SUPPLEMENTAL DRAFT ENVIRONMENTAL IMPACT STATEMENT

FOR THE

ALABAMA LEDGE WIND FARM

Town of Alabama
Genesee County, New York

February 2011

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COMMONLY USED ACRONYMS AND ABBREVIATIONS

amsl	above mean sea level
ANSI	American National Standards Institute
APE	Area of potential effect
Applicant	Alabama Ledge Wind Farm LLC
AWEA	American Wind Energy Association
CO_2	carbon dioxide
dB	decibel
dBA	decibels, A-rated
DEIS	Draft Environmental Impact Statement
EAF	Environmental Assessment Form
EDPR	EDP Renewables
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
FAA	Federal Aviation Administration
FEIS	Final Environmental Impact Statement
Horizon	Horizon Wind Energy LLC
Hz	Hertz
IDA	Genesee County Industrial Development Agency
IEC	International Electrotechnical Commission
ISO	Organization for International Standardization
kHz	kilohertz
kV	kilovolt
mCNR	modified Composite Noise Rating Method
MOA	Memorandum of Agreement
mph	miles per hour
m/s	meters per second
MW	megawatts
MWh	megawatt hour
Nation	Tonawanda Band of Seneca Nation
NEPA	National Environmental Policy Act
NHP	National Heritage Program
NHPA	National Historic Preservation Act
NIA	Noise Impact Assessment
NIST	National Institute of Standards and Technology
NOx	nitrogen oxide
NRHP	National Register of Historic Places
NYCRR	New York Codes, Rules, and Regulations
NYECL	New York Environmental Conservation Law

COMMONLY USED ACRONYMS AND ABBREVIATIONS – continued

NYISO	New York Independent System Operator
NYSA&M	New York State Department of Agriculture and Markets
NYSDEC	New York State Department of Environmental Conservation
NYSDOT	New York State Department of Transportation
NYSERDA	New York State Energy Research and Development Authority
O&M	Operation and Maintenance
OPRHP	Office of Parks, Recreation & Historic Preservation (New York State)
OSHA	Occupational Safety and Health Administration
OS/OW	oversize/overweight
PILOT	Payment in lieu of tax
POI	Point of Interconnection
PRHPL	New York Parks, Recreation and Historic Preservation Law
Project	Alabama Ledge Wind Farm
PSC	Public Service Commission
PTC	Production Tax Credit
REC	renewable energy credits
RPS	Renewable Portfolio Standards
RSG	Resource Systems Group
SDEIS	Supplemental Draft Environmental Impact Statement
SEQRA	State Environmental Quality Review Act
SHPO	State Historic Preservation Office (New York)
SO_2	sulfur dioxide
SPCC	Spill Prevention Containment and Countermeasure
SPDES	State Pollutant Discharge Elimination System
STAMP	Science and Technology Advanced Manufacturing Park
SWPPP	Stormwater Pollution Prevention Plan
Tetra Tech	Tetra Tech EC, Inc.
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VIA	Visual Impact Assessment
WTG	wind turbine generator

FIRMS INVOLVED IN PREPARATION OF THE SDEIS

This Supplemental Draft Environmental Impact Statement (SDEIS) has been developed pursuant to the State Environmental Quality Review Act (SEQRA) (6 New York Codes, Rules and Regulations [NYCRR] 617) under the direction of Alabama Ledge Wind Farm LLC (the Applicant), with input from the following list of preparers. The Applicant's lead consultant, Tetra Tech EC, Inc. (Tetra Tech), was responsible for the majority of the SEQRA required elements of the document.

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EXECUTIVE SUMMARY

This Supplemental Draft Environmental Impact Statement (SDEIS) has been prepared to describe further the potential environmental impacts and mitigation measures associated with the construction and operation of the proposed Alabama Ledge Wind Farm (the Project) as required under the New York State Environmental Quality Review Act (SEQRA) (6 New York Codes, Rules, and Regulations [NYCRR] 617). The Project as originally proposed was described, and its impacts evaluated, in the Alabama Ledge Wind Farm Draft Environmental Impact Statement (DEIS) accepted by the Town of Alabama, Lead Agency under SEQRA, on February 11, 2008.

Provided below is a brief Project description, along with summaries of the regulatory process; the Project's purpose, need, and benefit; a summary of potential environmental impacts; and proposed mitigation measures. Alternatives to the Project and its effect on use and conservation of energy are also reviewed.

Project Description

Alabama Ledge Wind Farm LLC (the Applicant), a direct subsidiary of Horizon Wind Energy LLC, is proposing to develop a wind-powered generating facility of up to 40 wind turbines, with a maximum capacity of up to 79.8 megawatts (MW) depending on the specific wind turbine installed. The maximum output capacity per turbine, depending on the model selected, will likely range from 1.65 MW to 3.0 MW. All installed turbines will be the same make and model. Depending on the model selected, the turbine rotor diameter will range from 82 to 112 meters, and the hub height will range from 78 to 100 meters. In addition to the wind turbines, the Project will involve construction of up to three permanent meteorological towers, a system of gravel access roads, electrical collection lines, an operation and maintenance (O&M) building, an on-site step-up substation, and an interconnection substation facility. A temporary construction laydown yard and temporary concrete batch plant are also planned during the construction phase of the Project.

The revised Project Area encompasses 4,849 acres (7.6 square miles) of privately owned land under agreement with the Applicant in the Town of Alabama, as compared to the DEIS Project Area, which consisted of approximately 7,936 acres (12.4 square miles) (Figure 1). The proposed facilities will temporarily impact approximately 312 acres of land during construction and 66 acres of land during Project operations, as compared to the original construction and operation footprints presented in the DEIS of 463 acres and 104.1 acres, respectively. These impacts are based on conservative assumptions regarding potential impact areas and will likely be reduced further once the final design is completed and associated impacts are presented in the Final Environmental Impact Statement (FEIS).

All Project facilities are shown in Figure 2. A comparison figure showing both the DEIS and SDEIS layouts simultaneously is provided as Figure 3. A summary of the primary Project facilities in the new SDEIS layout compared to the prior DEIS layout is provided in Table ES-1.

Table ES-1. Comparison of Project Layouts Proposed in the DEIS and the SDEIS

Project Component	DEIS Layout	SDEIS Layout
Wind Turbines	52	40
Access Roads	16 miles	14 miles
Buried Electrical Collection Lines	22 miles	18.5 miles
Overhead Electrical Collection and Transmission Lines	1 mile	0.2 mile
Permanent Meteorological Towers	2	up to 3
O&M Facility	5 acres	5 acres*
Substation/Point of Interconnection/Switchgear Facility	5 acres	5.8 acres
Temporary Construction Laydown Yard	10 acres	15 acres

*O&M facility currently proposed to be located within the 15 acres for the laydown yard following construction.

The Project has an anticipated construction start date of no earlier than 2012 instead of the spring 2009 start date stated in the DEIS. The Project will create jobs for between 125 and 200 people during construction. Once built, the wind turbines and associated components operate in almost a completely automated fashion. The Project will, however, permanently employ 10 to 15 personnel.

Regulatory Process

This SDEIS has been prepared by Tetra Tech EC, Inc. (Tetra Tech) of Boston, Massachusetts. It was prepared in accordance with the requirements of SEQRA and is intended to facilitate the environmental review process and to provide a basis for informed public comment and decision-making. The Project as originally proposed was described, and its impacts evaluated, in the DEIS accepted by the Town of Alabama, Lead Agency under the SEQRA, on February 11, 2008. Since completion of the DEIS, the Applicant has revised the Project layout, reducing the number of proposed turbines and subsequent installed capacity and shifting the location of the O&M building, laydown yard, and substation connecting the Project to the on-site transmission line. On April 28, 2010, the Town of Alabama issued a Positive Declaration on the SDEIS and issued a Notice of Intent to Prepare an SDEIS (Appendix A). In support of the Town's desire to review the proposed changes in more detail, the Applicant has prepared this SDEIS to describe revisions to the Project layout, and present the results of additional studies.

New data collected for the potential impact area since the submittal of the DEIS, and which is now reported on in this SDEIS, includes, but is not limited to the following:

- Subsurface archaeological resource investigations, conducted in accordance with field study guidelines for wind energy facilities (SHPO 2006) that were developed by the New York State Historic Preservation Office (SHPO) and tailored to the Project as advised by the SHPO given the proximity to the Tonawanda Band of Seneca Nation (the Nation);
- A review of historic architectural resources within a 5-mile radius of the Project that are either listed on or are potentially eligible for listing on the National Register of Historic Places (NRHP), conducted in accordance with guidelines developed by the New York SHPO; and
- An updated assessment of avoided air emissions from the Alabama Ledge Wind Farm.

In addition, the Applicant updated the following impact assessment studies, which were originally conducted and presented in the DEIS. These revised investigations now evaluate the revised Project facility layout presented in this SDEIS:

- Visual impact assessment, with additional photo simulations from viewpoints requested since the preparation of the DEIS;
- Shadow flicker impact analysis; and
- Environmental sound survey and noise impact assessment.

Upon acceptance of this SDEIS, public and agency comments will be received on the SDEIS until the end of the comment period as specified in the Notice accompanying the SDEIS. After the public and agency comment period on the SDEIS, the Applicant will prepare a FEIS and the Lead Agency will issue a Statement of Findings to complete the SEQRA process requirements.

Purpose, Need, and Benefit

The purpose of the proposed action is to create a wind-powered electrical-generating facility that will provide a significant source of renewable energy to the New York power grid. The Project would facilitate compliance with the Public Service Commission (PSC) "Order Approving Renewable Portfolio Standard Policy," issued on September 24, 2004. This Order calls for an increase in renewable energy used in the State to 25 percent (from the then level of 19 percent) by the year 2013. On January 8, 2010 following a planned mid-course review of the RPS program and its goals, the PSC increased the goal again to 30 percent by 2015 in a subsequent order (NYSERDA 2010). The Project responds to objectives identified in the 2002 and 2009 updated New York State Energy Plan (State Energy Plan) and Final Environmental Impact Statement (New York State Energy Planning Board 2002), as well as the Preliminary Investigation into Establishing a Renewable Portfolio Standard in New York (NYSERDA 2003). These objectives include stimulating economic growth, increasing energy diversity, and promoting a cleaner and healthier environment. The benefits of the proposed action include positive impacts on socioeconomics (e.g., payment-in-lieu of tax (PILOT) revenues to local municipalities, lease revenues to participating landowners, and reduced wholesale electricity

prices statewide), air quality (through reduction of emissions from fossil-fuel-burning power plants), and climate (reduction of greenhouse gases that contribute to global warming). The principal, overriding benefits of the Project are in complete accordance with the 2002 State Energy Plan (New York State Energy Planning Board 2002), namely:

"Stimulating sustainable economic growth"
"Increasing energy diversity…including renewable-based energy," and
"Promoting and achieving a cleaner and healthier environment"

The Project is also in accordance with additional objectives highlighted in the 2009 updated State Energy Plan (New York State Energy Planning Board 2009) including:

- increasing renewable penetration to further reduce the net retail rate of electricity;
- helping achieve the state's environmental goals;
- creating jobs and economic development opportunities;
- reducing energy imports and price volatility for fossil fuels; and
- reducing negative health impacts associated with energy production.

The Project as currently presented in this SDEIS is expected to offset annual air emissions of nitrogen oxide (NO_x) by 197 tons, sulfur dioxide (SO_2) by 686 tons, and carbon dioxide (CO_2) by 180,463 tons.

Summary of Potential Impacts

In accordance with the requirements of SEQRA, potential impacts arising from the proposed action were identified early in the application process and are evaluated in either the DEIS or this SDEIS with respect to an array of environmental and cultural resources. Provided below is a summary list of potential impacts that may occur in association with the construction and/or operation of the Project. These impacts and associated mitigation measures are described in greater detail in the DEIS and updated where relevant in this SDEIS.

Table ES-2. Summary of Potential Project Impacts

Environmental Factor	Potential Impacts
Geology, Soils, and Topography	• Soil erosion • Soil compaction • Conversion of prime farmland soils
Surface and Groundwater Resources	• Stream crossings • Siltation/sedimentation • Temporary disturbance • Wetland filling • Permanent stream crossings
Biological Resources	• Vegetation clearing • Incidental wildlife injury and mortality • Loss or alteration of habitat

Environmental Factor	Potential Impacts
Agricultural Resources	• Conversion of agricultural land • Preservation of land near turbines for agriculture
Climate and Air Quality	• Construction vehicle emissions • Dust during construction • Reduced air pollutants and greenhouse gases
Aesthetic & Visual Resources	• Visual change to the landscape • Visual impact on sensitive sites/viewers • Shadow-flicker impact on adjacent residents
Cultural Resources	• Visual impacts on architectural resources • Disturbance of historic archaeological resources
Noise	• Construction noise • Operational impacts on adjacent residents
Transportation	• Road wear • Traffic congestion/delays • Road system improvements/upgrades
Socioeconomics	• Host community payment / PILOT • Revenue to participating landowners • Expenditures on goods and services • Tourism • Short and long-term employment
Public Safety	• Stray voltage • Tower collapse/blade failure • Ice throw • Lightning strike • Fire
Community Services, Public Utilities, and Infrastructure	• Demands on police and emergency services • Telecommunication interference • Utility distribution lines and poles • Bulk Power System Upgrade • New Source of Clean Renewable Energy
Communications	• Interference with public, private or government communication facilities
Land Use and Zoning	• Adverse and beneficial impacts on farming • Changes in community character and land use trends

The Project is expected to result in positive, long-term agricultural and socioeconomic effects within the Project Area and across the State, and to provide benefits to the region's air quality. The Project will result in minor, generally short-term impacts to soils, vegetation, wetlands, wildlife habitat, and transportation facilities as a result of Project construction. The Project will have long-term effects on community character, avian/bat resources, ambient noise levels, and some historic and visual resources during operation. However, with the inclusion of proper mitigation measures, operational impacts other than the Project's visibility (e.g., noise, bird collisions, shadow flicker) will be limited and minor.

Summary of Mitigation Measures

Various measures will be taken to avoid, minimize and/or mitigate potential environmental impacts. General mitigation measures will include adhering to requirements of various local, state, and federal ordinances and regulations and entering into development agreements with adjacent landowners. The Applicant will also employ environmental inspectors to assure compliance with permit requirements and environmental protection commitments during construction. The proposed Project will result in significant environmental and economic benefits to the area. These benefits also serve to mitigate unavoidable adverse impacts associated with Project construction and operation.

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

- Siting the Project away from population centers and areas of residential development.
- Siting Project components outside of areas of mature forestland to the extent practicable.
- Locating access roads and turbines along field edges where practical and in field corners to avoid or minimize disturbance of agricultural land.
- Keeping turbines a minimum of 1,200 feet from residences that are not participants in the Project to avoid significant noise and visual impacts.
- Utilizing multiple-megawatt scale turbines to reduce the length of interconnect and access roads per megawatt of capacity.
- Burying electrical interconnection lines between turbines except where unavoidable due to sensitive environmental/cultural resources or construction constraints.
- Using existing roads for turbine access whenever possible to minimize disturbance to agricultural land, wildlife habitat, wetlands, and streams.
- Utilizing construction techniques that minimize disturbance to vegetation, streams, and wetlands.
- Siting the interconnection substation facilities in an area partially screened by existing mature vegetation.
- Painting the turbines with a matte non-specular finish.
- Developing and implementing a sedimentation and erosion control plan.
- Proposing a compensatory stream/wetland mitigation program, if warranted based on federal and state permitting requirements.
- Siting select turbines to avoid or minimize wetland, wildlife, or visual impacts.
- Performing post-construction mortality monitoring to improve understanding of possible avian and bat impacts.
- Siting turbines to avoid interference with microwave and AM/FM communication systems.
- Implementing agricultural protection measures to avoid, minimize, or mitigate impacts on agricultural land and farm operations.

- Developing a traffic and dust management plan during construction.
- Upgrading public roads utilized during construction.
- Finalizing a component delivery plan that minimizes impacts on residential areas.
- Developing and implementing a historic resource protection plan in concert with the New York SHPO.

Alternatives

Alternatives to the proposed Project that were considered and evaluated include no action, alternative Project area, alternative Project design/layout, alternative turbine technology, and alternative Project size/magnitude. Analysis of these alternatives revealed that the size, type, number, and the configuration of the turbines as currently proposed are necessary to produce a commercially feasible project. The Applicant investigated several alternative locations across western New York and rejected many locations due to significant development constraints including migratory bird issues, incompatible land uses, lack of contiguous land, a lack of adequate wind resource, unsuitable transmission facilities (either too far to connect or in need of major system upgrades), and lack of likely community acceptability. All suitable locations, including the proposed Project site, must be seriously considered if the State is to meet its obligations regarding domestic generation of renewable energy by 2015.

The Applicant has revised the Project layout numerous times since its inception in an effort to optimize the balance between energy generation with the protection of agricultural, environmental, and aesthetic resources as well as community safety and welfare. The Applicant considered several types of wind energy conversion technologies for the Project. However, the 3-bladed, upwind, horizontal axis, wind turbine provides the smallest land-use footprint per unit of energy generated and has demonstrated itself as the most reliable and commercially viable for the application of utility scale electrical power generation. The Applicant has reduced the size of the originally proposed Project layout from up to 52 turbines in the DEIS to up to 40 turbines in the SDEIS.

The Applicant has considered reducing the Project size by using either smaller or fewer turbines. Doing so, however, would not fully capture the available wind resource and both hurt the State's objective of supplying domestic renewable energy as well as the Project's ability to offset fixed expenses associated with construction and connecting to the power grid. In summary, the alternatives analysis concluded that the Project as proposed offers the optimum use of resources with the fewest potential adverse impacts.

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. 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 the Project Site. However, the operating Project will generate up to 79.8 MW of electricity from a renewable resource (the wind) without fossil-fuel emissions. This greatly exceeds the energy

required to construct and operate the Project. The Project will add to and diversify the State's sources of power generation helping to stabilize power prices currently subject to spikes in fossil fuel prices. Over the long-term, the Project will help displace some of the State's older, less efficient, and dirtier sources of power and possibly stave off the need to build new fossil fuel plants.

1.0 INTRODUCTION

Alabama Ledge Wind Farm LLC (the Applicant) has prepared this Supplemental Draft Environmental Impact Statement (SDEIS) for the proposed Alabama Ledge Wind Farm (the Project) located in the Town of Alabama in Genesee County, New York. The Project draws its name from the Town of Alabama and the Onondaga Escarpment, a limestone escarpment that runs the length of Western New York and passes through the Town of Alabama in the northwest corner of Genesee County. The escarpment, known locally as the Ledge, marks the relative dividing line between the Lake Erie and Lake Ontario basins that drive the region's energetic winds. The energetic wind resource of the Ledge, together with is primarily agricultural land use pattern and proximity to the National Grid Oakfield-Lockport 115-kilovolt (kV) line that gives access to New York's electricity market, drove the selection of the Project Area.

The following definitions are used throughout this document to describe the proposed action.

> **Applicant.** Refers to Alabama Ledge Wind Farm LLC, a wholly owned direct subsidiary of Horizon Wind Energy LLC.
>
> **Project**. Refers to all activities associated with the construction, operation, and individual components of the Alabama Ledge Wind Farm, including, but not limited to, turbines (including blades, towers, nacelle, foundations, etc.), electrical collection lines, access roads, crane pads, laydown yard, meteorological towers, and other facilities.
>
> **Project Area**. Refers to an arbitrary boundary line encompassing the parcels of private land within the Township of Alabama under agreement with the Applicant for the Project.

The Project as originally proposed was described, and its impacts evaluated, in the Draft Environmental Impact Statement (DEIS) accepted by the Town of Alabama, Lead Agency under the State Environmental Quality Review Act (SEQRA), on February 11, 2008. Since completion of the DEIS, the Applicant has revised the Project layout, reducing the number of proposed turbines and subsequent installed capacity and shifting the location of the operations and maintenance (O&M) building, laydown yard, and substation connecting the Project to the on-site transmission line. In support of the Town's desire to review the proposed changes in more detail, the Applicant has prepared this SDEIS to describe revisions to the Project layout, and present the results of additional studies.

To minimize duplication and inconsistency, this SDEIS follows the same general format as the DEIS and incorporates various sections of the DEIS by reference. Only information that has changed or been added since preparation of the DEIS is specifically addressed in this document. For ease of reference, the headings and section numbers shown in the SDEIS follow the same general outline as in the DEIS. Where information is the same as described in the DEIS, it is so noted in the SDEIS. All references to sections, appendices, and figures within this document pertain to this SDEIS unless otherwise noted.

