Applicant in coordination with relevant agency staff, local officials, and affected stakeholders. A wide range of options were considered by the Applicant when developing these mitigation measures. The mitigation plan that has resulted from these efforts minimizes impacts both during construction and operation of the Project, and allows for flexibility to adapt to unforeseen impact conditions that may be encountered.

5.0 IRREVERSIBLE & IRRETRIEVABLE COMMITMENT OF RESOURCES

The anticipated irreversible and irretrievable commitment of resources associated with the proposed Project is largely as described in Section 5.0 in the DEIS. The reduction in the number of proposed wind turbines from 53 for the DEIS to 37 for this SEIS has resulted in a slight decrease of the total acres of land that would be developed that couldn't be used for other purposes (from 400 acres in the DEIS to 383 acres in this SEIS).

6.0 GROWTH INDUCING IMPACTS

Since publication of the DEIS, a number of wind farm facilities have become operational in the region, and the industry is well established locally. The closest operational wind farm is the Noble Chateaugay Windpark, located just east of the Project Site in the Town of Chateaugay. Other wind projects nearby include EDPR's Marble River Windfarm as well as Noble's Clinton, Ellenburg, and Altona facilities in Clinton County. Revenue from taxes, payments to landowners, and economic activity from construction, operation, and maintenance activities provide economic/financial benefits of these to local communities that encourage economic development/stability, and it is likely that impacts from the Jericho Rise Wind Farm would be similar.

Growth inducing impacts discussed in the DEIS that remain accurate include short term increases in economic activity during construction, a small number of long term jobs created, local infrastructure improvements that could support unrelated economic development, and economic benefits to participating landowners. Increased revenue for farms hosting wind turbines could allow them to stay in operation and stabilize income in less productive years. Tax revenue paid to the Towns of Chateaugay and Bellmont could have positive impacts by allowing for reduced local tax rates and improving schools and other services. All of these impacts could result in modest increases in local population and associated economic development. However, based on experience with other operating wind projects in the area, the level of growth is not anticipated to be substantial enough to significantly change patterns of land use or demand for community services and facilities.

Although the DEIS indicates that tourism could be a potential benefit, current conditions indicate that the Jericho Rise Wind Farm is not likely to draw significant tourism. Neither Franklin County nor Clinton County lists wind facilities as a tourist attraction, and data on how many people have traveled to the region to see wind farms do not exist. The DEIS asserts that the effects from tourism could be short-lived, as the novelty of wind energy decreases and wind farms become more common. As the Jericho Rise Wind Farm is neither the first, nor the largest, of its kind in the area, it is unlikely that this Project would draw additional tourists to the area.

7.0 CUMULATIVE IMPACTS & BENEFITS

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.

Where individual effects of the Project may interact with other effects of the Project, such potential cumulative impacts have been individually addressed in Section 2 of this SEIS.

This section addresses the potential cumulative impacts that may arise from interactions between the impacts of the Project and the impacts of other projects. In general, cumulative impact analysis of external projects is required where the external projects have been specifically identified and either are part of a single plan or program, or there is a sufficient nexus of common or interactive impacts to warrant assessing such impacts together. Some cumulative impacts are the simple additive effect of the projects (i.e., each will disturb a certain amount of ground surface, wetlands, or natural communities). These additive impacts can be quantified by simply tallying the total impacts resulting from each project, to the extent that such information is known and has been publicly presented. Certain other cumulative impacts may not simply be additive and therefore need a certain level of further analysis. The subsections below discuss whether there are identified projects for which a cumulative impact analysis is required, and assess the extent to which the impacts of such projects will be cumulative with the impacts of the Jericho Rise Wind Farm.

7.1 OTHER DEVELOPMENT 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 review and approval status of projects that are still in the planning and development phase is highly variable, ranging from preliminary site investigations to those with completed system reliability impact studies (a requirement of the NYISO), detailed project plans, and landowner agreements. The NYISO oversees the New York Transmission System (the "Grid") and has in place a process for permitting the interconnection of new electric generating facilities with the Grid. Consequently, consideration of a project's status in the NYISO review process is a helpful measure for determining whether a proposed project may or may not be built. The NYISO reviews projects in three main phases: submittal of an interconnection request, preparation of a feasibility study, and completion of a system reliability impact study. This review process separates projects, initially by feasibility to connect to the Grid through a selected transmission facility. Proposed projects in any phase of project review by the NYISO are identified on a comprehensive queue listing maintained by NYISO on their website (http://www.nyiso.com). It is reasonable to assume that wind power projects with in-progress system reliability

impact studies and with upcoming proposed operation dates may be considered 'proposed' or 'future' projects for the purposes of cumulative impact analysis.

The DEIS selected six wind power projects within 30 miles[2] of Jericho Rise Wind Farm to be reviewed for potential cumulative impacts due to their proximity to the Project and similar potential socioeconomic and environmental impacts. At the time the DEIS was released, these six projects were all in various stages of the permitting or construction process. Five of these projects are now operational. Table 42 below summarizes the current status of each of the six projects addressed in the DEIS.

Table 42. Current Status of Wind Projects Considered for Possible Cumulative Impacts

Project Name	Status	MW	Approximate Distance from Project
Noble Chateaugay	Operational 2009	107	1.1 miles east
Noble Clinton	Operational 2008	102	4.3 miles east
Noble Ellenburg	Operational 2008	81	4.3 miles east
Marble River	Operational 2012	216	7.5 miles northeast
Noble Altona	Operational 2009	97.5	20.3 miles southeast
Wind Horse Beekmantown	Withdrawn 2013	19.5	22.5 miles southeast

Sources: NYISO, 2015; NYSDEC, 2015e.

As indicated above in Table 42, the DEIS identified the Wind Horse Beekmantown Wind Farm as possibly contributing cumulative impacts. However, that project was withdrawn from the NYISO queue in March 2013, and is no longer being proposed. The NYISO queue currently includes two additional potential projects in the region: EDPR's North Slope Wind Project in Franklin County and Invenergy Wind Development's Bull Run Wind Project in Clinton County, which together represent approximately 400 MW of additional wind generation. However, neither of these projects have system reliability impact or feasibility studies, or upcoming proposed operation dates. There are currently no active projects listed in the NYISO queue that could be considered proposed or future projects for the purposes of cumulative impact analysis (NYSISO, 2015). Consequently, this evaluation is limited to the potential cumulative impacts of the Jericho Rise Wind Farm and the five operational projects identified above. Because each of the five operational projects was analyzed as part of the cumulative impacts analysis presented in the DEIS, the anticipated cumulative impacts remain quite similar.

[2] In the DEIS, distance from the Project was measured from a central point of the Jericho Rise Project Site to the closest boundary of each operational project.

7.2 WETLANDS

Direct impacts to wetlands will include excavating, placing fill in wetlands, and clearing wetland vegetation. Indirect impacts to wetlands can include increased erosion and sedimentation. The majority of direct wetland impacts associated with the construction of wind farms are typically temporary, with impacted wetlands restored following construction. Since the five projects considered in this cumulative impacts analysis are all currently operational, with construction variously completed between 2008 and 2012, cumulative temporary and indirect impacts to wetlands are not anticipated.

Project construction associated with the 37 proposed turbines and associated infrastructure will result in permanent wetland impacts (i.e., conversion to built facilities) of 0.13 acres, while the six alternate turbines would result in 0.05 acres of permanent wetland impact. When added to the permanent impacts incurred at the five operating wind energy facilities, these Project impacts contribute to minor cumulative wetland impacts. However, these impact numbers are very small in the context of the amount of wetlands present throughout the region. Furthermore, as discussed in Section 7.2 of the DEIS, permanent disturbance to wetlands is regulated, by both state and federal agencies. All the wind projects included in this cumulative impacts analysis went through an iterative siting process to avoid and minimize wetland impacts, and implemented compensatory wetland mitigation plans, as required, to prevent the net loss of wetlands. Therefore, construction and operation of the proposed Project and five operational wind projects in Clinton and Franklin Counties are not expected to result in significant cumulative adverse impacts to wetlands.

7.3 WILDLIFE

As discussed in Section 2.3 of the DEIS and SEIS, construction and operation of the Project is not expected to significantly affect most wildlife species. Limited mortality may occur to less mobile species such as reptiles, amphibians, and small mammals. However, most species are expected to avoid areas of active construction in favor of suitable adjacent habitat. Temporarily displaced wildlife are expected to return to the area after the completion of construction activities. Some wildlife habitats would be permanently converted to built facilities, causing a localized reduction in habitat. However, similar suitable habitats are widely available in areas immediately adjacent to the Project site, and significant adverse effects to the quality or quantity of wildlife habitats are not expected to occur as a result of the proposed Project.

Similar impacts to wildlife (i.e., limited mortality, temporary displacement, and localized reductions in habitat) likely also occurred at each of the other five projects considered in this cumulative impacts analysis. However, as indicated in Section 7.3 of the DEIS, the temporal differences in the project timelines ameliorate the cumulative effects of construction-related impacts. Permanent loss of wildlife habitat caused by development of the proposed Project and

five operational projects is minimal relative to the coverage of similar habitats throughout the region. None of the five projects that have already been constructed have individually caused significant impacts to wildlife or wildlife habitats, and the impacts don't collectively interact with or increase the extent of the impacts from other projects. Consequently, significant adverse cumulative effects are not anticipated from the addition of the Jericho Rise project.

