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Draft Environmental Impact Statement for the Noble Chateaugay Windpark and Noble Bellmont Windpark Franklin County, New York

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List of Abbreviations and Acronyms

agl	above ground level
AM	amplitude modulation
amsl	above mean sea level
ANSI	American National Standards Institute
APE	Area of Potential Effect
ASACTC	Alcohol and Substance Abuse Treatment Center
BBA	Breeding Bird Atlas
BBRA	Bird and Bat Risk Assessment
BCI	Bat Conservation International
BMP	best management practices
BOCES	Board of Cooperative Educational Services
BTU	British Thermal Unit
CBC	Christmas Bird Count
cm	centimeter
CO_2	carbon dioxide
CPCN	Certificate of Public Convenience and Necessity
CWA	Clean Water Act
cy	cubic yards
dB	decibels
dBA	A-weighted decibel level

DBH	diameter at breast height
DEIS	Draft Environmental Impact Statement
DHS	Department of Homeland Security
DOD	Department of Defense
EAF	Environmental Assessment Form
E & E	Ecology and Environment, Inc.
ECL	Environmental Conservation Law
EPA	Environmental Protection Agency
EPFPP	Emergency Preparedness and Fire Prevention Plan
FAA	Federal Aviation Administration
FCC	Federal Communication Commission
FEIS	Final Environmental Impact Statement
FERC	Federal Energy Regulatory Commission
FM	frequency modulation
GAO	U.S. Government Accountability Office
GHz	gigahertz
GPS	global positioning system
GW	gigawatt
GWh	gigawatthour
HASP	Health and Safety Plan
HMANA	Hawk Migration Association of North America
Hz	hertz
IDA	Industrial Development Agency
km	kilometers
kV	kilovolt

List of Abbreviations and Acronyms (cont.)

kW	kilowatt
kWh	kilowatt hour
LGRMIF	Local Government Records Management Improvement Fund
LMR	Land Mobile Radio
MASW	multichannel analysis of shear waves
MDS	map-documented structure
met tower	meteorological tower
MHz	megahertz
MW	megawatt
NEC	National Electric Code
NFPA	National Fire Protection Association
NHP	Natural Heritage Program
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
Noble	Noble Chateaugay Windpark, LLC and Noble Bellmont Windpark, LLC
NOI	Notice of Intent
NO_x	nitrogen oxides
NRCS	Natural Resource Conservation Service
NRE	National Register Eligible
NRHP	National Register of Historic Places
NTIA	National Telecommunications and Information Administration
NWCC	National Wind Coordinating Committee
NWI	National Wetlands Inventory
NYISO	New York Independent System Operator
NYPA	New York Power Authority

List of Abbreviations and Acronyms (cont.)

NYSDAM	New York State Department of Agriculture and Markets
NYSDEC	New York State Department of Environmental Conservation
NYSDOE	New York State Department of Education
NYSDOT	New York State Department of Transportation
NYSHPO	New York State Historic Preservation Office
NYSIO	New York State Independent System Operator
NYSM	New York State Museum
OPRHP	Office of Parks, Recreation, and Historic Preservation
OSHA	Occupational Safety and Health Administration
PCS	personal communication system
PEM	Palustrine Emergent Wetlands
PFO1	Palustrine Broad-Leaved Deciduous Forested Wetland
PFO1/4	Palustrine Broad-Leaved Deciduous/Needle-Leaved Evergreen Forested Wetland
PILOT	payments in lieu of taxes
PSC	Public Service Commission
PSS	Palustrine Scrub-Shrub
RA	rural arterial
ROW	right-of-way
RPS	Renewable Portfolio Standard
RU	rural use
SCADA	supervisory control and data acquisition
SEQRA	State Environmental Quality Review Act
S/NHRP	State and National Register of Historic Places
SO_2	sulfur dioxide
SPDES	State Pollutant Discharge Elimination System

List of Abbreviations and Acronyms (cont.)

SPL	sound pressure level
SRIS	System Reliability Impact Study
SSURGO	Soil Survey Geographical
STATSGO	State Soil Geographic Database
SWPPP	Storm Water Pollution Prevention Plan
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
VFD	volunteer fire department
VIA	Visual Impact Assessment
VRA	Visual Resource Assessment
WCFZ	Worst Case Fresnel Zones
WECS	wind energy conversion system
WMA	Wetland Management Area
ZVI	Zone of Visual Influence

Executive Summary

Executive Summary

E-1 Introduction and Project Description

This Draft Environmental Impact Statement (DEIS) describes the potential impacts and mitigation associated with the construction and operation of the Noble Chateaugay Windpark and Noble Bellmont Windpark (the Project). The Windpark will be located in the Towns of Chateaugay and Bellmont, Franklin County, and will produce approximately 129 megawatts (MW) of power from a renewable resource. When constructed, the Project will consist of:

- Up to eighty-six 1.5-MW wind turbines (72 turbines in the Town of Chateaugay and 14 in Town of Bellmont);
- Approximately 22 miles of new roads providing access to the turbines; and
- An electrical collection system to gather the power generated at each of the turbines to a substation in the Town of Clinton, Clinton County, that will provide access to the grid.

E-2 Project Alternatives

In designing the Project, Noble considered alternative Project sizes, turbine technologies, and Project facility designs. The Project Site was selected through a systematic process that considered:

- The location of wind resources in New York State;
- The availability of existing roads and utility interconnections in proximity to the locations with the most promising wind resources;
- The availability of land with landowners willing to sign easements for their property;
- Community support;

- The presence of environmental constraints including visual and noise impacts, impacts on wetlands and streams, and effects on important wildlife habitat; and

- The presence of land use constraints including zoning and building restrictions.

E-3 Potential Project Impacts and Mitigation

Resource-specific impacts that may potentially be associated with the Project were evaluated during the DEIS process. Existing conditions were evaluated relative to critical environmental resources, communication signals, traffic and transportation, land use, socioeconomics, and cultural resources. When potential impacts were identified, every effort was made to avoid them through modifications to the Project design. When impacts could not be avoided, they were minimized to the extent practicable and mitigation strategies were developed. Potential impacts were evaluated with respect to the following resource/receptor areas:

Wetlands

Project facilities were sited to minimize or avoid wetland impacts on the greatest extent practicable; however, some limited disturbance to wetlands will occur. Construction of the Project will result in temporary disturbance of 0.88 acres of wetlands and the Project facilities will create approximately 0.09 acres of permanent impacts on wetlands. Approximately 0.01 acres of permanently impacted wetlands are under federal or state jurisdiction.

For those wetland impacts that cannot be avoided, mitigation will be completed as a condition of the wetland disturbance permits that will be required prior to construction. Consistent with U.S. Army Corps of Engineers (USACE) guidance, wetland impacts will be offset through wetland creation and enhancement of existing wetlands; also, the mitigation area will be hydrologically connected to waters of the United States. Noble has assumed mitigation ratios of 2:1 for the permanent wetland impacts associated with fill, with additional mitigation required to offset conversion of forested wetland to non-forested wetland and to compensate for the temporary loss of wetland function; however, exact ratios and mitigation size will be finalized through discussions with USACE and the New York Department of Environmental Conservation (NYSDEC) as the permitting proceeds.

Upland Vegetation

Primary impacts on upland vegetation will include the removal of existing vegetation through minimal clearing of forested, shrub/scrub, and herbaceous vegetation as part of construction activities. Permanent impacts will include removal of upland vegetation at the turbine pedestal, crane pad, and permanent access roads. The remainder of the Project footprint will be allowed to naturally revegetate, although it will be subject to periodic removal of woody vegetation to maintain a herbaceous or scrub-shrub state, especially adjacent to access roads and within the collection system corridor.

To minimize impacts on vegetation, facilities have been sited, to the extent practicable, within previously disturbed areas such as reverting farm fields and along existing farm roads and areas where recent logging has occurred. Where possible, access roads and the collection system have been located within areas with minimal tree growth, such as edges of active/inactive farm fields or co-located with existing logging roads. Where construction activities will require the removal of any trees of economic value, landowners will be compensated in accordance with their individual easement agreements.

Wildlife

No significant impacts on wildlife species are expected as a result of construction or operation of the Project. Most species present within the Project Area are expected to avoid the areas during active construction periods. Because only transient threatened and endangered non-bird wildlife species are found in the Project Area, no impacts are expected as a result of construction or operation of the Project. Indirect impacts on wildlife will occur as a result of habitat alteration. The indirect loss of habitat will be minimal as compared to available habitat in the Project Area. Impacts on fish and wildlife will be minimized through the implementation of Best Management Practices (BMPs) to stabilize the ground surface and allow for successful revegetation following construction of the Project.

The impacts on habitat are consistent with activities and conditions that regularly occur throughout the Project Area such as ground disturbance, mowing of vegetation, access road use associated with farming activities, and tree removal and access road use associated with logging activities. No mitigation is proposed.

Birds and Bats

Construction-related activities (e.g., clearing for road construction, infrastructure construction, equipment noise, and increased vehicle traffic) can potentially impact birds and bats. Displacement from habitat is the primary concern with construction-related impacts. However, potential impacts from construction are generally only temporary in nature. If construction takes place in suitable nesting habitat for endangered or threatened species in the spring to early summer – during breeding season – the work area will be surveyed and cleared by an environmental monitor in advance of construction. With implementation of monitoring activities, no significant adverse impacts from construction on threatened or endangered species are anticipated.

Operation of the wind turbines can potentially impact birds and bats through collisions with the rotors and towers, displacement from habitat, or influence on migration, etc. There is a low risk of any substantial negative impact on habitat through loss, degradation, or displacement of breeding birds. No significant adverse impacts on breeding-bird populations are anticipated from operation of the Project. Collisions are typically the primary concern with operation-related impacts. Potential impacts can vary among different bird and bat populations and groups. It is likely that nocturnal migrant passerines will make up the majority of the bird kills. However, the potential mortality risk to migrant passerines is considered low-to-moderate based on the Project location, the passage rate and altitude data from the radar study (and other regional radar studies), and the avoidance behavior of passerines typically exhibited at wind energy facilities. It is anticipated that the bird fatality rates for the Project will be near the national average and within the range of the national and eastern results. This prediction is based on the results of the bird studies, literature review, and because there are no waterbody features in the Project Area that attract or concentrate large numbers of migrating birds. Consequently, no biologically significant adverse impacts are anticipated for any species.

It is anticipated that the bat fatality rates for the Project will also be near the national average for other wind projects. This prediction is based on the results of the bat studies and because there are no features in the Project Area that attract or concentrate large numbers of bats. Any impacts will likely be distributed among several species.

The potential for significant bird and bat impacts was taken into account in the siting of the Project. Impacts will be further minimized through the use of turbines equipped with slow-blinking lights to reduce the potential attraction to nocturnally migrating birds under adverse weather conditions. Furthermore, modern turbines (i.e., solid tubular structures) will be installed that are designed to prevent birds from perching or nesting on them. No guy wires will be required for these turbines.

Post construction mortality monitoring will be implemented by Noble to evaluate the actual impacts of the Project on birds and bats. Based on real-time, site-specific data collected during the post-construction mortality monitoring, Noble will coordinate closely with NYSDEC to identify and assess potential mitigation strategies that can be implemented to reduce potentially significant adverse impacts, if any. This management approach will allow mitigation measures to be developed/modified during the course of Windpark operation that are responsive to site-specific conditions and to the growing and evolving data base of information regarding bird/bat interactions with turbines.

Agricultural Lands

Potential permanent impacts of the Project on agricultural lands include the loss, by conversion to non-agricultural uses, of prime farmland soils or soils of statewide importance. Project facilities will impact approximately 46 acres of soils at turbine locations and roads, which is significantly less than 1% of those soils in the County and approximately 0.5% of the soils in the Project Area. Permanent impacts within the Project Area will affect approximately 24 acres of land within agricultural district FRA01. The total acreage of soils that will be permanently impacted within this agricultural district will not significantly affect the soil resources in the County. Other impacts, such as topsoil mixing, erosion and sedimentation, introduction of stones and rocks on and into surface soils, and soil compaction will be minimized through mitigation measures including development and implementation of BMPs and a Stormwater Pollution Prevention Plan (SWPPP). Impacts on agricultural lands will be minimized by restricting Project equipment to the construction right-of-way (ROW). Overall, the Project should benefit the agricultural landowners who have elected to have Project facilities located on their land. The minimal loss of productive agricultural land will be offset by the financial benefits the landowners will obtain from payments they will receive from Noble for their participation in the Project. In some instances these payments will help to keep marginal farming operations viable and agricultural land from being sold for non-agricultural uses.

All construction activities on agricultural land will be conducted in accordance with New State Department of Agriculture and Markets (NYSDAM) Agricultural Mitigation for Windpower Projects (NYSDAM 2003) and the local requirements for agricultural mitigation. Specific agricultural mitigation measures that have been implemented to the maximum extent practicable, including locating structures along field edges where possible, locating access roads along ridge tops, avoidance of dividing larger fields into smaller fields, and avoidance and maintenance of all existing drainage and erosion-control structures. Upon completion of construction, restoration will be performed on the temporary impact areas to preclude any long-term effects and to return areas to their pre-existing condition. All agricultural areas disturbed by the Project will be restored in accordance with NYSDAM guidelines and individual landowners' needs.

Visual Resources

Based on an evaluation of the aesthetic resources, land uses, user groups, and visual simulations, it is apparent that the Project will change the visible landscape of the region and create a distinct visual aspect. The turbines will be unique and prominent visible features of the landscape from many locations. Federal Aviation Administration (FAA)-required lighting on the turbines will be visible from many viewpoints within the Project Area. Shadows from the turbines will fall on some residences.

To minimize visual impacts, towers will be tubular style to minimize textural contrast; neutral white or off-white, as per FAA guidelines; and where specifications permit, will have non-specular paint to minimize reflected glare. Mitigation measures will be taken on a case-by-case basis where shadow flicker or other adverse visual impacts pose a significant problem for a landowner. A Historic Resource Impacts Plan has been developed as indirect mitigation to offset visual impacts on potentially historic structures.

Sound

Noise from construction activities associated with the Project is likely to temporarily constitute a moderate unavoidable impact at some homes in the Project Area. Because construction activities will move from place to place around the site, it is unlikely that there will be significant impacts at any single receptor for any extended period of time. The predicted sound pressure levels indicate that Project noise might be audible at a number of homes in the vicinity of the Project, but the Project will comply with the local noise requirements for wind farms. Construction activities will generally be confined to between the hours of 7:00 am and 7:00 pm, in order to minimize and avoid unnecessary impacts on the community from construction noise.

Transportation

During construction, there will be an increase in traffic from delivery vehicles for turbine components, materials associated with turbine site construction and assembly, and personal vehicles for workers. Delivery vehicles will range in size from oversized load tractor-trailers (to deliver tower sections, turbine nacelles, rotor blades, and cranes) to smaller vehicles such as dump trucks, concrete trucks, fuel delivery trucks, mechanic's vans, and pickup trucks. During Project operation, traffic and transportation impacts will be limited to light trucks and automobiles for service and maintenance personnel.

Construction vehicle traffic will be limited to between the hours of 7:00 am and 7:00 pm and typically will be scheduled between 7:00 am and 4:00 pm, except along school bus routes from 7:00 am to 8:30 am and 2:30 pm to 4:00 pm. During weeks of peak construction activity (approximately 9 weeks), Project-related transportation will result in about a total of 171 round trips per day over 8 hours per day. Using the most conservative assumption possible, hourly daytime traffic on U.S. Route 11 will increase about 14% from existing levels during the peak Project transportation period. As the roads in the Project Area are not currently congested, minimal delay for local traffic is expected.

Noble will enter into road-use agreements with the Towns that will designate approved construction transportation routes and commit the cost of both improvements and repairs to these routes to Noble's account. The process of creating a road use agreement will enable the Towns and municipalities' plans for scheduled paving and resurfacing to be coordinated with improvements and repairs by Noble.

Socioeconomics

Project construction may have short-term impacts on local lodging. The Project is not expected to have a long-term impact on housing and population in the region. The sales data for existing wind farm markets indicate there is no influence on property values attributed to wind farm construction. Average sales prices have, on the whole, increased, indicating that the existence of wind farms has not diminished real property values.

Construction of the Project will create an increase in local economic activity, including purchases of thousands of room-nights at local motels/hotels, automotive fuels, meals, and other items. The Project will extensively utilize and support providers of local services, suppliers, and area manufacturers during construction and operation of the Project.

Noble anticipates entering into a payments-in-lieu-of-taxes (PILOT) agreement for the Project with the Franklin County Industrial Development Agency (IDA) as well as Host Community Agreements under which annual payments will be made to the Towns of Chateaugay and Bellmont for local needs.

In order to mitigate any potential impacts on the local service sector, Noble will notify local merchants and the lodging industry of the anticipated influx of workers so that they may properly prepare for any periods with a high number of out-of-town workers. Noble will also apprise construction subcontractors of the availability of services, including lodging, within a 30-mile radius of the Project Area, and will seek to mitigate overburdening local services through construction scheduling.

Cultural Resources

No prehistoric or historic archaeological sites were identified during the site investigations; as such, no archaeological resources will be impacted by construction or operation of the Project. In the event of an unanticipated discovery of archaeological resources during construction, Noble will stop work immediately in the vicinity of the find and contact the New York State Historic Preservation Office (NYSHPO).

The Project will not directly impact architectural resources (i.e., demolition of any National Register Eligible [NRE] buildings). While there is some potential for visual and noise impacts on structures potentially eligible for the National Register of Historic Places (NRHP) as a result of construction activities, it is unlikely that these impacts will be significant because of their temporary nature. Operation of the Project may have a visual effect on 58 NRE structures, 18 contributing properties, one NRE Historic District, and 21 properties possibly eligible for listing on the NRE within the 5-mile Noble Chateaugay Windpark/Noble Bellmont Windpark study area.

Because NRE properties are within the visual Area of Potential Effect (APE), indirect mitigation for visual impacts will be required. Noble has developed a Historic Resource Impacts Mitigation Plan that identifies specific strategies that can help preserve historical resources in the affected communities and make them accessible to local residents and visitors. The final mitigation plan will be approved by the NYSHPO prior to construction.

E-4 Cumulative Impacts

An analysis was conducted to determine whether potential cumulative impacts that may arise from interactions between the impacts of the Project and the impacts of other proposed wind power projects in the region are significant. The construction of multiple wind power projects will result in localized impacts on wildlife, wetlands, agricultural lands, and forest lands; however, neither the individual Project impacts nor the cumulative impact from all proposed Projects are expected to be significant. Short-term, cumulative impacts on noise and transportation may result if the Projects are constructed during the same time period; however, these impacts are expected to be temporary and will not be significant. The potential for slight long-term increases in cumulative visual impacts at limited locations in the region, including historic properties, and risks to birds and bats were also identified. None of these impacts were determined to be significant. Cumulatively, construction and operation of the wind power projects will have significant long-term beneficial effects on the use and conservation of energy resources.

E-5 Project Benefits

The Project will have a significant long-term beneficial impact on air quality and climate by producing 129 MW of electricity without any emissions to the atmosphere. Specifically, the Project is expected to reduce power plant air pollution in New York State by about 6,000 tons of NO_x; 12,250 tons of SO_2; and 3,600,000 tons of CO_2 over 20 years, by displacing dirty fossil fuel-based electric generation (GE Energy 2005).

Local economic benefits of the Project will include:

- Temporary and permanent employment;
- Increased commerce in the Town from spending by Project employees, suppliers, and local merchants;
- An increased flow of revenue to the County, Town(s), and School District through PILOT payments and other municipal payments;
- An increased flow of revenue to landowners through easement agreements; and
- Increased economic diversification.