A Final Environmental Impact Statement (FEIS) will be completed for the Project following the public comment period on the SDEIS. The FEIS will include the final Project design and respond to public and agency comments received on both the DEIS and this SDEIS.

Changes between DEIS and SDEIS

1. Revised Project Area

   The Project Area in the DEIS encompassed 7,936 acres (12.4 square miles) in the southwest corner of the Township of Alabama, which included 3,700 acres (5.8 square miles) of leased private land. The Project Area for the SDEIS has been refined to include only participating properties and encompasses 4,849 acres (7.6 square miles). Figure 1 shows the revised Project location.

2. Revised locations and reduced number of wind turbines

   Wind turbine generator (WTG) locations were revised based on wind resource assessment, engineering considerations, environmental constraints, and the Town of Alabama zoning requirements and setbacks. The revised layout also considers agency and public comments received during the review of the DEIS. The Project currently consists of up to 40 WTGs in the Town of Alabama, which reduces the number of WTGs from the 52 WTGs proposed in the DEIS layout. The maximum output capacity per turbine depending on the model selected will range from 1.65 megawatts (MW) to 3.0 MW for a maximum total Project nameplate capacity of up to 79.8 MW, a decrease from between 85.8 and 104 MW in the DEIS. The proposed 40 turbine locations are shown on Figure 2, and a comparison of the layout between the DEIS and SDEIS is shown on Figure 3.

3. Revised electrical collection system and transmission line interconnection route

   The total distance of underground interconnecting electric power lines is now 18.5 miles, compared to 22 miles in the DEIS. The length of overhead power lines potentially necessary for the Project has been reduced from 1 mile in the DEIS to 0.2 mile in the SDEIS. The length of overhead line previously proposed between and parallel to Gorton and Wight Roads is currently proposed as an underground collection line. The updated route is now based on consideration of field-based resource data not available at the time of the DEIS filing, avoidance and minimization of environmental impacts, and negotiations with landowners within the route vicinity. The location of the proposed point-of-interconnect (POI) switchyard and substation parcel of land is immediately east of Wight Road and approximately 1,000 feet south of the intersection of Wight Road and Judge Road. The proposed POI switchyard and substation location is shown on Figure 2, and a comparison of the layout between the DEIS and SDEIS is shown on Figure 3.

Figure 1. Regional Project Location

Figure 2. Proposed Project Layout

Figure 3. Project Layout Comparison DEIS vs. SDEIS

4. Revised access road configuration

   The access road layout was modified to facilitate the construction and maintenance of the revised wind turbine locations. In addition, access roads were modified to avoid and minimize potential impacts to wetlands and cultural resources. In agricultural areas, the Applicant has continued to design the access road configuration based on NYSA&M guidelines and a review of the Project layout during a field visit with an NYSA&M representative. Measures to minimize impacts to agricultural areas include locating roads along field edges and utilizing existing farm roads to the extent possible. Proposed access roads now total 14 miles, compared to 16 miles as included in the DEIS. This includes both new and existing roads that will be improved by the Applicant to accommodate the construction and operation of the Project. Of the 14 miles of proposed access roads for the Project, 3.6 miles are existing farm and gas line roads in the Project Area. The access road configuration is depicted on Figures 2, and a comparison of the layout between the DEIS and SDEIS is shown on Figure 3.

5. Revised O&M building and laydown yard location

   The O&M building and laydown yard location are currently both proposed to be located on the Buffalo Crushed Stone property on south side of Ledge Road at the intersection with Kenyon Road.

6. Revised Project construction schedule

   The anticipated Project construction commencement has been moved from Spring 2009 as reported in the DEIS to no earlier than 2012.

7. Revised temporary and permanent impacts

   Updated temporary and permanent impacts are provided in each resource impact section of the SDEIS but have generally been reduced due to the smaller Project development footprint. The updated development footprint for all Project facilities temporarily impacts up to 312 acres of land and permanently impacts up to 66 acres, compared to temporary impacts of 463 acres and permanent impacts of 104 acres associated with the layout presented in the DEIS.

8. Avian and bat studies final report, previously reviewed in DEIS

   Appendix B to the SDEIS provides the Avian and Bat Studies for the Proposed Alabama Ledge Wind Project, Genesee County, New York, Final Report dated November 26, 2007. The findings and conclusions presented in the DEIS were based on the Final Report, which incorporates the January 2007 interim report that was provided as Appendix F to the DEIS. The Final Report is provided in the SDEIS for inclusion in the SEQRA record for the ALWF. The findings and conclusions of the report are as previously reviewed in the DEIS.

9. Energy offset analysis

   Resource Systems Group (RSG) conducted a study to evaluate the avoided emissions of selected air pollutants from the operation of the Project, provided as Appendix C of the SDEIS. The RSG study evaluated the emissions that would be offset from displacement of fossil-fuel based power generation sources in the New York power market.

10. Supplemental visual impact assessment and shadow flicker analysis

    The Applicant has prepared supplemental visual simulations at viewpoints requested by the Town of Alabama following completion of the DEIS (Appendix D). The Applicant has also revised the shadow flicker assessment with results from modeling the turbine layout presented in the SDEIS (Appendix E).

11. Additional cultural resources studies

    Since the DEIS, the Applicant has conducted a Phase 1B subsurface archaeological field study report (Appendix F) and a Historic Architecture 5-Mile Ring study report (Appendix G) and provided both to SHPO for review. The Phase 1B study is a confidential report and its distribution is limited by request of the SHPO.

12. Supplemental acoustic impact assessment

    The Applicant prepared a revised acoustic impact assessment with results from modeling the turbine layout presented in the SDEIS (Appendix H).

2.0 REVISED PROJECT DESCRIPTION SINCE DEIS

2.1 Project Summary / Introduction

The Project will consist of up to 40 turbines, each with a maximum output between 1.65 MW to 3.0 MW for a maximum total Project nameplate capacity of up to 79.8 MW. All installed turbines will be the same make and model. Depending on the model selected, the turbine rotor diameter will range from 82 to 112 meters and the hub height will range from 78 to 100 meters. Turbine models currently under consideration include the Suzlon S88, Vestas V82, Vestas V90, Vestas V112, and the Gamesa G87 or comparable model. The Applicant will select a turbine and tower based on suitability of the wind resource and turbine availability following negotiations with suppliers.

In addition to the wind turbines, the Project will involve construction of up to three permanent meteorological towers, a system of gravel access roads, electrical collection lines, an O&M building, an on-site step-up substation, and an interconnection substation facility. A temporary construction laydown yard and temporary concrete batch plant are also planned during the construction phase of the Project. A site layout map illustrating these key elements is provided in Figure 2. In addition to the on-site improvements, the Project may require upgrades to other portions of the electrical system. These system upgrades, as well as the Applicant's portion of the associated costs, will be defined in a Facility Study conducted by the New York Independent System Operator (NYISO).

The Project is designed to provide economical renewable electricity to meet New York State's growing energy needs. The Project design and construction methodology were chosen to strike a balance between maximizing energy production, minimizing geological and environmental impacts, and limiting potential intrusions on the host community. The Project is expected to be in service for at least 20 years. Well maintained wind power plants operating according to industry standard practices are capable of service lives longer than 20 years. Due to the rapid advancement in wind turbine technology, it is possible that during the Project's service life, the turbines would be retrofitted or replaced under a re-powering program. Such retrofitting is not uncommon at older wind power projects in Europe and California.

2.2 Project Location

The Project is located on the Onondaga Escarpment, a limestone escarpment, which runs the length of Western New York, passing through Town of Alabama in the northwest corner of Genesee County. The escarpment, known locally as the Ledge, marks the relative dividing line between the Lake Erie and Lake Ontario basins that bound the region and drive the region's energetic winds. A map showing the Project location is presented as Figure 1, Regional Project Location.

The Project Area boundaries shown in Figure 2 encompass all proposed Project facilities and generally extend from Macomber Road to the east, Galloway and Christie Roads to the south, Alleghany Road to the west, and Reed Road to the north. The substation/POI facility is located just south of Judge Road and west of Gorton Road adjacent to the existing National Grid (formerly Niagara Mohawk Power Corporation) 115-kV transmission line.

The entire Project Area encompasses approximately 4,849 acres (7.6 square miles) of leased private land in the southwest corner of the Township of Alabama. The Project facilities will temporarily impact approximately 312 acres of land during construction and 66 acres during Project operations. A site layout illustrating these key elements is contained in Figure 2, Proposed Project Layout.

The Project Area is characterized by gently-slopping topography with elevation ranging from approximately 710 feet above mean sea level (amsl) in the northern most portion of the Project Area to 910 feet amsl at the southern most portion of the Project Area. Land use within the Project Area is dominated by active agriculture, with farms and single-family rural residences generally occurring along the road frontages. All land within the Project Area is zoned agricultural-residential or industrial.

2.2.1 Project Participation

Approximately 21 landowners over 51 parcels will have improvements to their land due to Project construction. An additional 40 parties have signed neighbor agreements, non-disturbance agreements, or setback waivers with the Applicant. The Applicant has secured sufficient acreage under lease and easement option agreements to construct an economically viable Project and is concluding negotiations on additional neighboring parcels.

2.3 Project Facility Owner/Developer/Operator

The Applicant is a wholly owned direct subsidiary of Horizon Wind Energy LLC (Horizon). Horizon and its subsidiaries and affiliates develop, construct, own and operate wind farms throughout North America. Based in Houston, Texas with over 20 offices across the United States, Horizon has developed more than 3,400 MW and operates over 2,800 MW of wind farms. Horizon has over 1,620 turbines in operation in the United States and a total of over 30 million hours of wind turbine operational history through its 22 wind farms in nine states across the country.

Since acceptance of the Applicant's DEIS on February 11, 2008, Horizon has commissioned 1,369 MW of additional wind capacity throughout the country, with another 601 MW anticipated to be online by the end of 2010. Operating assets in New York include the Maple Ridge Wind Farm on Tug Hill in Lewis County, New York (50 percent owned by Horizon and 50 percent owned by Iberdrola Renewables) and the Madison Wind Farm in Madison County, New York. At the time this report was prepared, Horizon has more than 14,000 MW under various stages of development.

Horizon is owned by EDP Renewables (EDPR), a global leader in the renewable energy sector that designs, develops, manages and operates power plants that generate electricity from renewable energy sources. EDPR has a total installed capacity of 6,259 MW. Horizon is now in its tenth year of developing wind energy facilities in New York, with two operating projects, four New York development offices, and extensive experience in development, construction, and operation.

2.4 Project Facility Layout and Components

2.4.1 Facility Layout Criteria

In addition to the facility layout criteria described in the DEIS, which included wind resource assessment, land use constraints and setbacks, and the locations of sensitive environmental and cultural resources, the SDEIS layout has been revised based on the results of field-based wetland delineation, cultural resource investigations, and other issues raised during the public comment period on the DEIS to avoid sensitive resources to the extent practicable. Further information regarding supplemental wetland and cultural resource investigations performed since the DEIS are provided in Sections 3.2 and 3.7, respectively, and corresponding Appendices E and F.

2.4.2 Roads and Civil Construction Work

Project site roads are designed to allow for oversized heavy equipment to be transported to the Project Area and will be used throughout the life of the Project to allow access to and from the wind turbines, substations and meteorological monitoring towers. Flat areas of no more than 60 feet by 100 feet will be cleared of topsoil, compacted and graveled as necessary adjacent to each turbine location as a crane pad to facilitate the erection of the wind turbines and towers. Other graveled areas are parking areas near the Project O&M facility, as well as an equipment lay-down yard located adjacent to Ledge Road. An on-site concrete batch plant is also planned to be located near the lay-down yard in the southwest end of the Project Area. Figure 2, Proposed Project Layout illustrates the location of the Project facilities. All proposed roads and transportation facilities are sited to minimize ground disturbance in general and disturbance to agricultural lands, wetlands, and cultural resources in particular.

Road access to the Project Area will be provided by a number of existing public roads, as described in Section 3.8 of the DEIS. The Applicant is in the process of developing a detailed construction and delivery plan that will examine the feasibility of transporting large or heavy Project components to and around the Project Area. It is currently estimated that approximately 9.87 miles of existing public roads will be improved to facilitate Project construction.

2.4.2.1 Project Site Roads

Approximately 14 miles of access roads will be constructed and/or improved (3.6 miles of the 14 miles align with existing farm and gas line roads) to access the turbines, compared with 16 miles for the DEIS layout. The remainder of this section is as described in the DEIS.

2.4.2.2 Road Design

Roads will be designed as described in the DEIS.

2.4.3 Turbine Tower Foundations

This section is as described in the DEIS.

2.4.4 Wind Turbine Generators and Central Control System

This section is as described in the DEIS with the exception that rotor diameters for the turbines proposed for the Project have increased from up to 100 meters to up to 112 meters .

2.4.5 Electrical Collection System Infrastructure

The total distance of underground interconnecting electric power lines is now 18.5 miles, compared to 22 miles in the DEIS. The length of overhead power lines potentially necessary for the Project has been reduced from 1 mile in the DEIS to 0.2 mile in the SDEIS. The length of overhead line previously proposed between and parallel to Gorton and Wight Roads is currently proposed as an underground collection line. The updated route is now based on consideration of field-based resource data not available at the time of the DEIS filing, avoidance and minimization of environmental impacts, and negotiations with landowners within the route vicinity.

2.4.6 Interconnection Substation Facilities

This section is as described in the DEIS with the exception of the substation location. The location of the proposed POI switchyard and substation parcel of land immediately east of Wight Road and approximately 1,000 feet south of the intersection of Wight Road and Judge Road. The proposed POI switchyard and substation location is shown on Figure 2, and a comparison of the layout between the DEIS and SDEIS is shown on Figure 3.

2.4.7 Project Grounding System

This section is as described in the DEIS.

2.4.8 Meteorological Monitoring Station Towers

This section is as described in the DEIS.

2.4.9 Operations & Maintenance Facility

This section is as described in the DEIS with the exception of the O&M facility location; a comparison of the layout between the DEIS and SDEIS is shown on Figure 3. The O&M building and laydown yard location are currently both proposed to be located on the Buffalo Crushed Stone property on south side of Ledge Road at the intersection with Kenyon Road.

2.5 Project Construction

The following Table 2.5-1 provides details on the Project components and their individual footprint during construction (temporary disturbance) and operation (permanent disturbance).

Table 2.5-1. Proposed Project Impact Assumptions

Project Components	Typical Area of Vegetation Clearing	Area of Total Soil Disturbance (temporary and permanent)	Area of Permanent Soil Disturbance
Wind Turbines and Workspaces	250-foot radius per turbine	250-foot radius per turbine	50-foot radius 60 feet x 100 feet crane pad
New Access Roads a/	100 feet wide per linear foot of road	54 feet wide per linear foot of road	34 feet wide per linear foot of road
Improved Existing Public Roads b/	50 feet wide (adjacent to existing road)	50 feet wide (adjacent to existing road)	50 feet wide (adjacent to existing road)
Buried Electrical Collection Lines and Communications Cables	75 feet wide per linear foot of cable	35 feet wide per linear foot of cable plus 10 feet per additional circuit	None (land over buried cable will be restored)
Overhead Electrical Collection Lines	150 feet wide per linear foot of cable	12 feet wide temporary road within cleared area for construction access	Limited to pole footprint diameter and any permanent tree clearing that extends to the ROW
Permanent Meteorological Towers	1 acre per tower	1 acre per tower	0.1 acre per tower
O&M Building Facility	5 acres	5 acres	5 acres
Construction Laydown Yard	15 acres	15 acres	None
Collection Substation/POI Switchyard/Switchgear Facility	5.8 acres each	5.8 acres each	5.8 acres each
Temporary Crane Paths over Fields c/	N/A	N/A (within other cleared areas)	None

a/ Permanent road width in agricultural lands will be 16 feet, in accordance with NY Agricultural Protection Measures, with necessary improvements for side slopes, ditches, culverts, etc. For purposes of the EIS the permanent disturbance is assumed to be 22 feet. Permanent road widths in wetland areas may be as low as 16 feet wide, with necessary improvements for side slopes, ditches culverts, etc. For purposes of the EIS the permanent disturbance is 20 feet, depending on site-specific conditions. In areas of steep slopes, cut and fill measures may cause temporary and/or permanent road impact widths to be greater than the typical widths presented in this table. All specific cut and fill areas and their associated impact dimensions will be included in final design documents for the Project and will be included with local building permit applications.

b/ Temporary road widening will average a total of 50 additional feet by the length of the improvement. Improved area will either be on one or both sides of the road, depending on site-specific conditions. Extent of permanent impacts will depend on highway agreements with state, county, and town highway departments. Where requested, improved areas will remain permanent if dictated by highway departments.

c/ Crane paths are designed to walk the crane from turbine to turbine during construction only. Cranes will typically be moved along new or existing access roads. If off-road movement is necessary, soil compaction and decompaction is expected to be limited to plow zone/logging skidding zone and will not result in new ground disturbance. After construction, if and when a crane is needed, it will be trucked in using the access road and erected at the turbine.

2.6 Operations and Maintenance

This section is as described in the DEIS.

2.7 Decommissioning

The following Table 2.7-1 updates the anticipated decommissioning costs associated with the Project.

Table 2.7-1. Decommissioning Costs Summary

Decommissioning Cost per WTG (in Current U.S. Dollars):				
Pay Item Description	**Quantity**	**Unit of Measure**	**Unit Price**	**Total Price**
Turbine and BOP	40	Each	$72,237.88	$2,889,515.20
Substation Removal	1	Each	$44,000	$44,000
Total Decommissioning Cost				***$2,933,515.20***
	Salvage Value			
Turbine, BOP, and Substation	40	Each	$73,936.39	$2,957,455.49
Total Scrap Value				***$2,957,455.49***
Estimated Cost of Decommissioning, minus Salvage Value:				***-$23,940.29***

Assumptions:
BOP = Balance of Plant
Access roads are wide enough to permit crane walk.
Loadout of tower and nacelle onto owner provided trucks at time of crane picks for disposal or salvage.
Gravel hauled with 20 miles of location and disposed of or stock piled.
All transformers loaded onto owner provided trucks for disposal or salvage.
Assume 2 acres / location to be reclaimed and revegetated.
Cost does not included future regulatory requirements.

2.8 Project Purpose, Need and Benefit

The purpose of the proposed action is to create a wind-powered electrical-generating facility that will provide a significant source of renewable energy to the New York power grid. The Project would facilitate compliance with the Public Service Commission (PSC) "Order Approving Renewable Portfolio Standard Policy," issued on September 24, 2004. This Order calls for an increase in renewable energy used in the State to 25 percent (from the then level of 19 percent) by the year 2013. On January 8, 2010 following a planned mid-course review of the RPS program and its goals, the PSC increased the goal again to 30 percent by 2015 in a subsequent order (NYSERDA 2010). The Project responds to objectives identified in the 2002 and updated 2009 New York State Energy Plan (State Energy Plan) and Final Environmental Impact

Statement (New York State Energy Planning Board 2002), and the Preliminary Investigation into Establishing a Renewable Portfolio Standard in New York (NYSERDA 2003). These objectives include stimulating economic growth, increasing energy diversity, and promoting a cleaner and healthier environment. The benefits of the proposed action include positive impacts on socioeconomics (e.g., payment-in-lieu of tax (PILOT) revenues to local municipalities, lease revenues to participating landowners, and reduced wholesale electricity prices statewide), air quality (through reduction of emissions from fossil-fuel-burning power plants), and climate (reduction of greenhouse gases that contribute to global warming).

The Project as currently presented in this SDEIS is expected to offset annual air emissions of nitrogen oxide (NO_x) by 197 tons, sulfur dioxide (SO_2) by 686 tons, and carbon dioxide (CO_2) by 180,463 tons.

2.9 Project Cost and Funding

As presented in the DEIS, the estimated capital cost to construct the Project is still in the range of $140 to $180 million. The Applicant to date has committed to investing millions of dollars at risk capital to option the land and associated wind rights of area landowners as well as to conduct initial Project feasibility studies, permitting, and environmental reviews. The Applicant anticipates investing between five and ten million dollars, the same amount as presented in the DEIS, to complete the engineering and permitting studies necessary to finalize the Project's design.

The Applicant will provide all of the investment capital necessary to take the Project up to construction and operation. The Project will receive no public funding from the federal, state, or local governments during development or construction. The current Production Tax Credit (PTC) program applies to projects in service by December 31, 2012 and may be extended beyond 2012 such that the Project will receive tax credits worth $22/MWh of power it delivers to the electrical grid for the first 10 years of its operation. The Applicant may opt for a federal cash grant based on total Project costs in lieu of the PTC.