Potential cumulative impacts to birds and bats are discussed below in Section 7.4, while potential cumulative impacts to threatened and endangered species are discussed in Section 7.5.

7.4 BIRDS AND BATS

Since the five projects considered in this cumulative impacts analysis are all currently operational, with construction variously completed between 2008 and 2012, no cumulative construction-related impacts to birds and bats are anticipated from the addition of the Jericho Rise project.

Collision with spinning turbine blades is known to cause bird and bat fatalities, and the operation of numerous wind energy facilities can cause cumulative impacts. These cumulative impacts resulting from operating facilities can be approximated by adding the estimated fatalities from each wind farm.

Cumulative Impacts to Birds

As discussed above in Section 2.3, results from post-construction monitoring studies at nearby wind projects are generally the best predictor of collision mortality at a proposed wind power site. Since release of the DEIS in 2008, there have been additional studies of operating wind projects in the immediate vicinity of the Jericho Rise Project site. Mortality at the five operational projects included in this cumulative impact assessment ranged from 0.83 to 2.66 birds/MW/year, for an average impact of 1.62 birds/MW/year (see Table 20 in Section 2.3.2.2 of this SEIS). Based on these fatality numbers, it is anticipated that the 77.7 MW Jericho Rise Wind Farm will cause the deaths of between 65 and 207 birds/year, with an average fatality rate of 126 birds/year.

According to the NYSDEC (2015e), the Noble Chateaugay facility is 107 MW, Noble Clinton is 102 MW, Noble Ellenburg is 81 MW, Noble Altona is 97.5 MW, and Marble River is 216 MW. When combined with the 77.7 MW Jericho Rise Wind Farm, the cumulative generating capacity totals 681.2 MW. It is anticipated that, collectively, the proposed Project and five operational projects in Clinton and Franklin Counties will cause the death of between 566 and 1,812 birds/year, with an average fatality rate of 1,104 birds/year.

Recent studies looking at the regional and national cumulative effects of passerine mortality caused by wind turbine operation shows that this level of mortality does not have a significant effect on songbird populations. Small passerines are the most abundant bird group in the United States and Canada, as well as the most common bird fatalities from turbine collisions at wind energy facilities. Erickson et al. (2014) developed bias-corrected standardized songbird fatality rates from over 110 studies across the continental United States and Canada. Using species composition information from those studies, and estimates of cumulative mortality from all wind energy projects in the United States and Canada, it was concluded that wind turbine-caused mortality had no measurable impact on any small passerine species populations.

A similar approach was also used to look at potential impacts of wind energy on a regional scale in the Northeast (Erickson et al., 2015). Using the fatality rates from wind energy reported in the region, the impacts to small passerine populations in Bird Conservation Region (BCR) 14 were evaluated. BCR 14 is the Atlantic Northern Forest region and covers all of Maine, New Brunswick, and Nova Scotia, contains parts of New Hampshire, Vermont, Quebec, and the Adirondack Mountains in New York. Using the estimator bias adjusted fatality rates, regional estimates of small bird fatalities were approximately 2,500 to 3,500 birds per year. The regional impact of mortality due to collisions with wind turbines on bird populations was extremely low relative to the size of the BCR 14 bird populations. Most of these species are migratory and may reside in areas outside BCR 14, so this analysis is likely an overestimate of the potential for population effects, because only the resident population within BCR 14 was included. The highest impact was an estimated 0.06% of the northern mockingbird (*Mimus polyglottos*) population (five fatalities in a population of 9,000). Prairie warblers (*Setophaga discolor*) and yellow-throated vireos (*Vireo flavifrons*) had an estimated impact to 0.03% of the population (five fatalities in populations estimated at 16,000), and pine warblers (*S. pinus*) had an estimated impact to 0.03% of the population (49 fatalities in a population estimate of 180,000). All other species impacted in the region were less than 0.01% of the population. Red-eyed vireos (*V. olivaceus*) had an estimated impact to 0.006% of the population (689 fatalities in a population of 12,000,000).

Fatality estimates for raptor species have been developed as well. Using similar methods to those used in Erickson et al. (2014), it was determined that sharp-shinned hawk (*Accipiter striatus*) and red-tailed hawk (*Buteo jamaicensis*) were the raptor species affected most: approximately 0.2 to 0.3% of their populations suffer annual mortality from collisions with wind turbines in the United States and Canada. Impact estimates for all other raptor species were less than 0.2%. While these ratios of fatality estimates to population sizes are higher than for the small passerines, they are still quite low relative to the overall population size and typical annual mortality for raptor populations (Erickson et al., 2015).

Impacts to Bats

As with birds, results from post-construction monitoring studies at nearby wind projects are generally the best predictor of bat mortality at a proposed wind power site. Since release of the DEIS in 2008, there have been additional studies of operating wind projects in the immediate vicinity of the Jericho Rise Project site. Mortality at the five operational projects included in this cumulative impact assessment ranged from 0.71 to 4.5 bats/MW/year, with an average impact of 3.21 bats/MW/year (see Table 19 in Section 2.3.2.2 of this SEIS). Based on these fatality numbers, it is anticipated that the 77.7 MW Jericho Rise Wind Farm will cause the deaths of between 56 and 350 bats/year, with an average fatality rate of 250 bats/year.

The cumulative generating capacity of the Jericho Rise Wind Farm and the five projects currently operating nearby totals 681.2 MW. Collectively, it is anticipated that the proposed Project and five operational projects in Clinton and Franklin Counties will cause the death of between 484 and 3,066 bats/year, with an average fatality rate of 2,187 bats/year. There is very little information related to the population sizes of common bats species. Information exists on population size for federally listed bats (e.g., Indiana bat, Virginia big eared bat) due to population monitoring efforts for these species. However, there are no comparable efforts for the more common bat species that are impacted by wind turbines. The most common bats found as fatalities at wind turbines (hoary bat, eastern red bat, and silver haired bat) have large ranges that cover a substantial portion of North America. Because these species are considered migratory, bats found at any given wind project may not be from the local populations near that wind project. The effect of the loss of the cumulative number of bats on the populations is unknown.

7.5 THREATENED AND ENDANGERED SPECIES

Construction of the proposed Project will not overlap with construction of any of the five operational projects considered in this cumulative impacts analysis. Construction on these projects was completed between 2008 and 2012. Therefore, no cumulative construction impacts to threatened, endangered, or sensitive species are anticipated.

Bald eagle use in the Project site is very low, and only transient individuals utilize the Project site. Golden eagles are also rare within the Project site, with only one migratory individual observed in 2007 surveys and none observed in 2015 surveys from January to June. Therefore, these two species are unlikely to be adversely affected from operation of the Project, and cumulative impacts are not anticipated.

An additional 13 bird species listed as threatened, endangered, or of special concern could occur in the vicinity of the Project site. Seven of these species were not observed during any of the many avian surveys conducted onsite, and are thought to only occur onsite as transient individuals, while six of these species were observed within the Project

site in 2007 and/or 2015. Four of the six sensitive bird species observed onsite were found in such low numbers within the Project site they are not anticipated to be adversely affected by Project operation. Since adverse Project impacts are not anticipated, cumulative impacts will also not occur to these species. Two of the 13 rare birds occur more frequently and appear to breed at the Project site: northern harrier and sharp-shinned hawk.

Northern harrier, a state-listed threatened species, exhibits moderate use of the Project site. However, harrier behavior makes it unlikely to experience collision mortality. The DEIS cited literature suggesting that breeding harriers are likely to stay close to the ground, out of the turbine collision zone, and that northern harrier mortality has consistently been documented as low at operating wind farms. As discussed in Section 2.3.2.2 of this SEIS, more recent studies confirm these findings. Therefore, although this species is present within the study area, Project operation is not expected to have adverse impacts. Northern harriers at the operating wind projects in the area also fly close to the ground and thereby avoid collision mortality. Consequently, no cumulative impacts to this species are anticipated.

The sharp-shinned hawk is listed as a species of special concern in New York State. It was observed in relatively low numbers during Project site surveys; however, breeding does occur within the Project site. The sharp-shinned hawk favors forested habitats, and typically hunts in dense vegetation. Therefore, although displacement from forested habitats is possible due to forest clearing, collision fatalities resulting from Project operation are unlikely for the sharp-shinned hawk. The same is true for any sharp-shinned hawks that may be present at other operational wind energy facilities in Franklin and Clinton Counties, and therefore, cumulative impacts to this species are not anticipated.

Two species of bat were identified by NYNHP as of concern for the Project site: the northern long-eared bat (threatened) and the eastern small-footed bat (special concern). Through acoustic and mist-netting surveys conducted in 2007 and 2015, three calls of northern long-eared bat identified within the Project site. Possible calls of eastern small-footed bat were identified by the acoustic analysis software; however, further review of the acoustic data could not confirm the presence of this species. The results of the surveys indicate that these species may be present but in very low numbers. Given that the density of these species in the Project is very low, no impacts to the species are anticipated as a result of Project operation. Therefore, cumulative impacts to northern long-eared bat and eastern small-footed bat are also not anticipated.