Construction of the Project will result in the direct employment of up to 540 electrical workers, crane operators, equipment operators, carpenters, and other construction workers (with a total estimated payroll and benefits of $24.5 million) and will create an estimated 320 additional direct, indirect, and induced jobs countywide (with a total estimated payroll and benefits of $9 million). A significant percentage of the construction workers employed during the eight-month construction period will be hired from within the local community.

During plant operations, the Project will employ 9 skilled operators, managers, and administrative personnel and create 38 more direct, indirect, and induced jobs countywide (with a total estimated payroll and benefits of $1.7 million). The Project is expected to spend a total of $50.4 million countywide during construction. Total economic benefits during construction are estimated at $76.2 million, including payrolls, supplies, materials, hotel stays, meals, and economic multiplier effects.

During plant operations, the Project will spend an estimated $1.1 million annually, exclusive of taxes. Total annual economic benefits during operation are estimated at about $3.8 million including payrolls, supplies, materials, windpark easement payments, and economic multiplier effects. Total countywide economic benefits, based upon regional multipliers applied to direct Project expenditures in original capital investment and ongoing operational expense, are estimated to be $152.9 million over 20 years. PILOT and host community payments from the Project will also represent a significant increase to Town revenues.

The Project will assist in the revitalization of the local economy by providing steady income through easement payments to participating landowners. Many of the landowners are farmers, and the additional income from annual easement payments is expected to help stabilize their income and provide relief from the cash-flow fluctuations that are inherent to the agricultural industry.

Additional value to the local economy will result from increased diversification of the county and state economic bases. Economic diversification ensures greater stability of the economy by minimizing financial high and low cycles associated with a specific industry. This effect is particularly important in rural areas, where more goods and services are imported and more dollars leave the region.

Other Project benefits include monetary contributions for preservation, restoration, and enhancement of historic resources. Proposed projects include evaluation of the Rutland Railroad Train Depot in Chateaugay for use as a Historical Society headquarters and community center, evaluation of the Chateaugay Town Hall for historical restoration, and construction of a Town Historical Society information kiosk in Bellmont.

All of the foregoing benefits will be provided without any corresponding increased burden on local schools or other public services.

1

1 Description of Proposed Action

1.1 Description of the Proposed Action

1.1.1 Project Overview and Definitions

Noble Chateaugay Windpark, LLC and Noble Bellmont Windpark, LLC (Noble) propose to install and operate a wind energy facility (the Project) in Northeastern New York State primarily located in the Towns of Chateaugay and Bellmont, Franklin County (see Figures 1-1 and 1-2). The Project will have the capability of producing approximately 129 megawatts (MW) of power.

The Project consists of the following:

- Installation and operation of 14 wind turbines within an approximate 920-acre area in the Town of Bellmont and installation and operation of 72 wind turbines within an approximate 7,447-acre area in the Town of Chateaugay;

- Construction and use of approximately 22 miles of access roads that will connect each wind turbine to a Town road, County road, or State highway to allow equipment and vehicle access for construction and subsequent maintenance of the facilities as well as access by emergency services, if needed. The majority of the access roads will be located in the Towns of Chateaugay (approximately 18 miles of access road) and Bellmont (4 miles of access road), with approximately 900 feet of new turbine access road located in the Town of Ellenburg.

- Construction and use of an electrical collection system that will allow delivery of electricity to a previously permitted substation in the Town of Clinton, Clinton County, where the electricity will tie into an existing 230-kilovolt (kV) New York Power Authority (NYPA) Plattsburgh – Willis line that will provide access to the grid. The electrical collection system will be partially buried (approximately 29 miles total) and partially above ground (approximately 5 miles total) and where practicable, will be installed along the same right-of-way (ROW) corridor as the access roads. The electrical collection system will primarily be constructed in the Towns of Chateaugay (24 miles underground and 2.5 miles overhead) and Bellmont (4 miles underground and 1 mile overhead). The collection system also will traverse Noble-controlled parcels in Clinton County, in the Towns of Clinton (1.5 miles overhead) and Ellenburg (<1 mile underground).

- Addition of equipment within the previously approved substation located on Ryan Road in the Town of Clinton necessary to accommodate the additional power from the Project. This substation work will be engineered, reviewed, and approved by NYPA to accept the generated power while minimizing the number of taps into the existing 230-KV lines.

- The use of existing equipment laydown areas located on Irona Road in Irona and Joe Woods Road in Mooers (see Figure 1-3). These laydown areas were identified and approved for the Clinton County Noble Windpark projects. An additional laydown area of approximately 20 acres may be utilized at the new Chateaugay Business Park located in the Town of Chateaugay. Utilization of this additional area will involve construction of a short gravel road that will be extended from an existing gravel road and utilization of an open field without major disturbance. The site was reviewed and cleared by necessary authorities and given a "shovel ready" status by Empire State Development in April 2006. Appendix Q provides this certification as well as details on the laydown and parking areas already selected and approved for the Clinton County Noble Windpark projects. Only the areas shown on Figure 1-3 will be used for the Chateaugay and Bellmont Windparks.

- Use of parking areas for the Project that were previously considered in the evaluation of the Clinton County Noble Windpark projects. These areas are summarized in Sections 2.21 and 2.22, Traffic and Transportation.

The wind turbines that will be installed at the Chateaugay and Bellmont Windparks will be General Electric 1.5 MW, Model 1.5sle, MTS, T-Flange wind turbine generators with an 80-meter tower.[1] The turbine is a three-bladed, upwind, horizontal-axis wind turbine with a rotor diameter of 77 meters (253 feet). The nacelle is located at the top of each tower and contains the electrical generating equipment. The turbine rotor and the nacelle are mounted on top of a tubular tower giving a rotor hub height of 263 feet (80 meters). The maximum height for the turbine is 389 feet (118.5 meters) when a rotor blade is at the top of its rotation (see Figure 1-4).

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1 1.5MW refers to the production capacity of the turbine, which is 1.5 megawatts. The nomenclature "sle" is used to designate that the diameter size of the turbine rotor is 77 meters. 80 Meter refers to the height of the tower. MTS (Modular Tower System) designates the type of tower configuration, and T-Flange designates the type of flange used to connect the tower directly to the foundation.

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

- **Project.** "Project" refers to all activities involved in the construction and operation of the Wind Energy Facility described above and all components thereof, including but not limited to wind turbines (including blades, towers, pads, and foundations); electrical collection lines and poles; trenches; access roads; and laydown areas and related structures (e.g., expansion of Clinton substation). The terms "Project" and "Wind Energy Facility" can be used interchangeably.

- **Project Area.** The Project Area is defined as the outer boundary of the general geographic area considered for wind energy conversion system (WECS) placement and the area necessary for electrical interconnection to the Clinton substation (see Figure 1-2).

- **Project Site.** The Project Site includes portions of the Project Area that have the potential to be permanently or temporarily disturbed as a result of the construction or operation of the Project. Noble has obtained property interests for all parcels within the Project Site (see Figure 1-2).

- **Turbine Cluster.** One or more wind turbines in close geographic proximity that are served by a single system of access roads and collection lines are called a turbine cluster. This designation allows potential impacts to be avoided or minimized (see Figure 1-2).

- **Turbine Site.** Individual 200-foot by 200-foot locations for proposed wind turbines, installation to include a foundation, the wind turbine tower, and associated equipment as well as a surrounding area including that for construction, staging and erection of equipment, and subsequent maintenance. The Turbine Site refers to the total area associated with each turbine that will experience temporary impacts during construction, as described. Once installed, permanent impacts at each Turbine Site will include a 120-foot by 40-foot gravel crane pad, which will be left in place post-construction, and each wind turbine will permanently occupy a round, slightly exposed base approximately 18 feet in diameter.

1.1.2 Project Area Description

Noble considered the location of a Project within an approximately 8,620-acre Project Area in Franklin County, New York, in the Towns of Chateaugay and Bellmont, with a small portion traversing Clinton County, in the Towns of Clinton and Ellenburg. Clinton County will be traversed for construction of 2.5 miles of collection line and 900 feet of access road. Land uses within the Project Area are predominantly a mixture of agricultural (approximately 5,055 acres) and forested land (approximately 3,515 acres). The remaining 50 acres includes roads and other paved surfaces, scattered residences, buildings, and open water features such as ponds. The Project Area also includes wetlands and surface waters (approximately 140 acres) based on New York State Department of Environmental Conservation (NYSDEC) mapping. Current agricultural use is associated primarily with dairy operations, which include pastureland and the production of corn, oats, hay, and alfalfa. In addition to the dairy farms, there are a number of potato farms within the Project Area. Forested land within the Project Area varies from early successional forest and reverting farmland to mature forest. Current use of the existing forest includes commercial timber production, personal firewood harvest, maple syrup production, and recreation, primarily hunting, fishing, and snowmobiling. A map of the Project Area is included as Figure 1-1.

Noble has obtained property interests allowing for the completion of construction activities within the Project Area. Figure 1-1 shows the general Project Area as well as the parcel boundaries of the lands on which property interests have been obtained in the form of individual easement agreements. The Project Site, or those portions of the Project Area that have the potential to be permanently or temporarily disturbed as a result of construction or operation of the Project, is also shown on this figure.

1.1.3 Project Site Description

The Project Site is located on an approximate cumulative 264 acres within the approximately 8,620-acre Project Area. Noble has obtained property interests that will allow it to complete Project activities on all appropriate parcels within the Project Site. Components of the Project Site acreage include the maximum 60-foot ROW (40-foot ROW in wetland and stream crossing areas) for 22 miles of roads (148 acres), the Turbine Sites (79 acres), and the collection system ROW (37 acres) and will include wind turbines, electrical collection, utility trenches, utility poles, access roads, and other related structures. Existing equipment laydown areas, previously evaluated through a joint Final Environmental Impact Statement (FEIS) approved for the Towns of Altona, Clinton, and Ellenburg, are noted but not further evaluated as part of the Project.

1.1.4 Turbine Clusters

The Project Site has been further divided into turbine clusters that are served by a series of access roads and a circuited electrical collection system. The clusters are shown on Figure 1-2 and are identified in Table 1.1-1.

Table 1.1-1 Turbine Clusters

Cluster Number	Turbine Numbers Included in the Cluster	Access Road Serving the Cluster	Municipality
Cluster 1	Turbines 2, 3, 4, 5, 6, 81, and 82	1	Town of Chateaugay
Cluster 2	Turbines 9, 10 and 11	2	Town of Chateaugay
Cluster 3	Turbines 12, 13, 14, 15, 17, and 18	3	Town of Chateaugay
Cluster 4	Turbines 7 and 8	4	Town of Chateaugay
Cluster 5	Turbines 23, 24, 25, and 26	5	Town of Chateaugay
Cluster 6	Turbine 19	6	Town of Chateaugay
Cluster 7	Turbine 20	7	Town of Chateaugay
Cluster 8	Turbines 21 and 22	8	Town of Chateaugay
Cluster 9	Turbines 27, 28, 29, 30, 31, 32, 33, 34, and 35	9	Town of Chateaugay
Cluster 10	Turbine 36	10	Town of Chateaugay
Cluster 11	Turbines 42 and 45	11	Town of Chateaugay
Cluster 12	Turbines 39 and 40	12	Town of Chateaugay
Cluster 13	Turbines 79 and 80	13	Town of Chateaugay
Cluster 14	Turbines 43 and 44	14	Town of Chateaugay
Cluster 15	Turbines 88 and 89	15	Town of Chateaugay
Cluster 16	Turbines 46, 47, 48, 49, 50, 52, 54, 55, 56, 61, and 62	16	Town of Chateaugay
Cluster 17	Turbines 57, 58, and 60	17	Town of Chateaugay
Cluster 18	Turbine 51	18	Town of Chateaugay
Cluster 19	Turbine 59	19	Town of Chateaugay
Cluster 20	Turbine 63	20	Town of Chateaugay
Cluster 21	Turbine 64	21	Town of Chateaugay
Cluster 22	Turbine 53	22	Town of Chateaugay
Cluster 23	Turbines 68, 69, 70, 72, and 73	23	Town of Bellmont
Cluster 24	Turbines 66, 67, and 71	24	Town of Bellmont
Cluster 25	Turbine 65	25	Town of Bellmont
Cluster 26	Turbines 74, 75, 76, 77, and 78	26	Town of Bellmont
Cluster 27	Turbines 86 and 87	27	Town of Chateaugay
Cluster 28	Turbine 85	28	Town of Chateaugay
Cluster 29	Turbines 83 and 84	29	Town of Chateaugay
Cluster 30	Turbines 37 and 41	30	Town of Chateaugay

1.2 Detailed Description of the Proposed Action

Appendix A includes drawings that provide engineering details for the Project Site including the proposed location of turbines, foundations, and roads as well as properties under easement, the electrical collection system schematic, the electrical substation, the location of the interconnection with existing 230-kV transmission lines, and details for proposed fences and gates.

1.2.1 Turbine Description

Selection of the various Project components will be based on several factors, including experience of the manufacturer, engineer, or vendor and suitability of the specific component to this specific location and wind resource. The turbines were selected based on the projected efficiency in the wind resource at this site, economy of scale, availability of service and replacement components, and the manufacturer's reputation. As discussed in Section 1.1, Description of the Proposed Action, the wind turbines that will be installed for the Project will be General Electric 1.5 MW, 80 Meter, MTS sle, T-Flange wind turbine generators. Appendix A includes the drawings and specifications for these turbines. Each turbine will have a maximum height of 389 feet when the rotor blade is at the top of its rotation and will have an approximate 18-foot diameter slightly exposed concrete foundation. Each turbine included within the Project will have a nominal output of 1.5 MW.

Power from the turbines is fed through a control and electrical stabilization cabinet at the turbine base inside the tower that is connected to a pad-mounted step-up transformer which steps the turbine supplied voltage of 585 volts up to 34.5 kV. The pad mounted transformers are located near the base of the towers and are connected on the high side to underground cables (the collection system) that connect all of the turbines together electrically.

The turbines will require lighting in accordance with Federal Aviation Administration (FAA) standards to eliminate hazards to aviation. Aviation warning lights will be limited to the minimum required by the FAA (e.g., if allowed by the FAA, lights will be installed on towers around the Project perimeter, and those within the perimeter spaced a half mile apart, rather than on all structures). There will be no lights during the day. There will be red strobes during the night designed at a minimum intensity and duration of time with an illumination pattern that will primarily be directed upward, as suggested by the FAA (see Sections 2.13 and 2.14, Visual Resources).

1.2.2 Collection System

The electrical power generated by the wind turbines is transformed and collected through a network of underground and overhead cables (the collection system), which will terminate at the Clinton substation in the Town of Clinton, Clinton County. Construction of the Clinton Substation was previously evaluated pursuant to the State Environmental Quality Review Act (SEQRA) including the adoption of a Joint Findings Statement and Decision by the Towns of Altona, Ellenburg, and Clinton in August 2006. The collection system will consist of approximately 29 miles of underground cabling and about 5 miles of overhead 34.5 kV electrical power lines, all of which are designed and coordinated to terminate at the Project connection in the Clinton substation. The underground cables are installed in trenches typically 4 to 5 feet deep and generally running beside and parallel to the Project's access roadways, thereby minimizing disturbances to additional ground. The collection systems are generally broken down into individual circuits of approximately 20 turbines or 30 MW of maximum power. Each circuit is run from the individual group of circuited turbines directly to the substation. The Project Site Layout shows the general routing paths of the underground and overhead electrical lines as well as the substation location.

The main functions of the substation and interconnection facilities are to step up the voltage from the collection lines (at 34.5 kV) to the NYPA transmission level of 230 kV. The Clinton substation is currently under construction. The engineering and NYPA interface to support the Chateaugay facility expansion, as described in the Joint Clinton County FEIS, will be incorporated into this substation configuration. The overall electrical system and substation expansion will be designed and constructed in accordance with the Guidelines of the National Electric Code (NEC), National Fire Protection Agency (NFPA), and the host utility (NYPA) requirements.

1.2.3 Construction Overview

Turbine Installation

Generally, all components of the Project will be installed in a fixed manner. In preparation for the installation of each turbine, a 200 x 200-foot temporary disturbance area will be cleared and graded to a slope not to exceed 5%. This area may be further minimized to avoid impacts on wetlands or other sensitive resources. A gravel crane pad approximately 120 x 40 feet will be constructed with a slope of 1% or less in all directions. This gravel crane pad will be located within the 200 x 200-foot turbine site. After turbine installation is completed, the crane pad will remain in place for future maintenance. Other disturbed areas at the turbine site will be restored with subsoil and stockpiled topsoil. All foundations and underground infrastructure will be in place for the life of the Project.

Preparation of each turbine site for installation of the foundations will involve excavation of surface materials. Extra care will be used to ensure that topsoil and subgrade materials are kept separated and stockpiled to help assure the land is returned to its original use. Topsoil stockpile areas will be clearly designated in the field and on the on-site 'working set' of construction drawings. When topsoil is stripped, the soil will be stockpiled at the end of access roads or access road spurs rather than dozed flat. Windrow stockpiling will not be used for extended periods of time in order to minimize the possibility of ponding and/or creating additional undesired runoff paths along access roadways. No topsoil will be removed from the immediate site area. Dewatering may be required to maintain the integrity of subsurface load-bearing materials. Where dewatering activities occur, documentation and tracking will be implemented to ensure compliance with all NYSDEC guidelines.

Glacial sandstone bedrock is a common subsurface material occurrence in northeastern New York. After specific geotechnical investigations are conducted, a number of construction options will be utilized to remove this subsurface material to support foundation preparation. The primary choices for removal of this material will include loosening by drilling and removal with either an excavator with a rock bucket attachment or, in more severe cases, an excavator equipped with a hydraulic/pneumatic breaker and/or grinding attachment. A last resort possibility would be select drilling and site-specific blasting to loosen rock during excavation of those bedrock materials. No blasting will occur until Noble has received full approval from the authority having jurisdiction. A more detailed discussion of blasting is included in Section 2.27, Description of Proposed Construction Plan.

The pad-mounted transformers located at each turbine will be situated so that there is a minimum 6 feet of clearance between the transformer and any other component. The transformers will be installed in accordance with industry standards.

During the Project construction phase, the large turbine components (i.e., tower sections, nacelle, and rotor blades) will be delivered to an off-site equipment laydown and inspection area for verification of match marking, a quality receipt inspection, and any necessary rigging adjustments prior to site delivery. From those areas, site-specific equipment will be delivered to individual turbine staging areas for erection. Each turbine site will serve as the primary staging area for the erection of that specific turbine. Materials such as cable reels and power poles will be staged at an off-site location. These materials will be transported to the sites as they are needed and utilized for construction.

The majority of construction crews will be bussed to the work sites, while the rest will park off the public roads on the Project's previously disturbed and designated areas such as access roads and turbine sites, as required.

Collection System Installation

A combination of overhead and underground cables will be installed to establish a multi-circuited collection system for the project. Each collection system circuit will consist of approximately 20 turbines or 30 MW of power and will run independently to the substation.

The underground portion of the collection system will be installed, to the greatest extent possible, within the maximum 60-foot ROW of temporary access road disturbance. In areas where underground collection lines will not be installed adjacent to an access road, an ROW width of 22 feet for one circuit, or 32 feet for two circuits, will be required.

Underground collection cables will be installed using a patented specialty-contractor trenching system that utilizes a continuous system of excavation and trench closure in a single-step process. The cables will generally be buried to a depth of 4 to 5 feet.

Overhead collection lines will be utilized where it is necessary to cross an existing road, along existing roadways, where underground collection is not feasible, and wherever necessary to minimize environmental impacts in sensitive areas. Installation of overhead lines will require a 25-foot ROW where located adjacent to existing roadways or 35-feet in other areas. The ROW will be cleared of any trees and large woody vegetation that may pose a hazard to the line. Where overhead lines are located adjacent to existing roadways, installation will take place from the edge of the road and the poles will be located approximately 10 feet from the road shoulder.