New York State's Renewable Portfolio Standards (RPS) creates a market for the green energy attributes of wind power that is separate from the underlying value of the electricity. These attributes, referred to as renewable energy credits (RECs), are generated according to the number of megawatt-hours (MWh) of power the Project produces. The Project must bid for the right to sell its RECs to the State, however, and must compete with all bidders from across New York and adjacent states or provinces. Currently, about 48 wind energy projects representing over 6,800 MW of power have active interconnection requests with the NYISO (NYISO 2010). Since the RPS program's inception in 2004, New York State Energy Research and Development Authority (NYSERDA) has conducted five competitive solicitations for RECs from utility-scale renewable facilities, awarding RPS contracts to 39 facilities with a total installed capacity of 1,532 MW. The average REC price over the course of the program is $18.18/MWh.

The Applicant anticipates bidding in future rounds of REC auctions. If the Project is not initially selected, the Applicant can bid the Project again in subsequent auctions. Based upon prevailing electricity prices, the Applicant does not anticipate initiating construction of the Project until it wins a REC award or secures an alternative contract for the offtake of the electricity and/or RECs.

2.10 Permits and Approvals Required

Implementation of the Project will require numerous permits, approvals, and consultations with local, state, and federal agencies. The permits and approvals that are expected to be required are listed in Table 2.10.1.

Table 2.10-1. Permits and Approvals for the Project

Agency	SEQRA Agency Status	Description of Permit or Approval Potentially Required
Towns		
Town of Alabama Town Board	Lead Agency	Site Plan approval SEQRA Lead Agency SEQRA Findings Approval of Town road agreements
Town of Alabama Planning Board	Interested	Advisory Recommendation to the Town Board
Town of Alabama Departments (Public Works, Codes, etc.)	Interested	Issuance of building permits Review and approval of highway work permits Review of Town road agreements
Genesee County		
Highway Department	Involved	Highway work permits SEQRA Findings
Genesee County Industrial Development Agency (IDA)	Involved	Potential funding through PILOT agreement Issuance of SEQRA Findings
Genesee County Planning Board	Interested	Recommendation pursuant to General Municipal Law
New York State		
Department of Environmental Conservation (NYSDEC)	Involved	New York Environmental Conservation Law (NYECL) Article 24 Permit for disturbances to state regulated wetlands NYECL Article 15 Permit for disturbance of protected streams State Pollutant Discharge Elimination System (SPDES) General Permit. Section 401 Water Quality Certification Issuance of SEQRA findings

Agency	SEQRA Agency Status	Description of Permit or Approval Potentially Required
Department of Transportation (NYSDOT)	Involved	Special Use Permit for oversize/overweight vehicles Highway work permit Issuance of SEQRA Findings
Department of Agriculture & Markets (NYSA&M)	Interested	Consultation
PSC	Interested	Consultation
NYSERDA	Interested	Possible funding through Renewable Portfolio Standard Auction
Office of Parks, Recreation & Historic Preservation (OPRHP)	Interested	Consultation pursuant to New York Parks, Recreation and Historic Preservation Law (PRHPL) § 14.09 and Section 106 of the National Historic Preservation Act (NHPA)
Federal		
Federal Aviation Administration (FAA)	N/A	Lighting Plan and clearances for potential aviation hazard
United States Army Corps of Engineers (USACE)	N/A	Section 404 Permit for placement of fill in federal jurisdictional wetlands/waters of the U.S. National Environmental Policy Act (NEPA) compliance Compliance with Section 106 of the NHPA Compliance with Section 7 of the Endangered Species Act
United States Fish and Wildlife Service (USFWS)	N/A	Consultation

2.11 Public and Agency Involvement

The Applicant public and agency outreach activities conducted prior to the formal submittal of the DEIS are as described in the DEIS. Additional outreach activities since the DEIS have consisted of consultation with the SHPO to clarify archeological study needs for the Project and to receive their review on both the archeological and architectural study (Appendix F and G). Agency correspondence since the DEIS is provided in Appendix A of the SDEIS.

2.12 SEQRA Process

On January 10, 2007, a Full Environmental Assessment Form (EAF) addressing the proposed wind power Project was submitted by the Applicant to the Alabama Town Board pursuant to SEQRA. The formal submittal of the EAF initiated the SEQRA process for the subject action. Also on January 10, 2007 a solicitation of Lead Agency Status was forward to involved SEQRA agencies by the Alabama Town Board, along with a copy of the EAF document. All other

involved agencies agreed to the Alabama Town Board's assumption of Lead Agency in this matter. On March 12, 2007, the Alabama Town Board, as Lead Agency, issued a positive declaration, requiring the preparation of a DEIS. In preparation of receiving the DEIS, the Town of Alabama established a 60-day public scoping period including a public hearing on May 3, 2007.

The DEIS was accepted by the Town of Alabama for public review on February 11, 2008. A public meeting was held on March 25, 2008 at the South Alabama Fire Hall in Oakfield, New York. The public comments on the DEIS were accepted through May 13, 2008, with an extension until May 30, 2008 granted at the request of interested agencies. Following completion of the public comment period, the Applicant began drafting response to comments in preparation of submitting an FEIS.

Due to the Project layout changes since the DEIS, the Town requested that the Applicant consider preparation of an SDEIS prior to submitting an FEIS to allow the Town to review the changes in more detail. On December 14, 2009, the Applicant formally submitted a letter to the Town of Alabama explaining the Applicant's intentions to prepare and submit a SDEIS. On April 12, 2010, the Town of Alabama, as Lead Agency, reissued a Positive Declaration on the Project for the preparation of a SDEIS (Appendix A). A public scoping process was held to decide on the scope for the SDEIS. A public scoping meeting was held on May 3, 2010 with comments on the draft scope accepted through May 15, 2010. The Town of Alabama accepted the Final Scope on July 12, 2010 (Appendix A).

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

- SDEIS accepted by Lead Agency (Alabama Town Board).
- File notice of completion of SDEIS and notice of public hearing and comment period.
- Public hearing on the SDEIS (must be held at least 14 days after public notice is published).
- 60-day public comment period.
- Complete FEIS; document accepted by Lead Agency.
- File Notice of Completion of FEIS.
- 10-day public consideration period.
- Lead Agency issues Finding Statement, completing the SEQRA process.
- Involved agencies issue Findings Statements.

This SDEIS, along with a copy of the public notice, will be distributed for review and comment to the public, will be posted on the Project website, and circulated to involved and interested agencies.

3.0 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

3.1 Soils, Topography and Geological Resources

3.1.1 Existing Conditions

As described in the DEIS, information for this section was compiled from published federal and state geologic maps, reports and technical studies (as referenced below and listed in the References section), and field observations in the Project Area.

3.1.1.1 Soils

The existing conditions of soil designations within the Project area are similar to those described within the DEIS; however, due to the revised Project layout, the soil series and specific component soil types likely to be impacted by the Project have changed slightly. Table 3.1-1 provides an updated list of soil types anticipated to be affected either temporarily or permanently by the Project.

Table 3.1-1. Impacts by Soil Types

Soil Symbol	Soil Name	Acres Temporary Impact	Acres Permanent Impact
Ad	Alden mucky silt loam	0.14	0.06
ApA	Appleton silt loam, 0 to 3 percent slopes	10.61	2.51
AuA	Aurora silt loam, 0 to 3 percent slopes	6.10	1.41
AuB	Aurora silt loam, 3 to 8 percent slopes	0.41	0.00
BeB	Benson soils, 0 to 8 percent slopes	31.56	8.48
BeD	Benson soils, 8 to 25 percent slopes	5.27	0.57
BeE	Benson soils, 25 to 40 percent slopes	1.61	0.00
CaA	Canandaigua silt loam, 0 to 2 percent slopes	18.78	5.94
CbA	Canandiagua mucky silt loam, 0 to 2 percent slopes	12.95	2.67
CeB	Cazenovia silt loam, 3 to 8 percent slopes	7.90	1.23
CgC3	Cazenovia silty clay loam, 8 to 15 percent slopes, eroded	1.85	0.14
ClB	Collamer silt loam, 2 to 6 percent slopes	4.44	0.65
DuC	Dunkirk silt loam, 6 to 12 percent slopes	0.37	0.25
HlA	Hilton loam, 0 to 3 percent slopes	0.97	0.00
HlB	Hilton loam, 3 to 8 percent slopes	9.41	1.40
IoA	Ilion silt loam, 0 to 3 percent slopes	0.08	0.00
La	Lakemont silty clay loam	0.16	0.00
Ld	Lamson very fine sandy loam	15.57	2.55
Le	Lamson mucky very fine sandy loam	3.44	0.72

Soil Symbol	Soil Name	Acres Temporary Impact	Acres Permanent Impact
LmA	Lima silt loam, 0 to 3 percent slopes	17.35	3.97
LmB	Lima silt loam, 3 to 8 percent slopes	13.46	3.63
LoA	Lyons silt loam, 0 to 3 percent slopes	0.10	0.00
Ma	Madalin silty clay loam	0.01	0.00
NeA	Newstead silt loam, 0 to 3 percent slopes	1.54	0.06
NgA	Niagara silt loam, 0 to 2 percent slopes	0.44	0.27
OdA	Odessa silt loam, 0 to 2 percent slopes	2.10	0.17
OnA	Ontario loam, 0 to 3 percent slopes	8.66	1.74
OnB	Ontario loam, 3 to 8 percent slopes	42.12	8.38
OnC	Ontario loam, 8 to 15 percent slopes	1.72	0.07
OnD	Ontario loam, 15 to 25 percent slopes	0.09	0.00
OsC	Ontario stony loam, 8 to 15 percent slopes	1.10	0.00
OvA	Ovid silt loam, 0 to 3 percent slopes	16.53	4.98
OvB	Ovid silt loam, 3 to 8 percent slopes	21.10	2.90
Pd	Palms muck	0.24	0.00
PhA	Palmyra gravelly loam, 0 to 3 percent slopes	0.25	0.00
PhB	Palmyra gravelly loam, 3 to 8 percent slopes	5.21	0.74
QU	Quarries	16.37	4.95
RsA	Romulus silt loam, 0 to 3 percent slopes	11.55	3.13
Ru	Rubbleland	0.18	0.11
SmB	Scio silt loam, 2 to 8 percent slopes	0.80	0.00
WsB	Wassaic silt loam, 2 to 8 percent slopes	19.73	2.53
	Total	**312.24**	**66.22**

Source: USDA NRCS 2009.

The information presented in Table 3.1-2, General Description of Soil Units of the DEIS has also been updated to reflect the properties and parameters for all soil units impacted by the revised Project layout. Refer to Table 3.1-2 General Description of Soil Units for updated information.

Table 3.1-2. General Description of Soil Units

Soil Name	Hydrologic Group[1]	Water Table Depth (ft)	Bedrock Depth (ft)	Drainage Classification	pH	Risk of Corrosion		Erosion Factors K	Unified Soil Classification[2]	Plasticity Index
						Uncoated Steel	Concrete			
Alden mucky silt loam	D	0	6.6	Very poorly drained	7.1	High	Low	.24	OL	10.0
Appleton silt loam, 0 to 3 percent slopes	C	1	6.6	Somewhat poorly drained	7.2	High	Low	.28	ML	8.0
Aurora silt loam, 0 to 3 percent slopes	B	1	3.0	Moderately well drained	7.0	Moderate	Low	.28	CL	13.1
Aurora silt loam, 3 to 8 percent slopes	B	1	3.0	Moderately well drained	7.0	Moderate	Low	.28	CL	13.1
Benson soils, 0 to 8 percent slopes	D	7	1.6	Somewhat excessively drained	6.9	Low	Moderate	.24	SC	9.0
Benson soils, 8 to 25 percent slopes	D	7	1.6	Somewhat excessively drained	6.9	Low	Moderate	.24	SC	9.0
Benson soils, 25 to 40 percent slopes	D	7	1.6	Somewhat excessively drained	6.9	Low	Moderate	.24	SC	9.0
Canandaigua silt loam, 0 to 2 percent slopes	D	0	6.6	Poorly drained	7.4	High	Low	.49	CL	8.4
Canandiagua mucky silt loam, 0 to 2 percent slopes	D	0	6.6	Very poorly drained	7.4	High	Low	.43	OL	8.4
Cazenovia silt loam, 3 to 8 percent slopes	B	2	6.6	Moderately well drained	7.5	High	Low	.28	ML	10.0
Cazenovia silty clay loam, 8 to 15 percent slopes, eroded	B	2	6.6	Moderately well drained	7.5	High	Low	.28	ML	10.0
Collamer silt loam, 2 to 6 percent slopes	C	2	6.6	Moderately well drained	6.9	Moderate	Low	.49	CL	8.6
Dunkirk silt loam, 6 to 12 percent slopes	B	7	6.6	Well drained	6.8	Low	Low	.49	CL	5.4
Hilton loam, 0 to 3 percent slopes	B	2	6.6	Moderately well drained	7.0	Moderate	Moderate	.20	CL-ML	6.6
Hilton loam, 3 to 8 percent slopes	B	2	6.6	Moderately well drained	7.0	Moderate	Moderate	.20	CL-ML	6.6
Ilion silt loam, 0 to 3 percent slopes	D	0	6.6	Poorly drained	7.6	High	Low	.28	ML	10.0
Lakemont silty clay loam	D	0	6.6	Poorly drained	7.4	High	Low	.49	CL	17.3
Lamson very fine sandy loam	B/D	0	6.6	Poorly drained	7.3	High	Low	.37	ML	1.1

Soil Name	Hydrologic Group[1]	Water Table Depth (ft)	Bedrock Depth (ft)	Drainage Classification	pH	Risk of Corrosion		Erosion Factors K	Unified Soil Classification[2]	Plasticity Index
						Uncoated Steel	Concrete			
Lamson mucky very fine sandy loam	B/D	0	6.6	Very poorly drained	7.3	High	Low	.32	ML	1.1
Lima silt loam, 0 to 3 percent slopes	B	1	6.6	Moderately well drained	7.3	Moderate	Low	.28	CL	9.7
Lima silt loam, 3 to 8 percent slopes	B	1	6.6	Moderately well drained	7.3	Moderate	Low	.28	CL	9.7
Lyons silt loam, 0 to 3 percent slopes	D	0	6.6	Poorly drained	7.4	High	Low	.28	ML	10.0
Madalin silty clay loam	D	0	6.6	Poorly drained	7.4	High	Low	.37	MH	24.5
Newstead silt loam, 0 to 3 percent slopes	C	1	2.2	Somewhat poorly drained	6.8	High	Low	.28	ML	10.0
Niagara silt loam, 0 to 2 percent slopes	C	1	6.6	Somewhat poorly drained	7.4	High	Low	.49	ML	8.3
Odessa silt loam, 0 to 2 percent slopes	D	1	6.6	Somewhat poorly drained	7.6	High	Low	.49	ML	25.9
Ontario loam, 0 to 3 percent slopes	B	7	6.6	Well drained	7.0	Low	Low	.20	ML	6.2
Ontario loam, 3 to 8 percent slopes	B	7	6.6	Well drained	7.0	Low	Low	.20	ML	6.2
Ontario loam, 8 to 15 percent slopes	B	7	6.6	Well drained	7.0	Low	Low	.20	ML	6.2
Ontario loam, 15 to 25 percent slopes	B	7	6.6	Well drained	7.0	Low	Low	.20	ML	6.2
Ontario stony loam, 8 to 15 percent slopes	B	7	6.6	Well drained	7.0	Low	Low	.17	SM	6.2
Ovid silt loam, 0 to 3 percent slopes	C	1	6.6	Somewhat poorly drained	7.4	High	Low	.28	ML	10.0
Ovid silt loam, 3 to 8 percent slopes	C	1	6.6	Somewhat poorly drained	7.4	High	Low	.28	ML	10.0
Palms muck	A/D	0	6.6	Very poorly drained	0.0	High	Moderate	NA	PT	12.5
Palmyra gravelly loam, 0 to 3 percent slopes	B	7	6.6	Well drained	7.6	Low	Low	.20	SC	3.0

Soil Name	Hydrologic Group[1]	Water Table Depth (ft)	Bedrock Depth (ft)	Drainage Classification	pH	Risk of Corrosion		Erosion Factors K	Unified Soil Classification[2]	Plasticity Index
						Uncoated Steel	Concrete			
Palmyra gravelly loam, 3 to 8 percent slopes	B	7	6.6	Well drained	7.6	Low	Low	.20	SC	3.0
Quarries	NA	7	6.6	NA	0.0	NA	NA	NA	NA	0.0
Romulus silt loam, 0 to 3 percent slopes	D	0	6.6	Poorly drained	7.3	High	Low	.32	ML	10.0
Rubbleland	NA	7	6.6	NA	0.0	NA	NA	NA	NA	0.0
Scio silt loam, 2 to 8 percent slopes	B	2	6.6	Moderately well drained	5.9	Moderate	Moderate	.49	ML	2.0
Wassaic silt loam, 2 to 8 percent slopes	B	7	2.5	Well drained	7.4	Low	Low	.28	CL	7.5

NOTES:

Source: USDA NRCS 2009

[1] (a) Definition

Hydrologic group is a group of soils having similar runoff potential under similar storm and cover conditions. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonally high water table, intake rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The influence of ground cover is treated independently.

(b) Classes

The soils in the United States are placed into four groups, A, B, C, and D, and three dual classes, A/D, B/D, and C/D. In the definitions of the classes, infiltration rate is the rate at which water enters the soil at the surface and is controlled by the surface conditions. Transmission rate is the rate at which water moves in the soil and is controlled by soil properties. Definitions of the classes are as follows:

A. (Low runoff potential). The soils have a high infiltration rate even when thoroughly wetted. They chiefly consist of deep, well drained to excessively drained sands or gravels. They have a high rate of water transmission.

B. The soils have a moderate infiltration rate when thoroughly wetted. They chiefly are moderately deep to deep, moderately well drained to well drained soils that have moderately fine to moderately coarse textures. They have a moderate rate of water transmission.

C. The soils have a slow infiltration rate when thoroughly wetted. They chiefly have a layer that impedes downward movement of water or have moderately fine to fine texture. They have a slow rate of water transmission.

D. (High runoff potential). The soils have a very slow infiltration rate when thoroughly wetted. They chiefly consist of clay soils that have a high swelling potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. They have a very slow rate of water transmission.

(1) Dual hydrologic groups, A/D, B/D, and C/D, are given for certain wet soils that can be adequately drained. The first letter applies to the drained condition, the second to the undrained. Only soils that are rated D in their natural condition are assigned to dual classes. Soils may be assigned to dual groups if drainage is feasible and practical.

[2] Unified Soil Classification, see ASTM D2487.

NA -not available

3.1.1.2 Prime Farmland

The descriptions of Prime Farmland Soils, Prime Farmland Soils If Irrigated, and Farmland Soils of Statewide are as described in the DEIS. It is important to clarify that the designation of a soil under any of these classes does not necessarily indicate that the land is currently or was formerly used for agricultural purposes; rather, it simply indicates that the soil type possesses the necessary physical and chemical criteria to satisfy the designation defined by the United States Department of Agriculture (USDA) or pertinent state agencies.

Table 3.1-3 Impacts to Farmland Soils presents updated estimates of temporary and permanent impacts to farmland soils from Project construction and operation.