The blue-spotted salamander, a species of special concern, was identified by the New York Amphibian and Reptile Atlas as occurring in the vicinity of the Project site, and suitable upland and wetland habitat for this species occurs on-site. Impacts will be minimized by avoiding areas of mature forest and wetlands to the extent practicable. The Herp Atlas has no records of blue-spotted salamander occurring in the Chateaugay, Brainardsville, Churubusco, Ellenburg

Center, Ellenburg Depot, Ellenburg Mountain, or Jericho quads where the five operating wind project considered in this analysis are located (NYSDEC, 2007a). Therefore, no cumulative impacts to this species are anticipated.

As discussed in Section 2.3.1.2 of this SEIS, no RTE plant species were observed on the Project site during a comprehensive survey of suitable habitat within the disturbance footprint of the Project. Therefore, the Project is not expected to adversely impact RTE plant species, and no cumulative impacts to rare plants are expected.

7.6 AESTHETIC AND VISUAL RESOURCES

Based on a comparison of the simulations prepared for the original Project, with those prepared for the Revised Project, it appears that overall Project visibility and visual impact will be comparable to, or slightly reduced from that reported in the original VIA and discussed in Section 2.5 of the DEIS. The increased height of the currently proposed turbines is essentially imperceptible, and to the extent that it has any effect, it is offset by the wider spacing and reduced number of turbines currently proposed. The overall conclusions presented in the VIA and DEIS remain valid. The predominant visual character of the area is that of a working agricultural and forest landscape. While there are localized exceptions, the proposed Project generally appears to be visually compatible with this type of a visual setting.

Locations with foreground (less than 0.5 mile) views of the Project turbines would likely experience moderate to high visual impacts. Even with some tree screening in the immediate foreground, turbines would likely be visible and would create contrast with the existing landscape. Project impacts would be higher at locations where the existing visual quality is high and the viewer exposure/sensitivity is high, and would tend to be moderate elsewhere. Impacts at locations with mid-ground (0.5 to 3.5 miles) views of Project facilities would typically range from low to moderate, depending on the degree of screening and the existing level of visual quality. The Project would have low to negligible impact on visual quality in areas with background (greater than 3.5 miles) views of the Project facilities because at such distances the turbines would typically be well screened, blend in with the sky, and/or not be prominent features of the landscape.

Because the overall Project visibility and visual impact will be so similar to that reported in the original VIA, the discussion of cumulative visual impacts presented in Section 7.6 of the DEIS remains largely valid. The updated visual simulations presented in Figure 12 illustrate the existing views in the vicinity of the Project, which include existing Noble Chateaugay turbines where visible, along with the views that will occur after the revised Project is built (also including the existing turbines). Some cumulative visual impacts may occur at certain viewpoints that will have visibility of both Project turbines and existing turbines, where views of a greater number of turbines will be available than if the project were considered alone. As shown in Table 42 above, the Noble Chateaugay project is located in close proximity to

the proposed Project site, so some viewpoints will have foreground views of both Projects. The four remaining operational project are located far enough away so as to contribute only negligibly to background or long distance views.

7.7 SOUND

Construction of the proposed Project will not overlap with construction of any of the five operational projects considered in this cumulative impacts analysis. Construction on these projects was completed between 2008 and 2012. Therefore, no cumulative impacts due to construction noise are anticipated from the addition of the Jericho Rise project.

As described in Section 7.7 of the DEIS, it was determined that most of the projects considered in this cumulative impacts analysis (see Table 42) are at a sufficient distance from the Project that they would not contribute to cumulative noise impacts on potentially sensitive receptors. Only the Noble Chateaugay project is close enough to potentially impact the same receptors.

Hessler Associates, Inc. conducted a new noise impact assessment for the revised Project (see Appendix R), which is summarized in Section 2.7 of this SEIS. The study consisted of two phases: a background sound level survey and a computer modeling analysis of future turbine sound levels. Because the background sound monitoring was conducted in May 2015, the measured ambient sound levels include any noise from the operating Noble Chateaugay turbines. In the second phase of the study, an analytical noise model was used to predict the sound levels associated with the Project. The modeling study, carried out per the NYSDEC guidelines, showed that the region where noise impacts might occur (i.e., where an increase of 6 dBA or more is predicted) does not encompass any homes based on the "typical" measured background levels (see Plot 2 in Appendix R). The modeling analysis also shows that full compliance is expected with the local laws in Chateaugay and Bellmont relating to wind energy facilities (see Plot 3 in Appendix R). Although numerous conservative assumptions were built into the model and the actual Project sound levels are expected to be lower than the predicted levels most of the time, a mildly adverse reaction may be possible from some residents. However, significant adverse impacts are not expected as a result of the construction or operation of the proposed Project.

Cumulative noise impacts could occur if sound generated by the proposed Project turbines combines with sound generated by the Noble Chateaugay turbines to produce higher sound levels than either project would when operating alone. The closest Noble Chateaugay turbines are located east of the Project Site, in an active agricultural field between the Chateaugay River and State Route 374. There are a small number of receptors along River Road that could experience minor cumulative noise impacts, due to their location between the two projects. However, as

indicated in the DEIS, the cumulative sound levels from both Projects operating concurrently will not exceed the noise limits proscribed in the local laws relating to wind energy facilities.

7.8 TRAFFIC AND TRANSPORTATION

The Noble Ellenburg and Clinton wind projects became operational in 2008, while the Noble Altona and Chateaugay wind projects became operational in 2009, and the Marble River wind project became operational in 2012 (NYSDEC, 2015e). Since construction of these projects has been completed for several years, no cumulative impacts to traffic and transportation routes are expected as a result of Project construction.

During Project operation, a limited number of trucks will access the Project Site for service and maintenance. As indicated in DEIS Section 7.8, road traffic in the vicinity of the Project Site is below capacity and traffic conditions are light. No adverse cumulative impact is anticipated on local traffic and transportation due to operation of the Project.

7.9 LAND USE AND ZONING

Since the five projects considered in this cumulative impacts analysis are all currently operational, with construction variously completed between 2008 and 2012, no cumulative construction-related land use impacts are anticipated from the addition of the Jericho rise project.

Regional and Local Land Use and Community Character

The proposed Project is generally consistent with land use patterns in the Towns of Bellmont and Chateaugay. Although the revised Project will alter the appearance of the landscape, this effect will be less than anticipated in the DEIS, as the area already hosts several working wind farms. The increase in the abundance of wind turbines in the region when considering the proposed Project and operational projects collectively represents a cumulative land use impact. However, the agricultural and rural nature of the landscape will not significantly change as a result of Project operation.

Zoning and Other Applicable Laws

As described above in Section 2.13, the Project complies with setbacks and other requirements of the local ordinances, with the exception of the 400-foot height limit. A waiver is being requested that would allow turbine blade tip to reach 492 feet. Fewer taller turbines can maintain Project benefits while reducing impacts associated with Project operation, including visual impacts, noise impacts, and long-term conversion of agricultural land and natural communities to developed facilities. The change in the height of the turbines approximately 92 feet from what is currently permitted under the local laws will not produce an undesirable change in the character of the neighborhood or a detriment to

nearby properties. Moreover, the potential visual impact associated with the increase in turbine height is unlikely to be perceptible from most public vantage points (see Section 2.5 and Appendix M). Finally, the proposed waiver will not have an adverse effect or impact on the physical or environmental conditions in the neighborhood or nearby community.

The five operational wind energy facilities in Franklin and Clinton Counties were also subject to compliance with various local laws and zoning ordinances. These laws effectively minimize land use and zoning impacts. As a result, no significant cumulative impacts to zoning and local laws are anticipated.

Agricultural Land Use

Permanent Project impacts to agricultural land have been minimized by siting facilities along the edges of agricultural fields when possible and adhering to the Agricultural Protection Guidelines set forth by NYSDAM (see Appendix B). Overall, it is anticipated that the Project will have a long-term positive impact on agricultural land use, since the presence of the wind turbines can help keep land in agricultural use. This benefit is also likely at the other operational wind energy facilities in the areas, so cumulative impacts to agricultural land use are generally beneficial.

Future Land Use

The proposed Project and operational wind energy projects in the region should not interfere with future development (i.e., residential, agricultural, or any other type of development), provided the proposed use complies with the appropriate setbacks established in local law. When taken collectively with the five operational projects in Clinton and Franklin County, the proposed Project contributes to the trend of increased development of wind energy in the region. This trend could continue with the potential future development of additional wind energy projects in the early planning stages, such as the North Slope Wind and Bull Run Wind projects discussed above in Section 7.1.

7.10 SOCIOECONOMICS

Since the five projects considered in this cumulative impacts analysis are all currently operational, with construction variously completed between 2008 and 2012, no cumulative construction-related socioeconomic impacts are anticipated from the construction of the Jericho Rise project.

Population and Housing

The long-term employment associated with Project operation is not large enough to have a significant impact on local population or housing characteristics. Consequently, no cumulative impacts to population and housing are anticipated.