Access Roads

Access roads will have a maximum temporary width of 30 feet during construction. Access road ROW disturbance widths will be a maximum of 60 feet to allow for construction of the temporary access road, storage of topsoil, and safe passage of equipment. The maximum 60-foot wide construction corridor is being utilized to address a concern expressed by the New York State Department of Agriculture and Markets (NYSDAM) where a larger temporary road width is desirable on Windpark construction in agricultural land to enable two way construction traffic and additional road width for parking on the road. Modifications within the maximum 60-foot ROW and outside of the 30-foot temporary roadway will be limited to compaction and minor grading. The temporary construction access roads will be reduced to a permanent width of 12 feet for operation and maintenance of the turbines after the construction phase is complete. The remainder of the construction ROW will be allowed to naturally revegetate, although it will be subject to periodic removal of woody vegetation to maintain a herbaceous or scrub-shrub state composed of native species. Natural revegetation of the construction ROW is likely to result in the establishment of naturally occurring native plants because of existing seed banks and adjacent plant communities.

If soil conditions are not conducive to natural revegetation or if soil erosion risks are apparent, an annual rye seed or mulch will be used to temporarily stabilize the soil until conditions for natural revegetation improve. Areas that fit this description will be monitored to ensure that adequate vegetative growth is occurring and, if not, supplemental seeding/mulching will take place on an as-needed basis.

In areas adjacent to agricultural fields, plans for revegetation or seeding/mulching will be discussed with individual farmers so that the re-establishment of vegetation complements each farmer's operation.

In most cases, access roads will be installed at grade and will not require sloped shoulders. However, in low lying areas such as wetlands, two-foot shoulders on either side of the road may be required to meet the existing grade.

The construction/access roads for the Project are gravel roads designed to bear the weight of truck traffic transporting concrete, gravel, and turbine components to the wind turbine sites over the life of the Project. The required gravel road base section will be constructed using site-specific geotechnical information taking into consideration the intended load-bearing requirements of construction traffic and equipment delivery. The gravel roads will be constructed on suitable, undisturbed, native soils. Geotextile fabric, or a comparable product, will be used to separate the native soil/fill from the base material to prevent fine soil particles from migrating into the gravel base material and to preserve road base integrity.

Roads will be constructed with culverts as needed to maintain a water table elevation below the base material to ensure roadbed stability. Roadside ditches will be constructed as dictated by the terrain to convey storm water runoff away from the roadways. During construction, to prevent access by the general public, construction/access roads will be gated within approximately 30 to 60 feet of where they intersect public roads, depending upon the layout of the access road entrance and landowner wishes. At the end of the project, permanent gating may be installed depending primarily upon landowner wishes and/or the sensitivity to off-road access.

Environmental Monitoring

Construction activities will be monitored to ensure compliance with applicable permits, the Stormwater Pollution Prevention Plan (SWPPP), and best management practices (BMPs). A compliance monitoring document will be included as part of Noble's Quality Assurance Plan. This plan will contain permit conditions and other commitments made by Noble during the EIS process including those associated with wetland and stream disturbance, vegetation removal, storm water management, erosion control, and agricultural impacts. Noble will retain an environmental monitor whose duties will include coordination of environmental monitoring activities, documentation and implementation of mitigation activities as they are conducted, and preparation of a final report available to the Towns of Chateaugay and Bellmont and involved and interested agencies as needed and/or requested.

1.2.4 Operation and Maintenance

The turbines are anticipated to be operable 365 days a year and 24 hours a day. Downtime for preventive maintenance and/or malfunctions may reduce the operating hours. The turbines will generate electricity only during times of sufficient wind.

Noble plans to operate the Windpark with 9 full-time employees. Eight of these employees will perform routine and unplanned work on the turbines under an operations and maintenance contract. A facility manager will be responsible for all operations and maintenance of the site, including administration and direction of turbine maintenance with technical oversight as required by the manufacturer and operational coordination with the utility grid system and the local landowners. Two technicians will assist the facility manager in performing preventative maintenance on the electrical substation and the collection system. Large repair tasks will be accomplished using both Project employees and contractors.

The operational staff will maintain the turbines, including routine maintenance, long-term maintenance, and emergency work. In all cases, the facility staff will be responsible for facilitating the needed repair either with internal staff or with the aid of additional contractor support.

Routine maintenance for the turbines will include testing of lubricants for contaminants, changing of lubricants, calibrating and testing electronic systems, and tightening of bolts and components. Routine maintenance is generally completed on a scheduled basis by climbing the tower using the internal ladder and doing the work with normal hand tools and electrical testing equipment.

Long-term maintenance may include replacement/rebuilding and cleaning of larger components such as generators and gearboxes, testing of electrical components, and refurbishing blades.

Emergency work also may be required as the result of a system or component failure. Certain unplanned work such as blade repairs or repairs to other large components may require the use of a crane to complete the work.

Noble does not expect to use herbicides or pesticides to control vegetation or pests along access roads and turbine maintenance areas. Generally, these areas are not expected to promote vegetation growth because of the use of geotextile fabric and gravel construction, as well as the periodic use of the access roads by vehicles. Maintenance of cleared areas and periodic removal of vegetation will consist of trimming trees and clearing undesirable vegetation by side trimming, cutting, and mowing to (1) control re-sprouting of undesirable tall growing species to maintain safe clearance within wire security zones; (2) remove vine growth from poles; (3) clear access paths to overhead equipment; (4) protect underground collection lines from root damage; and (5) maintain erosion- and sediment-control devices. In some cases, spot control of invasive species might be required. If herbicide or pesticide use should become necessary, Noble will comply with applicable laws and best practices standards. Maintenance of clearance distances around above-ground electrical lines will be limited to a minimum of a 5-foot radius around conductors as recommended by the manufacturer's specifications as necessary to prevent interference with power cables.

Any and/or all materials used during the inspection and maintenance of project equipment will follow a strict MSDS program and, when required, will include documented, dedicated control of excess materials as well as off-site disposal of waste materials with an emphasis on recycling whenever possible.

1.2.5 Fire Protection

Fire protection methodology is included throughout the Project's design as well as in construction and operation procedures (see Section 2.29, Health and Safety). The turbines will be located on a parcel of open land that occupies approximately one acre. The open land will be maintained and kept free of significant regeneration, thus minimizing the potential spread of a fire should one start.

The fire protection features of the turbine include components within the nacelle that monitor bearing, oil, and nacelle temperatures. These components will be connected to the turbine supervisory control and data acquisition (SCADA) system. The SCADA system will monitor these temperatures and automatically shut the turbine down and send an alarm to the control room if predetermined set points are exceeded. In addition to the monitoring system, each nacelle and each service vehicle is equipped with a fire extinguisher.

Beyond the physical fire protection components of the facility, the operations staff will develop a site-specific Emergency Preparedness and Fire Prevention Plan (EPFPP) to be submitted to the Towns at least 10 business days prior to the start of construction for review and comment. This plan will detail the actions to be taken by the site manager and staff should an emergency or fire occur. The EPFPP will be coordinated with the local fire departments and emergency response organizations and will set forth the lines of communication in the event of a fire or other emergency.

The Clinton substation currently under construction will be secured within a locked and fenced area. The overall design will meet American National Standards Institute (ANSI) and National Fire Protection Association (NFPA) standards for this type of installation. The main transformers will incorporate an oil spill containment area, designed to meet and include normal standards as presented by NYPA.

1.2.6 Power Generation

The electrical interconnection point is the 230-kV transmission line owned by the NYPA. The transmission line runs between Willis, New York, and Plattsburgh, New York.

On February 14, 2005, Noble notified the New York Independent System Operator (NYISO) of its intent to interconnect with the New York State transmission grid, which triggered the requirement to perform a System Reliability Impact Study (SRIS). The NYISO recommended the use of an outside consultant to expedite the study process. Noble has retained Seimens PTI to perform the study. Detailed studies to confirm these preliminary results are being completed pursuant to NYISO procedures.

The Project electrical substation connection is being constructed in association with the previously evaluated Clinton and Ellenburg Windpark Projects under construction in those Towns and will serve to interface the Project's electrical collection system to the transmission line. Some additional upgrades internal to the substation will be required to facilitate the additional connections. The Project will operate and maintain the distribution voltage equipment. Scheduled maintenance will be performed according to manufacturers' recommendations, and costs will be budgeted as required.

1.3 Project Alternatives

This section discusses Project alternatives and describes the process used to select the Project Site and the locations of turbines, roads, and interconnect and collection lines within the Project Area. The Project alternatives evaluated in this section include alternative Project sizes, alternative turbine technologies, alternative road and interconnect designs, and the no-build alternative. The Project Site was selected through a systematic process that considered: (1) the location of wind resources in New York State; (2) the availability of existing roads and utility interconnections; (3) the availability of land with landowners willing to sign easements for their property; (4) community support; (5) the presence of environmental constraints including visual and noise impacts, impacts on wetlands and streams, and important wildlife habitat; and (6) the presence of land use constraints including zoning and building restrictions. The selection process was designed to facilitate the evaluation of different potential Project Sites and turbine locations as Noble obtained property rights within a preferred Project Area sufficient to develop a wind energy facility.

1.3.1 Project Site Selection

Preliminary Screening

In November 2004, Noble began a wide area study of several potential project areas within multiple project regions. Potential project areas were identified in northern and western New York State. The Project Area selected within the Towns of Chateaugay and Bellmont was one of many prospective sites evaluated in northern New York State, including several locations in Franklin and Clinton Counties. Noble evaluated these potential sites using the following criteria:

- **Availability of sufficient wind resources.** Wind turbines must be sited where there is sufficient wind flow of adequate speed and duration. Potential Project Sites were evaluated using topographic maps and the New York State Wind Resource Map produced by TrueWind in 2001 and updated in 2005. Generally, wind speeds averaging at least 7.5 meters per second (m/s) are needed for commercial wind energy project viability. A project area with adequate wind resources was identified in northern Clinton and Franklin Counties, and potential Project Sites were investigated within this project area.

- **Proximity to existing roads and transmission lines.** A key consideration for wind project siting is the accessibility of an existing utility system to deliver the power generated into the energy grid. Use of existing transmission facilities minimizes environmental impacts associated with construction of new power transmission facilities, which would include clearing ROWs and other construction impacts. The NYPA 230-kV transmission line running from Plattsburgh to Willis traverses northern Clinton and Franklin Counties, making electrical transmission possible. The availability and proximity of this high-voltage transmission line also enhances the efficiency of the Project versus delivery at a lower voltage, by reducing transmission line "losses."

The Project Area is accessible via Interstate 87, U.S. 11, NYS Route 374, and NYS Route 190. Transportation in and through Franklin and Clinton Counties and the Towns of Chateaugay and Bellmont is provided by a well-developed system of local, County, and State roads. The roads are suitable for delivery of the equipment needed to construct and maintain the Project. The Project Area also includes many existing farm and logging roads. Improving these existing roads for Project access will minimize disturbance of additional areas for new roads.

- **Availability of Privately Owned Lands.** The Project Area is primarily comprised of privately owned lands. Many of the properties are larger parcels that are used for farming activities and have low population density, making them attractive for wind energy development. Larger, sparsely settled parcels require fewer easements and less encroachment on residential uses.

  Members of the Noble Project team met with landowners and residents of the community to determine whether there would be sufficient participation of landowners to develop a viable project. As a result of these discussions and meetings, the Project team determined that there was sufficient support to proceed with development of a wind project. Because Noble is a private developer, Project Site selection is limited to those locations where it is able to enter into voluntary agreements with landowners for development.

- **Presence of Environmental and Land Use Constraints.** Noble conducted a preliminary analysis of the Project Area to determine the environmental and land use constraints present at the potential Project Site locations (Fatal Flaw Analysis). This Fatal Flaw Analysis revealed that there was a relative lack of potential disturbance to sensitive ecological resources, land and water resources, cultural and visual resources, and landowners within the Project Area.

Identification of Preferred Project Site and Turbine Locations

For those properties within the Project Area that satisfied the preliminary screening criteria, further analysis was conducted to identify land use and environmental constraints that could potentially be fatal flaws in the project development. The specific issues addressed in the Fatal Flaw Analysis included assessments of:

- Geology and soils;
- Water resources;
- Wetlands;
- Threatened and endangered species;
- Avian and bat issues;

- Traffic and transportation;
- Land use;
- Cultural resources;
- Environmental Justice issues; and
- Visual impacts.

If no fatal flaws were identified, the wind resources were further verified through the installation of meteorological towers within the Project Area to collect site-specific data. These data were compared to the New York State Wind Resource Map and modeled to predict electrical production from each of the potential turbine locations.

Noble obtained agreements with landowners within the Project Area that would allow for the construction of turbines, access roads, and transmission lines on their property. The Project Site was not finalized until a sufficient number of landowner agreements were in place to site all of the Project facilities (see Figure 1-2).

When land acquisition activities were completed, an "area constraints map" was developed to determine where turbines, roads, and transmission system components could be located. To the greatest extent possible, areas were eliminated from consideration if they were located on a NYSDEC- or National Wetlands Inventory (NWI)-mapped wetland or area that appeared to be "wet" based on a review of soils mapping and or site investigation. Areas were eliminated from consideration if they were located:

- Too close to a road, residence, or existing structure to maintain legally required setbacks;
- Too close to a residence, to comply with sound pressure level requirements;
- Too close to an airport based on FAA and other applicable requirements; or
- In a microwave path or other radiowave pathway.

Data on the mapped constraints was entered into the WindFarmer™ modeling program to determine optimum turbine locations within the Project Area. In addition to the mapped constraints, the WindFarmer™ model takes into account meteorological data and noise calculations to optimize turbine locations within a given area.

Proposed turbine locations were field-verified to ensure that:

- Impacts on wetlands were avoided to the extent practicable;
- Setback requirements as set forth in and Town of Chateaugay Local Law No. 7 of 2006 and Town of Bellmont Local Law No. 2 of 2006 were met;
- Engineering constraints were minimized.

Adjustments were made and modeling was repeated until preliminary turbine sites were optimized.

Care was also taken to choose turbine locations that would minimize impacts on the use of active agricultural lands. Noble met with Matthew Brower of NYSDAM to discuss proposed locations of wind turbines, access roads, and electrical collection systems. In consultation with Mr. Brower, turbines located on active farms were sited in accordance with NYSDAM turbine siting guidelines as well as input from the landowners. To the extent practicable, roads and interconnects were located on the edge of agricultural land to minimize impacts on agricultural operations. Collection lines located away from access roadways are proposed as underground and at a depth of 4 to 5 feet to minimize impacts on farming practices.

Road and Interconnect Location Selection

During the process of field-verifying proposed turbine locations, access road and electrical collection line placement was also considered. In the interest of minimizing impacts, every effort was made to minimize the number of access road/interconnection systems needed. Each system was designed to:

- Co-locate electrical lines and roads within the same corridor, where possible;
- Optimize the use of previously disturbed areas such as farmlands and roads; and
- Avoid crossings of wetlands and streams.

Once a route was selected based on these primary criteria, a secondary analysis was performed to determine whether the proposed route had any engineering constraints. The final Project design showing turbines, roads, and interconnect locations is presented as Figure 1-2. A further discussion of the evaluation process to site roads and collection lines to minimize impacts on wetlands and proposed mitigation strategies is presented in Section 2.8, Wetlands: Impacts and Mitigation, and Appendices D and E.

1.3.2 Project Alternatives Evaluated

Smaller Project Size

Noble evaluated reducing the size of the Project by using a smaller number of turbines. However, reducing project size would undermine its financial viability and would also reduce the energy portfolio, environmental, and economic benefits of the Project. This evaluation included the possibility of reducing Project generation capacity to less than 80 MW, which would render it non-jurisdictional for a Certificate of Public Convenience and Necessity under Article 68 of the New York State Public Service Law.

Wind generating projects have certain fixed "infrastructure" costs that are independent of the size of the facility. For example, the cost of the utility interconnection and facility substation cost will not vary significantly with the size of the facility. The financial viability of a project depends on its ability to recover these fixed costs by maximizing electric generation.

Prices for electricity produced by the Project are based on the cost to generate the electricity. As a fuel-free energy resource, the Project's main costs are fixed capital costs. To be competitive with other wind projects and other sources of electrical energy, the capital and other fixed costs per kilowatt hour (kWh) of output must be reduced as much as possible by maximizing project output. Some smaller wind energy projects that have been built have only been made possible because of large financial grants. Reducing Project output without a corresponding reduction in fixed costs will create a negative impact on its financial viability and discourage investment.

Thus, the Project has been sized to maximize its output to defray its fixed costs, maximize its environmental benefits through the production of clean energy, and maximize local economic benefits through landowner easement payments, payment-in-lieu-of-taxes (PILOT) payments, and other local economic benefits, all the while minimizing its environmental and other impacts. A smaller project would produce fewer global benefits (clean energy, emissions reductions, and reductions in fossil fuel use) and fewer local and regional economic benefits, without any necessary corresponding reduction in environmental impacts. It also would be contrary to the State's goals of increasing the use of renewable sources of electricity to the same extent as the Project that has been proposed. In order to meet the state's goal that 25% of its electrical supply come from renewable sources by 2013, the State must encourage the development of large scale projects.

A smaller Project of less than 80 MW would change the localized environmental impacts slightly in a few different ways. The footprint and visibility would be slightly reduced because the Project would consist of at least 33 fewer turbines. Reducing the amount of disturbed forest land and vegetation might reduce environmental impacts; in addition, there may be the opportunity to reduce impacts on wetlands because fewer access roads would be required. However, given the minimal impacts on forest land, vegetation, and wetlands of the project as proposed, the overall benefit of a reduced sized project to local environmental resources would not be significant. Visually, a reduction in the number of turbines may provide a minimal benefit at a particular receptor but would do little to change the overall impact of the wind project on the regional landscape. There would also be minimal reduction in the need for collection lines and the associated visual impacts. Thus, the reduction of the size of the Project even by approximately 33 turbines would only marginally change its aesthetic profile.

Turbine Selection

The commercial wind industry has moved toward the use of "megawatt class" wind turbine generators because they are more cost-effective than smaller machines (i.e., they have a more favorable ratio of rotor "swept area" to generator size). For land-based use, the industry has developed turbines with generating capacities in the range of 1.5 MW to approximately 2 MW. Smaller turbines are available; however, a significantly larger number of turbines would be required to produce comparable amounts of power from smaller turbines. To maintain an equivalent level of power generation within a given project, more of the smaller turbines would be required. This would increase temporary and permanent disturbance to soils, vegetation, and water resources as the number of towers and the length of required access road and interconnect system increases. Potential operational impacts (e.g., noise and avian mortality) would also likely increase with a larger number of smaller machines. In terms of visibility and visual impact, while smaller turbines might be marginally less visible, higher blade speed, higher density, and greater numbers could actually increase the Project's visual impact. Use of a shorter tower would substantially increase wind turbulence in the blade area, and the cost of turbine maintenance.

The use of larger turbines (2 MW) was considered for the Project; however, turbines larger than 1.65 MW have not been operating in the United States for any appreciable period of time. The technology for large turbines is developing but these larger machines have not been sufficiently tested to ensure reliability for this Project. Larger turbines generally sit atop taller towers and have a greater potential for visual, avian and other impacts.

Economies of scale dictate that the largest proven turbines that meet the regulatory requirements and fully utilize the available wind resource be selected. Prominent manufacturers have machines in this range. GE's 1.5 MW and NEG Micon's 1.65 MW machines meet these requirements and were considered. GE 1.5 turbines were ultimately selected for several reasons:

- They are among the quietest operating machines;
- They incorporate state-of-the-art operating features;

- GE has proven its willingness to stand behind its equipment; and

- Noble has a long and positive working relationship with GE.

The project would use tubular steel towers instead of lattice towers. This alternative will reduce potential avian collision impacts by nearly eliminating potential perching locations. Pending results of geotechnical investigations, an alternative tower foundation design may be employed to reduce the quantity of concrete required (and, thus, concrete truck traffic to the site) and the extent of soil disturbance at each tower site.