Table 3.1-3. Impacts to Farmland Soils

Soil Type		Acres Temporary Impact	Acres Permanent Impact
Prime Farmland Soils			
Cazenovia silt loam, 3 to 8 percent slopes		7.90	1.23
Collamer silt loam, 2 to 6 percent slopes		4.44	0.65
Hilton loam, 0 to 3 percent slopes		0.97	0.00
Hilton loam, 3 to 8 percent slopes		9.41	1.40
Lima silt loam, 0 to 3 percent slopes		17.35	3.97
Lima silt loam, 3 to 8 percent slopes		13.46	3.63
Ontario loam, 0 to 3 percent slopes		8.66	1.74
Ontario loam, 3 to 8 percent slopes		42.12	8.38
Palmyra gravelly loam, 0 to 3 percent slopes		0.25	0.00
Palmyra gravelly loam, 3 to 8 percent slopes		5.21	0.74
Scio silt loam, 2 to 8 percent slopes		0.80	0.00
Wassaic silt loam, 2 to 8 percent slopes		19.73	2.53
	Subtotal	***130.29***	***24.27***
Prime Farmland If Drained			
Appleton silt loam, 0 to 3 percent slopes		10.61	2.51
Newstead silt loam, 0 to 3 percent slopes		1.54	0.06
Niagara silt loam, 0 to 2 percent slopes		0.44	0.27
Odessa silt loam, 0 to 2 percent slopes		2.10	0.17
Ovid silt loam, 0 to 3 percent slopes		16.53	4.98
Ovid silt loam, 3 to 8 percent slopes		21.10	2.90
	Subtotal	***52.31***	***10.89***
Farmland of Statewide Importance			
Aurora silt loam, 0 to 3 percent slopes		6.10	1.41
Aurora silt loam, 3 to 8 percent slopes		0.41	0.00

Soil Type		Acres Temporary Impact	Acres Permanent Impact
Benson soils, 0 to 8 percent slopes		31.56	8.48
Canandaigua silt loam, 0 to 2 percent slopes		18.78	5.94
Dunkirk silt loam, 6 to 12 percent slopes		0.37	0.25
Ilion silt loam, 0 to 3 percent slopes		0.08	0.00
Lakemont silty clay loam		0.16	0.00
Madalin silty clay loam		0.01	0.00
Ontario loam, 8 to 15 percent slopes		1.72	0.07
Ontario stony loam, 8 to 15 percent slopes		1.10	0.00
Romulus silt loam, 0 to 3 percent slopes		11.55	3.13
	Subtotal	***71.83***	***19.29***
	Total	**254.43**	**54.45**

Source: USDA NRCS 2009.

3.1.1.3 Topography

The topography within the Project Area is as described in the DEIS.

3.1.1.4 Surficial Geology

The surficial geology within the Project Area is as described in the DEIS.

3.1.1.5 Bedrock Geology

The existing conditions of bedrock geology is as described in the DEIS.

3.1.1.6 Unusual Landforms or Geologic Formations

The existing conditions of unusual landforms and geologic formations is as discussed in the DEIS. Review of updated NYSDEC data indicates that two additional mining facilities are also located within 1.5 miles of the Project. Both mining operations are inactive surficial sand and gravel pits that have been reclaimed (NYSDEC Division of Mineral Resources 2009).

3.1.2 Potential Impacts

3.1.2.1 Construction

3.1.2.1.1 Soil Erosion and Siltation

Approximately 312 acres of surface soils will be disturbed during the construction of the Project. Once construction activities are complete, 79 percent of the disturbed area, or approximately 246 acres of surface soil, will be restored. Table 3.1-4 depicts the approximate area of both temporary and permanent soil disturbance associated with the revised Project layout.

As described in the DEIS, the Project will submit and obtain a SPDES permit, which will address all applicable erosion and sedimentation control measures required to sufficiently eliminate the potential for contamination and erosion caused by the disturbance of construction activities The SPDES will also include a spill prevention control plan that will be implemented during construction, in the event equipment has a fuel leak or there is another hazardous material leak.

Table 3.1-4. Approximate Area of Soil Disturbance

Project Component	Temporary Impact (acres)	Permanent Impact (acres)
Turbines	180.0	7.2
Access Roads	62.5	48.0
Underground Electrical Collection Lines	45.6	0
Overhead Collection and Transmission Lines	0.3	<0.1
O&M Building*	0	5
Substation	5.8	5.8
Construction Laydown Yard	15.0	0
Meteorological Towers	3.0	0.3
Total	**312.2**	**66.3**

*O&M building currently proposed to be located within the 15 acres for the laydown yard following construction.

3.1.2.1.2 Soils in Agricultural Areas

Based on the revised Project layout, construction of the Project would temporarily impact about 130 acres of prime farmland soil, 52 acres of prime farmland soil if drained, and 72 acres of farmland soils of statewide importance. Permanent impacts would be significantly less, including approximately 24 acres of prime farmland soil, 11 acres of prime farmland soil if drained, and 19 acres of farmland soils of statewide importance. Despite their designations, these soils are not necessarily in use for active agricultural production. In addition, most impacts would be short term and would not affect the potential use for 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.

3.1.2.1.3 Excavation in Bedrock

Excavation in bedrock, including the potential necessity for blasting and the potential presence of large boulders, is as described in the DEIS.

3.1.2.2 Operation

3.1.2.2.1 Surface Soils

As described in the DEIS, the Project will design a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the NYSDEC state manuals that will address any alterations to the impervious service values and crossings of the existing drainage patterns.

3.1.2.2.2 Subsidence

The potential for subsidence associated with historic gypsum mining is as described in the DEIS.

3.1.3 Mitigation Measures

3.1.3.1 Soil Erosion and Siltation

As described in the DEIS, a sediment and erosion control plan will be developed as part of the Project SWPPP, which is required by the SPDES permit for construction and the SPDES permit for operation. This plan will address mitigative measures for soil erosion and siltation.

3.1.3.2 Soils in Agricultural Areas

Restoration and other mitigation of impacts to soils in agricultural areas are as described in the DEIS.

3.1.3.3 Excavation and Mining Related Issues

Excavation and mining related issues are primarily as described in the DEIS; however, the revised Project layout includes the siting of the O&M building and construction laydown yard on a parcel of land that was previously quarried by Buffalo Crushed Stone. This area has been filled and reclaimed, and subsidence is therefore not anticipated; however, the Applicant will conduct field-based geotechnical investigations to ensure the safe siting of these Project facilities. Refer to the DEIS for details regarding the methods and scope of these surveys.

3.1.3.4 Management of Oil and Hazardous Materials

Management of oil and hazardous materials, including the development of a Spill Prevention Containment and Countermeasure (SPCC) Plan, is as described in the DEIS.

3.2 Water Resources

The following section describes updated information on surface waters, wetlands, and groundwater resources within the Project Area as a result of the updated Project layout.

3.2.1 Existing Conditions

3.2.1.1 Surface Waters

Existing surface water conditions within the Project Area are as described in the DEIS. Impacts to streams within the Project Area will be described in the updated Wetland Inventory Report that will be included in the FEIS.

3.2.1.2 Wetlands

Land use within the Project Area has not changed substantially from that described in the DEIS. There has been no significant development within the Project Area and agricultural practices remain the overwhelming dominant land use. Thus, it is expected that existing wetland conditions for the Project Area (Figure 4 and 5) remain as described in Appendix D of the DEIS.

The Applicant will prepare a wetland delineation report for the final Project layout and temporary road widening necessary for delivery of Project components that will include the results of the initial field studies that were conducted in the summer and fall of 2008.

Based on final impact calculations, the Applicant will determine whether Joint Permit Application for the NYSDEC and USACE is required in accordance with federal and state permitting requirements. The application would include an updated impact summary for jurisdictional wetlands based on the results of the wetland delineation field effort.

3.2.1.3 FEMA Flood Plain Mapping

As described in the DEIS, the entire Project Area is located outside the 500-year floodplain.

3.2.1.4 Groundwater

Existing conditions for groundwater are as described in the DEIS.

3.2.2 Potential Impacts

3.2.2.1 Construction

3.2.2.1.1 Surface Waters and Wetlands

The DEIS describes general construction impacts to surface waters and wetlands. Construction techniques and mitigation measures will be as described in the DEIS. A comprehensive wetland delineation was performed in the summer and fall of 2008 for the updated Project layout. The updated Wetland Inventory Report will be presented in the FEIS and will include calculations of temporary and permanent impacts as a result of construction of the Project. Wetland impacts from construction of the Project are anticipated to be less than as described in the DEIS as a result of the changes made to the Project layout.

3.2.2.1.2 Groundwater

Potential impacts to groundwater from construction of the Project are as described in the DEIS.

Figure 4. State Mapped Wetlands

Figure 5. National Wetlands Inventory

3.2.2.2 Operation

3.2.2.2.1 Surface Waters and Wetlands

Impacts to surface waters and wetlands from operation of the Project are generally as described in the DEIS. The Project is expected to have fewer permanent impacts as a result of the updated layout. Conversions of forested wetlands to non-forested wetlands are considered a permanent impact under NYSDEC regulations. While the converted area may still be classified as a wetland, the conversion from forested to non-forested may change its function and therefore would constitute a permanent change. Permanent impact calculations from the operation of the Project will be described in the updated Wetland Inventory Report that will be provided in the FEIS.

3.2.2.2.2 Groundwater

Potential impacts to groundwater from operation of the Project are as described in the DEIS.

3.2.3 Mitigation Measures

Mitigation is as described in the DEIS.

3.2.3.1 Surface Waters and Wetlands

As described in the DEIS, mitigation measures for permanent impacts to surface waters and wetlands will be determined through the NYSDEC and USACE permitting process. General mitigation measures for temporary impacts are as described in the DEIS.

3.2.3.2 Groundwater

As described in the DEIS, mitigation measures for impacts to groundwater resources will be factored into the SPCC Plan and the SWPPP.

3.3 Biological, Terrestrial, and Aquatic Ecology

The following section describes updated information on ecological resources within the Project Area, including vegetation, ecological communities, wildlife, and listed threatened and endangered species as a result of the updated Project layout.

3.3.1 Existing Conditions

3.3.1.1 Vegetation and Ecological Communities

Vegetation and ecological communities are generally as describe in the DEIS. Due to modifications in the Project layout and site boundary, acreages of land cover types have changed (Figure 6). Table 3.3-1 provides updated land cover acreages based on the modified Project area.

Table 3.3-1. Land Cover Classes Found within the Project Area

Land Cover Class	Acres	Percent Cover (%)
Cultivated Crops	3,383.33	69.8
Pasture/Hay	638.08	13.2
Deciduous Forest	310.40	6.4
Woody/Forested Wetlands	295.83	6.1
Developed, Low Intensity	95.28	2
Developed, Open Space	63.15	1.3
Emergent Herbaceous Wetlands	1.78	<1
Evergreen Forest	20.60	<1
Open Water	19.53	<1
Mixed Forest	18.00	<1
Developed, Medium Intensity	1.77	<1
Shrub/Scrub	1.56	<1
Total	**4,849.31**	

Source: USGS National Land Cover Dataset (NLCD) 2001

3.3.1.2 Significant Ecological Communities and Rare Plant Species

As stated in the DEIS, the New York State Natural Heritage Program (NHP) responded in December 2006, that there are no known occurrences of state listed threatened or endangered plant species have been documented within the Project Area.

3.3.1.3 Wildlife and Terrestrial Habitat

Wildlife and terrestrial habitat within the Project Area is as described in the DEIS.

3.3.1.3.1 Birds

Avian use within the Project Area is as described in Appendix F of the DEIS. The Applicant is preparing a Draft Avian and Bat Mortality Monitoring Plan in coordination with the NYSDEC.

3.3.1.3.2 Mammals

As mentioned in the DEIS, no formal surveys for mammals were conducted in the Project Area.

3.3.1.3.3 Fish

Fish resources within the Project Area are as described in the DEIS.

3.3.1.3.4 Wildlife Habitat

As discussed in Section 3.3.1.1, wildlife habitat within the Project Area is as described in the DEIS.

Figure 6. National Land Cover

3.3.1.4 Threatened and Endangered Wildlife Species

As discussed in the DEIS, the NHP indicated that there are 12 State-protected, threatened, or endangered species that have the potential to occur within the Project Area. There is no new available information on threatened and endangered wildlife species.

3.3.2 Potential Impacts

3.3.2.1 Construction

3.3.2.1.1 Vegetation

The updated Project layout will temporarily disturb approximately 312 acres and permanently disturb approximately 66 acres of vegetative cover (Table 3.3-2). Conversely, impacts as discussed in the DEIS would have temporarily disturbed 348.20 acres and permanently disturbed 89.85 acres. Due to layout modifications, the updated Project layout will result in a reduction of impacts totaling approximately 59.73 acres. Of this, the updated Project layout will result in a disturbance reduction of 8.16 acres to forested areas. All other vegetation impacts from construction of the Project are as described in the DEIS.

Table 3.3-2. Impacts to Vegetative Communities

	Temporary Impacts		Permanent Impacts	
Land Use Class	**(acres)**	**(% Impact)**	**(acres)**	**(% Impact)**
Cultivate Crops	243.97	78	53.78	81
Deciduous Forest	18.70	6	2.08	3
Developed, Low Intensity	3.74	1	1.06	2
Developed, Medium Intensity	0.09	<1	0.06	<1
Developed, Open Space	2.87	<1	1.24	2
Evergreen Forest	3.98	1	0.31	<1
Mixed Forest	2.09	<1	0.14	<1
Pasture/Hay	32.48	10	7.00	11
Woody Wetlands	4.21	1	0.53	<1
Total	**312.13**		**66.19**	

Note: Affected acreages, including wetlands, are from NLCD 2001 coverages and thus are estimated. More detailed wetland impact calculations based on field-based wetland delineations will be presented in the FEIS.

3.3.2.1.2 Fish and Wildlife

Impacts to fish and wildlife from construction of the Project are as described in the DEIS.

3.3.2.1.3 Threatened and Endangered Species

Construction of the Project would not have any impacts on rare plants. Impacts on other threatened and endangered wildlife species are as described in the DEIS.

3.3.2.2 Operation

3.3.2.2.1 Vegetation

As discussed in Section 3.3.2.1.1, operation of the Project will result in approximately 66 acres of permanent impacts to vegetation. Due to Project modifications, permanent impacts have been reduced by 23.66 acres from those described in the DEIS. All other operational impacts are as described in the DEIS.

3.3.2.2.2 Fish and Wildlife

Impacts to fish and wildlife as a result of the operation of the Project are as described in the DEIS. Appendix B to the SDEIS provides the Avian and Bat Studies for the Proposed Alabama Ledge Wind Project, Genesee County, New York, Final Report dated November 26, 2007. The findings and conclusions presented in the DEIS were based on the Final Report, which incorporates the January 2007 interim report that was provided as Appendix F to the DEIS. The Final Report is provided in the SDEIS for inclusion in the SEQRA record for the ALWF. The findings and conclusions of the report are as previously reviewed in the DEIS.

3.3.3 Mitigation Measures

3.3.3.1 Vegetation

Mitigation measures for vegetation are as described in the DEIS. As described in Section 3.3.2.1.1 and Table 3.3-2 modifications to the Project layout have resulted in a reduction of impacts of approximately 59.73 acres.

3.3.3.2 Fish and Wildlife

Mitigation measures for fish and wildlife are as described in the DEIS. As stated in Section 3.3.1.3.1, the Applicant is preparing a Draft Avian and Bat Mortality Monitoring Plan in coordination with the NYSDEC.

3.4 Agricultural Resources

3.4.1 Existing Conditions

Agriculture is a significant contributor to Genessee County's overall economy. Genesee County is characterized by 551 farms that encompass 183,539 acres of land, representing 58 percent of the County's total land area of 316,159 acres (494 square miles) used for agricultural production. The number of farms decreased by 5 percent from 580 farms in 2002 reported in the DEIS; however, the average size of farms has increased 9 percent from 306 acres in 2002 to 333 acres in 2007 (USDA 2007; U.S. Census Bureau 2010).

Genesee County is one of the major dairy-producing counties, ranked fifth in the State of New York, with a market value of production for milk and other dairy products from cows of $95.9 million in 2007, up from $58.5 million in 2002. Other important agricultural product categories in the County, based on market value of production include: vegetables, melons, potatoes, and sweet potatoes ($43.6 million); beef production ($13.3 million); and grains, oilseeds, dry beans, and dry peas ($14.0 million). Top crop items by number of acres devoted to production are forage (land used for hay, haylage, grass silage, and greenchop), corn for grain and silage, vegetables harvested, and snap beans (USDA 2007).

Despite the importance of agriculture, employment in the agricultural sector has declined over the years and only accounts for 3.6 percent of County employment by industry in 2000. Meanwhile, the educational, health, and social services (22.9 percent); manufacturing (20.3 percent); and retail trade (11.1 percent) sectors have grown in importance. Within the Town of Alabama, agriculture represents 6.9 percent of employment by industry, with the primary employment sector of manufacturing (23.8 percent) followed by educational, health, and social services (15.5 percent) (U.S. Census Bureau 2000).

The Project Area occurs within New York State Agricultural District 2.

3.4.2 Potential Impacts

3.4.2.1 Construction

This section is as described in the DEIS (Section 3.13.2.1.2) except that impacts have been reduced due to the smaller layout (Figure 7). As shown in Section 3.3.2 (Table 3.3-2) temporary, construction-related disturbance to agricultural land in crop production would total approximately 244 acres, down from 330 acres in the DEIS. Temporary disturbance of agricultural land used for hay and pasture has also decreased to 32.5 acres from 45 acres in the DEIS.

3.4.2.2 Operation

This section is as described in the DEIS (Section 3.13.3.3.3) except that impacts have been reduced due to the smaller layout. The turbine sites (up to 40), substation, and other ancillary facilities represent the cumulative conversion of approximately 54 acres of land from agricultural land in crop production to developed land use, as compared with 74 acres in the DEIS. For agricultural land used for hay and pasture, permanent conversion has been reduced to 7 acres from 8.8 acres in the DEIS.

3.4.3 Mitigation Measures

As stated in the DEIS (Section 3.13.3.1.2), to minimize and/or mitigate impacts to active agricultural land and farming activities during construction and operation, Project siting and construction would fully comply with NYSA&M Agricultural Protection Measures, which were provided as Appendix B to the DEIS and listed in Section 3.13.3.1.2.

Figure 7. Agriculture

3.5 Climate and Air Quality

3.5.1 Existing Conditions

3.5.1.1 Climatic Condition

Existing climatic conditions are as described in the DEIS.

3.5.1.2 Air Quality

Existing air quality conditions are as described in the DEIS. Updated air quality data for the State of New York is available in the 2008 Data Tables in the New York State Ambient Air Quality Report (NYSDEC 2008a).

3.5.2 Potential Impacts

3.5.2.1 Construction

Construction-related impacts are as described in the DEIS.

3.5.2.2 Operation

The operation of the Project is anticipated to have a positive impact on air quality by producing 177,000 to 225,000 MWh per annum of emission-free electricity. This is equivalent to powering approximately 24,000 New York households. The power supplied by the Project will generally displace power provided by on-demand/peaking power plants. Such plants routinely come on and off line and adjust their output with changes in electricity demand or the sudden loss of supply (i.e. a power plant goes off-line) regardless of whether wind power is available. These plants are mainly fossil fuel thermal plants with relatively high air emissions.

RSG conducted a study to evaluate the avoided emissions of selected air pollutants from the operation of the Project, provided as Appendix C of the SDEIS. The RSG study evaluated the emissions that would be offset from displacement of fossil-fuel based power generation sources in the New York power market. The analysis matches the projected hour-by-hour generation of the Project with the actual hourly generation of fossil-fuel units in the NYISO power market area. The RSG database model matches expected hourly generation for the Project based on 79.8 MW nameplate capacity with the hourly generation of the variably dispatched fossil fuel unties at the power plants identified in Figure 1 and Table 1 of the report (Appendix C).

The results of the report estimate that the Project will result in the following avoided emissions:

- 197 tons per year of NO_x
- 686 tons per year of SO_2
- 180,463 tons per year of CO_2

The methodology utilized in the RSG report produces higher avoided emissions estimates than

the estimates presented in the DEIS. The DEIS utilized generic annual average emissions based on United States Environmental Protection Agency (EPA)-reported emissions and power plant data. The Project-specific, time-matched marginal avoided emissions analysis in the RSG report is based on accepted principles and procedures for estimating air emissions reductions from wind and other renewable electric power generation on the electric grid. Additional information regarding the study methodology and assumptions is provided in the report in Appendix C.

The report concludes that the avoided air emissions from electric power generation by the Project will be significant. The avoided emissions will include NO_x, SO_2, and CO_2, which are quantified in the report, as well as pollutants that are more difficult to quantify but are associated with fossil-fuel based power generation, including fine particulate matter, mercury, volatile organic compounds, carbon monoxide, and other toxic air pollutants.

3.5.3 Mitigation Measures

3.5.3.1 Construction

Mitigation measures are as proposed in the DEIS.

3.5.3.2 Operation

Mitigation measures are as described in the DEIS; operation of the Project will have a long-term beneficial impact on air quality and the environment. The air quality benefits from wind energy are principal drivers in the development of such projects and the mission of the Applicant. In essence, the operation of a utility-scale wind farm and its benefits on air quality can and should be viewed as mitigation for other environmental impacts associated with the Project.

3.6 Aesthetic and Visual Resources

Since publication of the DEIS, the Applicant has prepared additional simulations (Appendix D) and updated the shadow flicker analysis (Appendix E) to reflect the revised layout.

3.6.1 Existing Conditions

This section is as described in the DEIS. The Visual Study Area described in the Visual Impact Assessment (VIA) in Appendix G of the DEIS was comprised of a 5-mile and 10-mile radius of proposed turbines. The revised turbine layout falls within a reduced overall Project Area, and as such, the inventory of sensitive visual resources in the DEIS encompasses the sites previously described in the DEIS.