Property Values

As described above in Section 2.9, evidence on the impact of wind farms on residential property values is conflicting. A few reports, including a study from the North Country and one from the United Kingdom, suggest that wind facilities have deleterious effects on property values of nearby residential homes (e.g., Heintzelman & Tuttle, 2012; Gibbons, 2014). However, the evidence is not conclusive. There is also a larger body of evidence demonstrating that operation of wind farms does not have an adverse impact on property values (e.g., Hoen et al., 2009; Hinman, 2010; Carter, 2011; Atkinson-Palombo & Hoen, 2014). Although there is some public perception that wind farms can reduce property values, statistical data do not show that this is the case. Given the numerous studies that show property values are not adversely impacted by wind farms, impacts to local property values are not anticipated due to operation of the Project. Therefore, no cumulative effects are anticipated.

Economy and Employment

As described in Section 2.9, it is anticipated that operation of the revised Project will generate five full-time, local jobs with wages totaling $420,000 dollars annually. Local revenue and supply chain spending will create additional jobs, as will the induced impacts as a result of increased spending from the aforementioned jobs created. Similar economic benefits are associated with the other operational wind energy facilities in the area. Consequently, the regional economy will experience cumulative benefits from the proposed Project and other wind energy projects in the area.

Municipal Budgets and Taxes

The proposed Project and the five operational wind energy projects in Clinton and Franklin Counties will have a cumulative beneficial impact on municipal budgets and taxes since the taxing jurisdictions will receive additional revenues from the projects in the form of PILOT revenues.

7.11 CULTURAL RESOURCES

No impacts to archaeological resources are anticipated from the proposed Project. The revised Project layout has been sited to avoid all impacts to the archaeological sites documented in the 2008 Phase 1B survey. A supplemental Phase 1B archaeological survey for the SEIS Project layout was conducted, developed based on consultation with the SHPO. The methods and results of the supplemental Phase 1B archaeological survey are summarized in Section 2.6 of this SEIS. The Applicant is reviewing and revising the Project layout as necessary to avoid, to the greatest extent practicable, impacts to any archaeological sites that may be recommended as eligible for the NRHP. Based on the work performed to date, the Applicant expects that few such adjustments will be necessary and any such adjustments will be minor. Since no Project-specific impacts are expected, the Project is not anticipated to contribute to any cumulative impacts on archaeological resources.

Project construction is not anticipated to have any effect on historic-architectural resources. No direct physical impacts to historic-architectural resources will occur as a result of the Project. Furthermore, construction of the five operational wind projects considered in this cumulative impacts analysis was completed between 2008 and 2012. Therefore, no construction-related cumulative impacts to historic-architectural resources are anticipated.

With regard to operational impacts, the NYSOPRHP determined in 2008 that the Project will have an adverse impact on historic-architectural resources. The reduction of the number of proposed turbines in the current SEIS layout does serve to reduce the potential visual impact somewhat relative to the Project layout that was evaluated in the DEIS and presented in the 2008 report to NYSOPRHP. However, the overall visual effect of the Project is not anticipated to be significantly different than that described in the DEIS. Therefore, NYSOPRHP's determination of an adverse effect remains valid for the current configuration of the Project. The potential effect resulting from the introduction of wind turbines into the visual setting for any historic or architecturally significant property is dependent on a number of factors including distance, visual dominance, orientation of views, viewer context and activity, and the types and density of other modern features in the existing view. As described in Section 2.6, the Applicant is currently consulting with NYSORPHP staff to evaluate the SEIS Project Layout's potential effect on historic-architectural resources. EDR conducted a field review of historic properties within the 5-mile study area between August 12 and August 14, 2015. The historic resources review included site visits to 120 properties. As described in EDR's work plan (see Appendix O), photographs and notes were collected to allow for re-evaluation of each property's potential eligibility for the NRHP. This information is being provided directly to NYSOPRHP via their Cultural Resources Information System (CRIS) website. In correspondence dated September 15, 2015 (Bonafide, 2015), NYSOPRHP restated their determination of an adverse effect for the current configuration of the Project.

The visual simulations presented in Figure 12 illustrate the existing views in the vicinity of the Project, which include the Noble Chateaugay turbines where visible, along with the views that will occur after the revised Project is built (also including the Noble Chateaugay turbines). Some cumulative visual impacts may occur at certain viewpoints that will have visibility of both Project turbines and Noble Chateaugay turbines, where a greater number of turbines will be available than if either project were considered alone. Cumulative impacts may occur for those historic-architectural resources that are adversely impacted by the proposed Project, if they also have views of the Noble Chateaugay turbines. Where both projects are visible from a historic property, the increased number of turbines visible from such resources, relative to either project considered alone, could increase the visual dominance of modern features in that site's visual setting.

The Applicant will review potential cumulative impacts with the SHPO and Lead Agencies to develop a mitigation strategy that addresses impacts to historic-architectural resources, including cumulative impacts. To mitigate the Project's potential adverse effect on historic resources, the Applicant intends to enter into agreements with the Towns of Bellmont and Chateaugay to fund historic preservation projects that will benefit historic resources within their communities. Preliminary suggestions for potential mitigation projects are provide din Section 2.6.3.2.2 of this SEIS. As noted above, the Applicant will continue to consult with NYSOPRHP and the Lead Agencies to define appropriate mitigation projects that will benefit the local community.

7.12 ENVIRONMENTAL BENEFITS

Positive cumulative impacts associated with the combined impacts of the Jericho Rise Wind Farm and other operational projects nearby are related to air quality improvements through the displacement of other polluting energy sources with wind power, and better meeting the state's RPS 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.

7.13 TRANSMISSION CAPACITY

As indicated in the DEIS, the proposed Jericho Rise Wind Farm and the five operating wind energy facilities in Clinton and Franklin Counties will collectively absorb a substantial portion of the capacity on the 203 kV Willis Plattsburgh lines.

8.0 EFFECTS OF USE & CONSERVATION OF ENERGY RESOURCES

As described in Section 8.0 of the DEIS, the Project will have significant, long-term beneficial effects on the use and conservation of energy resources, particularly as a contributor to meeting federal, state, and international energy policies and initiatives. This section provides information about new energy policies and initiatives that have been promulgated since the release of the DEIS and considers Project consistency with such policies. A discussion of the beneficial impacts of the Project in mitigating climate change is provided in Section 2.4.

The Intergovernmental Panel on Climate Change (IPCC) continues to review the science regarding climate change, and they released the Fifth Assessment Report in 2013. The report considers new evidence of climate change since the Fourth Assessment Report of 2007, and again concludes that warming of the climate system is unequivocal and that further warming will cause "severe, pervasive, and irreversible impacts for people and ecosystems" (IPCC 2013, 2014). The United Nations Framework Convention on Climate Change and the Kyoto Protocol continue to provide global targets for emissions reductions. Increasing the use of pollution-free renewable energy as a replacement for existing sources that contribute to greenhouse gases is imperative to meeting internationally established pollution reduction goals and curbing global climate change.

The U.S. Department of Energy (USDOE) released its *2014-2018 Strategic Plan* in April 2014. The Strategic Plan contains 12 strategic objectives organized around three distinct goals: 1) Science and Energy, 2) Nuclear Security, and 3) Management and Performance. The first strategic objective is to advance the goals and objectives in the President's Climate Action Plan by supporting prudent development, deployment, and efficient use of energy resources that also create new jobs and industries. USDOE "is committed to energy solutions that make best use of our domestic energy resources and help the nation achieve an approximately 17% reduction in greenhouse gas emissions below 2005 levels by 2020, and further reductions in the post-2020 period." The President's Climate Action Plan contains a goal of doubling renewable energy generation from wind, solar, and geothermal sources between 2012 and 2020. A more diverse energy mix, including wind energy projects like the Jericho Rise Wind Farm, will provide multiple options to meet demand and achieve environmental goals (USDOE, 2014).

The New York State Energy Plan has been updated twice since the DEIS was released, with the most recent Plan published in June, 2015. The Project is consistent with the objectives outlined in this Plan, which include increased use of energy systems that enable the State to significantly reduce greenhouse gas emissions while stabilizing long-term energy costs, the key objective being to increase the percentage of non-fossil fuel consuming (i.e., renewable) sources of generation, and improving the State's energy independence through development of in-state energy supply resources. Specific targets include reducing greenhouse gas emissions by 40% from 1990 levels and generating 50%

of electricity from renewable resources by 2030. The State Energy Plan recognizes that wind energy projects, like the proposed Jericho Rise Wind Farm, will play a role in fulfilling this objective (NYSEPB, 2015). Based on the 2015 State Energy Plan, other public benefits of the Project related to energy use include the following:

- Production and use of in-state energy resources can increase the reliability and security of energy systems, reduce long-term energy costs, and contribute to meeting climate change and environmental objectives.
- To the extent that renewable resources are able to displace the use of carbon and particulate emitting fossil fuels, relying more heavily on these in-state resources will also reduce public health and environmental risks posed by all sectors that produce and use energy.
- By focusing energy investments on in-state opportunities, New York can reduce the amount of dollars "exported" out of the state to pay for energy resources.
- By re-directing those dollars back into the state economy, New York will increase the amount of business and economic activity related to power generation within the state. Renewable energy contributes to the reduction of energy price volatility in the long-term and enables wind to displace other fossil based forms of generation.