Alternative Project Design

The design and layout of the Project has been continuously evaluated since the decision was made to pursue a project in the Towns of Chateaugay and Bellmont. Over the past 12 months, various turbine totals and layouts were evaluated in an attempt to maximize energy efficiency while minimizing adverse environmental impacts. The Project layout, as proposed, has been engineered to capture the area's high wind energy, while minimizing wake effects on downwind turbines. The original computer-generated optimal siting plan for the turbines, from a wind resource perspective, has been modified by landowner agreements/considerations and recognition of the need to protect sensitive resources such as wetlands, wildlife habitat, and agricultural land. The final proposed location of turbines and associated facilities reflects input and guidance received from landowners and project consultants focusing on cultural resources, noise, land use, and ecological impacts. The layout, as proposed, results in a carefully achieved balance of energy production, environmental protection, and community involvement. Relocation of any turbines would have a ripple effect, in that the location of all other turbines would have to be reexamined and possibly changed in order to maintain an efficient and workable Project design. Therefore, reduction of environmental impacts in one location could result in increased impacts in another location and/or reduced power generation. In the case of visual impact, removal or relocation of one or two individual turbines from an 86-turbine layout is unlikely to result in a significant change in Project visibility and visual impact from most locations.

Each of the proposed turbines has been located outside the boundaries of wetlands. Impacts on wetlands in the current proposed layout result from some unavoidable wetland areas that are crossed by roads and/or collections lines. If the Project layout were to be modified to eliminate all impacts on wetlands, the Project would not be feasible. Even if that were not the result, other impacts would be unacceptably increased. Examples of increased impacts include the additional lengths of roads and collection lines that would be required to avoid all wetlands. For every foot of road increased, there would be an increase of up to 60 square feet of disturbance to forest, farmland, and/or wildlife habitat. Each additional mile of road would add approximately seven acres of soil and vegetation disturbance. The proposed layout avoids impacts on wetlands to the maximum extent possible without a major increase in the length of the roads. In addition to the increased length of roads within the Project Area, layout changes to further reduce wetlands impacts would require the construction of additional road entrances at existing public roads to access some of the turbines that would be inaccessible because of small wetlands or streams. This would create additional visual impact to the rural character of the area because of the numerous entrance roads cutting into forests and open spaces and would create additional traffic impacts in the areas and general inconveniences to the people living in the area. The proposed design has as many as 11 turbines along one access road with a single entrance from a public road. Relocating the roads to totally avoid wetlands would increase the construction activity that would be visible from public roads.

At the outset of project design activities, Noble utilized specific criteria for the preliminary siting of collection/distribution lines. First order criteria for collection line routing were (1) shortening the length of circuits to minimize electrical losses; (2) availability of property rights; and (3) absence of environmental fatal flaws. Once preliminary collection/distribution routes were identified, the advantages and disadvantages of overhead versus underground collection lines for each segment of the line were considered. Both overhead and underground installation have the potential to impact streams and wetlands but these impacts can be minimized by using various construction techniques, some of which are directional drilling, maintaining buried cable depths in agricultural areas coordinated with landowners operations, and by strategic pole placements. After careful analysis, a mixed approach was selected, utilizing both underground and above-ground installations where the best balance of environmental impact, cost, reliability, and safety/maintenance factors can be achieved.

It is planned that approximately 85% of the electrical interconnect system will be buried. Overhead lines are being used in places to span wetlands and streams to avoid installing multiple underground lines in certain locations. A totally underground collection system would significantly increase cost and require installation of additional lines because of the lower thermal limits of underground collection lines. This has the potential to increase impacts on vegetation, soils, and wetlands. Adding some overhead lines, as proposed, will reduce impacts on soil and water resources but will cause some visual impact. To minimize adverse visual impact, the majority of overhead lines will be carried on single wooden poles, similar in appearance to distribution lines that are currently found along most of the roads within the Project Area. The overhead lines have been routed primarily along field edges and hedgerows to minimize the need for ROW clearing and to minimize additional impacts on agricultural land and farming operations.

Permanent access road widths will be the minimum necessary to operate and maintain the Project (anticipated to be 12-feet wide) and have been sited with NYSDAM guidelines in mind, to minimize loss of agricultural land and impacts on farming operations. Consequently, alternative Project designs likely to pose equal or greater risk of adverse environmental impacts while yielding equal or less electrical output were rejected.

Alternative Construction Phasing

Construction time lines are intentionally compressed and minimized as a mitigation measure to limit construction-related impacts by keeping the period of the impact on the community as short as possible without creating an extreme overload of the local resources. Alternatively, transportation, construction noise, dust generation, and other impacts overall would be reduced by having a compressed construction season. Noble intends to engage in the construction of multiple access roadways, turbine foundations, collection trenches and transmission pathways simultaneously. This is also necessary because of the adverse conditions present during the winter months within the Project Area.

Conversely, the division of construction timelines into two or more phases was evaluated. This option would allow for a multi-year construction schedule in order to reduce certain impacts such as disruption to agricultural activities. Phased construction could also be considered as mitigation to transportation, noise, dust and other impacts overall. Levels of impacts generated could be kept to a minimum throughout each phase.

Upon further review, it was determined that benefits to phased construction would be offset by the longer construction presence. Those impacted preferred the shortest timeframe option (non-phased construction).

No-Build Alternative

Selection of the no-build alternative would preclude the development of a Windpark on an approximately cumulative 264 acres of land in an area with favorable wind resources and infrastructure to support such a project. In the northeastern U.S., good wind energy project sites are limited and those that do exist are primarily located in areas that will have similar social and environmental concerns. Therefore, the selection of the no-build alternative would force continued reliance in the Northeast on non-renewable energy resources (e.g., fossil fuels and nuclear materials). Energy production with such non-renewable sources results in a plethora of severe direct and indirect adverse environmental impacts (e.g., air emissions, water consumption, toxic effluents and thermal emissions, by-product wastes, significant infrastructure needs and related land-use impacts, visual impacts, noise impacts, traffic impacts, and health impacts), and socio-economic effects (e.g., decreased energy diversity and reliability, fluctuating and increased consumer costs, and uncertainties regarding the ability to meet increasing energy demands).

Furthermore, the benefits of adding approximately 129 MW of clean, renewable electric energy to the power grid would be lost. Electric generation by fossil fuel-fired facilities presents serious consequences in the form of, among other things, air emissions (i.e., carbon dioxide, sulfur dioxide, nitrogen oxides, particulate matter, and mercury). The continued reliance on fossil fuel-fired generators would negate the reductions in emissions expected from operations of the Project that are estimated to displace 12,250 tons of sulfur dioxide (a precursor of acid rain), 6,000 tons of nitrogen oxide (a smog precursor), mercury (a deadly poison), and 3,600,000 tons of carbon dioxide (a greenhouse gas) over 20 years (GE Energy 2005). The adverse environmental and health effects of air emissions from combustion of fossil fuels are well documented and include global warming, acid rain, smog, respiratory health effects, and significant long-term impacts on wildlife. Air emissions and global warming have been cited as serious concerns for bird populations in North America in *A Birdwatcher's Guide to Global Warming* by The National Wildlife Federation and American Bird Conservancy (Price and Glick 2004). This guide advocates renewable energy sources such as wind to help slow global warming and reduce the threat it poses to people and wildlife.

Beyond air emissions, fossil fuel-fired facilities have other significant environmental impacts. These include, among others, massive water withdrawals/consumption for cooling (which entrain and impinge fish), the release of toxic effluents resulting from plant operations, thermal releases (when cooling waters are returned to the water body from which they were withdrawn), and visual impacts resulting from the facilities' structure and vapor/steam plume. To the extent that new technologies are required under the Clean Water Act to reduce water withdrawals, such technologies have their own attendant adverse environmental impacts (e.g., construction and maintenance of massive structures in water bodies, thereby causing long-term habitat disturbance). In any event, even with modern pollution control devices, significant adverse impacts remain. The cumulative effect of the operation of many fossil fuel power plants continues to pose an environmental threat that will only worsen with continued and expanded usage necessary to meet the ever-increasing demand for energy.

Beyond environmental impacts, fossil fuel power plant facilities also have significant adverse socioeconomic effects. Strict air emissions regulations and control measures, along with other environmental requirements to permit new or repowered fossil-fueled facilities, have increased the capital and operating costs of power plants and the ultimate cost of electricity for the consumer.

Further, the infrastructure required for efficient energy distribution is in some instances lacking, leading to price fluctuations and unreliability of energy supply. For example, although natural gas is heralded as the cleanest of the fossil fuels, it nonetheless has substantial drawbacks, both socioeconomic and environmental. Natural gas is transported through a network of pipelines throughout the country, but this network is not always capable of transporting the required gas to various regions. This results in significant price swings and increased costs to consumers. In extreme instances, supply disruptions may force use of dirtier fuels such as fuel oil.[2] In addition, natural gas facilities suffer from many of the same adverse environmental impacts as do coal-fired and oil-fired plants, particularly with respect to

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2 Diversity in the mix of energy sources that supply our electricity can help reduce price fluctuations for the consumer.

water withdrawals, thermal releases, and visual impacts. Thus, fossil fuel-fired facilities, which depend on non-renewable resources, have undeniable and well-defined significant environmental and social costs.

Nuclear facilities pose their own unique set of dangers, including the disposal of radioactive waste (high-level and low-level), impacts on the marine environment from thermal water discharge, and the potential danger of a catastrophic radioactive release as the result of an accident or terrorism. Moreover, the stigma associated with, and public perception of, nuclear facilities (both the power plants themselves and radioactive waste disposal sites) render the siting of any new facilities difficult.

In marked contrast, wind energy plants do not produce air emissions or other pollutants, nor do they utilize finite fossil fuel resources in the production of energy. Thus, wind projects provide a compensatory benefit to the environment generally—and wildlife particularly—by displacing other types of electricity generation that are harmful to the biosphere (AWEA 2003). Wind projects do, however, require appropriate wind resources, and they are generally distributed over a larger land area than fossil fuel facilities. These characteristics make rural areas appropriate for wind project development. Rural areas often are used for farming or logging, and wind energy facilities are wholly compatible with these two land uses. They do not require the project sponsor to take control of land; instead, an easement is signed and the land remains the property of the rural landowner. Thus, revenues are paid to the landowner, and these monies help sustain economic vitality in the rural area (Department of Energy 2003). In addition to easement payments to private landowners, the Project is expected to make significant PILOT and other payments to local taxing jurisdictions and make road improvements as a result of construction and post-construction remediation. The no-build alternative would deprive the rural area of these direct economic benefits as well as preclude development of an environmentally benign and beneficial energy production technology.

Importantly, both the United States's and New York State's energy policies explicitly recognize the need to supplement non-renewable energy production resources with renewable energy resources. Thus, they encourage development of renewable sources and support renewable sources as being a vital part of the local and national long-term energy strategy (e.g., New York State Energy Planning Board 2002; Renewable Portfolio Standard, New York State Public Service Commission 2003).

This Project utilizes a renewable resource, is environmentally benign compared to fossil fuel-fired and nuclear-powered facilities, and is environmentally and socioeconomically beneficial (both locally and globally). Because of continued improvements in renewable energy technology, a commercial-sized wind farm, such as the Project, can generate electricity that is competitive with electricity produced from fossil fuels and can do so with significantly lower impact on the overall environment than comparable conventional non-renewable energy projects. The Project is consistent with the long-term energy goals of both the U.S. and the State of New York. Finally, the Project would actually create environmental benefits (including to avian species and other wildlife) by displacing more environmentally harmful means of energy production.

1.4 Project Purpose, Needs, and Benefits

1.4.1 Project Purpose and Need

The Project will generate electricity, using no fuels or water and with zero emissions or waste discharge, and provide it to the NYISO grid using wind, a renewable resource. The Project will have capacity sufficient to generate approximately 129 MW of power that will help to meet New York State's Renewable Portfolio Standard (RPS) and fill the need for a more diverse national energy portfolio that would include a higher percentage of energy utilizing renewable resources. Renewable energy projects reduce reliance on both domestic and foreign fossil fuel resources and diversify the range of resources used to produce the electricity that supplies the state and national electrical needs. In addition, renewable energy projects reduce air emissions from fossil fuel combustion. These emissions are detrimental to air quality and have been documented to adversely affect human health.

On September 22, 2004, the New York Public Service Commission issued its "Order Approving Renewable Standard Portfolio Standard Policy" requiring that 25% of the State's electric supply come from renewable sources by the year 2013. In addition, Governor Pataki's Executive Order 111 directs State agencies to increase their purchases of "green energy" (including wind energy). This Executive Order requires all State agencies, departments, and authorities to purchase 10% of their energy from renewable energy sources by 2005, with the amount increasing to 20% by 2010. The New York State Comptroller has estimated that the RPS program will create 43,000 new jobs statewide.

New York's renewable energy policy is consistent with the National Energy Policy, which states that the U.S. has the technology needed to meet our principal energy challenges including:

- Promoting energy conservation;
- Repairing and modernizing our energy infrastructure; and
- Increasing our energy supplies in ways that protect and improve the environment.

Renewable and alternative energy supplies help diversify our energy portfolio and result in few adverse environmental impacts. The current contribution of renewable and alternative energy resources to the state and the national total electricity supply is relatively small; however, the renewable and alternative energy sectors are growing. Continued growth of renewable and alternative energy is vital to delivering clean energy to fuel our future economic growth. The federal government provides tax incentives to further the development and use of renewable energy technologies.[3]

1.4.2 Project Benefits

The construction and operation of the Project will result in positive environmental, economic, and energy benefits.

The Project is expected to reduce power plant air pollution in New York State by about 6,000 tons of nitrogen oxides (NO_x); 12,250 tons of sulfur dioxide (SO_2); and 3,600,000 tons of carbon dioxide (CO_2) over 20 years by displacing dirty fossil fuel-based electric generation (GE Energy 2005).

Local economic benefits of the Project will include:

- Temporary and permanent employment;
- Increased commerce in the Town from spending by project employees, suppliers, and local merchants;
- An increased flow of revenue to the County, Town(s), and School District through PILOT payments and other municipal payments;
- An increased flow of revenue to landowners through easement agreements; and
- Increased economic diversification.

Construction of the Project will result in the direct employment of up to 540 electrical workers, crane operators, equipment operators, carpenters, and other construction workers (with a total estimated payroll and benefits of $24.5 million) and will create 320 additional direct, indirect, and induced jobs countywide (with a total estimated payroll and benefits of $9 million). A significant percentage of the construction workers employed during the six-month construction period will be hired from within the local community to the extent that qualified workers are available. Personnel specially trained in specific procedures for wind turbine construction will be brought in and temporarily housed in the area during the construction phase of the project.

During plant operations, the Project will employ 9 skilled operators, managers, and administrative personnel and create 38 more direct, indirect, and induced jobs countywide (with a total estimated payroll and benefits of $1.7 million). The

3 The renewable Electricity Production Tax Credit provides a tax credit for each kilowatt hour of energy produced by eligible renewable generators including wind. The tax credit was originally established under the authority provided in 26 U.S.C §45 and was renewed in the Energy Policy Act of 2005 §1301.

company also has several wind energy projects in development in upstate New York and anticipates establishing a regional operations center in northeastern New York State, with additional full-time staff members.

The Project will spend an estimated $50.4 million countywide during construction. Total economic benefits during construction are estimated at $76.2 million, including payrolls, supplies, materials, hotel stays, meals, and economic multiplier effects. During plant operation, the Project will spend an estimated $1.1 million annually, exclusive of property taxes. Total annual economic benefits during operation are estimated at about $3.8 million including payrolls, supplies, materials, windpark easement payments, and economic multiplier effects. Total countywide economic benefits, based upon regional multipliers applied to direct project expenditures in original capital investment and ongoing operational expense, are estimated to be $152.9 million over 20 years.

The Project will extensively utilize and support providers of local services, suppliers, and area manufacturers during both construction and operation.

Noble has proposed to provide payments to both Towns and other taxing authorities in the form of PILOT and host community payments. These payments will result in a significant increase in local revenue for the taxing authorities.

The Project will assist in the revitalization of the local economy by providing steady income through easement payments to farmers and other landowners. Most of the landowners are farmers, and the additional income from annual lease payments is expected to help stabilize their income and provide some relief from the cash-flow fluctuations that are inherent in the agricultural industry.

Additional value to the local economy will result from increased diversification of the county and state economic bases. Economic diversification ensures greater stability of the economy by minimizing financial high and low cycles associated with a specific industry. This effect is particularly important in rural areas, where more goods and services are imported and more dollars leave the region.

Finally, all of the foregoing benefits will be provided without any corresponding increased burden on local schools and other public services.

1.5 Table of Required Permits and Consultations

Table 1.5-1 identifies the permit and consultations required for construction and operation of the Noble Chateaugay Windpark and Noble Bellmont Windpark.

Table 1.5-1 Required Permits and Consultations

Agency	Permit or Consultation Required
Town/County	
Town of Chateaugay Town Board	Wind Energy Permit
Town of Bellmont Town Board	Wind Energy Permit
Town of Clinton Town Board	Wind Energy Permit
Town of Ellenburg Town Board	Wind Energy Permit
Franklin County Industrial Development Agency	PILOT approval
NYSDOT, Franklin County Highway Superintendent	County Road Use Permits/Agreements County Highway Non Utility Permits County Highway Utility Permits
Town of Chateaugay Hwy Supt	Town Road Use Permit/Agreement
Town of Bellmont Hwy Supt	Town Road Use Permit/Agreement
Town of Chateaugay	Building permits to meet New York State Building Codes as identified under Civil/Foundation and OSHA/NEC
Town of Bellmont	Building permits to meet New York State Building Codes as identified under Civil/Foundation and OSHA/NEC
Franklin County Highway Superintendent and/or NYS DOT	Temporary Parking Permit
Franklin County Health Department	Well Permits
State	
New York State Department of Agriculture and Markets	Consultation with regard to Project design; construction and restoration of Project components on agricultural land throughout the Project Site
New York State Department of Environmental Conservation	Sect. 401: Water Quality Certification SPDES Storm Water Article 15 – Stream Disturbance Permit Article 24 – Freshwater Wetlands Permit
New York State Department of Transportation	**State Hauling Permits (oversize load, etc)** State Highway Non Utility Permits (Access Entrance Roads/Driveways) State Highway Utility Permits
NYS Historic Preservation Office	Consultation
NYS Public Service Commission	Sect. 68 Certificate of Public Convenience and Necessity

Table 1.5-1 Required Permits and Consultations

Agency	Permit or Consultation Required
Federal	
United States Army Corps of Engineers	Section 404: Waters of the U.S. Individual Wetland Certification
Federal Aviation Administration	Obstruction to Aviation: Approved Lighting Plan
U.S. Fish and Wildlife	Consultation

2

2 Environmental Setting and Impacts

2.1 Geology: Environmental Setting

This section provides a general overview of the geology within the Project Area. A low to moderate seismic hazard exists, which will be accounted for during the design of the facility.

2.1.1 Regional Geology and Topography

The Project Area is located in the Northern Lowlands of New York State at the northeastern edge of the Adirondack Highlands. The Adirondack Mountains are located southwest of the site. They occupy a circular region roughly 200 km in diameter and are composed of Proterozoic-aged metamorphic rock that is more resistant to erosion than the surrounding sedimentary rock. In the vicinity of the Project Area, the Potsdam Sandstone overlies the basement rock in a non-conforming formation. The Upper-Cambrian-aged Potsdam Formation slopes away from the Adirondack Mountains and is overlain by Beekmantown Dolomite. The Potsdam and Beekmantown formations are separated by transitional passage beds of alternating sandstone and dolomite.