3.6.2 Potential Impacts

3.6.2.1 Construction

This section is as described in the DEIS.

3.6.2.2 Operation

The VIA provided as Appendix G in the DEIS and the Shadow Flicker Analysis provided as Appendix H in the DEIS included up to 52 turbines. The SDEIS layout consists of fewer turbines (up to 40) and minimal turbine shifts from the DEIS layout. As a result, the visual simulations and viewshed analysis provided in the DEIS are a conservative representation of the Project with the reduced turbine layout. The shadow flicker analysis has been updated with the revised layout.

3.6.2.2.1 Visual Simulations

The Applicant prepared 17 additional visual simulations from nine different viewpoints based on comments received on the DEIS and further discussion with the Lead Agency following submission of the DEIS. One simulation was conducted from Indian Falls Road near the Mount Pleasant Historic Site, referred to as Viewpoint 30 in the DEIS. The other 16 simulations were prepared from eight new viewpoints chosen for the SDEIS at the request of the Town of Alabama located in the vicinity of two intersections along County Road 26. The additional SDEIS viewpoints are depicted on the Viewpoint Locations figure in Appendix D. At each viewpoint, simulations looking in the direction of the nearest proposed turbine were prepared, along with a second simulation looking directly down the road toward the intersection (i.e., the primary view orientation of drivers on the roads). The purpose of this exercise was to illustrate what drivers would see as they approach these intersections, and evaluate the potential distraction caused by turbines peripheral to the driver's view and within their primary line of sight.

Supplemental Viewpoint 30

Existing View

Viewpoint 30 is from Indian Falls Road, near the Mount Pleasant Historic Site in the Town of Pembroke, looking north. It is approximately 1.7 miles from the nearest turbine that would be visible in this view. Open agricultural fields framed by hedgerows and forest patches dominate the existing view. The terrain is nearly flat, and trees are present in the foreground, mid-ground and background, providing the viewer with an understandable depth of field. The sky and the land each occupy about half of the view, with the textured browns of the fields and forest set off by a nearly clear blue sky. The trees that edge and enclose the fields are the only vertical elements in this otherwise horizontal landscape.

Simulated View

With the proposed Project in place, the blades of several turbines can be seen above the background trees. On closer inspection, a small number of additional turbines can be discerned. The background trees provide a considerable amount of screening to all but the uppermost part of the turbines, and the whiteness of the lower portion of the sky allows the light-colored blades to blend well under the atmospheric conditions captured in this photograph. At this distance, the turbines' line, form, and scale generally appear compatible with the existing vegetation, even

without foliage as shown. They also appear compatible with the rural land use that characterizes this view.

Supplemental Viewpoint 1A (View toward proposed turbine 56)

Existing View

This viewpoint is on Townline Road (County Road 26), approximately 1,190 feet east of the intersection with Macomber Road (County Road 30). This view is oriented to the southwest toward the location of the nearest proposed turbine (turbine 56). The view includes a roadside house and yard, backed by an open agricultural field. A woodlot occurs at the far end of the field and defines the visible horizon in this view. The view is framed by street/yard trees and a utility pole, but the snow-covered yard and field give the view a sense of openness.

Simulated View

With the proposed Project in place, portions of three turbines can be seen in this view. Turbine 56 (the closest turbine in this view) is approximately 2,810 feet from the viewer, and partially obscured by the bare branches of the large maple tree that frames this view. Of the two more distant turbines, one rises prominently above the woodlot in the background, while the other is largely screened by the foreground tree. The turbines present significantly scale contrast with the background trees, but at this distance, they do not appear overwhelming or out of scale with foreground features of the landscape (house, street trees, etc.). Their white color presents only moderate contrast with the sky, and their vertical line is consistent with the vertical lines of the existing tree trunks, utility poles, and building corners. Screening provided by the foreground tree prevents turbine 56 from dominating the view and should limit its visibility and potential distraction to drivers from this viewpoint.

Supplemental Viewpoint 1B (View toward intersection)

Existing View

In this view, the viewer at Viewpoint 1 has turned to the west and is looking down Townline Road toward the intersection with Macomber Road (approximately 1,190 feet away). The existing view in this direction is dominated by the centrally located road and large trees that parallel the road on either side. Houses and barns are interspersed with the roadside trees. Utility poles, mailboxes, parked vehicles, and a street sign are other man-made features visible on the right hand side of the road. The lack of leaves on the trees and the snow-covered yards and fields on the left hand side of the road give a sense of openness to this view. The view will be much more enclosed/focused during the growing season when the roadside trees are in full foliage.

Simulated View

With the proposed Project in place, two turbines are visible in this view. One is largely obscured behind the tree branches and a barn on the left hand side of the road, while the other is clearly visible down the axis of the road. Turbine 56 is outside the field of view, approximately

27 degrees south (left) of the orientation of this view toward the intersection. The orientation of the road draws the viewer's eye to this turbine, which will become a focal point in this view, even though it is more distant than turbine 56. Although its form and motion will contrast with other landscape features, at this distance the turbine does not appear out of scale with its surroundings (foreground trees and utility poles) and does not dominate the view. Its vertical line and white color are also compatible with the other man-made features present in the view.

Supplemental Viewpoint 2A (View toward proposed turbine 56)

Existing View

This viewpoint is also located on Townline Road, approximately 375 feet west of Viewpoint 1 and 890 feet east of the intersection with Macomber Road. This view is oriented to the southwest, toward proposed turbine 56, which would be approximately 2,480 feet from the viewer. The existing view includes two large maples along the edge of the road in the foreground. A farmstead, including a house, barn, and utility buildings, is also visible in the foreground beyond the trees. A large open field dominates the left hand side of the view, while more distant residential structures and trees can be seen beyond the barn on the right hand side of the view. The open road surface, adjacent agricultural field, and expanse of clear blue sky give the view a sense of openness.

Simulated View

With the proposed Project in place, all or portions of eight turbines are visible in this view. The closest and most unobstructed turbine is turbine 56, which is located in the open mid-ground field, approximately 2,480 feet southwest of the viewer. At this distance, and in comparison with to the adjacent woodlot, the scale contrast presented by turbine 56 (and a second turbine to the left of it) is apparent. All of the other turbines are more distant and/or more well screened, which reduces their visibility and contrast. Because of its proximity, turbine 56 will attract viewer attention and become a focal point in the view. However, the presence of other visible turbines to the southwest of Townline Road will reduce the novelty of this nearest turbine and prevent it from monopolizing viewer attention.

Supplemental Viewpoint 2B (View toward intersection)

Existing View

In this view the viewer at Viewpoint 2 has turned to the west and is looking down Townline Road toward the intersection with Macomber Road. That intersection (as indicated by the stop sign) is located approximately 890 feet from this viewpoint. The view in this direction is dominated by the road surface, which carries the viewer's eye to the visible horizon in the center of the view. Open fields, homes, and farm structures in the foreground on the left hand side of the road contrast with more heavily vegetated conditions on the right hand side. Street and yard trees increase in abundance on both sides of the road in the mid-ground. Other man-made features visible in this direction include roadside utility poles running along the right hand side of the road, and a communications tower rising above the mid-ground trees on the left.

Simulated View

With the proposed Project in place, portions of five turbines can be seen in the mid-ground and background of this view. Turbine 56 is outside the field of view, approximately 31 degrees south (left) of the orientation of Townline Road. The abundance and distribution of turbines in this view prevent any one machine from becoming a focal point in the view. All of the turbines are at least partially screened by existing structures and vegetation, and visibility of two of them is restricted to portions of the rotor blades. However, two turbines rising above the barn, and a third at the visual terminus of the road, are the least screened and most likely to draw viewer attention. At this distance, their scale contrast with existing vegetation and structures is not overwhelming. However, their novel form and motion will contrast with other elements of the landscape. Their white color minimizes contrast with the background sky and their vertical line is consistent with the existing tree trunks, utility poles, and communication tower.

Supplemental Viewpoint 3A (View toward proposed turbine 56)

Existing View

This viewpoint is again located on Townline Road, east of the intersection with Macomber Road. This viewpoint is approximately 360 feet east of the intersection and approximately 535 feet west of Viewpoint 2. This view is oriented toward proposed turbine 56, which would be located approximately 2,045 feet from the viewer. The view in this direction is dominated by a stately home in an open grove of trees. Agricultural out- buildings and farm vehicles/equipment are also visible in this view. A large open field in the foreground, open fields beyond the house, and a broad expanse of open blue sky give this view an open feel, despite the abundance of trees and structures in the view.

Simulated View

With the proposed Project in place, four turbines can be seen in this view, one directly behind the house and trees in the foreground, the others more distant. All are significantly screened by tree branches, and only turbine 56, directly behind the foreground trees, is prominent against the sky. Due to its proximity to the viewer and the house in this view, the scale and land use contrast presented by this turbine are notable. None of the other turbines present strong line, color, or scale contrast with their surroundings.

Supplemental Viewpoint 3B (View toward intersection)

Existing View

In this view, the viewer at Viewpoint 3 has turned to the west and is looking down Townline Road toward the intersection with Macomber Road. That intersection is located approximately 360 feet from this viewpoint. The existing view is dominated by Townline Road which runs down the center of the view. The character of the view is rural and includes a mix of residential structures, farm buildings livestock, open fields, and roadside utility poles, trees, and brush. The straight line of the road and the roadside structures and vegetation focus the viewer's attention toward the center of the view at the visual terminus of the road.

Simulated View

With the proposed Project in place, two turbines have been added to the view. One is off to the left and significantly screened by mid-ground trees. The other is centrally located and relatively unscreened at the visual terminus of Townline Road. Turbine 56 is outside the field of view, approximately 39 degrees south (left) of the orientation of Townline Road. At this distance neither turbine in this view appears out of scale with its surroundings, and their vertical line and white color are consistent with other man-made features in the view. Their color also minimizes contrast with the sky. Although turbine 56 is much closer, the central location of the one turbine, at the visual terminus of the road make it a focal point in the view. However, it does not dominate the view, and will be but one of several turbines a driver sees (or has seen) as driving down this road. Therefore no one machine is likely to dominate the view.

Supplemental Viewpoint 4A (toward proposed turbine 56)

Existing View

This viewpoint is located on Macomber Road, approximately 360 feet north of the intersection with Townline Road. The view is oriented to the southwest and is approximately 2,035 feet from the proposed location of turbine 56. The view is of a residential yard dominated by trees. Mowed lawn and structures, (including houses and a barn) can be seen at ground level, but tree trunks and branches significantly block views of the sky. This obstruction would be almost complete during the growing season. The view is enclosed and largely restricted to the foreground yard. Mid-ground and background features are largely obscured, except for what appears to be a treeline just at or above the rooftops of the structures in this view.

Simulated View

With the proposed Project in place, turbine 56 is visible just to the right of center, behind a large tree in the residential yard. The turbine's white color minimizes contrast with the sky, and its visibility is largely obscured by tree branches. Consequently, despite its appreciable scale contrast, this turbine does not draw the viewer's attention in this view. Due to the abundance of foreground vegetation, visibility of turbine 56 is expected to be completely obstructed during the growing season.

Supplemental Viewpoint 4B (View toward intersection)

Existing View

This view from Viewpoint 4 is oriented to the south, toward the intersection with Townline Road. The intersection is approximately 535 feet from the viewer at this location. The existing view in this direction is much more open than the view toward proposed turbine 56. Structures and trees occur along the road frontage, but these are backed by open fields. The wide spacing of the structures, the open fields, and the presence of agricultural buildings give the landscape a rural character. The dominant visual element is Macomber Road, which carries the viewer's eye in a gently rising curve toward the horizon in the right central portion of the view. Background

features visible at the horizon line are restricted to woodlot tree tops that block views of more distant landscape features.

Simulated View

With the Project in place, none of the proposed turbines can be seen in this view. Turbine 56 is located approximately 34 degrees to the west (right) of the orientation of Macomber Road. It is outside the field of view and behind foreground trees (as illustrated in the previous simulation). Consequently there is no visual change or potential distraction in this view toward the intersection.

Supplemental Viewpoint 5A (View toward proposed turbine 56)

This view from Townline Road is oriented to the south approximately 1,310 feet north of the proposed location of Turbine 56. A level snow-covered field in the foreground is backed by a horizontal line of forest vegetation that spans the view from left to right. Two structures, also horizontal in line, occur within the trees on the left hand side of the view. A broad expanse of open sky, uninterrupted by any foreground screening, occurs above the tree line. The open sky and field, along with the narrow horizontal line of mid-ground vegetation, gives the view an expansive, open feel.

Simulated View

With the proposed Project in place, turbine 56 appears prominently in the foreground field. At this distance details of the structure (rotor hub, nacelle components) can be perceived, and its scale contrast with adjacent trees is obvious. The turbine's vertical line and large size are in strong contrast with the existing landscape. It becomes a clear focal point in the view and reduces the perception of openness that characterizes the existing view.

Supplemental Viewpoint 5B (View toward intersection)

Existing View

In this view, the viewer at Viewpoint 5 has turned to the east and is looking down Townline Road toward the intersection with Macomber Road, approximately 900 feet away (at the stop sign). This view includes a rural road, lined by a mix of street trees, fields, residential and agricultural structures, hedgerows and woodlots. Foreground street trees on the right side of the road partially obscure the sky. The sky on the left hand side of the view is more open, but mid-ground vegetation is more dense on this side of the road. Although the land is relatively level, trees and man-made features (silo, utility poles, street signs) add significant vertical elements to the landscape.

Simulated View

With the proposed Project in place, none of the proposed turbines can be seen in this view. All are located outside the field of view, directly north and south of the viewer. The closest of these

is turbine 56, which lies approximately 76 degree south of the orientation of Townline Road. This turbine would be very peripheral to the drivers' primary field of view when approaching the intersection at this location.

Supplemental Viewpoint 6A (View toward proposed turbine 56)

Existing View

This view from Townline Road toward the location of proposed turbine 56 is very similar to Viewpoint 5. It is oriented to the south, approximately 1,285 feet from the proposed turbine location. As with the previous viewpoint, the view in this direction is characterized by a broad open field in the foreground, with a horizontal band of trees running across the mid-ground and defining the visible horizon. The only interruption to the open sky in this view is created by a small clump of brush on the right side, in the foreground of the view.

Simulated View

With the proposed Project in place, turbine 56 becomes a prominent foreground feature in the view. At this distance details of the turbine are clearly discernable, and scale contrast with the nearby trees and structures is notable. The turbine's proximity to the buildings increases the perceived contrast with land use, but its white color minimizes contrast with the snow and sky.

Supplemental Viewpoint 6B (View toward intersection)

Existing View

This view looking down Townline Road toward the intersection with Macomber Road is also very similar in character to the view oriented in this direction from Viewpoint 5. This viewpoint is somewhat further from the intersection (approximately 1,595 feet) and the open fields in the foreground on either side of the road give it a more open feel than the view from Viewpoint 5. Otherwise, the dominant features of the view, including foreground street trees on the right hand side of the road, more abundant trees in the distance on the left, and interspersed man-made structures, are similar to the previous view in this direction. The horizontal band of background trees that define the horizon in this view is more obvious than at Viewpoint 5.

Simulated View

Also similar to Viewpoint 5, with the proposed Project in place, no turbines are visible from Viewpoint 6. All of the turbines proposed in this direction are located outside the field of view, directly north and south of the viewer. Turbine 56 is the closest of these, but is approximately 107 degrees south (left) of the orientation of Townline Road. It would thus be slightly behind drivers approaching the intersection at this location.

Supplemental Viewpoint 7A (View toward proposed turbine 37)

Existing View

This viewpoint on Ledge Road is approximately 620 feet west of the intersection with Alleghany

Road. The view is to the southwest toward the proposed location of turbine 37. It is characterized by open agricultural fields, with two large grain bins, two barns, and a house occurring along a road that runs from left to right across the view. Overhead utility lines also parallel the road, and are consistent in height with the other built structures. The land appears to rise gradually to mid-ground woodlots and hedgerows that define the visible horizon and block views of more distant landscape features.

Simulated View

With the proposed Project in place, all or portions of seven turbines are now visible in this view. Turbine 37 is in the center of the view, approximately 3,375 feet from the viewer. It is the closest and least obstructed of the turbines, and is clearly taller than the adjacent trees and built structures. However, its scale contrast is not striking, and the proximity of additional turbines of comparable scale prevents it from dominating the view. The remaining turbines are all partially screened, and, like turbine 37, do not appear significantly out of scale with their surroundings. Despite the number of visible turbines, their spacing, distance from the viewer, and the screening provided by existing trees, keep them from feeling overwhelming.

Supplemental Viewpoint 7B (View toward intersection)

Existing View

In this view, the viewer at Viewpoint 7 has turned to the east and is looking down Ledge Road. The crossroad intersection with Alleghany Road is visible in the center of the view. The view features a mix of residential and agricultural structures, street trees, open fields, and woodlots. Overhead utility lines parallel both roads. The view has a strong rural character. Ledge Road carries the viewer's eye up a gentle undulating rise to a high point with woodlots on either side of the road.

Simulated View

With the proposed Project in place, three turbines are visible in the view. One on the left hand side of the road is substantially screened by foreground trees. The other two on the right hand side of the view are less well screened, but their contrast with the sky is minimized by their white color. At this distance the turbines do not dominate the view or appear out of scale with their surroundings. Turbine 37 is just outside of the field of view, approximately 23 degrees south (right) of the orientation of the view down Ledge Road toward the intersection. Although the closest and most prominent of the turbines in this area, turbine 37 does not dominate the view (as evidenced in the previous simulation), and will be but one of several turbines a driver sees (or has seen) as driving down this road. Therefore, no one machine is likely to draw a driver's attention.

Supplemental Viewpoint 8A (View toward proposed turbine 37)

Existing View

Viewpoint 8 is on Ledge Road (County Road 26), approximately 1,420 feet west of the intersection with Alleghany Road (Route 77). This view is oriented to the southeast, approximately 4,170 feet from the nearest proposed turbine (turbine 37). The existing view is characterized by an open, snow-covered field in the foreground, with a horizontal band of trees and structures (primarily farm buildings and grain bins) stretching from left to right across the center of the view. A broad expanse of open sky is uninterrupted by foreground vegetation or structures. The view has a strong horizontal line and a very open, agricultural feel.

Simulated View

With the proposed Project in place, all or portions of seven turbines are visible in this view. Although turbine 37 is the closest and least screened, it is not significantly more prominent than the other turbines visible in this view. All of the turbines are beyond the mid-ground band of vegetation that forms the visual horizon in this view, and although clearly taller than the other built structures in the view, at this distance their perceived scale is fairly uniform, and not overwhelming. The turbines' white color minimizes contrast with the existing structures, sky, and snow-covered field in this view, and their utilitarian character is compatible with the working agricultural landscape.

Supplemental Viewpoint 8B (View toward intersection)

Existing View

In this view the viewer at Viewpoint 8 has turned to the east and is looking down Ledge Road toward the intersection with Alleghany Road, approximately 1,435 feet away. The view in this direction is also very open, with agricultural fields lining both sides of the road, and foreground features being limited to a roadside utility line. A thin and somewhat discontinuous horizontal band of structures and trees define the perpendicular orientation of Alleghany Road. Woodlots and hedgerow trees in the slightly elevated background define the visible horizon in this view, and block views of more distant landscape features.

Simulated View

With the proposed Project in place, all or portions of nine turbines can be seen spanning the full field of view. One turbine is visible at the terminus of the road, but this turbine is more distant and less obvious than turbines on the periphery of the view. Turbine 37 appears at the far right-hand side of the view, approximately 18 degrees south of the orientation of Ledge Road. As with the view oriented directly toward this turbine, the even distribution of turbines across the view, and the general uniformity of their perceived scale, prevents any one turbine from becoming a dominant feature or focal point in this view.

3.6.2.2.2 Assessment of Shadow Flicker

A wind turbine's rotating blades can cast a moving shadow on locations within a certain distance of a turbine. These moving shadows are called shadow flicker, and can temporarily impact nearby residences or public gathering places. The potential impact area depends on the time of year and day (which determines the sun's azimuth and altitude angles) and the wind turbine's physical characteristics (height, rotor diameter, blade width, and orientation of the rotor blades). Shadow flicker generally occurs during low angle sunlight conditions, typical during sunrise and sunset times of the day. However, when the sun angle is very low (less than 3 degrees), the light has to pass through more atmosphere and becomes too diffuse to form a coherent shadow. Shadow flicker will not occur when the sun is obscured by clouds/fog, the source turbine is not operating, or at night. Further, shadow flicker impacts can be greatly diminished by the presence of trees or other tall structures located closer to the receptor.