The 2015 State Energy Plan provides a vision for New York's energy future that consists of "a clean, resilient, and affordable energy system," and it is clear that renewable energy, including wind power, will be a major component of energy produced in the State. The State Energy Plan evaluates the existing, planned, and potential use of New York's renewable energy resources, including hydropower, wind power, bioenergy, solar energy, and geothermal energy. The benefits of renewable energy resources as described in the 2015 Plan include helping achieve environmental goals; creating jobs, income, and economic growth; reducing imported energy and reliance on fossil fuels; reducing price volatility due to fossil fuel use; reducing the negative health impacts of energy use; reducing peak demand and transmission and distribution constraints; and exerting downward pressure on wholesale electricity prices. The Project is consistent with these environmental goals, and it will provide an additional source of clean, renewable energy for New York State.

9.0 REFERENCES

Abraxas Energy Consulting, LLC. 2015. *Emissions Calculator*. Available at: http://www.abraxasenergy.com/energy-resources/toolbox/emissions/ (Accessed May 2015).

Arnett, E.B., M.R. Schirmacher, C.D. Hein, and M.M.P. Huso. 2011. *Patterns of Bird and Bat Fatality at the Locust Ridge II Wind Project, Pennsylvania. 2009-2010 Final Report.* Prepared for the Bats and Wind Energy Cooperative (BWEC) and the Pennsylvania Game Commission (PGC). Prepared by Bat Conservation International (BCI), Austin, Texas. January 2011.

Arnett, E.B., M.R. Schirmacher, M.M.P. Huso, and J.P. Hayes. 2009. *Effectiveness of Changing Wind Turbine Cut-in Speed to Reduce Bat Fatalities at Wind Facilities: 2008 Annual Report.* Prepared for the Bats and Wind Energy Cooperative (BWEC) and the Pennsylvania Game Commission. Bat Conservation International (BCI), Austin, Texas. April 2009. Available at: http://www.batsandwind.org/pdf/Curtailment_2008_Final_Report.pdf. (Accessed July, 2015).

Arnett, E.B., M.R. Schirmacher, M.M.P. Huso, and J.P. Hayes. 2010. *Patterns of Bat Fatality at the Casselman Wind Project in South-Central Pennsylvania. 2009 Annual Report.* Annual report prepared for the Bats and Wind Energy Cooperative (BWEC) and the Pennsylvania Game Commission. Bat Conservation International (BCI), Austin, Texas. January 2010.

Atkinson-Palombo, C, and B. Hoen. 2014. *Relationship between Wind Turbines and Residential Property Values in Massachusetts.* A Joint Report of University of Connecticut and Lawrence Berkeley National Laboratory. January 2014.

Bay, K., S. Conover, D. Young, and E. Baumgartner. 2015. *Post-Construction Studies for the Marble River Wind Farm, Clinton County, New York. 2014 Fatality and Acoustic Bat Report: April - November 2014*. Prepared for EDP Renewables, Houston, Texas. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming.

Bonafide, J. 2008. Re: PSC, Jericho Rise Wind Farm/53 Turbines/87.45, 07PR04701. Review correspondence, New York State Office of Parks, Recreation, and Historic Preservation, Waterford, NY.

Bureau of Labor Statistics. 2015. Local Area Unemployment Statistics Map. Available at: http://data.bls.gov/map/MapToolServlet?survey=la&map=state&seasonal=u (Accessed June 2015).

Burt, E., P. Orris, and S. Buchanan. 2013. *Scientific Evidence of Health Effects from Coal Use in Energy Generation*. University of Illinois at Chicago School of Public Health. April 2013.

Carter, J. 2011. *The Effect of Wind Farms on Residential Property Values in Lee County, Illinois.* Available at: http://renewableenergy.illinoisstate.edu/downloads/publications/2011%20Wind%20Farms%20Effect%20on%20Property%20Values%20in%20Lee%20County.pdf (Accessed May 26, 2015).

Cattin, R., S. Kunz, A. Heimo, M. Russi, and G. Russi. 2008. *Two Years of Monitoring of a Wind Turbine Under Icing Conditions*. Proceedings of DEWEK, Bremen, Germany. November 26-27, 2008.

Chief Medical Officer of Health (CMOH) of Ontario. 2010. *The Potential Health Impact of Wind Turbines*. May 2010. Available at: http://www.health.gov.on.ca/en/common/ministry/publications/reports/wind_turbine/wind_turbine.pdf (Accessed: May 28, 2015).

Code of Federal Regulations (CFR). 2004. *Title 36 - Parks, Forests, and Public Property, Chapter I - National Park Service, Department of the Interior, Part 60 - National Register of Historic Places, Section 60.4 - Criteria For Evaluation*.

Colby, W.D., R. Dobie, G. Leventhall, D. M. Lipscomb, R. J. McCunney, M. T. Seilo, and B. Sondergaard. 2009. *Wind Turbine Sound and Health Effects: An Expert Panel Review*. Prepared for American Wind Energy Association and Canadian Wind Energy Association.

Comsearch. 2015a. *Wind Power GeoPlanner: Microwave Study, Jericho Rise Wind Farm LLC*. Prepared on behalf of EDP Renewables. July 13, 2015.

Comsearch. 2015b. *Wind Power GeoPlanner: Off-Air TV Analysis, Jericho Rise Wind Farm LLC*. Prepared on behalf of EDP Renewables. January 28, 2015.

Comsearch. 2015c. *Wind Power GeoPlanner: Communication Tower Study, Jericho Rise Wind Farm LLC*. Prepared on behalf of EDP Renewables. January 30, 2015.

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.

Cowardin, L.M., V. Carter, F.C. Goblet, and E.T. LaRoae. 1979. *Classification of Wetlands and Deepwater Habitats of the United States.* U.S. Fish and Wildlife Service, OBS-79/31, Washington, D.C.

Division of Mineral Resources (DMR). 2015. *Downloadable Mining Database*. Available at: http://www.dec.ny.gov/lands/5374.html (Last updated 2015; accessed May 27, 2015).

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.

Ecology & Environment, Inc. 2006a. *Architectural Survey of the Proposed Noble Wind Park, Town of Clinton, New York, Revision 1. Project Number 05PR03060*. Report prepared for Noble Environmental Power, LLC, by Ecology & Environment, Inc., Lancaster, NY.

Ecology & Environment, Inc. 2006b. *Architectural Survey of the Proposed Noble Wind Park, Town of Ellenburg, New York, Revision 1. Project Number 06PR01321*. Report prepared for Noble Environmental Power, LLC, by Ecology & Environment, Inc., Lancaster, NY.

Edinger, G.J., D.J. Evans, S. Gebauer, T.G. Howard, D.M. Hunt, and A.M. Olivero (editors). 2014. *Ecological Communities of New York State.* Second Edition. A revised and expanded edition of Carol Reschke's Ecological Communities of New York State. New York Natural Heritage Program, New York State Department of Environmental Conservation, Albany, NY.

Ellenbogen, J.M., S. Grace, W.J. Heigher-Bernays, J.F. Manwell, D.A. Mills, K.A. Sullivan, M.G. Weisskopf. 2012. *Wind Turbine Health Impact Study: Report of Independent Expert Panel*. January 2012. Prepared for Massachusetts Department of Environmental Protection and Massachusetts Department of Public Health. Available at: http://www.mass.gov/eea/docs/dep/energy/wind/turbine-impact-study.pdf (Accessed: May 27, 2015).

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

Environmental Laboratory. 1987. *Corps of Engineers Wetland Delineation Manual.* Technical Report Y-87-1. U.S. Army Corps of Engineers: Waterways Experiment Station; Vicksburg, MS.

Environmental Protection Agency (EPA). 2011. *Fact Sheet: The Cross-State Air Pollution Rule: Reducing the Interstate Transport of Fine Particulate Matter and Ozone*. Available at: http://www.epa.gov/airtransport/CSAPR/pdfs/CSAPR Factsheet.pdf (Last updated July 11, 2011; Accessed May 22, 2015).

EPA. 2014. *eGRID 9th Edition Version 1.0 Year 2010 Summary Tables*. Available at: http://www.epa.gov/cleanenergy/documents/egridzips/eGRID_9th_edition_V1-0_year_2010_Summary_Tables.pdf (created February 2014; Accessed May 26, 2015).

EPA. 2015a. *The Green Book Nonattainment Areas for Criteria Pollutants*. Available at: http://www.epa.gov/airquality/greenbook/index.html (Last updated May 20, 2015; Accessed May 22, 2015).

EPA. 2015b. *Sources of Greenhouse Gas Emissions*. Available at: http://www.epa.gov/climatechange/ghgemissions/sources.html (Last updated May 7, 2015; Accessed May 22, 2015).

EPA. 2015c. *Impaired Waters and Total Maximum Daily Loads.* Available at: http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/. (Last updated March 12, 2015; accessed July 2015).