Thickness of the Potsdam Sandstone is not known but is thought to be at least 550 feet. A well log for a hole drilled at Morrisonville, New York, indicated that the thickness of the Potsdam Sandstone is at least 775 feet (Postel 1952). The Potsdam Formation was deposited on a marine carbonate shelf that extended along the edge of the North American continent from Newfoundland to Alabama. The lower portion of the Potsdam Formation consists of poorly sorted conglomerates and sandstones. The middle portion of the Potsdam Formation is more widespread and is comprised of better-sorted pebble conglomerates that were probably deposited by braided streams. The upper part of the Potsdam Formation is marine, fossiliferous, and much more widespread than the lower and middle portions of the formation. It consists of sandstones with uniform and well-defined bedding (NYSM/GS 1991).

Thickness of the passage beds, while likely variable across the region, is thought to be around 50 feet and records transition of the depth and location of regional inland seas. The thickness of the Beekmantown Dolomite, while also variable across the region, is around 500 feet and indicates a deeper water marine environment than the underlying sandstone (Postel 1952).

Sometime in the Tertiary Period, the Adirondack metaplutonic rocks began to rise, possibly because of a hot spot near the base of the crust. Erosion worked to remove the Potsdam and Beekmantown formations where uplift occurred. In the Northern Lowlands, where the sedimentary formations remained, Adirondack Mountain uplift resulted in a gradual inclination of the beds away from the mountains (Postel 1952; NYSM/GS 1991).

Glacial deposits of the Pleistocene Epoch were deposited throughout the region. Thickness of the deposited material is quite variable, and ranges from a few feet to 100 feet or more (Postel 1952).

The topography of this region is dominated by the Adirondack Highlands which showcase the highest peaks in New York State including Mt. Marcy at 5,344 feet and Algonquin Peak at 5,114 feet. Beyond the peaks of the Adirondacks, the topography contains undulating features ranging from large tracts of cultivated agricultural areas to isolated lakes and depressional areas.

2.1.2 Project Area Geology and Topography

The Project Area is primarily located in the Towns of Chateaugay and Bellmont, Franklin County, with a relatively small portion of the Project Area extending into the Towns of Clinton and Ellenburg, Clinton County, New York. It is located in the Northern Lowlands of New York State, at the northeastern edge of the Adirondack Highlands. Figure 2-1 shows the Project Site on a United States Geological Survey (USGS) Quadrangle Map. Within the Project Area, elevations range from a low of 898 feet to a high of 1,556 feet above mean sea level. The Project Area is also comprised of large tracts of relatively flat agricultural areas with gradual changes in slope and relief of less than 15 percent.

Unconsolidated glacial till ranging in thickness from 0 feet (where bedrock outcrops are visible at the ground surface) to 100 feet or more overlie Proterozoic sedimentary rocks of sandstone, limestone, and dolomite composition throughout the site. Within the Project Area, streams and tributaries contribute to these features.

Detailed geotechnical investigations are currently in the planning stages and will further characterize geologic conditions at tower sites within the Project Area. The detailed investigations will take place prior to final foundation design and will include the following:

- Sampling and Standard Penetration Testing;
- Split spoon samples to a depth of 16 feet and at 5-foot intervals thereafter or at changes in soil strata;

- Seismic Testing Using a multichannel analysis of shear waves (MASW);
- Piezometers to determine groundwater conditions, if or where shallow groundwater conditions are implied by the borings;
- Soil Samples collected from auger cuttings, split spoon sampling, or test pit excavations; and
- Soil Resistivity and Thermal Conductivity Testing.

2.1.3 Seismic Activity

According to the USGS, which maintains records back to 1938, significant earthquake epicenters (magnitude 5.0 or greater) have been recorded in the region. The Project Area is located within a low to moderately active seismic region. One magnitude 5.8 quake occurred in the Massena, New York, area in 1944 and one quake with magnitude between 5.0 and 5.9 occurred south of Montreal, Quebec, in 1877. In addition, more recent earthquakes have also occurred in the Blue Mountain Lake Area of upstate New York in October of 1983 with a magnitude of 5.1 and another occurred in Plattsburgh, New York, in April of 2002 with a magnitude of 5.2. These areas are located between 50 and greater than 100 miles from the Project Area. However, no earthquake epicenters with a magnitude of 6.0 or greater have been recorded within 100 miles of the Project Area (USGS 2006a). The latest earthquake to occur in this region of New York State took place in the center of Lake Ontario on June 1, 2006, and was registered at magnitude 2.4.

In addition, no significant tectonic or quaternary faults have been mapped in Franklin or Clinton Counties, and there are no known active faults (i.e., younger than 1.6 million years) in this region (USGS 2006a).

The USGS provides an Earthquake Hazards Program, which estimates the level of seismic activity probable for any area within the continental United States. The USGS Earthquake Hazards Program indicates an 8-16% chance for the occurrence of the peak ground acceleration in the vicinity of the Project Area. Therefore, a low to moderate potential for significant seismic activity exists (USGS 2006a), which will be accounted for during the design of the facility.

2.2 Geology: Impacts and Mitigation

This section provides information on the potential impacts and mitigation related to geologic resources present in the Project Area. Resources evaluated include potential impacts on geology and topography from construction operations and potential Project-related risks from seismic activity in the region once operational.

2.2.1 Construction Impacts

Construction of the Project is not expected to impact regional geology and topography, as the spatial scale of the Project is much smaller than the regional scale. Minor alterations to the turbine sites to level off the area will be required, which will not change the overall topography of the Site. Construction of the Project could impact portions of the Project Site geology and topography where construction occurs in the following situations; however, no significant long-term impacts on topography of the Project Site are expected:

- Surface soils could be compacted during construction of the turbines, crane pads, and support structures (i.e., access roads and underground power lines); and

- Local topography around the turbine sites and roads may be changed to accommodate the requirements to construct and operate the turbines.

Blasting during construction is not anticipated; however, if blasting should become necessary, it will not proceed until full approvals have been obtained from the authority having jurisdiction. Refer to Section 2.27, Description of Proposed Construction Plan, for a more detailed discussion of blasting requirements.

2.2.2 Project Facility Impacts

As described in Section 2.1.3, the USGS states that one significant earthquake epicenter (magnitude 5.2) has been recorded within 50 miles of the Project Site and that the Project Site is not located within an active seismic region (USGS 2006a). No significant quaternary faults have been mapped in Franklin County or Clinton County, and there are no known active faults (i.e., younger than 1.6 million years) in this region (USGS 2006a). The USGS has recently developed an Earthquake Hazards Program, which estimates the level of seismic activity probable for any area within the continental United States. When the Project Site location (latitude and longitude) was entered into the USGS Earthquake Hazards Program, the results indicated the area has an extremely low potential for significant seismic activity, meaning events with a magnitude 6.0 or greater have not occurred in this area (USGS 2006a). Even though the risk of seismic activity adversely affecting the Project Area is relatively low, the potential for a significant seismic event will be accounted for during the design of the facility.

2.2.3 Mitigation

There is no evidence of seismic activity having caused catastrophic failure of any wind facility that meets the standards of the New York code. The potential earthquake hazards for the region will be accounted for when designing the anchoring system for the towers; and the tower designs include seismic loading per applicable sections of the Building Code of New York State, namely, Sections 1614 through 1622, and Minimum Design Loads for Buildings and Other Structures (ASCE 7-05), whichever is more stringent.

In addition, the proposed tower locations will be set back from private residences, other structures, and overhead power lines at a distance greater than the maximum height of the tower, which is less than 400 feet. The turbine setback requirements (minimum 600 feet from public roads and neighboring property lines and 1,200 feet from U.S. Route 11 and NYS Route 374) in the Town of Chateaugay Local Law No. 7 of 2006 and (minimum 500 feet from public roads and neighboring property lines) in the Town of Bellmont Local Law No. 2 of 2006 are adequate to protect the public from a tower collapse regardless of its cause, seismic or otherwise.

2.3 Soils: Environmental Setting

This section provides a general description of the soil characteristics based on Natural Resource Conservation Service (NRCS) soil type descriptions for the Project Area.

2.3.1 Project Area Description

In general, these soils are moderately well drained with slow to rapid runoff and moderate permeability. The Empeyville soil series comprises approximately 7,280 acres of the Project Area while the Tunbridge series comprises approximately 1,340 acres of the Project Area. The Empeyville series consists of soils formed in glacial till and are found on nearly level to moderately steep slopes ranging from 8 to 21% within the Project Area. Permeability of these soils is moderate but can be slower as depth increases. Most of the cleared areas of this soil series are used for hay, corn, and oats while wooded areas contain sugar maple, beech, and birch species.

The Tunbridge soil series consists of moderately deep well-drained soils on glaciated upland areas. Permeability of these soils is moderate to rapid with runoff ranging from very low to high. Most areas containing this soil type are wooded but some areas may have been cleared to be used as cultivated fields or pasture land. Slopes of this soil series can range from 13 to 15% within the Project Area.

Table 2.3-1 summarizes major characteristics of soils within the Project Area (USDA – STATSGO 2005). State Soil Geographic Database (STATSGO) data is comprised of general soil information for a given geographic area. There is more detailed data derived by the United States Department of Agriculture (USDA) referred to as Soil Survey Geographic Database (SSURGO) data. However, data with this level of detail is not yet available for the portion of New York State which contains the Project Area. Therefore, STATSGO data provides the best available information to characterize the existing soil conditions.

2.3.2 Turbine Sites

The soils underlying each turbine site were determined using the STATSGO, which contains the general soils data for Franklin County. This data is presented as a map displaying the general soil types in the Project Area (see Figure 2.3-1). It should be noted that prior to construction, Noble will conduct geotechnical studies to determine the site-specific soil makeup at each turbine site. The geotechnical studies will be submitted to the Town for review as part of the Building Permit submittal package for the turbine foundations. See Section 2.1.2 for the components of this study.

Table 2.3-1 Major Characteristics of Soil Types Found in the Project Site

Map Symbol	Soil Series	Prime Farmland Soils/Soils of Statewide Importance	Hydrologic Group[1]	Water Table Depth (Ft.)[2]	Hydric	Drainage[3]	Wind Erodibility Group[4]	Depth To Bedrock (In.)[5]	Acres
NY155	Empeyville	Not available	C	2	No	MW	8	60	7279.65
NY151	Tunbridge	Not available	C	6	No	W	8	20	1339.54

Note: Acreages listed in the table are based on individual parcel data that has been combined for purposes of calculation.

1. Class-C: Slow infiltration rates; soils with layers impeding downward movement of water, or soils with moderately fine or fine textures
2. Maximum value for the range in depth to the seasonally high water table during the months specified, expressed in feet.
3. Soil Drainage Class: MW = Moderately; W = Well
4. Erodibility Group 8: Erosion not a problem.
5. The maximum value for the range in depth to bedrock expressed in inches.

2.3.3 Agricultural Land

Agricultural activity within the Project Area includes pasture land, hay, and row crops. The Project Site includes approximately 5,055 acres of agricultural land, which represents approximately 60% of the Project Site. Agricultural land uses are further described in Section 2.23, Land Use, of this Draft Environmental Impact Statement (DEIS).

Article 25-AA of New York State's Agriculture and Markets Law authorizes the creation of local agricultural districts. These districts are established to protect and encourage the continued use of existing farmland by providing legal protection to farmers using sound agricultural practices. The Project Site lies within a portion of one agricultural district in the Towns of Chateaugay and Bellmont (see Figure 2.3-2). The number of acres of the Project Site within Agricultural District FRA01 is approximately 3,250 acres (2,400 acres in the Town of Chateaugay and 850 acres in the Town of Bellmont).

Agricultural districts are often created based on the presence of prime farmland and soils of statewide importance (NYSDAM 2006). Soils identified as prime farmland or soils of statewide importance are recognized as having the greatest productivity for crop growth. According to the National Resource Conservation Service (NRCS), prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses (7 CFR 657). In general, prime farmlands have an adequate and dependable water supply, a favorable temperature and growing season, and other acceptable soil factors such as acidity or alkalinity, salt and sodium content, few or no rocks, and are permeability to water and air. Soils of statewide importance have the soil quality, growing season, and moisture supply needed to produce economically sustained high yields of crops when treated and managed according to acceptable farming practices. Prime farmlands and soils of statewide importance are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding. The Project Area falls within Agricultural District FRA01, and likely contains prime farmland and soils of statewide importance. However, STATSGO data does not provide detailed information on these soil attributes.

2.3.4 Steep Slopes and Drainage Characteristics

Areas with steep slopes (usually >15%) are of concern because, when they are cleared of vegetation during construction activities, these areas may be subject to severe erosion during storm events. In addition, steep slopes may affect Project construction activities by limiting the delivery and use of heavy equipment and the rigging and erection of the turbine components. Furthermore, construction activities at these locations may be more involved since topography may need to be altered. The available soils data (STATSGO) indicates two general soils series with slopes ranging from 8 to 21% (Empeyville) and 13 to 15% (Tunbridge). As noted above, the STATSGO data does not provide a very fine level of detail, and the slopes in the Project Area can fall anywhere within the ranges of 8 to 21%. Based on field observations that were performed during the siting process for the Project, many of the Project components were sited in a given area to avoid steep slopes that can cause potential problems during construction, including difficulty with access and potential increase in erosion. Section 2.4, Soils Impacts and Mitigation, provides additional detail on turbine, access road, and collection line siting, how these potential impacts have been identified, and how they will be mitigated.

Soil drainage characteristics may also be a concern since soils with poor drainage can result in areas of ponding or significant water buildup during storm events. This can cause problems during construction with equipment access and increased rutting potential in soils that are saturated. As shown in Table 2.3-1, all soils in the Project Area are moderately well to well drained.

2.4 Soils: Impacts and Mitigation

The following sections describe the soil constraints, the potential impacts of the Project on soil resources and agricultural productivity, and the mitigation measures that will be implemented during construction to avoid or minimize impacts on these resources. Construction activities such as clearing and grading, trenching and excavation, movement of heavy equipment, and cleanup activities may impact soils at the Project Site. Impacts related to construction vehicle traffic may also include erosion, soil compaction, and damage to soil structure mainly where hydric or saturated soils and soils with poor drainage exist. Stones or rocks from shallow bedrock areas may be introduced into the topsoil as a result of excavation and construction activities. Potential permanent impacts of the Project on agricultural lands include the loss of prime farmland soils or soils of statewide importance and the loss of land within agricultural districts.

Construction impacts may include erosion, soil compaction, and the introduction of large stones and rocks into surface soil layers. Rutting and compaction of soils will result from the passage of heavy equipment and construction vehicle traffic in the proposed construction areas. These impacts are of particular concern in cultivated fields and may be more likely to occur when soils are saturated, moist, or poorly drained. Agricultural productivity could be compromised by the introduction of large stones or rocks into surface soil layers, which can damage agricultural equipment. Rock fragments and stones at the surface and in the surface layer may be encountered during grading, trenching and excavation, and backfilling. Ripping of shallow bedrock during construction could also introduce rock fragments and stones into the topsoil.

Potential operational impacts on agricultural lands include the loss, by conversion to nonagricultural uses, of prime farmland soils or soils of statewide importance and the loss of land within agricultural districts. Other impacts, such as topsoil mixing, severe erosion and sedimentation, introduction of stones and rocks on and into surface soils, and soil compaction also can affect the long-term productivity of agricultural lands in the Project Site if proper restoration guidelines are not followed.

2.4.1 Construction Impacts

To estimate areas of potential impact from the construction of the Project facilities, the Franklin County Soil Survey, Clinton County Soil Survey, and USDA-STATSGO were reviewed to identify the soil series within the Project Site and to provide more detailed information on potential soil and agricultural productivity-related impacts at each turbine, access road, and associated collection system. It is important to note that the STATSGO database provides only general soils types for the area. More detailed soil type coverage was not available for this area of Franklin and Clinton Counties.

Overall, construction of the Project will disturb approximately 264 acres of the 8,620-acre Project Area (or approximately 3% of the Project Area). Within this

264 acre area, approximately 249 acres of soils will be disturbed. This includes impacts on approximately 79 acres (or <1% of the Project Area) of soils at turbine locations, approximately 148 acres (or <1% of the Project Area) of soils for roads including the maximum 60-foot ROW construction corridor, and approximately 22 acres (or <1% of the Project Area) of soils for collection systems (power line locations with maintained corridors). The remaining 15 acres includes forested areas of the collection line that will be cleared during construction but will not result in an impact on soils. Of the 249 acres, approximately 197 acres of soils disturbed during construction will be restored to pre-existing conditions after construction is completed. These 197 acres will either naturally revegetate or will be seeded/mulched to protect the soil until vegetations is reestablished; these areas are considered temporary soil impacts. For additional detail on the cover types included that will be impacted during construction and operation of the Project, see Section 2.24, Land Use.

Soils in the Project Area have attributes indicating they are susceptible to or have the potential for high erosion and a high compaction rate.[4] In addition, shallow bedrock could be encountered in the 249-acre temporary soils impact area. The general soil types located in the Project Area are all moderately well drained; thus, poorly drained soils are not likely to be a potential problem. Slopes within the Project Area range from 8 to 21%, including Empeyville soils with slopes of 8 to 21% and Tunbridge soils with slopes of 13 to 15%. Approximately 88% of the Project Area contains Empeyville soils while the remaining 12% contains Tunbridge soils. While slopes greater than 15% could be encountered in the 249-acre temporary soils impact area, project components have generally been sited to avoid these areas of steep slopes.

Temporary impacts within the Project Area also will affect approximately 132 acres of land within an agricultural district (District FRA01) including potential prime farmland and soils of statewide importance. Construction activities may also impact agricultural land that is not located in an agricultural district. Impacts on active agricultural land will involve the direct loss of any crops and pastureland grown at the time of construction but are expected to be short-term and minimal. In addition, New York State Department of Agriculture and Markets (NYSDAM) guidelines were taken into account during project siting and impacts on active agricultural areas were avoided to the extent possible. Therefore, construction activity is not expected to have a significant impact on the agricultural soils within the Project Site.

The potential for erosion is influenced by the grain size, slope, and drainage characteristics of the soils. Areas with level to nearly level slopes and coarse-grained, well-drained soils are less likely to be eroded than areas with steep slopes or fine-

4 Soils with the potential for compaction or rutting were identified by using the Franklin and Clinton County Soil Survey information as well as the USDA STATSGO database, which indicates the general limitations for a given soil type.

grained, poorly drained soils. As a result, in general, there is potential for erosion to occur on these soils and on sloped areas containing these soils. The STATSGO data indicates that some soil types within the Project Site may have a severe or potentially severe erosion hazard. Short-term increases in erosion can occur as a result of the removal of vegetation during clearing and grading activities and the subsequent exposure of topsoil to precipitation and high winds. In addition, increased erosion can occur in areas where vegetation is slow to become reestablished. Increased erosion of all soil types is of special concern adjacent to water bodies, where it can result in increased sedimentation and degradation of the water body.

There is also a potential for soil contamination to occur as a result of spills or leaks of lubricants and fuels used in the construction process. This potential impact is considered minor because of the limited occurrence of such situations. Handling of spills or leaks will be addressed in a site-specific Storm Water Pollution Prevention Plan (SWPPP). A Draft SWPPP is included in Appendix R of this DEIS.

Blasting for construction purposes could also impact soil integrity. Blasting during construction is not anticipated; however, if blasting should become necessary, it will not proceed until full approvals have been obtained from the authority having jurisdiction. Refer to Section 2.27, Description of Proposed Construction Plan, for a more detailed discussion of blasting requirements.

2.4.2 Project Facility Impacts

To estimate areas of potential permanent impact from Project facilities, the soil series data obtained from STATSGO described above was reviewed based on the final components and impact parameters for the Project Area including turbines, access roads, and associated collection systems.