Shadow flicker intensity is defined as the difference in brightness at a given location in the presence and absence of a shadow. Shadow flicker intensity diminishes with greater receptor-to-turbine separation distance. Shadow flicker intensity for receptor-to-turbine distances beyond 1,500 meters is very low and generally considered imperceptible. In general, the largest number of shadow flicker hours, along with greatest shadow flicker intensity, occurs nearest the wind turbines. Since the Town of Alabama requires a minimum turbine siting setback of 365.8 meters to any residence, receptors are generally not located in the in the area where the potential shadow flicker impacts would be greatest, which ensures that shadow flicker impacts are minimized.

The final wind turbine model has not yet been determined for the Project. Since larger turbines generally result in greater shadow flicker impacts, this study has been conservatively based on a generic turbine with the largest potential dimensions that would be likely used for the Project. The generic turbine evaluated has a hub height of 100 meters and a rotor diameter of 90 meters.

Shadow flicker frequency is related to the wind turbine's rotor blade speed and the number of blades on the rotor. From a health standpoint, such low frequencies generated by wind turbines are harmless. For comparison, strobe lights used in discotheques have frequencies which range from about 3 Hertz (Hz) to 10 Hz (1 Hz = 1 flash per second). As a result, public concerns that flickering light from wind turbines can have negative health effects, such as triggering seizures in people with epilepsy are unfounded. The Epilepsy Action (working name for the British Epilepsy Foundation), states that there is no evidence that wind turbines can cause seizures (Epilepsy Action 2008). However, they recommend that wind turbine flicker frequency be limited to 3 Hz. Since the blade pass frequency for any of the wind turbines that may be selected, will be less than 1.0 Hz (less than 1 alternation per second), no negative health effects to individuals with photosensitive epilepsy are anticipated.

Shadow flicker impacts are not regulated in applicable state or federal law, and there is no

permitting trigger with regard to hours per year of anticipated impacts to a receptor from a wind energy project. Due to the significant growth of the wind energy industry in recent years, some states have published model bylaws for local governments to adopt or modify at their own discretion which sometimes includes guidance and recommendations for shadow flicker levels and mitigation. However, a general precedent has been established in the industry both abroad and in the United States that fewer than 30 hours per year of shadow flicker impacts is acceptable to receptors in terms of nuisance and well below health hazard thresholds. This shadow flicker impact analysis presents the potential shadow flicker exposure in both expected hours per year and worst case minutes per day in order to address the Town of Alabama zoning requirements of fewer than 30 hours per year and 30 minutes per day at a receptor.

An analysis of potential shadow flicker impacts from the Project was conducted using the WindPro software package. The WindPro analysis was conducted to determine shadow flicker impacts under realistic impact conditions (actual expected shadow). This analysis calculated the total amount of time (hours and minutes per year) that shadow flicker could occur at receptors out to 1,500 meters. The realistic ("expected") impact condition scenario is based on the following assumptions:

- The elevation and position geometries of the wind turbines and surrounding receptors (houses);
- The position of the sun and the incident sunlight angle relative to the wind turbine and receptors on a minute by minute basis over the course of a year;
- Historical sunshine hours availability (percent of total available);
- Estimated wind turbine operations and orientation (based on 2 years [2005-2006] of on-site measured wind data [wind speed / wind direction frequency distribution]); and
- Receptor viewpoint (i.e. house windows) conservatively assumed to always be directly facing turbine to sun line of sight ("greenhouse mode").

WindPro incorporates terrain elevation contour information and the analysis accounts for terrain elevation differences. The sun's path with respect to each turbine location is calculated by the software to determine the cast shadow paths every minute over a full year. Sun angles less than 3 degrees above horizon were excluded since light at these low angles has to pass through more atmosphere and becomes too diffuse to form a coherent shadow.

A total of 365 sensitive receptor locations were considered. These locations correspond to structures (primarily houses) in the Project site area. A receptor in the model is defined as a 1 square meter area (approximate size of a typical window), 1.0 meter above ground level. Approximate eye level is set at 1.5 meter in the WindPro model.

WindPro predicts that shadow flicker impacts will primarily occur near to the wind turbines. A detailed WindPro shadow flicker analysis results summary is provided the Shadow Flicker Impact Analysis report provided in Appendix E. The maximum predicted shadow flicker impact

at any receptor is 47 hours, 57 minutes per year, which is only approximately 1.1 percent of the potential available daylight hours. Only 14 of the 365 receptors modeled had shadow flicker impact predicted more than 30 hours per year. Of those 14 receptors, 13 have agreements with the Applicant for the Project. The shadow flicker impact prediction statistics are as summarized in Table 3.6-1. The analysis of potential shadow flicker impacts from the proposed wind farm turbines on nearby houses (receptors) shows that shadow flicker impacts are expected to be minor. The analysis conducted is conservative and actual shadow flicker impacts are likely to be less than those presented here. The analysis assumes that the houses all have a direct in line view of the incoming shadow flicker sunlight and does not account for trees or other obstructions. In reality, the windows of many houses will not face the sun directly for the key shadow flicker impact times. For these reasons, shadow flicker impacts are expected to be less than estimated with the conservative analysis, and shadow flicker is not expected to be a significant environmental impact.

Table 3.6-1. Statistical Summary of WindPro Predicted Shadow Flicker Impacts at Modeled Receptor Locations

Cumulative Shadow Flicker Time (Expected)	Number of Receptors
Total	**365**
= 0 Hours	138
> 0 and < 10 Hours	158
≥ 10 and < 20 Hours	40
≥ 20 and < 30 Hours	15
≥ 30 and < 40 Hours	9
≥ 40 Hours	5

3.6.3 Mitigation Measures

Mitigation measures are as described in the DEIS.

3.7 Historical, Cultural, and Archeological Resources

3.7.1 Archeological Resources

In consultation with the New York State OPRHP, which serves as the SHPO, and with the Nation, the Applicant and Tetra Tech conducted archeological and historic architectural investigations to identify whether the proposed Project might affect archeological or architectural resources that are eligible for the NRHP. The area of potential effects (APE) for archeology includes areas of proposed ground disturbance resulting from Project construction, operation and decommissioning of proposed facilities. The APE for historic architecture included a view shed within a five-mile ring, determined in consultation with the OPRHP and the Nation.

Tetra Tech conducted a Phase 1B archeological identification survey between October 30 and December 5, 2008 and between June 18 and 30, 2009. SHPO requested that Phase 1B archeological fieldwork should be conducted along the entire Project APE. The Nation expressed interest in monitoring the Phase 1B fieldwork. Tetra Tech conducted shovel testing of 74,900 feet (23,835.4 meters) in areas with dense ground cover, and systematic surface surveys of 75,188 linear feet (23,923.2 meters) of the APE in areas with ground visibility of 80 percent or better. In total one historic period archeological site and 14 prehistoric period archeological sites were identified. Most prehistoric period archeological sites were associated with the Onondaga Escarpment, an area known for high quality cherts. The Phase 1B archeological survey report is presented in Appendix F. Due to the sensitive nature of archeological resources, this report is not available for public review.

On February 18, 2010, the Applicant and Tetra Tech met with SHPO to discuss results of the Phase 1B archeological survey and possible approaches to reduce Project effects on potentially significant cultural resources in the APE. Options discussed included Project modifications of construction methods, route design modifications, and/or Phase II intensive surveys to determine which sites in the APE were eligible to the NRHP.

In light of these options, the Applicant contracted TRC Companies, Inc. to perform additional cultural surveys. Phase II archaeological evaluations were conducted in May-June 2010 at 17 sites located in the Project Area. These include 14 sites originally identified during the Phase 1B survey (Appendix F) and three new locations discovered during supplemental Phase 1B investigations due to Project layout revisions. The SHPO and the Nation were consulted both prior to and during archaeological investigations of the Project. A representative of the Nation was present during all archaeological investigations. Pending consultation with the SHPO, the Applicant may consider layout revisions to avoid impacts to archeological sites verified during the Phase II investigation.

The Applicant will continue consultation with SHPO and the Nation to identify whether additional archeological investigations might be required. The Applicant intends to avoid construction impacts on significant archeological sites when practicable and/or develop a Memorandum of Agreement (MOA) to comply with SHPO guidelines.

3.7.2 Architectural Resources

Tetra Tech conducted historic architecture fieldwork in two phases, as outlined in the 2006 *New York State Historic Preservation Office Guidelines for Wind Farm Development Cultural Resources Survey Work*. Fieldwork for an intensive survey identifying all historical structures (i.e., 50 years old or older) within a one-mile ring of the Project was undertaken from December 13 to December 19, 2006. This identified 488 properties. Of these structures, 25 structures were recommended as potentially eligible for the NRHP, including one potential historic district. Eight cemeteries were also identified within the one-mile ring.

After consultation with the SHPO, Tetra Tech undertook a more focused survey within the larger five-mile ring, documenting only those structures identified in the field as being potentially NRHP-eligible. Tetra Tech sought the permission of the Nation to enter their Reservation to perform the historic resources survey as portions of the Reservation lie within the APE. The Nation's Council chose not to participate in the study and asked that Tetra Tech not survey within the boundaries of the Nation's land. Their request was respected, and no data were collected for buildings, structures or cemeteries within the boundaries of the Reservation. The survey area for the five-mile ring was roughly 13.1 miles (21.1 kilometers) from north to south, and 13.4 miles (21.6 kilometers) from east to west, at its widest points. This included approximately 88,311 acres (35, 738 hectares) of land. The survey identified five properties that had been previously listed in or determined eligible to the NRHP, 57 buildings or structures recommended as potentially eligible to the NRHP, and 8 cemeteries. The one-mile ring and five-mile ring historic architecture survey reports are presented in Appendix G.

In a letter dated February 26, 2010, the OPRHP concurred with Tetra Tech's recommendations regarding the NRHP eligibility of the surveyed structures within the APE. The OPRHP further determined that the Project would have an Adverse Impact on cultural resources. Due to the size of the turbines and the topography of the area an alternative layout that would avoid this impact could not be created. Consequently, the Applicant is now pursuing a mitigation plan to offset the adverse impact of the Project on the area's cultural resources and met with Town of Alabama on March 16, 2010 to initiate discussions of appropriate mitigation plans.

3.8 Noise

Since publication of the DEIS, additional baseline sound measurements were conducted in 2008 and updated noise impact assessment (NIA) was completed to reflect the revised layout.

3.8.1 Existing Conditions

To determine existing sound levels, a baseline sound survey was conducted at several locations within the Project area. These measurements were completed during the early spring defoliate season as sound levels during these periods have been shown to be lower than seasonal periods with leaves on trees. By collecting ambient sound measurements during the defoliate season, the yearly minimum background sound level is documented as a conservative basis against which to compare existing to future Project operational sound levels and for assessing status to the NYSDEC noise guideline which is incremental to existing conditions.

3.8.1.1 Measurement Locations

The long-term sound level monitoring stations were deployed on March 28, 2008 with data collection extending through April 21, 2008. Baseline measurement locations were carefully sited to encompass all major geographical sectors within the Project footprint. Long-term unattended baseline monitoring stations were deployed within 15 to 30 meters (50 to 98 feet) of

a residential structure with their position secured by fastening the monitoring station to a fencepost or other stationary object. The monitoring positions were located far as practical from extraneous background noise such as busy highways, rail corridors, and industrial facilities. By comparing results at the five measurement sites, the objective is to analyze and employ the cumulative data set to accurately represent the overall acoustic environment across the entire Project site. Noise monitoring stations are shown in Figure 4.6 of Appendix H. Onsite meteorological towers measured site-specific wind speed and data logged for the entire baseline sound survey period.

3.8.1.2 Instrumentation

All sound level measurements were completed with Larson Davis model 831 real-time sound level analyzers, equipped with a PCB model 377B02 1/2" precision condenser microphone. This instrument has an operating range of 5 decibel (dB) to 140 dB, and an overall frequency range of 16 to 20,000 Hz and meets or exceeds all requirements set forth in the American National Standards Institute (ANSI) Standards for Type 1 sound level meters for quality and accuracy (precision). Prior to, and immediately following both measurement sessions the sound level analyzers were calibrated with an ANSI Type 1 calibrator, which has accuracy traceable to the National Institute of Standards and Technology (NIST). No level adjustments were required with the sound pressure level drift found to be within acceptable tolerances.

The microphone and windscreen were mounted on tripods at an approximate height of 1.5 to 1.7 meter (4.9 to 5.6 feet) above grade. The sound analyzers were programmed to measure and data log broadband A-weighted sound pressure levels in ten and one-minute intervals, including a number of parameters such as the average $L_{eq,}$ minimum, maximum and statistical sound levels. Data collected also 1/1 and 1/3 octave band data spanning 16 Hz to 20 kilohertz (kHz). All data were immediately downloaded to a computer following the measurement session for the purposes of storage and further analysis.

3.8.1.3 Sound Survey Results

Sound data were collected for a sufficient period of time to encompass the full range of future WTG operational wind speeds, ranging from cut-in to the maximum rotor speed at full WTG rated power. Wind speed data was provided by the Project from two on-site meteorological stations (0983 and 0984) in 10-minute intervals, with meteorological data corresponding to the baseline sound survey period. The wind speed data were scaled from the 10-meter reference height to the effective 100 meter (328 feet) hub height wind speed, using the calculated site's roughness length coefficient and plotted against the corresponding baseline 10-minute L_{eq} sound measurement data.

The 1-hour L_{eq} is the metric defined for establishing baseline under the NYSDEC guideline. Sound level data were primarily logged in 10-minute intervals to be consistent with the onsite meteorological data collection tower which provides data in 10-minute increments and to better

account for changing wind. This smaller measurement period increases the overall conservatism of the assessment approach. The relationship between the measured background sound level (dBA) correlated to wind speed (meters per second [m/s]) at the reference hub height is presented in Appendix H Figure 4.7. The data points are presented cumulatively from all five monitoring sites and the results of a statistical regression analysis with the best fit correlation coefficient using a second order polynomial equation are shown. The wind speed versus sound pressure level relationship shows that L_{eq} sound levels in the Project area are largely driven by natural, wind induced sounds. The scattering and R^2 coefficient is expected and likely caused by noise associated with periodic aircraft flyovers, and short-term natural sounds such as wildlife and livestock, in addition to anthropogenic activity.

The results of the regression analysis reveal that during Project operation, background L_{eq} sound levels range from a minimum of 39.4 dBA at 3 m/s (7 miles per hour [mph]) at hub height, just below the stated cut-in wind speed, and increase to 42.7 dBA at 9 m/s (20 mph) at hub height corresponding to WTG at full rotational speed. At wind speeds higher than 10 m/s (22 mph), background sound levels continue to increase, but the WTG sound emissions will remain relatively constant until the WTG reaches cut-out wind speeds and the blades no longer rotate. A summary of background sound levels at reference wind speeds is shown in Table 3.8-1.

Table 3.8-1. Measured L_{eq} Background Sound Levels at Reference Wind Speed

100 m Wind Speed	3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s
Measured (L_{eq}) dBA	39.4	39.5	39.8	40.2	40.9	41.7	42.7	43.8

m = meter

3.8.2 Regulatory Standards and Guidelines

Regulatory standards and guidelines are as described in the DEIS.

3.8.3 Potential Impacts

The operational acoustic assessment was performed using the Project design layout version 18 following an iterative review process, and employing the most recent version of Datakustic GmbH's CadnaA, the computer aided noise abatement program (v 3.7.123). CadnaA is a comprehensive three-dimensional acoustic software model that conforms to the Organization for International Standardization (ISO) 9613-2 "Attenuation of Sound during Propagation Outdoors." In addition to operational noise, the potential for construction related noise impacts are also qualitatively discussed in this section.

3.8.3.1 Construction Noise Impacts

Construction noise impacts are as described in the DEIS. Due to the shorter total construction

timeframe necessary to install fewer turbines (up to 40), noise impacts associated with construction will be less than presented in the DEIS for construction of 52 turbines.

3.8.3.2 Operational Noise Impacts

The Applicant reviewed several candidate WTG model options including the Gamesa G87 2.0 MW, Vestas V82 1.65 MW, Vestas V90 2.0 MW, and the Suzlon S88 2.1 MW, prior to final selection of the Suzlon S88 that was modeled. At this time the Applicant has not finalized WTG selection. The acoustic assessment was based on Suzlon S88 due to the comparatively higher rated sound power emission level of the candidate WTG types and would consequently be the worst case in terms of resultant sound at noise sensitive areas.

3.8.3.2.1 Turbine Sound Levels

A somewhat unique characteristic of wind farm projects is that the noise generated by each individual WTG will increase as the wind speed across the site increases. In order to assist wind energy developers, government regulators, and acoustic engineers, wind turbine manufacturers report sound emissions in terms of apparent sound power level (L_W) per the International Electrotechnical Commission (IEC) acoustic measurement standards. This internationally accepted standard, currently in revision, was developed to ensure consistent and comparable sound emission data of utility-scale WTGs between manufacturers.

Noise emission measurements were completed on the Suzlon 2.1 MW S88 by an independent qualified measuring institute and used in the development the WTG sound specification. A summary of sound power data for the selected Suzlon S88 2.1 MW WTG by wind speed at a hub height of 100 m (328 feet) above grade are presented in Table 3.8-2. It is expected that the Suzlon turbine version installed will be similar to the sound data that was used in the acoustic modeling. However, it is possible that the actual sound warranty data could vary slightly.

Table 3.8-2. Broadband Sound Power Levels (dBA) Correlated with Wind Speed

	WTG Sound Power Level (L_W) at Reference Wind Speed						
Hub Height Wind Speed	7 mph (3 m/s)	9 mph (4 m/s)	11.2 mph (5 m/s)	13.4 mph (6 m/s)	15.9 mph (7 m/s)	17.9 mph (8 m/s)	20.1 mph (9 m/s)
Suzlon S88	<96	103.2	104.0	105.1	106.3	107.2	107.5

3.8.3.2.2 Project Critical Design Operational Condition

The Project critical design operational condition occurs at the point where the greatest differential exists between the background sound level and the WTG sound power level at a given wind speed. Although not initially intuitive, the operational noise condition that results in the greatest incremental increase relative to baseline does not typically occur at full rated power when the WTG is at its maximum noise emission level. For the Suzlon S88, the critical design wind speed is at the reference wind speed of 8 m/s (18 mph) at hub height, as shown in

Table 3.8-3. Acoustic modeling was completed for Project operation at the critical design wind speed, where the sound power octave band data was scaled for the 8 m/s (18 mph) reference wind speed. The results from modeling this scenario were used to determine Project compliance with the NYSDEC guidelines.

Table 3.8-3. Suzlon S88 2.1 MW Critical Design Operational Condition

100-m Wind Speed	4 m/s	5 m/s	6 m/s	7 m/s	**8 m/s**	9 m/s	10 m/s
Suzlon S88 L_{max} Sound Power Level at Reference Wind Speed	103.2	104.0	105.1	106.3	**107.2**	107.5	107.4
Background L_{eq}	39.5	39.8	40.3	40.9	**41.7**	42.6	43.8
Net Change	63.7	64.2	64.8	65.4	**65.5**	64.8	63.6

Bold type indicates critical design wind speed.

3.8.3.2.3 Acoustic Modeling Methodology

All acoustic modeling was completed using DataKustic GmbH's CadnaA, the computer aided noise abatement program (v 3.7.123). CadnaA is a comprehensive three-dimensional acoustic software model that conforms to the ISO 9613-2 "Attenuation of Sound during Propagation Outdoors." The engineering methods specified in this standard consist of 1/1 octave band algorithms that incorporate the following:

- Geometric spreading wave divergence
- Reflection from surfaces
- Atmospheric absorption
- Screening by topography and obstacles
- Terrain complexity and ground effects
- Source directivity
- Height of both sources and receptors
- Seasonal foliage effects
- Meteorological conditions

CadnaA has been shown to be a highly accurate and effective acoustic modeling tool for wind energy projects when appropriate WTG acoustic modeling techniques and site-specific terrain and topographical features are considered. Calculation corrections have been applied to address inherent limitations in the ISO 9613-2 standard to account for specialized application of a large dimension-elevated sound source, such as a WTG.