Erickson, W.P., M.M. Wolfe, K.J. Bay, D.H. Johnson, and J.L. Gehring. 2014. *A Comprehensive Analysis of Small Passerine Fatalities from Collisions with Turbines at Wind Energy Facilities.* PLoS ONE 9(9): e107491. doi: 10.1371/journal.pone.0107491.

Erickson, W.P., K. Bay, and S. Howlin. 2015. *Weaver Wind Project Impacts and Risks to Small Passerine Populations.* Prepared for SunEdison, Portland, Maine. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming. July 13, 2015.

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

Federal Education Budget Project. 2015. *Chateauguay Central School District*. Available at: http://febp.newamerica.net/k12/NY/3607080 (Accessed June 5, 2015).

Funk, R.E. (editor). 1993a. *Archaeological Investigations in the Upper Susquehanna Valley, New York State*. Volume I. Persimmon Press, Buffalo, NY.

Funk, R.E. 1993b. Subsistence, Settlement, and Seasonality. In *Archaeological Investigations in the Upper Susquehanna Valley, New York State*. Volume I, pp. 245-312. Persimmon Press, Buffalo, NY.

Gamesa. 2014. General Characteristics Manual, "G114 2.1MW 50/60 Hz Power and Noise curves for low noise operating mode (NRS)." Document Code GD229761-en. July 18, 2014.

Garrad Hassan Canada, Inc. 2007. *Recommendations for Risk Assessments of Ice Throw and Blade Failure in Ontario*. Prepared for the Canadian Wind Energy Association. Document No. 38079/OR/01. May 31, 2007.

Garvin, J.C., C.S. Jennelle, D. Drake, and S.M. Grodsky. 2011. Response of Raptors to a Windfarm. Journal of Applied Ecology 48:199-209.

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.

Gibbons, S. 2014. *Gone with the Wind: Valuing the Visual Impacts of Wind Turbines through House Prices.* Spatial Economics Research Centre (SERC). SERC Discussion Paper 159. April 2014.

Gipe, P. 2013. *A Summary of Fatal Accidents in Wind Energy*. Available at http://www.wind-works.org/cms/index.php?id=43&tx_ttnews[tt_news]=414&cHash=5a7a0eb3236dd3283a3b6d8cf4cc508b (Last updated May 1, 2013; Accessed May 28, 2015).

Global Wind Energy Council. 2012. *Wind Power FAQs.* Available at: http://www.gwec.net/faqs/how-many-wind-turbines-world/ (Accessed June 2015).

Hawk Migration Association of North America. 2015. *HawkCount*. Available at: http://www.hmana.org/. (Accessed June 13, 2015).

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.

Heintzelman, M.D. and C.M. Tuttle. 2012. *Values in the Wind: A Hedonic Analysis of Wind Power Facilities*. Land Economics 88:571-588.

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

Hinman, J. 2010. *Wind Farm Proximity and Property Values: A Pooled Hedonic Regression Analysis of Property Values in Central Illinois.* Thesis. Illinois State University. May 2010. 143 pages. Available at: http://renewableenergy.illinoisstate.edu/downloads/publications/2010%20Wind%20Farm%20Proximity%20and%20Property%20Values.pdf (Accessed May 26, 2015).

Hoen, B., R. Wiser, P. Cappers, M. Thayer, and G. Sethi. 2009. *The Impact of Wind Power Projects on Residential Property Values in the United States: A Multi-Site Hedonic Analysis*. Lawrence Berkeley National Laboratory, Environmental Energy Technologies Division. December 2009.

Intergovernmental Panel on Climate Change. IPCC. *2013: Summary for Policymakers.* In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY.

IPCC. 2014. *Climate Change 2014: Synthesis Report Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.). Geneva, Switzerland, 151 pp.

Jain, A., P. Kerlinger, R. Curry, and L. Slobodnik. 2009a. *Annual Report for the Maple Ridge Wind Power Project: Post-Construction Bird and Bat Fatality Study - 2007*. Final report prepared for PPM Energy and Horizon Energy and Technical Advisory Committee (TAC) for the Maple Ridge Project Study. May 6, 2009.

Jain, A., P. Kerlinger, R. Curry, L. Slobodnik, A. Fuerst, and C. Hansen. 2009b. *Annual Report for the Noble Ellenburg Windpark, LLC, Postconstruction Bird and Bat Fatality Study - 2008*. Prepared for Noble Environmental Power, LLC by Curry and Kerlinger, LLC. April 13, 2009.

Jain, A., P. Kerlinger, R. Curry, L. Slobodnik, J. Histed, and J. Meacham. 2009c. *Annual Report for the Noble Clinton Windpark, LLC, Postconstruction Bird and Bat Fatality Study - 2008*. Prepared for Noble Environmental Power, LLC by Curry and Kerlinger, LLC. April 13, 2009.

Jain, A., P. Kerlinger, R. Curry, L. Slobodnik, and M. Lehman. 2009d. *Maple Ridge Wind Power Avian and Bat Fatality Study Report - 2008. Annual Report for the Maple Ridge Wind Power Project, Post-construction Bird and Bat Fatality Study - 2008*. Prepared for Iberdrola Renewables, Inc, Horizon Energy, and the Technical Advisory Committee (TAC) for the Maple Ridge Project Study. Prepared by Curry and Kerlinger, LLC. May 14, 2009.

Jain, A., P. Kerlinger, R. Curry, L. Slobodnik, J. Quant, and D. Pursell. 2009e. *Annual Report for the Noble Bliss Windpark, LLC, Postconstruction Bird and Bat Fatality Study - 2008*. Prepared for Noble Environmental Power, LLC by Curry and Kerlinger, LLC. April 13, 2009.

Jain, A., P. Kerlinger, L. Slobodnik, R. Curry, A. Fuerst, and A. Harte. 2010a. *Annual Report for the Noble Bliss Windpark, LLC: Postconstruction Bird and Bat Fatality Study - 2009*. Prepared for Noble Environmental Power, LLC. Prepared by Curry and Kerlinger, LLC, Cape May, New Jersey. March 9, 2010.

Jain, A., P. Kerlinger, L. Slobodnik, R. Curry, and A. Harte. 2011a. *Annual Report for the Noble Wethersfield Windpark, LLC: Postconstruction Bird and Bat Fatality Study - 2010*. Prepared for Noble Environmental Power, LLC. Prepared by Curry and Kerlinger, LLC, Cape May, New Jersey. January 22, 2011.

Jain, A., P. Kerlinger, L. Slobodnik, R. Curry, and K. Russell. 2010b. *Annual Report for the Noble Clinton Windpark, LLC: Postconstruction Bird and Bat Fatality Study - 2009*. Prepared for Noble Environmental Power, LLC. Prepared by Curry and Kerlinger, LLC, Cape May, New Jersey. March 9, 2010.

Jain, A., P. Kerlinger, L. Slobodnik, R. Curry, and K. Russell. 2010c. *Annual Report for the Noble Ellenburg Windpark, LLC: Postconstruction Bird and Bat Fatality Study - 2009*. Prepared for Noble Environmental Power, LLC. Prepared by Curry and Kerlinger, LLC, Cape May, New Jersey. March 14, 2010.

Jain, A., P. Kerlinger, L. Slobodnik, R. Curry, and K. Russell. 2011b. *Annual Report for the Noble Altona Windpark, LLC: Postconstruction Bird and Bat Fatality Study - 2010*. Prepared for Noble Environmental Power, LLC. Prepared by Curry and Kerlinger, LLC, Cape May, New Jersey. January 22, 2011.

Jain, A., P. Kerlinger, L. Slobodnik, R. Curry, and K. Russell. 2011c. *Annual Report for the Noble Chateaugay Windpark, LLC: Postconstruction Bird and Bat Fatality Study - 2010*. Prepared for Noble Environmental Power, LLC. Prepared by Curry and Kerlinger, LLC, Cape May, New Jersey. January 22, 2011.

John Milner Associates, Inc. [JMA]. 2007. *Historic-Architectural Resources Survey: Marble River Wind Farm Project*. Report prepared for ESS Group, Inc. and Marble River, LLC by John Milner Associates, Inc., Croton-on-Hudson, NY.

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.

Madders, M., and D.P. Whitefield. 2006. *Upland raptors and the assessment of wind farm impacts*. Ibis 148: 43–56.

Martin, C., E. Arnett, and M. Wallace. 2013. *Evaluating Bird and Bat Post-Construction Impacts at the Sheffield Wind Facility, Vermont, 2012 Annual Report*. Prepared for Bat Conservation International and First Wind. March 25, 2013. Department of Natural Resources Management, Texas Tech Univseristy, Lubbock, Texas.

McCann Appraisal, LLC. 2010. *Michael McCann Sworn Affidavit to the Adams County Board, Re: Wind Turbine Setbacks*. Adams County Courthouse, Quincy, Illinois.

Morris, J., A. Cerbin, J. Stutt, and A. Coh. 2013. *New York's Renewable Portfolio Standard: Where to from Here?* Pace Energy and Climate Center, Pace Law School.

Morrison, M.L., W.M. Block, M.D. Strickland, B.A. Collier, and M.J. Peterson. 2008. *Wildlife Study Design*. 2nd Edition. Springer-Verlag, New York.