Overall, the Project will potentially permanently impact approximately 46 acres (or <1 % of the Project Area). The permanent impact areas are located within the temporary impact areas; therefore, the same attributes exist including high potential for erosion and compaction, and encountering shallow bedrock. Permanent impacts from soil disturbance will affect approximately 6 acres (or <1% of the Project Area) of soils at turbine locations (in the form of turbine pedestals and turbine crane pads) and approximately 40 acres (or <1 % of the Project Area) of soils for roads (the area of the permanent access road).

As mentioned in Section 2.3.3, the Project requires the acquisition of land rights of farmland within state-certified Agricultural District FRA01. Soils within agricultural districts are generally designated as prime farmland or soils of statewide importance and must be accounted for during the EIS process because removing significant portions of these areas from use can have a potential impact on the farming community in a given area. Permanent impacts within the Project Area will affect approximately 24 acres of land within Agricultural District

FRA01. The total acreage of soils within an agricultural district that will be permanently impacted by conversion to nonagricultural uses is less than 1% of soils in the Project Area and will not significantly affect the soil resources in the County or in Agricultural District FRA01.

2.4.3 Mitigation

Construction impacts will be confined to the Project Site and, upon completion, restoration will be performed on the temporary impact areas to preclude any long-term effects and to return areas to their pre-existing condition. ,A SWPPP will be submitted to the Town(s) at least 5 days prior to commencement of construction. The SWPPP will be implemented as part of the construction process (see Appendix R for a Draft SWPPP) to control and minimize the erosion and sedimentation within the Project Site. Areas within the Project Site where erosion risks are apparent and where topsoil has been restored will be seeded or mulched to provide faster establishment of cover for erosion control and to optimize the success of restoration. In areas in or adjacent to agricultural fields, plans for revegetation or seeding/mulching will be coordinated with NYSDAM and the individual landowner. Restoration activities in these areas will be conducted in accordance with NYSDAM guidelines so that the reestablishment of vegetation complements each farmer's operation. Prior to construction, Noble will document areas within the Project Site that currently have erosion and sedimentation issues so that adequate measures can be taken to correct these issues during the construction process. Many of the farm road improvements will correct current deficiencies. During construction, an on-site inspector will address and remediate any erosion or sedimentation issues or construction-related non-permitted agricultural disturbance. Adequate preconstruction documentation will help determine whether erosion and sedimentation issues resulted from the Project.

Agricultural Lands

Care was taken to choose turbine locations that would minimize impacts on the use of active agricultural lands, wherever possible. The Project will not involve the granting of public funds; accordingly, NYSDAM does not require submittal of a Notice of Intent (NOI) to construct in an agricultural district. Noble has nonetheless initiated consultations with Matthew Brower of NYSDAM to discuss proposed locations of wind turbines, access roads, and electrical collection systems. In consultation with Mr. Brower, turbines located on active farms were sited with NYSDAM turbine siting guidelines in mind as well as input from the landowners. To the extent practicable, roads and interconnects were located on the edge of agricultural land to minimize impact to agricultural operations. Underground collection lines will be buried at a depth of 4 to 5 feet to minimize impacts on farming practices. The construction and restoration process for farmland has been developed in accordance with NYSDAM guidelines. Noble will continue to coordinate with NYSDAM to develop an appropriate post-construction monitoring plan to ensure that the goals of the NYSDAM guidelines are met. Formal monitoring of areas temporarily disturbed by construction will occur for two years immediately following the completion of initial restoration. During the monitoring and remediation phase, any agricultural impacts that need additional mitigation will be identified and mitigated. General conditions to be monitored include topsoil thickness, concentrations of rock and large stones, trench settling, condition and function of drainage features, and repair of Project fences.

Impacts on agricultural lands will be minimized by restricting Project equipment to the construction ROW to limit the soil compaction and erosion that may also affect long-term farmland productivity. The Project construction contractor will minimize rutting and compaction by maintaining construction equipment and materials on the Project access roads. Vehicles used for delivery of heavier loads will also be restricted to access roads. Environmental conditions will be monitored by both the Environmental Monitor and Resident Site Manager. If site conditions deteriorate to a point that the environmental integrity and/or structural integrity of the site could be compromised, vehicle access will be restricted until the appropriate conditions are reestablished. An environmental condition that may compromise the integrity of the site is super saturation of topsoil and/or materials beneath the road base. Super saturation may occur during or following periods of heavy rain and spring snow melt. During periods of super saturation, soils are more vulnerable to compaction and erosion. Noble's Environmental Monitor will determine when soil saturation surpasses an appropriate level for delivery of heavier loads (such as vehicles carrying tower sections or nacelles).

Measures that will be implemented to reduce soil compaction off the improved roads and turbine sites may include the use of riprap or timber mats on saturated soils, organic mulch or residue on the soil surface, and restrictions on traffic and load placements within these areas. If activities are required off the improved roads and turbine sites during conditions of extreme wetness, access will be limited until suitable soil conditions are restored. Following construction, all disturbed agricultural areas that are outside the finished roadway and turbine sites will be decompacted to a depth of 18 inches with a deep ripper or heavy-duty chisel plow, in accordance with applicable regulations and NYSDAM guidelines.

Erosion Control

Soil erosion will only last for a short time during construction and will be minimized through the implementation of erosion-control measures to reduce unnecessary impacts and to comply with the appropriate regulations. Best Management Practices (BMPs) will be developed in conjunction with applicable guidelines (e.g., NYSDAM Guidelines and SWPPP requirements) and included in the SWPPP (see Section 2.6.3 for further detail on the SWPPP). Temporary erosion controls, including interceptor diversions and sediment filter devices (e.g., hay bales and silt fences), will be installed prior to initial ground disturbance. If necessary, temporary trench plugs will be installed immediately following trench excavation for cabling, and mulch or erosion-control fabrics (e.g., jute netting) may be used on critical slopes or areas to control erosion. During construction, Noble will monitor the effectiveness of temporary erosion-control devices in accordance with the SWPPP and Noble's Quality Assurance Plan (see Section 2.27, Description of Proposed Construction Plan). Temporary erosion control devices will be inspected on a regular basis and after each rain event to ensure proper function. Temporary erosion-control structures will be maintained until the affected areas are successfully revegetated. Following successful revegetation of construction areas, temporary erosion-control devices will be removed.

Topsoil and Subsoil

Soil impacts such as loss of organic matter, topsoil-subsoil mixing, deterioration of soil structure, and soil settling or slumping will be minimized by the use of the following effective protective measures. Measures that will be employed include ensuring that topsoil-subsoil mixing does not occur and that compaction and other construction-related results are avoided or mitigated. Topsoil will be segregated to the depth of the plowed layer and stockpiled to ensure that it is separated from construction activities. The subsoil layer will also be stored separate from the topsoil and away from construction activities.

Topsoil will be replaced to original depth, and the original contours will be reestablished to the extent possible. In areas where the topsoil has been stripped, soil decompaction will be conducted prior to topsoil replacement. If necessary, machinery such as deep-shank, Paraplow, Paratill, or other specified equipment will be brought in to break up soil down to the depth of actual compaction. Following decompaction, rocks 4 inches in diameter and larger will be removed from the surface of the subsoil prior to replacement of the topsoil. If the excavated materials are not suitable for use as backfill around turbine pads and roadway areas, Noble will ensure that adjacent agricultural land is not used to replace the backfill. If imported soils are needed for this process, they will be similar in texture to the soils already present. When conditions are too wet, subsoil decompaction and topsoil replacement will be postponed until the conditions are such that the soil can be decompacted in accordance with recommendations from NYSDAM and as part of Noble's Quality Assurance Plan.

Drainage

If areas of sub-surface drainage tile are encountered during construction, they will be avoided, protected, or completely restored. Other potential impacts that may occur include changes to the natural drainageways of agricultural lands. Noble will mitigate these potential impacts by implementing subsurface intercept drain lines and ditch plugs and, where necessary, culverts and ford crossings to maintain natural drainage patterns. In addition, where Project roads are constructed or existing roads are improved, design of these roads will include drainage systems that will actually improve many of the existing areas where high erosion from runoff exists. Mitigation measures that will be taken to avoid impacts or damage on surface drainage features are discussed in Section 2.6, Water Quality: Impacts and Mitigation, of this DEIS.

2.5 Water Quality: Environmental Setting

2.5.1 Groundwater

Groundwater qualities such as depth to groundwater, direction of groundwater flow, hydraulic gradient, and hydraulic conductivity are important for characterizing the groundwater conditions within the Project Area. As part of the EIS process, site-specific features including depth to groundwater, the location of potential groundwater resources, and the direction of groundwater flow have been identified based on available desktop resources. This information will be utilized by Noble to ensure that the potential impacts on geology and groundwater resources do not occur or are minimized to the extent possible. The following is based on information available from the United States Geological Survey (USGS) that is related to groundwater in local wells in the vicinity of the Project Site.

Residential Wells

Groundwater is used as the main drinking water supply in the Towns of Bellmont, Chateaugay, Clinton, and Ellenburg. The Village of Chateaugay public water system supplies water to approximately 1,100 residents (EPA 2006c). The water supply source is an underground spring located within the Project Area on Village of Chateaugay property. The Town of Ellenburg has a limited public water distribution system. The majority of residences in the Project Area use private groundwater wells as their source of potable water. According to New York State Department of Health (NYSDOH 2005 and 2006) there are no known water quality problems or concentrations of pollutants in the groundwater at the Project Site. The main source of the potable groundwater supply is the Potsdam Sandstone Aquifer identified by the United States Geological Survey (USGS) as the principal aquifer for the Project Site (USGS 2006b).

Depth to Groundwater

Site-specific groundwater depths have not yet been determined, but geologic investigations will be conducted to determine these site-specific features in conjunction with foundation design and prior to construction. Based on general data gathered from USGS wells in Burke, New York, and at SUNY Plattsburgh (2006) with a depth of 78 to 175 feet below ground surface, the depth to groundwater ranges from 20 to more than 30 feet below ground surface in the vicinity of the Project Site.

Aquifers

Sole-source aquifers are defined by the EPA as an aquifer that is needed to supply 50% or more of the drinking water for a given area and for which there are no reasonably available alternative sources should the water become contaminated. Given the fragile nature of these aquifers, they are given special consideration by the EPA. No sole-source aquifers are located within the Project Area (EPA 2006b).

2.5.2 Surface Water

The Project Area is located within the Chateaugay River watershed, which drains more than 164 square miles (426 square km) of land in Franklin and Clinton Counties to the Chateaugay and St. Lawrence rivers. This watershed is located within the greater English-Salmon watershed, which drains more than 797 square miles (2,064 square km) of land in Clinton, Franklin, and a small portion of St. Lawrence Counties. The English-Salmon watershed has been designated as a Category IV watershed by the New York Unified Watershed Assessment Program (NYSDEC 1998). Category IV watersheds are defined as those where the level of data is currently not sufficient to make an assessment of the watershed's condition. No waters within the immediate Project Area have been identified as impaired on the Section 303(d) List of Impaired Waters; all waters within the Project Area meet state water quality standards (NYSDEC 2006a).

NYSDEC Stream Classification

Table 2.5-1 provides descriptions of all perennial and intermittent streams that were identified during surveys within the Project Area. The streams range from well-defined stream channels to poorly defined headwater channels. The locations of these streams are depicted in relation to project facilities in Figure 2-5.

Table 2.5-1 Stream Characteristics, Chateaugay Windpark

Cluster ID	Name	Bank Height (feet)	Width of Water (at time of field investigations) (feet)[1]	Substrate	Classification according to NYSDEC	Connection
1	S6	0 – 6	0	Silt/Clay/Cobble	C(t)	Connects W6 to Boardman Brook.
1	S1007	0 – 3	0	Boulder	C(t)	Unnamed Tributary to Boardman Brook.
29	S102	0 – 3	5 – 8	Gravel/Boulder	C(t)	Boardman Brook. Connection to W102.
29	S102a	0 – 3	1	Gravel	C(t)	Unnamed Tributary to Boardman Brook. Connection to W102.
2	S3	0 – 3	0	Silt/Clay/Cobble	D	Unnamed Tributary to Marble River. Connection to W3.
2	S4	0 – 3	0	Silt/Clay/Cobble	D	Unnamed Tributary to Marble River. Connection to W4.
2	S11	0 – 3	0.5 – 2	Sand/Gravel	D	Unnamed Tributary to Marble River. Connected to W11.
27	S104	0 – 3	0	Silt/Clay/ Organic Matter	Not classified	Unnamed, Disturbed Tributary to Boardman Brook. Connected to W104.

Table 2.5-1 Stream Characteristics, Chateaugay Windpark

Cluster ID	Name	Bank Height (feet)	Width of Water (at time of field investigations) (feet)[1]	Substrate	Classification according to NYSDEC	Connection
27	S1010	0 – 3	5	Gravel	D	Unnamed Tributary to Marble River.
3	S19	3 – 6	1	Sand/Gravel	Not classified	Unnamed, Disturbed Tributary to Marble River. Connected to W19.
4	S34	0 – 6+	20	Gravel/Boulder	C(t)	Boardman Brook. Runs through W34.
4	S1000	6+	3	Gravel	Not classified	Unnamed, Disturbed Tributary to Boardman Brook (S34).
	S109	0 – 6+	0	Rock/Boulder	C(t)	Unnamed Tributary to Boardman Brook. Connected to W109.
5	S39	0 – 3	1	Gravel	Not classified	Unnamed, Disturbed Tributary to Marble River. Channel within W39.
9	S54	0 – 3	0	Silt/Clay/Cobble	C(t)	Unnamed Tributary to Boardman Brook. Connected to W54.
13	S1005	6+	3	Boulder/Cobble	Not classified	Unnamed Tributary to Chateaugay River.
13	S1006	6+	3	Boulder/Cobble	Not classified	Unnamed Tributary to Chateaugay River.
	S67	0 – 3	2	Silt/Clay	C(t)	Unnamed Tributary to Boardman Brook. Connected to W67.
	S70	0 – 3	5 – 10	Sand Loam	C(t)	Unnamed Tributary to Boardman Brook. Connected to W70.

New York State Department of Environmental Conservation (NYSDEC) stream classification data were reviewed to determine whether streams in the Project Area are protected by New York State under Article 15 of the Environmental Conservation Law (ECL). NYSDEC uses a stream classification system in order to identify the value and uses of watercourses in the state. A protected stream is any stream or particular portion of a stream for which any of the following classifications or standards have been adopted by the department or any of its predecessors: AA, AA(t), A, A(t), B, B(t) or C(t). Streams designated (t) - trout - also include those more specifically designated as (ts) - trout spawning. Disturbance to the bed or banks of protected streams requires a permit under Article 15 of the New York ECL.

The majority of the watercourses within the Project Area are identified as Class C(t), while others either have no classification or are designated as D waters. Class C streams support fishing and fish propagation and primary- and secondary-contact recreation. Class C(t) streams are capable of sustaining trout populations and are considered "protected streams" given special protection by NYSDEC. Disturbance to the bed or banks of these streams requires a permit under §15-0501 of the New York ECL. The best use of Class D waters is fishing. These waters support fish survival but do not support game fish propagation because of natural conditions such as intermittent flow, streambed condition, or other water conditions not conducive to propagation of game fish. Class D streams are not protected by the NYSDEC and therefore do not require special permitting. They are suitable for primary- or secondary-contact recreation, although conditions may limit these opportunities.

2.5.2.1 Protected Streams

Two named watercourses as well as several unnamed tributaries are located within the Project Area (see Figure 2-5). A small portion of Chateaugay River crosses into the western boundary of the Project Area. The Chateaugay River is designated a class C(t) stream by the NYSDEC and does support a cold water fishery. There are only two unnamed tributaries to the Chateaugay River within the Project Site, both of which are steep gullies that resulted from erosion and are ephemeral in nature; these tributaries are not classified by the NYSDEC. Boardman Brook, a tributary to the Marble River, originates within the Project Area, then flows in a westerly direction through the central portion of the Project Area then bends to the north as it travels through the northwestern parcels of the Project Area. Boardman Brook is also designated a Class C(t) stream, although it is intermittent and its headwaters are disturbed by ditching, fill, and agricultural activity. Tributaries to Boardman Brook have been identified within the northwest and central portions of the Project Site. Most of the identified tributaries are classified C(t), while one is not classified by the NYSDEC. Most of Boardman Brook and its tributaries are intermittent streams and may have once supported trout populations. The current conditions in these streams are mostly unsuitable for fish species. However, amphibians and macro-invertebrates are likely to inhabit these areas when water is present. The Marble River is located to the north of the Project Area. There are tributaries to the Marble River within the northeastern portion of the Project Site that do not drain through Boardman Brook. These tributaries are either designated Class D or are not classified by the NYSDEC.

There are several other streams classified as C(t) within the Project Area (the entire area within the outer geographic boundary of all potential sites considered for project facilities); however, none of these streams fall within the Project Site boundaries, which consists of all parts of the Project Area that have the potential to be permanently or temporarily disturbed.

2.5.2.2 Surface Water Use

All of the streams within the Project Area may be used to some extent by animals and livestock as a source of drinking water. Fish, amphibians, and macro-invertebrates may also use surface water for habitat when streams are flowing. However, since many of these streams are intermittent and in headwater areas, water availability is intermittent and may be present only during periods of continuous or heavy precipitation or during the snowmelt period in the spring.

Although the Class C(t) streams in the Project Area are designated for fishing and as trout species' habitat, it is unlikely that any of the intermittent waterbodies are used for recreation or fishing opportunities within the Project Site, because of their small size and/or intermittent nature in these areas where disturbance may take place. Care was taken in the layout of the facilities of the Project to avoid or minimize impacts on any significant water bodies.

2.5.3 Storm Water Runoff

The Project Area consists of a mix of undeveloped land and land used for agricultural purposes bounded by New York State roadways on the north, west, and south, and traversed by local roads. On most of the Project Area, storm water infiltrates naturally through soils, except on impermeable areas such as paved roads. During heavy precipitation events (such as 1- or 25-year storm events), storm water falling on the soil surface may saturate the soil and subsequently may run off into the numerous naturally occurring and man-made drainage channels in the area. These drainage channels typically connect to the wetlands or small unnamed, intermittent streams in the Project Area. Along some roads, drainage ditches have been installed to collect storm water runoff from the road surface and direct it to existing natural drainage channels or streams. Some roads or road segments in the Project Area lack significant drainage ditches; in this case, storm water runoff from the road surface simply empties off the road edge via overland flow.

Additional existing site conditions in relation to storm water runoff, potential storm water pollutants, and sediment- and erosion-control issues within the Project Site from construction will be submitted to the NYSDEC in the Storm Water Pollution Prevention Plan (SWPPP) in accordance with NYSDEC's State Pollutant Discharge Elimination System (SPDES) Permit for Stormwater Discharges from Construction Activity (GP-02-01). See Appendix R for a Draft SWPPP.

2.6 Water Quality: Impacts and Mitigation

Construction practices, including the building of access roads and placement of electrical collection lines, may impact the condition of streams, groundwater resources, and ultimately, water quality, through ground disturbance and runoff. This section will address possible impacts on groundwater and surface water that were identified when planning the construction and operation of the Project. No long-term ground water impacts are anticipated as project facilities were sited to avoid water resources and/or were sited in previously disturbed areas to the extent practicable. Noble will minimize any potential construction impacts on surface or groundwater quality through the implementation of Best Management Practices (BMPs) as discussed below.

2.6.1 Construction Impacts

Groundwater

Construction is not expected to significantly impact groundwater within or outside of the Project Area. It is possible that shallow groundwater may be encountered during excavation or that other localized groundwater flow disruptions may take place. Should any groundwater impacts occur, it is anticipated that groundwater will rapidly fill in disturbed areas. Any soil compaction during construction is not expected to extend to the water table; groundwater movement will not be disrupted by any compaction that takes place. Construction of the Project does increase the potential for introduction of pollutants to groundwater from spills of petroleum or other chemicals; however, the potential for these impacts will be minimized through the implementation of BMPs and the SWPPP (see Appendix R for a Draft SWPPP) during construction. A final SWPPP will be submitted to the Towns a minimum of 5 days prior to construction.