Source emission heights were modeled at the design hub height of 100 meters above grade. Received sound level calculations were completed at a height of 1.52 meters above grade. The ISO 9613-2 standard calculates received sound pressure levels for meteorological conditions favorable to propagation, i.e., downwind sound propagation or what might occur typically during

a moderate atmospheric ground level inversion. Though a physical impracticality, the ISO 9613-2 standard simulates omnidirectional downwind propagation and maximum WTG source directivities. For receptors located between discrete WTG locations or WTG groupings, the acoustic model may result in the over-prediction of received sound level results. In addition, the acoustic modeling algorithms essentially assume laminar atmospheric conditions, in which neighboring layers of air do not mix but flow at different velocities. This conservative assumption does not take into consideration turbulent eddies that form when winds change speed or direction, which can interfere with the sound wave propagation path and increase attenuation effects. Though considered exceptional events according the ISO 9613-2 calculation procedures, Project sound levels resulting from operation during periodic anomalous meteorological conditions were also considered in the modeling analysis.

Topographical information was imported into the acoustic model using the official United States Geological Survey (USGS) digital elevation dataset to accurately represent terrain in three dimensions. Terrain conditions, vegetation type, ground cover, and the density and height of foliage can also influence the absorption that takes place when sound waves travel over land. For the acoustic modeling analysis, a conservative ground absorption rate was selected, accounting for a semi-reflective ground surface. This ground absorption coefficient was further reduced in close proximity to WTGs to account for decreased ground attenuation effects associated with an elevated sound source relative to receiver height. Additional sound attenuation through foliage and diffraction around and over existing anthropogenic structures were disregarded for all modeling scenarios. The results are therefore representative of a defoliate (leaf-off) winter time period.

3.8.3.2.4 Noise Impact Analysis Results

The acoustic modeling results are detailed in Appendix H in the form of sound contour figures and tabular format by receptor location. Acoustic modeling was completed for Project operation ranging from WTG cut-in to full rotational wind speed to quantify sound levels on both an absolute and incremental increase basis to provide a compliance determination with the Town of Alabama local ordinance and the NYSDEC guidelines. Results presented in Appendix H show that the Project has been adequately designed to operate in compliance with the Town of Alabama broadband noise limit of 50 dBA. Evaluation of the Project's performance with regard to the 6 dBA NYSDEC incremental increase guideline showed that exceedances were identified at 25 receptors under normal moderate downwind meteorological conditions and 33 exceedances were identified under anomalous meteorological conditions. Table 3.8-4 summarizes the acoustic modeling results in comparison to the NYSDEC guideline criteria. Table 3.8-4 also shows the number of receptors that fall within the increase range of 3 to 6 dBA, which have the "potential for adverse noise impact only in cases where the most sensitive receptors are present" according to the NYSDEC guidelines. Increases greater than 6 dBA are identified as potential noise impacts requiring further analysis according to the NYSDEC. It should be noted that Project audibility does not cease at the 6 dBA isopleth threshold, but will

extend out for some distance. However, beyond this threshold, the prominence of Project sound is significantly lower and therefore less likely to be regarded as objectionable.

Table 3.8-4. Comparison Acoustic Modeling Results at Critical Design Wind Speed to NYSDEC Guideline

Incremental Increase in L_{eq} Background (dBA)	Normal # Potentially Impacted Receptors	Anomalous # Potentially Impacted Receptors	Expected Effect on Receptors
0 – 3	84	67	No appreciable effect.
3 – 6	73	82	Potential for adverse noise impact limited to cases where only the most sensitive receptors are present.
> 6	**25**	**33**	Potential noise impact. Requires a closer analysis of impact potential depending on existing SPLs and the character of sound emissions, land use and receptors.

3.8.3.2.5 Secondary Assessment of the Potential for Adverse Impacts

The modified Composite Noise Rating Method (mCNR) was used to assess potential noise impacts of Project operation under the critical design wind speed at the noise sensitive receptors where exceedances of the NYSDEC 6 dBA incremental increase criterion criteria were identified. The mCNR analysis is the procedure recommended by the New York State Department of Public Service staff for the evaluation of noise impacts from electric generating projects, subject to Article X. Though the Project is not subject to an Article X application, the use of this methodology was suggested by staffing early on in the permitting process and was carried through in this updated analysis. However, there may be some question to the validity for direct use as a siting tool for wind energy projects as compared to the likely intended purpose, as a secondary assessment approach for conventional power generating facilities in largely non-rural environments.

This methodology incorporates several factors including the expected sound levels from the Project, the existing background sound levels, character of the noise (e.g., tonal, impulsive), duration, and subjective factors such as community attitude or history of previous exposure. This method, which is based on case histories of reaction to new sources, dates back to 1955 and with minor modifications has been used by a number of federal agencies including the NYSDEC and the EPA. The procedure involves the following four steps:

1. Obtain a baseline rating classification, letter grade, from the predicted sound pressure level spectrum of the new noise source.

2. Determine a background (masking noise) correction based on the average measured background sound level spectrum.
3. Apply a number of other 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 after application of all corrections and adjustments.

A description and graph of final rating classifications and expected responses are provided in Table 3.8-5. The goal for the Project is to achieve a mCNR rating of "C" at all receptor locations corresponding to "no reaction although noise is noticeable."

Table 3.8-5. Final mCNR Noise Level Rankings and a Description of Anticipated Subjective Responses

Final mCNR Ranking	Anticipated Subjective Responses
A	No Complaints
B	
C	No Reaction though Noise is Generally Audible
D	
E	Widespread Complaints or Single Threat of Legal Action
F	
G	Several Threats of Legal Action and Appeals to Local Officials to Stop Noise
H	
I	Vigorous Action

The results of the mCNR analysis are summarized below in Table 3.8-6, and demonstrate that the majority of receptors have achieved a mCNR rating of "D"; however, there remain three receptors that show a final mCNR rating of "E." The results of this mCNR analysis are based on the Project critical design wind speed of 8 m/s (18 mph) under atypical anomalous meteorological conditions.

Table 3.8-6. Final mCNR Rating of Receptors with Potential Exceedances of the NYSDEC Guideline

Final Modified Composite Noise Rating	Number of Receptors
A	0
B	0
C	0
D	30
E	3
F	0

3.8.4 Mitigation Measures

The Applicant understands that the control of environmental noise has become increasingly important in the siting and operation of wind energy projects and realizes that residents must have an effective way to set forth any concerns that may arise during the course of Project construction and operation. Candidate mitigation measures include:

- Limiting noisy construction activities to daytime hours; and
- Implementing a complaint resolution program whereby residents can contact them directly with their concerns. Such complaints will be logged and investigated in order to resolve the identified issue.

3.9 Transportation

3.9.1 Existing Conditions

Existing conditions are as described in the DEIS.

3.9.2 Potential Impacts

3.9.2.1 Construction

Construction-related impacts are as described in the DEIS. Routes evaluated in the DEIS are still under consideration as delivery routes for vehicles, equipment, wind turbine generators, and other Project components. However, due to the decreased number of turbine sites, fewer local roads are anticipated to be utilized to make deliveries to construction sites. Additionally, construction of the Project is now anticipated to commence no earlier than 2011.

A comprehensive delivery route has not yet been finalized; however, as stated in the DEIS, it is likely that delivery of turbine components will be from the south by use of Interstate 90 (NYS Thruway) and NYS Route 77. Once finalized, the delivery route and associated documentation will address contingencies outside of the Project Area, which will consider highway limitations, planned work schedules for state highway routes, road widening, utility re-locations, and bridge reinforcement. Upon selection of a contractor and turbine delivery company for the Project, the route will be revisited with the responsible parties to determine of alternate routes provide better access to the Project.

As noted in the DEIS, the required improvements will be coordinated with state, county, and local highway departments (at no expense to these departments) prior to the arrival of oversize/overweight (OS/OW) vehicles on-site. In addition, these improvements may create additional Project related impacts (e.g., wetlands, drainage, and grading) that will be addressed in detail during the final Project design, and reviewed/approved during all Project permitting subsequent to completion of SEQRA review (i.e., SPDES General Permit, USACE/NYSDEC wetland permits, highway work permits).

3.9.2.2 Operation

Construction-related impacts are as described in the DEIS. However, due to the decreased number of turbine sites, fewer local roads are anticipated to be utilized to access turbines and other Project components during maintenance and operations activities.

3.9.3 Mitigation Measures

Proposed mitigation is as described in the DEIS. Prior to construction, the Applicant will obtain all necessary permits from the town, county, and state highway departments for activities including new access points to public roads, improving existing roadways, crossing highways with buried electrical collection lines, and operating oversize vehicles on the highway. The final transportation routing documentation will be provided to the Town of Alabama, Genesee County, and the NYSDOT, and will specify the local, county, and state roads to be used as haul routes (both within and outside of the Project Area) by construction/transportation vehicles.

3.10 Socioeconomics

3.10.1 Existing Conditions

This section is as described in the DEIS. Updated census, tax levy, and budget data is provided in Tables 3.10-1 through 3.10-3.

Table 3.10-1. Population Trends in Project Area

	Population 2000	Population 2005 (reported in DEIS)	Population 2009 (estimate)	Percent Change 1990-2000	Percent Change 2000 to 2005 (reported in DEIS)	Percent Change 2000 to 2009
Genesee County	60,370	59,257	57,868	0.52	-1.11	-4.1
Town of Alabama	1,881	1,840	1,823	-5.9	-2.18	-3.1

Sources: U.S. Census Bureau 2006 and 2010; New York State Data Center 2006 and 2009

Table 3.10-2. Real Property Tax Levy per Taxing Jurisdiction

Taxing Jurisdiction	Real Property Tax Levy (2006)	Real Property Tax Levy (2009)
Genesee County	$22,822,665	$23,625,070
Town of Alabama	$93,645	$88,153
Genesee County (Town of Alabama portion)	$692,859	$744,734
Oakfield-Alabama Central School District (Town of Alabama portion)	$1,485,781	$1,584,305

Sources: New York State Office of Real Property Services 2006 and 2010

Table 3.10-3. County, Town, and School District Budgets, 2008

Taxing Jurisdiction	Total Revenue	Total Expenditure	Total Indebtedness
Genesee County	$134,386,781	$132,131,636	$18,455,000
Town of Alabama	$1,270,237	$1,176,534	$$10,457
Oakfield-Alabama School District	$16,364,074	$16,276,729	$6,553,508

Source: New York State Office of the State Comptroller 2009

3.10.2 Potential Impacts

3.10.2.1 Construction

Construction-related impacts are as described in the DEIS.

3.10.2.2 Operation

3.9.2.2.1 Population and Housing

This section is as described in the DEIS.

3.9.2.2.2 Impacts on Property Values

The conclusions in this section are as described in the DEIS. New research has been published subsequent to filing the DEIS regarding potential impacts on property values. The study found that neither the view of wind facilities nor the distance of homes to those facilities is found to have any consistent, measurable, and statistically significant effect on sales prices (Hoen *et al* 2009).

The study provides a comprehensive analysis of transaction data from 10 study areas surrounding 24 wind facilities in nine states that became operational through the end of 2005. The total study sample consisted of 7,459 sales transactions that were evaluated with various models and using data subsets based on distance to turbines, timing of sale in relation to timing of wind project announcement and construction, and view of turbines from the site. Visibility of turbines, existing amenities, and other information was also collected during field visits to the residences over the course of the three-year study period.

The results of the study indicate that while the possibility exists that individual homes have been or could be impacted, if these impacts do exist, they are either too small and/or too infrequent to result in widespread, statistically observable impacts. The study did not find evidence that prices of sales occurring after construction of the facility for homes within a mile of the nearest wind turbine are affected and found some evidence that sales occurring prior to construction are affected. Notably, the study was not able to obtain information on whether turbine easement payments or neighbor agreements were in place at any of the projects in the study sample. Such mitigation measures have become more common and create a socioeconomic benefit that is not factored into the study results.

3.9.2.2.3 Economy and Employment

This section is as described in the DEIS.

3.9.2.2.4 Municipal Budgets and Taxes

The Project will have a positive effect on municipal budgets and taxes, as stated in the DEIS, through payments to the Town and other local jurisdictions in the form of a PILOT Agreement or other form host community agreement.

3.10.3 Mitigation Measures

3.10.3.1 Construction

This section is as discussed in the DEIS.

3.10.3.2 Operation

This section is as described in the DEIS. The Applicant will continue to discuss with the Town of Alabama regarding the Applicant's application pursuant to the Town of Alabama Incentive Zoning Law, originally filed January 11, 2007 and amended May 3, 2007.

3.11 Public Safety

This section addresses concerns regarding public safety at the proposed Project site.

3.11.1 Existing Conditions

This section is as described in the DEIS. Figure 8 provides an updated representation of the SDEIS layout shown over the network of gas infrastructure. The Project Area is populated by a network of gas infrastructure including 16 active gas wells, service lines running from gas wells to residences, gathering and transmission pipelines that direct the extracted natural gas towards a US Gypsum facility located in the adjacent town of Oakfield.

3.11.2 Potential Impacts

3.11.2.1 Construction

Potential impacts are as described in the DEIS except that the revised layout has been adjusted based on gas well locations and discussions with US Gypsum, the operator of the gas wells and pipelines in the Project Area. All but one turbine are located at least 500 feet from gas wells. Turbines, access roads, and electrical collection lines located near gas pipelines will have their workspace adjusted in accordance with the discussions between the Applicant and US Gypsum.

3.11.2.2 Operation

Operational impacts are as described in the DEIS.

Figure 8. Gas Facilities

3.11.3 Mitigation Measures

Mitigation measures are as described in the DEIS. The Applicant will continue to coordinate with US Gypsum to adjust workspaces as necessary.

The Applicant has also prepared a Preliminary Fire Protection and Emergency Response Plan, provided as Appendix I to this SDEIS. The preliminary plan has been created to describe the content and intent of a full Fire Protection and Emergency Response Plan to be developed in consultation with local authorities prior to Project construction. A final plan cannot be created until after the SEQR process is complete because various aspects of the plan will depend upon permit conditions contained in authorizations that cannot be issued until an FEIS has been accepted.

3.12 Community Facilities and Services

3.12.1 Existing Conditions

Existing conditions are as described in the DEIS.

3.12.2 Potential Impacts

Anticipated impacts during construction and operation are as described in the DEIS for public utilities and private energy infrastructure; police, fire, and emergency services; health care and educational facilities; and parks and recreational area.

As noted in the DEIS, prior to erecting turbines the Applicant must also file exact coordinates with the FAA pursuant to Federal Aviation Regulations (FAR Part 77). Subsequent to DEIS filing, the Applicant submitted in November 2009 Notices of Proposed Construction or Alteration for the revised layout, receiving Determinations of No Hazard (DNH) in March 2010 for all locations. The Applicant has also conducted internal airspace review and mapping to facilitate design of a layout that avoids airspace interference. If necessary, the Applicant will file the final turbine layout with the FAA prior to construction.

Additionally, the defunct railroad corridor anticipated to be crossed by overhead collection lines has been purchased by a participating landowner since the DEIS, and as such, a crossing agreement with the previous corridor owner, CSX Transportation, will no longer be necessary as originally stated in the DEIS.

3.12.3 Mitigation Measures

Anticipated mitigation measures are as described in the DEIS. Additionally, a Preliminary Fire Protection and Emergency Response Plan is provided as Appendix I to this SDEIS.

3.13 Communication Facilities

3.13.1 Existing Conditions

Existing conditions are as described in the DEIS.

3.13.2 Potential Impacts

Anticipated impacts are as described in the DEIS.

3.13.3 Mitigation Measures

Anticipated Mitigation Measures are as described in the DEIS.

3.14 Land Use and Zoning

3.14.1 Existing Conditions

3.14.1.1 Regional Land Use Patterns

Regional land use patterns are as described in the DEIS.

3.14.1.2 Compliance with Land Use and Zoning

This section is as described in the DEIS; development of the Project must adhere to setbacks and standards established in the Zoning Law of the Town of Alabama, adopted November 27, 2006.

3.14.1.3 Mining and Natural Gas Use

This section is as described in the DEIS.

3.14.1.4 Future Land Use

This section is as described in the DEIS with one update since filing of the DEIS; the Project in the Towns of Pembroke and Batavia proposed by Tonawanda Creek LLC withdrew from the NYISO Interconnection in July 2009.

3.14.2 Potential Impacts

3.14.2.1 Construction

3.14.2.1.1 Compliance with Land Use and Zoning

The Project would be constructed on private land in areas dominated by active agricultural land zoned Agricultural-Residential and Industrial. Most Project components would be sited in accordance with local setback requirements to the extent practical. Where necessary, the Applicant would obtain written waivers from affected landowners for turbines located less than the setback distance. Additionally, the turbine height will exceed the 195-foot limit in the Town Zoning Law. A variance must be obtained from the Town in order to erect the proposed turbines

through the Town's Incentive Zoning Ordinance. On April 14, 2010, the Applicant filed an amended application for Incentive Zoning with the Town to request relief from these standards on an as-needed basis to preserve the economic viability of the Project.

3.13.2.1.2 Mining and Natural Gas Use

This section is as described in the DEIS.

3.14.2.1.3 Future Land Use

This section is as described in the DEIS.

3.14.2.2 Operation

3.14.2.1.1 Compliance with Land Use and Zoning

This section is as described in the DEIS. Operation of the Project will be in compliance with local wind energy system requirements and zoning regulations in the Town of Alabama.

3.14.2.1.2 Mining and Natural Gas Use

This section is as described in the DEIS.

3.14.2.1.3 Future Land Use

This section is as described in the DEIS.

3.14.3 Mitigation Measures

Mitigation measures are as described in the DEIS.

4.0 UNAVOIDABLE ADVERSE IMPACTS

General siting and resource avoidance measures are as described in the DEIS. Any specific changes in proposed mitigation measures since the DEIS have been added to the resource sections presented in Section 3 of the SDEIS. The FEIS will describe any additional, specific mitigation measures to be updated after final design.

The positive and negative impacts associated with the development of the revised Project layout, along with mitigation measures, have been presented in tabular format in the Executive Summary. Any increases or reductions in the anticipated Project impacts since the DEIS are described in detail in Section 3 Environmental Setting, Impact Analysis and Mitigation Measures. The public need for and benefit derived from this Project is addressed in Section 2.8 Project Purpose, Need and Benefit.

4.1 General Mitigation Measures

As explained in the DEIS, general mitigation measures associated with the planning and design of the Project include the procedures prescribed by the various local, state, and federal ordinances and regulations governing Project development. The primary government review/approval processes and/or standard conditions that the Project will be developed in accordance with include:

- SEQRA
- NYSDOT and Genesee County Highway Department highway regulations
- Federal Clean Water Act regulations (Section 404 permit, Section 401 water quality certification)
- Town of Alabama building and zoning regulations
- NYSDEC water resources regulations (Article 24, Article 15, Section 401 water quality certification)
- Occupational Safety and Health Administration (OSHA) regulations (standard conditions for safe work practices during construction)
- NYSA&M Agricultural Protection Measures

The compliance of the Project with SEQRA regulations and the role of that compliance in mitigating and minimizing potential Project impacts are as described in the DEIS. This SDEIS has been prepared in accordance with these regulations and provides an update to the DEIS, ensuring that the potential costs and benefits of the revised Project will be described and weighed in a public forum.

As described in the DEIS, compliance with the other various federal, state, and local regulations governing the construction and design of the Project also will serve to minimize adverse

impacts. For a complete list of the regulatory approvals and consultations required for this Project, see Section 2.10, Permits and Approvals Required.

4.2 Proposed Mitigation Measures for Long-Term Unavoidable Environmental Impacts

In general, proposed mitigation measures for long-term unavoidable environmental impacts are as described in the DEIS. However, through revisions to the Project layout since the DEIS, the Applicant has also directly and indirectly incorporated additional mitigation measures. The Applicant has revised the layout specifically to reduce impacts to environmental resources by accounting for the locations of wetlands and cultural resources and by relocating the O&M building and construction laydown yard from usable agricultural land to disturbed former quarry land. The Applicant has substantially reduced the amount of overhead line by placing the length of overhead collection line proposed between and parallel to Gorton and Wight Roads underground. In addition, the revised facility layout requires a reduced Project footprint, indirectly mitigating Project impacts. Consequently, in comparison to the DEIS, long-term unavoidable adverse impacts to soil, land-use, water resources, biological resources, noise, visual resources, and cultural resources have also decreased.

Table 4.2-1 below lists the long-term adverse impacts associated with Project construction and corresponding mitigating factors. Specific mitigation measures and follow-up monitoring programs are described in the separate mitigation sections within Section 3 of the SDEIS and DEIS and in the various appendices, where applicable.