National Climatic Data Center (NCDC). 2015. *Summary of Monthly Normals (1981-2010) for Malone, New York. National Oceanic and Atmospheric Administration*. Available at: http://www.ncdc.noaa.gov/cdo-web/datatools/normals (Accessed May 22, 2015).

National Park Service (NPS). 1990. *How to Apply the National Register of Historic Places Criteria for Evaluation*. National Register Bulletin No. 15. National Register Branch, National Park Service, U.S. Department of the Interior, Washington, D.C. Available at: http://www.nps.gov/nr/publications/bulletins/pdfs/nrb15.pdf (Accessed June 2015).

New York Independent Systems Operator (NYISO). 2015. *Interconnection Queue*. Available at: http://www.nyiso.com/public/markets_operations/services/planning/planning_resources/index.jsp. (Accessed June 2015)

New York Natural Heritage Program (NYNHP). 2015. *Rare Plant Field Techniques and Specimen Preparation*. Available at: http://www.dec.ny.gov/animals/29399.html. (Accessed July 2015).

New York State Department of Agriculture and Markets (NYSDAM). 2013. *Guidelines for Agricultural Mitigation for Wind Power Projects*. July 20, 2013.

NYSDAM. 2014. *Department of Agriculture and Markets Agriculture and Farmland Protection Biennial Report 2013-2013.* Available at http://agriculture.ny.gov/AP/agservices/BiennialReport.pdf. (Accessed June, 2015).

NYSDEC. 2001. *Program Policy: Assessing and Mitigating Noise Impacts*. DEP-00-1. Division of Environmental Permits, Albany, New York. Issued October 6, 2000; revised February 2, 2001.

New York State Department of Environmental Conservation. NYSDEC. 2007a. *New York State Amphibian and Reptile Atlas Data*. Bureau of Wildlife, Albany NY. November 20, 2007.

NYSDEC. 2007b. NYS Breeding Bird Atlas (2000-2005). Available at: http://www.dec.ny.gov/cfmx/extapps/bba/. (Accessed July, 2015).

NYSDEC. 2009. Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects. August, 2009. Available at: http://www.dec.ny.gov/docs/wildlife_pdf/finwindguide.pdf (Accessed July, 2015).

NYSDEC. 2012. *DEC Reports: 2012 Winter Bat Surveys Results*. Press Release dated April 19, 2012. Available at: http://www.dec.ny.gov/press/81767.html (Accessed July 2015).

NYSDEC. 2013. *New York State Ambient Air Quality Report for 2013*. Available at: http://www.dec.ny.gov/chemical/8536.html (Accessed May 22, 2015).

NYSDEC. 2014. *Water Inventory/Priority Waterbodies List GIS Data Set*. Available at: http://gis.ny.gov/gisdata/inventories/details.cfm?dsid=1117&nysgis (Last updated October, 2014; accessed July, 2015).

NYSDEC. 2015a. *Commissioner's Policy – Climate Change and DEC Action.* Available at: http://www.dec.ny.gov/regulations/65034.html (Accessed June, 2015).

NYSDEC. 2015b. *Wild, Scenic, and Recreational Rivers.* Available at: http://www.dec.ny.gov/permits/32739.html. (Accessed July, 2015).

NYSDEC. 2015c. *DEC Water Well Program Information Search Wizard*. Available at: http://www.dec.ny.gov/lands/33317.html (Accessed July, 2015).

NYSDEC. 2015d *Spring 2015 Trout Stocking for Franklin County*. Available at: http://www.dec.ny.gov/outdoor/23323.html (Accessed July 2015).

NYSDEC. 2015e. *Wind Power*. Available at: http://www.dec.ny.gov/energy/40966.html (Accessed August 2015).

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).

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

New York State Energy Research and Development Authority (NYSERDA). 2014. *Patterns and Trends, New York State Energy Profiles: 1998-2012*. Albany, NY. Final Report, November 2014.

NYSERDA. 2015. *The New York State Renewable Portfolio Standard, Annual Performance Report through December 31, 2014*. Final Report. March 2015.

New York Independent System Operator (NYISO). 2015. *Planning Services and Requests*. Available at: http://www.nyiso.com/public/markets_operations/services/planning/planning_resources/index.jsp (Accessed August 2015).

New York State Office of Real Property Tax Services (NYSORPTS). 2015. *Countywide Municipal Profile Service.* Available at: http://orpts.tax.ny.gov/cfapps/MuniPro/#text (Last updated 2015; Accessed June 2015).

New York State Office of the Comptroller. 2015a. *Financial Data of Local Governments.* Available at: http://www.osc.state.ny.us/localgov/datanstat/findata/index_choice.htm (Last updated June 15, 2015; accessed June 16, 2015).

New York State Office of the Comptroller. 2015b. *Local Government Sales Taxes in New York State: 2015 Update.* Available at https://www.osc.state.ny.us/localgov/pubs/research/salestax2015.pdf (Accessed June 2015).

New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP). 2005. *New York State Historic Preservation Office (SHPO) Phase 1 Archaeological Report Format Requirements*. New York State Office of Parks, Recreation, and Historic Preservation, Waterford, NY.

NYSOPRHP. 2006. *New York State Historic Preservation Office Guidelines for Wind Farm Development Cultural Resources Survey Work*. New York State Office of Parks, Recreation, and Historic Preservation, Waterford, NY.

Normandeau Associates, Inc. 2010. *Stetson Mountain II Wind Project Year 1 Post-Construction Avian and Bat Mortality Monitoring Study, T8 R4 Nbpp, Maine*. Prepared for First Wind, LLC, Portland, Maine. Prepared by Normandeau Associates, Inc., Falmouth, Maine. December 2, 2010.

Normandeau Associates, Inc. 2011. *Year 3 Post- Construction Avian and Bat Casualty Monitoring at the Stetson I Wind Farm, T8 R4 Nbpp, Maine*. Prepared for First Wind Energy, LLC, Portland, Maine. Prepared by Normandeau Associates, Inc., Falmouth, Maine. December 2011.

Olcott, P.G. 1995. Ground Water Atlas of the United States: Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont. HA 730-M. Available at http://pubs.usgs.gov/ha/ha730/ch_m/M-text5.html. (Accessed July, 2015).

PanAmerican Consultants, Inc. [PCI]. 2006. *Architectural Survey Addendum for the Proposed Nobel Windpark Project, Town of Clinton, Clinton County, NY, 05PR03060*. Report prepared for Noble Clinton Windpark, LLC, by PanAmerican Consultants, Inc., Buffalo, NY.

Pierpont, R. 2008. Re: SEQRA, Jericho Rise Wind Farm, 15PR03895. Review correspondence, New York State Office of Parks, Recreation, and Historic Preservation, Waterford, NY.

Polisky, L. 2011. *Memorandum on Off-Air Digital Television Reception in the Vicinity of Wind Energy Facilities.* Comsearch. July 22, 2011.

Public Service Commission (PSC). 2004. *Order Regarding Retail Renewable Portfolio Standard.* Issued and Effective September 24, 2004.

PSC. 2015. *Order Adopting Regulatory Policy Framework and Implementation Plan*. Case 14-M-0101, Proceeding on Motion of the Commission in Regard to Reforming Energy Vision. Issued and Effective February 26, 2015.

Renewable Energy Task Force. 2008. *Clean, Secure Energy and Economic Growth: A Commitment to Renewable Energy and Enhanced Energy Independence.* The First Report of the Renewable Energy Task Force to Lieutenant Governor David A. Paterson, February 2008.

Reynolds, D.S. 2010a. *Post-Construction Acoustic Monitoring, 2009 Sampling Period: Noble Clinton Windpark, Clinton County, New York*. Prepared for Noble Environmental Power, LLC, Essex, Connecticut. Prepared by North East Ecological Services, Bow, New Hampshire. April 6, 2010.

Reynolds, D.S. 2010b. *Post-Construction Acoustic Monitoring, 2009 Sampling Period: Noble Ellenburg Windpark, Clinton County, New York*. Prepared for Noble Environmental Power, LLC, Essex, Connecticut. Prepared by North East Ecological Services, Bow, New Hampshire. April 6, 2010.

Seifert, H., A. Westerhellweg, J. Kröning. 2003. *Risk Analysis of Ice Throw from Wind Turbines*. Proceedings from BOREAS VI, Phyä, Finland. April 9-11, 2003.

Soil Survey Staff. 2015. *Web Soil Survey*. Natural Resources Conservation Service, United States Department of Agriculture. Available at http://websoilsurvey.nrcs.usda.gov/ (Accessed June 2015).

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

Stantec Consulting, Inc. (Stantec). 2008. *2007 Spring, Summer, and Fall Post-Construction Bird and Bat Mortality Study at the Mars Hill Wind Farm, Maine*. Prepared for UPC Wind Management, LLC, Cumberland, Maine. Prepared by Stantec (formerly Woodlot Alternatives, Inc.), Topsham, Maine. January 2008.

Stantec Consulting, Inc. (Stantec). 2009a. *Post-Construction Monitoring at the Mars Hill Wind Farm, Maine - Year 2, 2008*. Prepared for First Wind Management, LLC, Portland, Maine. Prepared by Stantec Consulting, Topsham, Maine. January 2009.