Construction activities associated with the Project are not expected to affect local aquifers or private residential drinking water wells within or outside the Project Site because the depth of excavation is less than the anticipated depth to groundwater (see Section 2.5, Water Quality: Environmental Setting). It is possible that perched groundwater lenses will be encountered during construction. If areas of perched water exist, they will be identified during site specific detailed foundation engineering investigations/evaluations performed in conjunction with the foundation design process. These perched water areas will be documented and reported through the environmental monitoring process with an engineering/quality Request for Information requesting disposition on specific methods to be utilized to maintain existing hydrology. Components of the geotechnical work to be completed are outlined in Section 2.1.2.

Surface Water

Streams within the Project Area and delineated within the Project Site are shown in relation to Project components in Figure 2-5. Stream crossings have been avoided during facility citing to the greatest extent practicable. No significant impacts are expected on streams in the Project Area as a result of construction of the

Project. However, because of the location of streams in the Project Area, as well as the linear nature of Project facilities, it is necessary to cross one stream (S19) with an access road within the Project Site. Stream S19 is an intermittent stream channel that is crossed by a farm road and has an existing culvert. This existing road will be temporarily expanded during construction to accommodate the access road for Cluster 3. Construction typical plans for stream crossings are included in Appendix A. The crossing will be engineered, designed, and installed to maintain sufficient flow at this location during construction. Upon completion of construction, the temporary crossing will be scaled back in order to minimize impacts from the permanent access road. Both temporary (construction) and permanent (operational) road widths at stream crossings will be permitted through the Joint Wetland Permit Process.

Three perennial tributaries (S1010, S67, and S34) to the Marble River will be crossed by overhead collection lines. Boardman Brook, delineated in the field as stream S34, will be spanned by overhead electrical collection lines. There will be no impacts on the bed and bank of Boardman Brook nor will the stream be crossed by any equipment during construction of the collection line. Stream S1010 and stream S67 are smaller streams that will also be spanned with power pole plants located as far away from the riparian areas as possible. This will avoid or minimize any disturbance to the banks of the streams. Stream S1010 is located in a steep forested valley between Clusters 2 and 3. A 35-foot-wide corridor will be cleared of all woody vegetation to install the overhead collection line. This corridor will be kept free of tall woody vegetation by selective pruning and periodic clearing. The small clearing of forested area within the riparian area will not result in any significant impact to the stream. Stream S67 located on the eastern side of County Line Road is located within a 25-foot corridor from the shoulder of the road that will be cleared of woody vegetation to accommodate an overhead line that will run parallel to the road. This corridor will also be maintained to be free of tall woody vegetation and will also not result in any significant impacts on the stream.

Protected Streams

Of the three streams that fall within Project Site boundaries, only streams S67 and S34 are considered protected streams by NYSDEC. Streams S67 and S34 are classified C(t) by NYSDEC, and overhead collection lines will be placed over these streams as described above. No significant impacts on streams S67 and S34 are expected as a result of this Project. No other protected streams located within the Project Area will be disturbed as a result of this Project.

Stormwater

Construction activities could result in indirect impacts on surface waters such as increased sedimentation and turbidity caused by increased surface runoff from disturbed areas. Stormwater runoff will be minimized and controlled by implementation of BMPs as outlined in the SWPPP (see Appendix R for a Draft SWPPP).

2.6.2 Project Facility Impacts

Groundwater

Project facilities are not expected to impact shallow groundwater within the Project Site because only a half acre of impervious surface, in the form of turbine pedestals, will be added to the Project Area. The effect on groundwater recharge will therefore be negligible. However, introduction of pollutants to groundwater from spills of petroleum and other chemicals during operation of the project could impact groundwater. These impacts will be prevented and controlled by Noble through continual implementation of spill-prevention BMPs by employees working on site. Soil compaction during operation of the Project will be minimal (limited to vehicles traversing access roads) and is not expected to impact groundwater movement at the Project Site. Any soil compaction that takes place is not expected to extend down to the water table.

The implementation of spill-prevention BMPs during operation and maintenance activities associated with the Project are expected to eliminate impacts on local aquifers and private residential drinking water wells within or outside the Project Site.

Surface Water

The operational Project facilities will not impact surface water within the Project Area. While Project construction will require the crossing of three streams by project components, no significant impacts are expected on streams in the Project Area. The windpark will consist of the following facilities in proximity to streams: an access road will cross over Stream S19 and overhead collection lines will cross over Streams S1010, S34, and S67.

Stormwater

There will not be a significant increase in impervious surface as a result of operation of the Project. Eighty six combined Project tower pedestals will add approximately a half acre of impervious surface to the approximately 8,620-acre Project Area. Therefore, no significant changes to stormwater runoff volumes are anticipated. The access roads and turbine sites will be gravel based, which will allow stormwater to continue to infiltrate into the soil.

2.6.3 Mitigation

Environmental monitoring of the site will occur during construction and site restoration in accordance with Noble's construction plan (Section 2.27, Description of Proposed Construction Plan) and the SWPPP. The environmental monitoring plan for construction will contain permit conditions and other commitments made by Noble during the Project permitting process including those associated with stream disturbance, stormwater management, and erosion control. A Notice of Intent (NOI) for construction activities will be submitted to the NYSDEC prior to construction and a SWPPP will be implemented on site. A Draft SWPPP is included in Appendix R and is summarized below.

The SWPPP encompasses all requirements set forth by the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activities (GP-02-02); it will identify all pollutant sources associated with construction and require the use of BMPs to reduce or eliminate stormwater and other discharges from the construction site. The document will include source and BMP identification, an erosion- and sediment-control plan, waste management and disposal guidelines, and a spill-prevention plan. It will also require inspections of the construction site to ensure that all sediment- and erosion-control measures and BMPs are implemented to their full design and are in proper working order.

The SWPPP will identify potential sources of stormwater and other pollutants and dictate the placement of construction stormwater pollution prevention measures and BMPs in detailed water pollution control site drawings. The SWPPP will also address BMPs that will take place on site to prevent spills and, in the event of a spill, response procedures that will minimize groundwater and surface water impacts. Any spillage of fuels, waste oils, other petroleum products, or hazardous materials shall be reported to NYSDEC's Spill Hotline (1-800-457-7362) within 2 hours. These proactive measures will limit the possibility of surface and groundwater pollution from oil, fuel, or other hazardous materials, as a result of Project construction and facility operation.

The erosion- and sediment-control plan will address excavation and slope erosion-control methods and protection of stockpiled soils by covering, containment, and/or revegetation. Sediment will be controlled by the implementation of linear barriers such as silt fencing or straw bale dikes and the construction of stabilized construction entrances to minimize sediment transport to local roads.

No increases in stormwater discharges are anticipated, but if any increase in stormwater discharges resulting directly from the construction of the Project occur, they will be documented and permitted through an SPDES permit for discharges from construction activities. Furthermore, measures will be taken to ensure that all new facilities consistent with the operation of the Project do not create any additional stormwater runoff than was generated during pre-construction conditions.

Groundwater impacts will be minimized through implementation of the SWPPP. If shallow groundwater enters the excavation areas during turbine foundation placement, it may be pumped out during installation of the foundation. Any groundwater that is pumped out of a foundation excavation will be discharged to an area (approved by the landowner) that will either direct the flow toward existing water bodies or temporarily retain the water until it can infiltrate back into the ground. Groundwater pumping will be addressed in the SWPPP, which will be submitted to the Town for review prior to construction. Temporary sediment traps or the controlled release of water through vegetated areas will be utilized during construction to intercept and manage sediment-laden runoff from dewatering of turbine foundations based on the engineering design contained in the SWPPP. The sediment-control practices will retain the runoff and allow sediment to settle prior to discharge. For dewatering practices, the sediment traps shall be placed adjacent to the turbine foundations, with the outlet discharging to a swale, ditch or vegetated area. The text will be revised to include reference to these above mentioned measures.

Other components that will be included in the plan are outlined in the Draft SWPPP in Appendix R.

2.7 Wetlands: Environmental Setting

A study was conducted to determine the extent and quality of wetlands within the Project Area. Preliminary wetlands identification consisted of a desktop review of topographic maps and the collection of soils information and existing wetland location information including mapping available from New York State Department of Environmental Conservation (NYSDEC) Freshwater Wetlands Program and National Wetlands Inventory (NWI) maps. Field visits were undertaken to verify the location and habitat type of wetlands prior to siting the Project facilities as a part of an extensive effort to minimize and avoid impacts on wetlands. Wetland delineations were conducted within a wide survey corridor around the proposed locations of Project facilities to identify the in-field wetland boundary and to assist in assessing potential impacts. Figure 2-7 shows wetlands located within the Project Site.

Preliminary wetland surveys indicated that there were many large wetland complexes within the Project Area and that there was a high probability of smaller jurisdictional wetlands not indicated on existing resource maps. This desktop review was used to guide field reconnaissance-level surveys in the spring of 2006 of the entire Project Area to develop general siting constraints. Additional reconnaissance-level surveys were conducted within the vicinity of the turbine sites and access roads during the siting process. Inclusive wetland delineations were conducted in the Project Site (i.e., in a 300-foot corridor for access roads, 100-foot corridor for electrical collection lines, and a 500-foot radius surrounding each turbine). The wetland delineations identified wetlands and water bodies that would potentially be temporarily or permanently disturbed as a result of construction or operation of the proposed facilities and also assess the potential for the minor realignment to reduce impacts on wetland resources. This information was then used to adjust the turbine sites and/or roads to avoid impacts to the extent practicable. The field investigation resulted in the delineation of 108 wetlands within the Project Site.

Streams and other surface water bodies were also identified during the field investigations. Section 2.8, Wetlands: Impacts and Mitigation, describes the wetlands that would be directly impacted by the Project. Sections 2.5 and 2.6, Water Quality, discuss the water bodies that were found in the Project Area and the potential impacts on water bodies.

This section presents a summary of the results of the desktop study and field delineations. A more detailed wetland delineation report presenting data from the field investigation is included as Appendix D. The following sections serve as a summary of the methods used to conduct infield investigations and as a review of the potential federal and state protection of existing wetlands delineated within the Project Site. Each wetland is classified based on vegetative composition and hydrologic connectivity.

Preliminary Data Review

Prior to conducting wetland delineations, a desktop analysis was conducted to identify potential wetland areas. Information sources used included color-infrared aerial photographs of the Project Area (see Figure 4-1 in Appendix D), USGS 7.5-Minute Series topographic maps (see Figure 3-1 in Appendix D), United States Fish and Wildlife Service (USFWS) NWI maps (see Figure 4-2 in Appendix D), NYSDEC Freshwater Wetlands maps (see Figure 5-1 in Appendix D), and Franklin County soil surveys (see Figure 3-3 in Appendix D). NWI maps were initially reviewed to identify potential wetland locations. NWI maps were created by aerial interpretation with little or no field verification; therefore, the wetland boundaries are approximate (USFWS 2006). Often times wetlands appearing on NWI maps did not exist in the field. NYSDEC Freshwater Wetlands Maps were used to identify NYSDEC-regulated wetlands. These maps were developed by NYSDEC from a variety of resources including aerial photographs, soil surveys, and some field verification. Similar to NWI maps, the wetland boundaries appearing on NYSDEC Freshwater Wetland Maps are approximate. Four state-regulated wetlands within the Project Area were depicted on the NYSDEC Freshwater Wetland Maps. The Franklin County Soil Survey indicated the presence of poorly drained soils extending beyond the boundaries of the mapped wetlands. Based on the results of the desktop review, it was determined that field verification would be required to determine the presence and extent of wetlands in the Project Area.

Activities within wetlands with an apparent hydrologic connection to waters of the U.S. are regulated by the U.S. Army Corps of Engineers (USACE). Generally, wetlands regulated by NYSDEC have to be 12.4 acres or larger or be formally mapped and designated as "wetlands of unusual local importance." Noble consulted with DEC regarding locally significant communities and have utilized DEC-mapped regulated wetland layers. No wetlands of unusual local importance were identified by the DEC in the Project Area. Some small, isolated wetlands do not fall under the jurisdiction of either agency. The number of wetlands and their regulatory status is described in Table 2.7-1. Final determinations of jurisdiction will be made by the regulatory agencies' subsequent field review.

Table 2.7-1 Chateaugay and Bellmont Field-Delineated Wetland Summary

Wetland Community Type (Cowardin et al. 1979)	No. of Wetlands Delineated	No. of Wetlands Likely under Federal Jurisdiction	No. of Wetlands with No Apparent Connection to Waters of the U.S.	No. of Wetlands Likely under NYSDEC Jurisdiction
PEM	49	21	28	3
PSS	26	19	7	2
PFO1	24	18	6	3
PFO4	8	8	0	0
PFO1/4	1	1	0	3
Total Wetlands Delineated	**108**	**67**	**41**	**10**

Table 2.7-1 Chateaugay and Bellmont Field-Delineated Wetland Summary

Wetland Community Type (Cowardin et al. 1979)	No. of Wetlands Delineated	No. of Wetlands Likely under Federal Jurisdiction	No. of Wetlands with No Apparent Connection to Waters of the U.S.	No. of Wetlands Likely under NYSDEC Jurisdiction
Total Acreage of Wetlands Delineated	91.72	79.83	11.89	13.83

Federally Regulated Wetlands

Section 404 of the Clean Water Act authorizes USACE to issue permits regulating the discharge of dredged or fill materials into the waters of the U.S., including wetlands. There is no minimum size for wetlands to require regulation under federal jurisdiction; however, wetlands that do not have a hydrological connection to waters of the U.S. may not be subject to federal jurisdiction. There are no regulatory maps identifying federally jurisdictional wetlands; however, NWI maps are often used to assist biologists plan field reviews.

State-Regulated Wetlands

Under Article 24 of the New York State Environmental Conservation Law (ECL), New York State regulates wetlands that exceed 5 hectares (12.4 acres) in size or have locally significant ecological value. New York State also regulates a 100-foot adjacent upland buffer area surrounding each regulated wetland to protect the wetland. Work within state-regulated wetlands and the regulated adjacent area, including removal of vegetation, requires a permit from NYSDEC.

2.7.1 Field Delineations and Results

Field surveys were conducted during summer and fall 2006. All wetlands and water bodies, including rivers, streams, drains, and seeps within a wide area survey corridor around the Project facilities were characterized in accordance with the USACE *Wetland Delineation Manual* (Environmental Laboratory 1987) and the NYSDEC *Freshwater Wetlands Delineation Manual* (1995). If a survey point met the criteria for a wetland within the survey corridor, the boundary of the wetland was clearly marked in the field and surveyed using a submeter accuracy global positioning system (GPS) unit. In addition to mapping the wetland boundaries, the functions and values of each wetland were assessed. The functional assessment will be used to determine overall Project impacts and to establish goals for a wetland compensation plan to offset the impacts. Results of the functional assessment are in section 7 of the wetland delineation report.

One hundred eight wetlands (i.e., areas with hydrophytic vegetation, hydric soils, and wetland hydrology) were delineated within the Project Site. See Figure 4-2 of the Wetland Delineation Report (Appendix D) for wetland boundaries. The habitat types and likely federal and state protection of existing wetlands are described below. Additional descriptions are included for state-regulated wetlands because of their dual regulation and their recognized ecological value.

2.7.2 Wetland Descriptions

Wetlands were typically found in conjunction with side-slope seeps or in topographic depressions that collect and hold water from surrounding areas or possibly have some groundwater influence. Large (approximately 10 acres or more) wetland complexes are found within deep or wide valleys and large depressions within the landscape. Smaller (less than 10 acres) wetlands were typically found within bowl-shaped depressional areas or in seepage areas. Many of these smaller wetlands do not have a clear hydrologic surface connection to waters of the U.S. and are referred to as isolated. The wetlands identified as a result of the field delineations were composed of common wetland communities of northeastern New York. Many also exhibited evidence of direct and indirect disturbance as a result of past and present land use. More detailed wetland descriptions are provided in the Wetland Delineation Report in Appendix D.

Table 2.7-1 contains a summary of the number of wetlands of each community type, number of wetlands under federal and state jurisdiction, and a number of wetlands with no apparent hydrological connection to waters of the U.S. The Cowardin et al. (1979) system used to determine community type broadly defines wetland types by hydrology and vegetative stem cover. The wetland classes identified within the Chateaugay Project Site under this classification system include Palustrine Emergent Wetlands (PEM), Palustrine Scrub-Shrub (PSS), Palustrine Needle Leaved Forested Wetland (PFO 4) and Palustrine Needle Leaved Forested Wetland (PFO1).

There are various regional specific plant communities within each class of wetlands. The identification of these specific wetland communities are important in regards to determining the role of a wetland system in the ecology of the surrounding landscape. Brief descriptions of the wetland communities found within the Project Site are provided below. The plant community descriptions were adopted from Edinger (2002).

Shallow Emergent Marsh

A majority of wetlands found in the Project Area are shallow emergent marsh communities. This includes most of the wetlands located in the agricultural and the non- forested areas. There is tremendous variation in characteristics within this community. A shallow emergent marsh can have fluctuations in water depths from 12 inches or more below the soil surface during summer months to 0.5 feet to 3.3 feet (15 cm to 1m) of inundation during flood stages. Within the Project Site, emergent marshes occurred on mineral soils or had a thick layer of peat overlying mineral soils. These wetlands were found within bowl-shaped depressional areas in rolling topography or in linear low-lying drainage areas. A few were riparian wetlands to small intermittent high gradient streams. The vegetative species composition of these wetlands is highly variable. Commonly observed species within the delineated wetlands include reed canary grass (*Phalaris arundinacea*), sensitive fern (*Onoclea sensibilis*), rough stem golden rod (*Solidago rugosa*), asters (*Aster novae-angliea*; *A. vimineous.*), bulrushes (*Scirpus atro-*

virens; *S. cyperinus*), soft rush (*Juncus effusus*), sedges (*Carex* spp.), mannagrass (*Glyceria Canadensis*; *G. striata*), bugleweed (*Lycopus uniflorus*), and jewelweed (*Impatensis capensis*). This community type is a component of many large wetland complexes in the Project Area.

Shrub Swamp

Shrub swamps are defined by having woody vegetation (i.e., trees, shrubs) less than 20 feet (6 meters) tall. This community is also highly variable. It is found in wet depressions, along lakes or rivers, or in transitional areas between a forested wetland and an emergent or open water area. This community type occurs on mineral or organic soils. Within the Project Site, this community is frequently found in reverting agricultural fields and areas of clearing recovery and sometimes in a mosaic with emergent wetlands. Some of these areas have a large number of sapling-sized trees progressing toward a forested wetland. Dominant scrub-swamp species observed include meadow-sweet (*Spiraea latifolia*), steeple-bush (*Spiraea tomentosa*), willows (*Salix* spp.), arrowwood (*Viburnum recognitum*), winterberry (*Ilex verticillata*), red maple saplings (*Acer rubrum*), dogwoods (*Cornus* spp.), and trembling aspen saplings (*Betula tremuloides*). Also categorized within this community and identified within the Project Site are alder thickets. Alder thickets are homogenous stands of dense stems of speckled alder (*Alnus rugosa*). This community is frequently found in association with active and former beaver colonies.

Red Maple Hardwood Swamp

Red maple hardwood swamps are a commonly occurring wetland community. They occur in poorly drained depressions in mineral soils. Within the Project Site, this type of swamp is generally found at the base of hillside slopes or valleys and sometimes exhibits pit and mound topography. The canopy can be exclusively red maple (*Acer rubrum*) or is the dominate species mixed with other hardwoods such as American elm (*Ulmus americana*), trembling aspen (*Populus tremuloides*), and green ash (*Fraxinus pennsylvanica*). If a shrub layer exists, it often times is dense and composed of winterberry (*Ilex verticillata*), arrowwood (*Viburum recognitum*), dogwoods (*Cornus* spp.), willows (*Salix* spp.), and canopy tree saplings. The groundcover, in some instances, within the Project Site is productive.