Table 4.2-1. Summary of the Project's Long-Term Unavoidable Adverse Impacts

Environmental Factor	Potential Impacts	Mitigation Measures
Physiography, Geology, and Soils	Loss of agricultural land	Using existing public and private (i.e., farm) roads whenever practicable.
Surface and Groundwater Resources	Wetland filling Permanent stream crossings	Aligning roads and turbines to avoid wetlands and streams Creating or improving wetlands in compliance with federal/state permit mitigation requirements
Biological Resources	Incidental wildlife injury and mortality Loss or alteration of habitat	Funding of post-construction studies to monitor potential impacts on birds and bats.
Land Use and Zoning	Adverse and beneficial impacts on farming Changes in community character and land use trends	Aligning roads and turbines with existing field rows and seams whenever practicable

Environmental Factor	Potential Impacts	Mitigation Measures
Cultural Resources	Visual impacts on architectural resources Disturbance of historic archaeological resources	Funding and/or implementing mitigation programs for unavoidable impact to historic resources in accordance with an MOA based on SHPO guidelines Siting Project facilities away from identified cultural resources
Visual Resources	Visual change to the landscape Visual impact on sensitive sites/viewers Shadow-flicker impact on adjacent residents	Siting the Project away from population centers and areas of residential development. Shifting turbine locations within a given area to minimize shadow impact. Using buried electrical collection lines between turbines to the extent practical. Entering into agreements with neighboring landowners located within 2,500 feet of a wind turbine.
Noise	Operational impacts on adjacent residents	Siting the Project away from population centers and areas of residential development. Entering into agreements with neighboring landowners located within 2,500 feet of a wind turbine.

With the incorporation of the above described mitigation measures as well as those detailed in the DEIS, the Project is expected to result in positive, long-term overall impacts that will offset any unavoidable adverse effects. The Applicant will nonetheless continue to work with the Town of Alabama and regulatory agencies to determine what mitigation programs may be warranted to compensate for long-term unavoidable impacts caused by the proposed wind farm. An update on the status of the Project mitigation measures will be provided in the FEIS.

4.3 Environmental Compliance and Monitoring Program

Environmental compliance and monitoring programs proposed by the Applicant are as described in the DEIS.

5.0 ALTERNATIVES ANALYSIS

The following alternatives to the proposed action were described and evaluated in the DEIS: no action, alternative Project area, alternative turbine technology, alternative Project design/layout, and alternative Project size/magnitude. The analyses of the no action alternative, alternative energy production technologies, and alternative Project area remain as described in the DEIS. The analyses of alternative turbine technology, alternative Project design/layout, and alternative Project size/magnitude have been revised to reflect changes since the DEIS.

5.1 No Action

The no action alternative is as described in the DEIS.

5.2 Alternative Project Area

The discussion of the Applicant's selection of the proposed wind energy development site is as described in the DEIS. The proposed site continues to offer significant wind resource, proximity to adequate transmission, relatively low population density, highly receptive land owners and neighbors, compatible existing land-uses, and relatively few sensitive resources. The proposed site therefore remains desirable from the standpoint of wind power development.

5.3 Alternative Project Design/Layout

The revised Project layout described in Section 2 of this SDEIS represents the latest stage of the detailed siting process described in the DEIS. The layout used in the SDEIS, like the one used in the DEIS before it, was developed through an iterative process that sought to minimize environmental impacts, satisfy engineering constraints, and preserve the Project's energy efficiency and thereby its economic viability. The DEIS layout was refined based on initial desktop and field studies, initial engineering, passing of new local land use ordinances, landowner agreements/considerations, and recognition of the need to protect sensitive resources such as forest habitat, wetlands, gas infrastructure, and agricultural land.

Since the publication of the DEIS, the Applicant has further refined the proposed layout to account for landowner preferences and cumulative meteorological data, and to reduce environmental impacts through a smaller Project footprint, avoidance of known locations of wetlands and surface waterbodies, and relocation of the O&M building and construction laydown yard from agricultural land to previously disturbed quarry land. Consequently, the layout now presented in this SDEIS has been reduced in overall impact footprint compared to the DEIS layout and continues to prioritize avoiding or minimizing potential impacts to sensitive resources. The Applicant will continue to refine the layout and seek to further minimize potential environmental impacts as it proceeds in the development of its final design layout, which will be presented in the FEIS.

5.4 Alternative Energy Production Technologies

The description of alternative energy production technologies is as described in the DEIS.

5.5 Alternative Turbine Technology

The discussion of alternative turbine technology is as described in the DEIS, with the exception that in addition to the Vestas V82, V90 and the Gamesa G87 turbine models, the Applicant is now also considering the Suzlon S88 and Vestas V112 or comparable models for the Project. The Suzlon S88 with a nameplate capacity of 2.1 MW, like the other viable models, is in the middle of the modern multi-megawatt class of wind turbines, the most successful class of wind turbines. The V112 with a nameplate capacity of 3.0 MW has a higher hub height and larger rotor diameter, enabling a more efficient conversion of the wind resource into electrical energy. The choice of a turbine with a higher nameplate capacity achieves the same Project nameplate capacity with fewer turbines, which minimizes overall impacts and results in decreased ground disturbance and a smaller total Project footprint.

5.6 Alternative Project Scale and Magnitude

The description of alternative Project scale and magnitude from the DEIS remains generally applicable to the SDEIS. Significantly larger or significantly smaller magnitude Projects continue to be neither economically nor environmentally viable, based on the rationale provided in the DEIS. The history of incremental downscaling of the proposed Project also remains pertinent, with the important caveat that further incremental downscaling has occurred since the DEIS. The current layout calls for a maximum of 40 turbines with a total capacity not to exceed 79.8 MW, while the layout used in the DEIS called for a maximum of 52 turbines with a total of between 85.8 and 104 MW.

Since the DEIS, the Applicant has revised the Project size and capacity based participating landowner preferences, cumulative meteorological data to date, engineering considerations, and regulatory concerns. The resulting layout maintains a highly economical magnitude, but has a smaller environmental footprint, as discussed in the individual resource descriptions of Section 3. The reduction in proposed Project capacity results in a comparable reduction of the total economic potential benefit of the Project.

6.0 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The irreversible and irretrievable commitment of resources associated with the proposed Project is as described in the DEIS, with the exception of the total commitment of land for the life of the Project. Specifically, based on the revised Project layout, approximately 66 acres of land developed for wind turbine tower locations, access roads, a substation, and an O&M building would not be available for alternative purposes for the life of the Project.

7.0 GROWTH INDUCING IMPACTS

Growth-inducing impacts are as described in the DEIS, with the exception of the direct economic benefits of the Project to local governments and to participating landowners and adjacent neighbors, which will be slightly moderated by the downscaling of the Project's size. Overall, the Project is still a commercial-scale wind energy generating facility, and as such, the potential for the following growth-inducing impacts still applies to the same extent as discussed in the DEIS:

- The Project will create 10 to 15 permanent jobs during operation of the Project.
- The Project will not result in long-term population change in the vicinity of the Project Area.
- The Project will result in improved local road infrastructure such that the Town of Alabama would be in a better position to support unrelated economic development.
- The Project may enhance tourism traffic in the area.
- The Project may result in the growth of the operation of the Buffalo Crush Stone quarry result in revenue and economic growth to the region.
- The reduced generating capacity proposed in the SDEIS will result in proportionally reduced total landowner payments for wind turbines, local participating farmers/landowners would still receive economic benefits that would give them an opportunity to also enhance their operation through better technology or expansion of available property and resources.

Unlike other types of commercial development, the construction of the Project will not encourage the development of additional wind power projects in the Project Area, but may encourage the growth of wind- or renewable-related businesses within the region.

8.0 SUMMARY OF CUMULATIVE IMPACTS

In conformance with the requirements of SEQRA review, the DEIS considered the cumulative impacts on the environment resulting from the proposed Project and other major developments in the surrounding community. These other developments, as described in Section 3.13, Land Use of the DEIS, consist of expansion of quarry activities at the Buffalo Crushed Stone Facility, the potential re-development of the John White Memorial State Game Farm to establish a veterans cemetery, and the development of the Science and Technology Advanced Manufacturing Park (STAMP). Because these developments have not changed in scope or viability since the DEIS, and the proposed Project remains similar but slightly smaller in magnitude, the cumulative impacts for these development remain generally as described in the DEIS. No other major development has been proposed in the surrounding community since the DEIS; therefore, additional discussions beyond these three local development projects are not required.

The DEIS also considered the cumulative impacts of the broader development of wind energy facilities in Genesee and adjacent counties. This section provides an updated discussion on those impacts based on additional information available since the publishing of the DEIS.

8.1 Proposed Major Development in the Project Vicinity

8.1.1 Potential Cumulative Impacts Associated With Expansion of Mining Activities at Buffalo Crushed Stone

As described in the DEIS except that the Project layout no longer proposes siting the O&M building and construction laydown yard on land that is permitted for quarry expansion. Instead, the Applicant now plans to site these facilities on previously quarried land. Consequently, the Project would not delay expansion of quarrying at this facility. No other cumulative impacts are anticipated from this change in Project layout.

8.1.2 Potential Cumulative Impacts Associated With the Re-Development of the John White Memorial State Game Farm

Cumulative impacts associated with the potential re-development of the John White Memorial State Game Farm are as discussed in the DEIS.

8.1.3 Potential Cumulative Impacts Associated With the Proposed STAMP Development

Cumulative impacts associated with the Proposed STAMP Development are as discussed in the DEIS. Since the DEIS, the GCEDC has completed scoping for the draft generic environmental impact statement and initiated cultural resource field studies.

8.1.4 Regional Wind Project Development

8.1.4.1 Operational Wind Farms

In addition to the two operational wind farms noted in the DEIS, the Wethersfield Wind Farm and the Steel Winds I Wind Farm, three of the proposed wind projects originally discussed in the DEIS (Section 8.1.4.2) have become operational since the publication of the DEIS for a total of five operational wind farms have been identified within approximately 30 miles of the proposed Project. The closest facility, High Sheldon Energy, is located approximately 20 miles to the south. The operational facilities as of the writing of this SDEIS are summarized in Table 8.1-1. Updated information regarding operational wind farms has been gathered from a variety of sources, including the American Wind Energy Association (AWEA), the NYSDEC, and developer websites and press releases. Based on this thorough review, five operational wind farms have been identified within approximately 30 miles of the proposed Project area. These facilities are summarized in Table 8.1-1. The closest facility, High Sheldon Energy, is located approximately 20 miles to the south.

Table 8.1-1. Operational Wind Farms within 30 miles of the Proposed Project

Project Name	Town, County	Distance and Direction from the Project	Power Capacity (MW)	Number of Turbines	Developer/ Owner	Year Online
High Sheldon Energy	Town of Sheldon, Wyoming County	20 mi south	112.5	75	Invenergy	2009
Wethersfield Wind Farm	Town of Wethersfield, Wyoming County	25 mi south	6.6	10	Enel North America	2000
Wethersfield Windpark	Town of Wethersfield, Wyoming County	26 mi south	126	84	Noble	2009
Steel Winds I Wind Farm	Town of Lackawanna, Erie County	28 mi southwest	20	8	First Wind and BQ Energy	2007
Bliss Windpark	Town of Eagle, Wyoming County	30 mi south	100.5	67	Noble	2008

Sources: AWEA 2009,2010; First Wind 2009a; NYSDEC 2008b; Noble Environmental Power 2007, 2009a, 2009b.

8.1.4.2 Proposed or Future Wind Projects

As described in the DEIS, within the region of the proposed Project, additional wind-powered generating facilities are in project planning and development phases. Facilities that have progressed beyond preliminary site investigations typically request to be added to the NYISO Interconnection Queue, a comprehensive list of proposed energy Projects that must undergo NYISO Large Facility Interconnection Procedures (LFIP) before becoming operational. The

Interconnection Queue includes details about the proposed Projects, including their locations and capacities, as well as their statuses in the NYISO LFIP. The NYISO LFIP is divided into six major phases: Interconnection Request (IR), Feasibility Study (FES), System Reliability Impact Study (SRIS)/System Impact Study (SIS), Facilities Study (FS) and Cost Allocation, Interconnection Agreement (IA), and Commencement of Interconnection Activities/Construction (NYISO 2007).

In order to update information pertaining to proposed or future wind projects in the region of the proposed Alabama Ledge Wind Farm, the most recent version of the NYISO Interconnection Queue (dated accessed 9/3/2010) was reviewed. As discussed in the DEIS, it is reasonable to assume that wind power projects that have reached the phase of in-progress SRIS and with upcoming proposed operation dates may be considered "proposed" or "'future" projects for the purposes of cumulative impact analysis. On this basis, with the exception of Hamlin Wind Farm, all of the projects listed in Table 8.1-2 Proposed Wind Projects Under Active Development in Genesee and Adjacent Counties, may be considered "proposed" or "future" projects.

Table 8.1-2. Proposed Wind Projects Under Active Development in Genesee and Adjacent Counties

Project Name	Town, County	Distance and Direction from the Project	Power Capacity (MW)	Developer	NYISO LFIP Phase*	Proposed In-Service Date
Stony Creek Wind Farm	Town of Orangeville, Wyoming County	21 mi south	142.588.5	Invenergy	FES, SRIS Available	December 2010
Dairy Hills Wind Farm	Towns of Covington, Perry, and Warsaw, Wyoming County	21 mi southeast	120	Horizon	SRIS Available	February 2012
Steel Winds II	Town of Lackawanna, Erie County	28 mi southwest	4515	First Wind	SRIS, FS Available	November 2010

* NYISO LFIP Phases: Interconnection Request (IR); Feasibility Study (FES); System Reliability Impact Study (SRIS)/System Impact Study (SIS); Facilities Study (FS) and Cost Allocation; Interconnection Agreement (IA); and Commencement of Interconnection. Activities/Construction Sources: First Wind 2009b; Horizon Wind Energy 2009; Living in New York 2007; National Wind Watch 2009; NYISO 2009,2010.

Table 8.1-2 identifies proposed wind projects that are under active development as of the writing of this SDEIS and are located in Genesee County or adjacent counties (Niagara, Orleans, Monroe, Livingston, Wyoming and Erie). The two projects proposed in Genesee County, namely Tonawanda Creek Wind and GenWy Wind, and one of the other proposed projects Two discussed in the DEIS (Section 8.1.4.2), additional projects, Tonawanda Creek Wind and Orleans Wind, proposed to be located within these counties were formerly withdrawn from in the Interconnection Queue but have been recently withdrawn (NYISO 2010). In addition, First

Wind's GenWy Wind Farm, proposed to be located in the Towns of Attica, Bennington, and Middlebury in Wyoming and Genesee Counties, remains in the queue but has suspended development due to insufficient wind resource (Beebe 2008).

8.1.5 Cumulative Impacts Associated With Regional Wind Farm Development

As stated in the DEIS, the proposed benefits associated with wind power tend to be more regional and global in nature (such as air quality benefits, homeland security benefits, etc.). With the development of more wind power facilities, such benefits accumulate and have an even more noticeable and meaningful positive impact on the environment.

Also as stated in the DEIS, most of the potentially adverse impacts associated with wind projects tend to be localized within a few miles of a project area and thus do not typically accumulate with the development of more wind power facilities in the same broad region. On that basis, the detailed assessment of cumulative impacts from regional wind development provided in the DEIS focused on the GenWy Wind Farm, the only operational or reasonably foreseeable wind project within 20 miles of the Applicant's Project. The DEIS also briefly discussed potential cumulative impacts associated with Tonawanda Creek Wind, but dismissed those impacts due to the early status of the Project at the time of DEIS filing. As noted above, both the GenWy Wind Farm and Tonawanda Creek Wind are no longer considered to be under active development; consequently, cumulative impacts associated with these projects are no longer considered reasonably foreseeable. The other operational and proposed wind projects identified above are all located at least 20 miles from the Applicant's Project. Due to the distances between these projects and the Applicant's Project, the adverse cumulative impacts would be limited primarily to avian and bat mortality and habitat loss, as detailed in the DEIS. Other minor cumulative impacts, both positive and negative, are described briefly in the following subsections.

8.1.5.1 Avian and Bat

The cumulative impacts resulting from the construction of the Project and other potential projects in the regional area on migrating and local birds, bats and other ecological resources are as described in the DEIS, with the exception that estimated impacts from the GenWy Wind Farm are no longer expected.

8.1.5.2 Climate and Air Quality

As noted in the DEIS, the construction of the Project and other proposed wind projects would avoid air pollution otherwise emitted by fossil fuel power plants throughout New York State. A quantitative assessment of these benefits in terms of total power production or total emissions reductions is difficult to provide considering the uncertainties associated with each proposed project. However, the cumulative benefits are anticipated to be significant.

8.1.5.3 Visual

Cumulative visual impacts associated with the Applicant's Project and the GenWy Wind Farm, as detailed in the DEIS, are no longer anticipated. Cumulative visual impacts associated with other operational or proposed wind projects are not anticipated to be significant due to the distances between projects and the spacing of turbines themselves within projects. Potential cumulative benefits on smog formation in the area are as described in the DEIS.

8.1.5.4 Cultural

Due to the separation between projects, the cumulative cultural impacts are likely to be nominal. The Applicant will review this issue with the SHPO and develop a mitigation strategy that takes potential cumulative impacts into consideration.

8.1.5.5 Land-Use

As noted in the DEIS, because of the setback requirements used by developers to site turbines, locations often tend to be in agricultural farmland. Each project that is built will therefore likely require the conversion of small portions of agricultural land into access roads or turbine foundations. Considering the scale of agricultural activity throughout the region, cumulative impacts of these land-use changes will be minor. In addition, it is notable that developers typically work closely with host landowners to reduce impacts on agricultural operations in addition to providing compensation for the use of area lands. Landowners often consider leasing land for wind development a superior revenue generating option to subdividing and selling off building lots – which diminishes the amount of land held by the landowner and potentially increases the number of neighbors sensitive to aesthetic impacts of farming (e.g. odor, noise, slow traffic). Payments from wind projects to area farms therefore commonly improve their financial sustainability and enable them to retain more land available for agricultural uses.

8.1.5.6 Transportation

Cumulative impacts of wind farm development on transportation are not expected. Impacts described in the DEIS in relation to the GenWy Wind Farm are no longer anticipated.

8.1.5.7 Socioeconomic

Due to the suspension of the GenWy Wind Farm and the separation between the Applicant's Project and reasonably foreseeable proposed projects, no local cumulative socioeconomic impacts are expected from regional wind farm development. Statewide socioeconomic impacts associated with cumulative progress towards the New York RPS are as discussed in the DEIS.

8.1.5.8 Public Safety

Although the GenWy Wind Farm is no longer viable, regional and national cumulative benefits to public safety are generally as described in the DEIS due to the likely development of other foreseeable projects in the region.

8.1.6 Mitigation of Wind Project Cumulative Impacts

The cumulative impacts of constructing and operating the Applicant's Project and other wind generating facilities in the region are, on balance, either positive or of limited significance, therefore not necessitating mitigation. Additionally, the Project as proposed in the SDEIS has reduced the number of turbines, length of overhead line, and overall Project footprint, thereby reducing the cumulative impact to environmental resources such as wetlands and wildlife. The Applicant will review the potential for cumulative cultural impacts with the SHPO to develop a MOA, if necessary.

9.0 EFFECTS ON USE AND CONSERVATION OF ENERGY RESOURCES

Effects on use and conservation of energy resources are as described in the DEIS. As currently proposed, the Project will still have significant, long-term beneficial effects on the use and conservation of energy resources.

Refer to Section 3.5 and Appendix C of this SDEIS for specific information regarding the anticipated energy supply from the revised Project and the pollution offsets associated with that supply.

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Appendix A
Agency Correspondence

Positive Declaration – Notice of Intent to Prepare a Supplemental Draft Environmental Impact Statement dated April 28, 2010

Final Scope: SEQR SDEIS Focus and Content adopted by Town Board July 12, 2010

Phase 1B Archeological Investigations Transmittal Letter to the SHPO dated October 29, 2009

Response Letter from the SHPO on the Phase 1B Archeological Investigations dated January 26, 2010

Historic Architectural Resources Investigation Transmittal Letter to the SHPO dated December 9, 2009

Response Letter from the SHPO on the Historic Architectural Resources Investigation dated February 26, 2010

Appendix B
Avian and Bat Studies

Appendix C
Avoided Air Emissions Report

Appendix D
Supplemental Visual Simulations

Appendix E
Updated Shadow Flicker Analysis

Appendix F
Phase 1B Archaeology Study

Appendix G
Five-Mile Ring Historic Architecture Survey

Appendix H
Updated Noise Impact Assessment

Appendix I
Preliminary Draft Emergency Response Plan