Stantec. 2009b. *Post-Construction Monitoring at the Munnsville Wind Farm, New York: 2008*. Prepared for E.ON Climate and Renewables, Austin, Texas. Prepared by Stantec Consulting, Topsham, Maine. January 2009.

Stantec. 2009c. *Stetson I Mountain Wind Project: Year 1 Post-Construction Monitoring Report, 2009 for the Stetson Mountain Wind Project in Penobscot and Washington Counties, Maine*. Prepared for First Wind Management, LLC. Portland, Maine. Prepared by Stantec, Topsham, Maine. December 2009.

Stantec. 2010. *Cohocton and Dutch Hill Wind Farms Year 1 Post-Construction Monitoring Report, 2009, for the Cohocton and Dutch Hill Wind Farms in Cohocton, New York*. Prepared for Canandaigua Power Partners, LLC and Canandaigua Power Partners II, LLC, Portland, Maine. Prepared by Stantec, Topsham, Maine. January 2010.

Stantec. 2011. *Cohocton and Dutch Hill Wind Farms Year 2 Post-Construction Monitoring Report, 2010, for the Cohocton and Dutch Hill Wind Farms in Cohocton, New York*. Prepared for Canandaigua Power Partners, LLC, and Canandaigua Power Partners II, LLC, Portland, Maine. Prepared by Stantec, Topsham, Maine. October 2011.

Stantec. 2013a. *Rollins Wind Project Post-Construction Monitoring Report, 2012*. Prepared for First Wind, Portland, Maine. Prepared by Stantec, Topsham, Maine. March 2013.

Stantec. 2013b. *Stetson II Wind Project Post-Construction Monitoring Report, 2012*. Prepared for First Wind, Portland, Maine. Prepared by Stantec, Topsham, Maine. March 2013.

Stantec. 2014. *Stetson I Wind Project 2013 Post-Construction Wildlife Monitoring Report, Year 5*. Stetson I Wind Project, Washington County, Maine. Prepared for First Wind, Portland, Maine. Prepared by Stantec Consulting, Topsham, Maine. February 2014.

Tetra Tech, Inc. 2008a. *Phase 1B Archeological Investigation: Jericho Rise Wind Farm, Clinton and Franklin Counties, NY. OPRHP 07PR04701*. Report prepared for Jericho Rise Wind Farm, LLC by Tetra Tech, Inc., Morris Plains, NJ.

Tetra Tech, Inc. 2008b. *Historic Architectural Resources Investigation 5-Mile Ring Study: Jericho Rise Wind Farm, Clinton and Franklin Counties, NY. OPRHP 07PR04701*. Report prepared for Jericho Rise Wind Farm, LLC by Tetra Tech, Inc., Morris Plains, NJ.

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.

Tidhar, D., L. McManus, Z. Courage, and W. L. Tidhar. 2012a. *2010 Post-Construction Fatality Monitoring Study and Bat Acoustic Study for the High Sheldon Wind Farm, Wyoming County, New York. Final Report: April 15 - November 15, 2010*. Prepared for High Sheldon Wind Farm, Sheldon Energy LLC, Chicago, Illinois. Prepared by Western EcoSystems Technology, Inc. (WEST), Waterbury, Vermont. April 15, 2012.

Tidhar, D., L. McManus, D. Solick, Z. Courage, and K. Bay. 2012b. *2011 Post-Construction Fatality Monitoring Study and Bat Acoustic Study for the High Sheldon Wind Farm, Wyoming County, New York. Final Report: April 15 - November 15, 2011*. Prepared for High Sheldon Wind Farm, Sheldon Energy LLC, Chicago, Illinois. Prepared by Western EcoSystems Technology, Inc. (WEST), Waterbury, Vermont. April 25, 2012.

Tidhar, D., W. Tidhar, and M. Sonnenberg. 2010. *Post-Construction Fatality Surveys for Lempster Wind Project, Iberdrola Renewables*. Prepared for Lempster Wind, LLC, Lempster Wind Technical Advisory Committee, and Iberdrola

Renewables, Inc. Prepared by Western EcoSystems Technology Inc. (WEST), Waterbury, Vermont. September 30, 2010.

Tidhar, D., W. L. Tidhar, L. McManus, and Z. Courage. 2011. *2010 Post-Construction Fatality Surveys for the Lempster Wind Project, Lempster, New Hampshire*. Prepared for Iberdrola Renewables, Inc. and the Lempster Wind Technical Committee. Prepared by Western EcoSystems Technology, Inc., Waterbury, Vermont. May 18, 2011.

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.

U.S. Army Corps of Engineers. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

U.S. Census Bureau. 2015a. *Community Facts for Bellmont, New York and Chateaugay, New York*. Available at http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml (Accessed June 2015).

U.S. Census Bureau. 2015b. *State and County Quick Facts for Franklin County, NY*. Available at: http://quickfacts.census.gov/qfd/states/36/36033.html (Accessed June 2015).

USDA Census of Agriculture. 1978. *Number, Land, and Value of Farms: 1978 and 1974.* Available at: http://usda.mannlib.cornell.edu/usda/AgCensusImages/1978/01/32/182/Table-01.pdf (Accessed June 2015).

USDA Census of Agriculture. 1987. *County Summary Highlights: 1987*. Available at: http://usda.mannlib.cornell.edu/usda/AgCensusImages/1987/01/32/4/Table-01.pdf (Accessed June 2015).

USDA Census of Agriculture. 2007. *County Summary Highlights: 2007.* Available at: http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/New_York/st36_2_001_001.pdf (Accessed June 2015).

USDA Census of Agriculture. 2012. *County Summary Highlights: 2012.* Available at: http://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_County_Level/New_York/st36_2_001_001.pdf. (Accessed June, 2015).

USDA Office of the Chief Economist. 2011. *Renewable Power Opportunities for Rural Communities.* April 2011.

U.S. Department of Energy (USDOE). 2014. *Strategic Plan 2014-2018*. DOE/CF-0067.

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

USDOE National Renewable Energy Laboratory (NREL). 2015b. *Jobs and Economic Development Impact (JEDI) model release W10.13.14*. Available at: http://www.nrel.gov/analysis/jedi/download.html (Accessed June 2015).

U.S. Energy Information Administration (USEIA). 2015a. *How Much Electricity Does an American Home Use?* Available at: http://www.eia.gov/tools/faqs/faq.cfm?id=97&t=3 (Last updated February 20, 2015; Accessed May 26, 2015).

U.S. Energy Information Administration (USEIA). 2015b. *What is U.S. Electricity Generation By Energy Source?* Available at: http://www.eia.gov/tools/faqs/faq.cfm?id=427&t=3. (Last updated March 31, 2015; Accessed May 22, 2015).

U.S. Fish and Wildlife Service (USFWS). 2008. *Birds of Conservation Concern 2008*. Division of Migratory Bird Management. Arlingon, VA. Available at: http://www.fws.gov/migratorybirds/pdf/grants/BirdsofConservationConcern2008.pdf. (Accessed July, 2015).

U.S. Fish and Wildlife Service (USFWS). 2013. *Eagle Conservation Plan Guidance. Module 1 - Land-Based Wind Energy. Version 2*. Division of Migratory Bird Management, USFWS. April 2013. Available at: http://www.fws.gov/migratorybirds/Eagle_Conservation_Plan_Guidance-Module%201.pdf. (Accessed July, 2015).

U.S. Fish and Wildlife Service (USFWS). 2014 Northern Long-eared Bat Interim Conference and Planning Guidance. January 6, 2014. USFWS Regions 2, 3, 4, 5, & 6. http://www.fws.gov/northeast/virginiafield/pdf/NLEBinterimGuidance6Jan2014.pdf (Accessed July 2015).

U.S. Fish and Wildlife Service (USFWS). 2015a. 2015 Range-Wide Indiana Bat Summer Survey Guidelines (April 2015). USFWS Endangered Species Program: Midwest Region.

USFWS. 2015b. *Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Northern Long-Eared Bat with 4(d) Rule*. Federal Register 80(63): 17974-18033. April 2, 2015.

Bugliosi, E.F., R.A. Trudell, G.D. Casey. 1998. *Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York – Adirondack Sheet. Plate 1.* U.S. Geological Survey. Water-Resources Investigations Report 87-4276. Available at: http://pubs.er.usgs.gov/publication/wri874276.

U.S. Geological Survey (USGS) 2010. *2010 Water Use Data for New York*. Available at: http://waterdata.usgs.gov/ny/nwis/water_use/ (Accessed July 2015).

USGS. 2015a. *Earthquake Hazards Program: Earthquake Archives*. Available at: http://earthquake.usgs.gov/earthquakes/search/. (Last updated May 26, 2015; Accessed May 27, 2015).

USGS. 2015b. *Earthquake Hazards Program: National Seismic Hazard Maps for 2014*. Available at: http://earthquake.usgs.gov/hazards/products/conterminous/ (Accessed May 27, 2015).

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.

Weldy, T., D. Werier, and A. Nelson. *2015 New York Flora Atlas*. [S. M. Landry and K. N. Campbell (original application development), USF Water Institute. University of South Florida]. New York Flora Association, Albany, New York.

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.