Spruce-Fir Swamp

This conifer swamp occurs along gentle slopes or slight landscape depressions often associated with groundwater discharge. Swamps of this nature in the region are commonly associated with beaver activity if occurring alongside a waterway. The canopy is generally dense with spruce (*Picea repens*; *Picea marianna*) and balsam fir (*Abies balsamea*). Soils can be mineral or organic but frequently contain a Sphagnum moss matt. The understory is sparse as a result of the shading from the dense canopy. It is also acidic from the leaf litter of the conifers influencing the herbaceous species composition. The wetlands of this community type have a herbaceous understory consisting of expansive thick Sphagnum moss matts with goldthread (*Coptis groenlandica*), asters (*Aster* spp.), bugleweed (*Lycopus uniflorus*), blue flag (*Iris versicolor*), ferns, rushes (*Scirpus* spps.) and sedges (*Carex* spp.).

Northern White Cedar Swamp

Northern White Cedar Swamps are a common community in the Adirondacks and northern New York State. The dominant tree species is northern white cedar (*Thuja occidentalis*) with red maple (*Acer rubrum*) or yellow birch (*Betula alleghaniensis*) in association. Cedar swamps occur in poorly drained depressions and along lakes and streams and on mineral or organic soils. This type of swamp is located in the upper northwest corner of the Project Area and associated with Boardman Brook. Species observed in the understory include raspberries (*Rubus ideaus*), mannagrass (*Glyceria striata*), jewelweed (*Impatiens capensis*), and a few sedges (*Carex* spp.).

Project Area State-Regulated Wetlands

There are four NYSDEC freshwater wetlands (CG-1, CG-3, CG-5, CB-56) present within the Project Area, all of which are Class II. According to NYSDEC, Class II wetlands provide important wetland benefits, the loss of which is acceptable only in very limited circumstances. Impacts on these wetlands are permitted but only if it is determined that the proposed activity satisfies a pressing economic or social need that clearly outweighs the loss of or detriment to the benefit(s) of the Class II wetland. Table 2.7-2 shows the acreage of each NYSDEC-mapped wetland contained within the Project Area.

Table 2.7-2 NYSDEC Freshwater Wetlands Within the Chateaugay Project Area

Wetland ID	Acreage
CG-1	4.68
CG-3*	31.66
CG-5*	10.55
CB-56	12.85
Total Acreage	**59.74**

Source: NYSDEC.
* will not be disturbed by project activities

While the mapped extent of the NYSDEC-mapped wetlands in the Project Area is extensive, field surveys demonstrated that the state wetland complexes are comprised of both wetland and upland communities and the extent of actual wetlands within the Project Site is not significant. Because mapped boundaries for wetlands CB-56 and CG-1 fall within the Project Site, detailed delineations were conducted to identify specific boundary locations in proximity to each of the project components. Descriptions of each state wetland complex within the proximity to the Project Site are discussed below. NYSDEC wetlands CG-3 and CG-5 are more than 500 feet outside the Project Site and project activity will not occur within the regulated adjacent area of these wetlands. Boundaries of these wetland complexes were not field verified for accuracy, and no further description is provided because they will not be disturbed by project activities.

Freshwater Wetland CG-1

Data provided by NYSDEC indicates CG-1 is a Class II wetland, approximately 4.68 acres in size. CG-1 is separated from CB-58 to the east by County Line Road. CB-58 is a larger contiguous forested wetland encompassing approximately 244 acres. Culverts within the road hydrologically connect the two wetlands. Only the extent of NYSDEC Wetland CG-1 falling within the narrow corridor of the electrical collection system was delineated. Wetland CG-1 is characterized as a red spruce-fir swamp with a scrub-shrub component. Common species observed include speckled alder (*Alnus rugosa*), red maple (*Acer rubrum*), red-osier dogwood (*Cornus stolonifera*), sensitive fern (*Onoclea sensibilis*), black spruce (*Picea mariana*), balsam fir (*Abies balsamea*), winterberry (*Ilex verticillata*), royal fern (*Osmunda regalis*), calla lily (*Calla palustris*), and a variety of sedges (*Carex* spp.). Other characteristics of this wetland include highly evident pit and mound topography, evidence of standing water during the growing season, and 16 inches of somewhat decomposed peat over mineral soil.

Freshwater Wetland CB-56

Data provided by NYSDEC indicates that Freshwater Wetland CB-56 is a Class II wetland, approximately 120 acres in size. 12.85 acres are located within the Project Area. This area is within the existing New York Power Authority (NYPA) transmission line. The portion contiguous to the transmission line is a spruce-fir swamp. It serves as the headwaters for a major tributary to Boardman Brook, a class C(t) stream. Because of the periodic clearing associated with the maintenance of the power line, the wetlands that fall within the right-of-way (ROW) are emergent with some scattered patches of shrubs (E & E-Mapped Wetlands Nos. W88, W89, W90, W91, and W92). Common species found within these community types include speckled alder (*Alnus rugosa*), pussy willow (*Salix discolor*), goldenrods (*Solidago canadensis*; *S. rugosa*; *S. umbellatus*), broadleaf cattail (*Typha latifolia*), and sensitive fern (*Onoclea sensibilis*). The remaining wetlands (W68, W69, and W70) are forested wetlands with a significant shrub understory. The species composition of these wetlands includes balsam fir (*Abies balsamea*), red maple (*Acer rubrum*), trembling aspen (*Populus tremuloides*), American elm (*Ulmus americana*), winterberry (*Ilex verticillata*), meadowsweet (*Spirea latifolia*), and a number of herbs.

2.8 Wetlands: Impacts and Mitigation

The Project will result in temporary and permanent impacts on wetlands. The majority of impacts are associated with disturbance caused by construction and will be temporary. These impacts are described in Section 2.8.1.

The wetland impact discussion provided in this section is broken down by impacts during construction and impacts resulting from operation of Project facilities. Temporary impacts will affect wetlands during filling or excavation where the Project Site will be restored to pre-construction contours and elevation. Temporary impacts are associated with portions of the Project Site that will only be necessary during construction. Therefore, the temporary nature of these impacts, which relates to grading and placement of fill, will not result in the permanent loss of forest cover. Permanent loss of forest cover is discussed under operation impacts along with permanent placement of fill and potential future impacts from maintenance activities. Noble will file appropriate permit applications with USACE and NYSDEC. A summary of USACE and NYSDEC regulations pertaining to wetlands is provided in Section 2.7, Wetlands: Environmental Setting.

Construction of the access roads, collection lines, transmission lines, and turbine staging areas will result in temporary disturbance of a total of 0.88 acres of wetlands. Of this, 0.47 acres are federal jurisdictional, 0 acres are state jurisdictional, and the remaining 0.41 acres are likely to be non-jurisdictional based on determinations of isolation. Post-construction, the wetland areas temporarily impacted will be returned to pre-construction contours and revegetated. Permanent impacts on all jurisdictional and non-jurisdictional wetlands associated with the operation of the Windpark will be limited to a total of 0.09 acres. Of this total, fewer than 0.01 acres of permanent impacts will be on federal and state jurisdictional wetlands. Table 2.8-1 below presents the breakdown of the temporary and permanent impacts on jurisdictional wetlands and non-jurisdictional wetlands by project component.

Table 2.8-1 Noble Chateaugay and Bellmont Windparks Roll-up of Wetland Impacts from Project Components

Component	Area of Temporary Impact (acres)	Area of Permanent Impact (acres)	Area of Impact within NYSDEC Regulated Buffer (acres)
Isolated Wetlands			
Access Roads	0.17	0.05	0
Turbines and Crane Pads	0.06	0.04	0
Staging Area	0.1	0	0
Collection system	0.08	0	0
Isolated total	0.41	0.09	0
Jurisditional Wetlands			0
Access Roads	0.04	<0.01	0
Turbines and Crane Pads	0	0	0

Table 2.8-1 Noble Chateaugay and Bellmont Windparks Roll-up of Wetland Impacts from Project Components

Component	Area of Temporary Impact (acres)	Area of Permanent Impact (acres)	Area of Impact within NYSDEC Regulated Buffer (acres)
Staging Area	0	0	0
Collection system	0.43	<0.01	2.11
Jurisdictional total	0.47	<0.01	2.11
Project Total	0.88	0.09	2.11

Maintenance of the ROWs for the electrical collection line will result in some long-term changes in the functions and values of a number of forested wetlands. These include the permanent conversion of forested wetland to scrub-shrub or emergent wetland. Approximately 0.43 acres of forested wetland will be permanently converted. In addition, operation of the Project will also result in impacts on 2.11 acres of upland adjacent area regulated by New York State around state jurisdictional wetlands.

2.8.1 Construction Impacts

Temporary impacts will affect wetlands during filling and excavation activities while the Project Site is restored to pre-construction contours and elevation. During Project construction, wetlands will be temporarily disturbed in order to provide sufficient access to accommodate construction equipment and staging areas at each turbine location to safely and efficiently erect the turbines. Installation of the electrical collection system will also result in temporary disturbance. Where possible, access roads will be co-located with existing logging roads, trails, and hedgerows (within the agricultural fields). Portions of access roads required solely for construction access, turbine staging areas, turbine base, and electrical collection system corridors will be restored to previously existing conditions.

Turbines

Each turbine will require a staging area 200 x 200 feet to stage turbine parts and position construction equipment around the turbine site. Sufficient space is needed around the turbine base to maneuver equipment and avoid safety hazards for construction workers. The staging areas were placed around the turbines to avoid impacts on wetlands as much as possible while still providing a safe and functional work space to erect the towers. Turbines were sited considering this construction condition; however, required setbacks and minimization of impacts on agricultural uses and forestlands constrained the location of three turbine staging areas. Unavoidable temporary impacts will occur on non-jurisdictional wetlands with the turbine staging areas for turbines T17, T14, and T26. This will result in 0.16 acres of temporary impacts on wetlands. There will be no jurisdictional wetlands impacted by the turbine staging areas. Vegetation will be cleared within the staging area and, if necessary, the staging area will be graded to be nearly level. The site contours of the turbine staging areas have been designed to utilize the existing base contours rather than importing significant fill volumes.

After construction, the contours within wetland areas will be restored to the extent possible while maintaining the integrity of the turbine base. The staging areas will also be revegetated. Field investigations have identified the wetlands impacted by these turbine staging areas to be isolated and, therefore, non-jurisdictional.

Access Roads

Approximately 0.21 acres of wetlands will be temporarily impacted by construction of access roads. Of this, 0.04 acres are likely jurisdictional. Construction impacts within wetlands will include the clearing of vegetation and grading within a 40-foot construction road corridor. The actual temporary access road width for construction will be 30 feet. While a maximum 60-foot corridor will be utilized in upland areas to provide safe egress and ingress of construction vehicles to the turbine sites, the narrower 40-foot disturbance corridor will be used in wetland areas to minimize impacts. Culverts and fords will be installed during road construction in appropriate areas to maintain wetland hydrology while the roads are in place. Typical design drawings of these methods are included in Exhibit A Construction Drawings (Drawings RD3-8). Noble will require a permanent access road ROW of 16 feet to each turbine. The permanent access road width will be 12 feet with the additional 4 feet available, if necessary, to build up when below grade to meet the necessary 12 foot road width. Post-construction, the additional road width required for construction will be removed.

Collection Lines

Approximately 0.48 acres of temporary wetland impact will result from the installation of the underground electrical collection system, of which, 0.40 acres are likely under federal jurisdiction with none under state jurisdiction. Although there will be no temporary impacts on NYSDEC-jurisdictional wetlands, there will be less than 0.01 acres of permanent impact associated with the pole plants and 2.11 acres of state jurisdictional adjacent area will be impacted by the overhead electrical collection line. Further discussion of the permanent wetlands impacts and state jurisdictional adjacent area can be found in Section 2.8.2.

Impacts on wetlands located within the electrical collection system corridors will be temporary in nature and limited primarily to the clearing of forested and woody vegetation. The clearing is necessary for equipment movement and pole plants. These areas will be returned to pre-construction contours and will be allowed to revegetate to an emergent or scrub-shrub community where feasible. Electrical collection lines will be installed below ground immediately adjacent to the operational access roads. Electrical collection lines will be installed between some of the clusters. The installation will require a disturbance corridor of 22 feet for one circuit and 32 feet for two circuits. The lines will be placed inside a narrow trench with an impervious bedding material and backfilled with native material. The narrow collection system trench will not create an impervious boundary as to not cause any alteration in the subsurface hydrology of wetlands. No permanent filling of wetlands will occur. Pre-existing contours will be restored after the trench is backfilled, and the area will be allowed to revegetate to an emergent or scrub-shrub state. These areas will be maintained to prevent reestablishment of trees. Approximately 0.24 acres of jurisdictional forested wetland will be converted as a result of the installation of the underground collection lines.

2.8.2 Project Facility Impacts

Facilities associated with the operational phase of the Project will have minimal impacts on wetlands. Operational facilities will result in approximately 0.09 acres of permanent impact, of which less than 0.01 acres are under federal and state jurisdiction. In addition, 2.11 acres will be impacted in the area adjacent to NYSDEC wetland CB-56. One turbine (26) and the associated crane pad and four roads will be located within the delineated boundary of wetlands that has been determined by E & E to be non-jurisdictional. These determinations will be field verified by NYSDEC and USACE during their review of permit applications for the Project.

Some overhead collection lines will be installed adjacent to existing roads and within the existing NYPA ROW. While the electrical collection system will result in permanent impacts associated with pole plants placed in the wetlands, maintenance of the overhead line will result in a permanent conversion of forested wetland to scrub-shrub or emergent cover types. Approximately 0.24 acres of forested wetland will be converted. In addition to the conversion of cover type, NYSDEC-jurisdictional wetlands are located within the County Line Road and NYPA ROW collection corridor. Some disturbance will also be necessary within the 100-foot jurisdictional adjacent area around the wetlands. Approximately 2.11 acres of adjacent area will be impacted. Based on the nature of the Project, any impacts within the regulated adjacent areas are expected to have only minimal impacts on the wetlands.

Noble will selectively prune along the overhead collection lines for continued operational safety. While no herbicides are currently planned to be used in the maintenance of any facilities, their use may be considered in the future for spot treatment and control of invasive species within the corridors.

Additional information regarding the wetlands to be impacted is included in the wetland delineation report in Appendix D.

2.8.3 Mitigation

A multi-phased siting process was undertaken to minimize impacts on wetlands to the greatest extent practicable. Constraints considered in locating Project facilities included wetlands, topography, optimal utilization of the wind resource, locations of residential dwellings, landowner access agreements, and proximity to other proposed turbines. Despite an extensive effort to avoid wetland impacts, because of other constraints and the linear nature of some Project components, it was not possible to design the Project without minimal impacts on wetlands while still meeting Project objectives. The process undertaken by Noble to minimize wetland impacts in the design of this Project is described below.

Siting Process

A wetland study was conducted to determine the extent and quality of wetlands with the potential to be impacted by the Project. The wetlands study consisted of a desktop review of existing wetland location information and mapping, reconnaissance level wetland surveys, and detailed wetland delineations. Each phase of the wetland study was used to refine siting for the Project facilities to minimize impacts on wetlands while balancing impacts on other resources.

The desktop review indicated that wetlands under state and federal jurisdiction were likely to exist within the Project Area. Based on the results of the desktop review, field reconnaissance-level surveys were conducted to develop general siting constraints. The general locations of large wetlands were identified, wetlands and streams were buffered, and these areas were blocked for consideration for turbine siting. Wetlands were considered along with other constraints, and a preliminary turbine layout was developed.

A second round of reconnaissance-level surveys was conducted based on the preliminary turbine layout. The primary purpose of the surveys was to refine the preliminary turbine locations to ensure that each site had sufficient space to locate the turbine and associated workspaces outside of wetlands. In addition, preliminary access road routes were identified during this field effort. Project engineers conducted an initial desktop review of the preliminary access roads, and a wetland delineation field survey corridor was established.

Detailed wetland delineations were conducted within a wide survey corridor of the Project Site based on preliminary siting of facilities. The objective of the detailed wetland delineations was to identify and document wetlands that would potentially be temporarily or permanently disturbed as a result of construction or operation of the proposed facilities. The survey corridor generally included a 300-foot corridor centered on access roads, a 100-foot corridor on collection lines, and a circular area with a 500-foot radius around each turbine location. In some areas, the Project Site and survey corridor were restricted by property access or other factors, while in other areas it was expanded (i.e., additional areas were examined to ensure that regulated buffers adjacent to NYSDEC-regulated wetlands were accounted for). The delineated wetland boundaries were added to facility mapping and used to further refine the location of turbine sites, roads, and electrical collection to avoid and minimize impacts on wetlands to the extent practicable.

Best Management Practices During Construction

Best Management Practices (BMPs) during construction will be implemented to minimize impacts on wetland hydrology. Where necessary, appropriately sized culverts, fords, or matts will be installed to maintain hydrology during construction and operation. Noble will use a patented trenching operation that will not leave open cuts during the installation of underground utilities; therefore, impacts on drainage patterns are not anticipated. Trench plugs will be used as required and installed immediately after trench excavation in order to maintain hydrologic conditions. Soil compaction could also alter wetland hydrology. BMPs that will be used to mitigate soil compaction include use of geotextiles to prevent soil compaction and segregation of topsoil and subsoil to be replaced within wetland areas during restoration to pre-existing contours. Typical drawings depicting these methods are included in Appendix A. Erosion-control measures will also be implemented to ensure wetlands will not be impacted as a result of sedimentation. These measures are outlined in a draft Stormwater Pollution Prevention Plan (SWPPP) included in Appendix R.

Invasive Species Concerns

NYSDEC has identified purple loosestrife (*Lythrum salicaria*), Japanese knotweed (*Polygonum cuspidatum*), and common reed (*Phragmites australis*) as potential invasive species threats within the Project Area. During field surveys, the presence of these invasive species within wetlands occurring within or adjacent to the Project Site was noted. These species were observed in small patches in areas outside of the Project Area within the U.S. Route 11 corridor. Appropriate measures will be taken to avoid the spread or allow new invasions in the wetland areas disturbed during construction. An invasive-species management plan will be developed with consultation from NYSDEC and USACE prior to construction within wetland areas and will include control measure,s and monitoring procedures, and measures to prevent the spread of invasive species.

Compensatory Wetland Mitigation

For those jurisdictional wetland impacts that cannot be avoided, mitigation will be required as a condition of the wetland disturbance permits. Within the DEC and USACE permitting requirements, compensatory mitigation can only be considered after the Project proponent demonstrates avoidance and minimization to the extent possible. Depending on agency input and local availability of existing mitigation opportunities, the mitigation may also take the form of a consolidated mitigation plan combining several of the available mitigation options.

Noble has considered multiple compensatory wetland mitigation options based on USACE guidelines. Based on USACE guidance, mitigation can be completed either financially, in the form of in-lieu-fee mitigation, land acquisition for preservation purposes, regional mitigation banking, or in the form of a specific wetland restoration, creation, or enhancement project developed in conjunction with the Project. A conceptual mitigation plan is included in Appendix E.

The compensatory mitigation plan is designed to maintain and/or improve wetland functions, values, and ecological integrity within a diversity of land use and provide for preservation of these areas to compensate for losses incurred during the construction and operation of the Project. The goal of the mitigation plan will be to restore, create, and/or enhance wetland hydrology and hydric soil conditions to adequately offset the loss of function and value to the jurisdictional wetlands on the site resulting from Project implementation.

A final plan will be developed in conjunction with regulatory agencies as part of the permitting process.

2.9 Biological Resources: Environmental Setting

Land use within the Project Area is generally agriculture (hay and row crops), forestland, and abandoned agriculture within various stages of succession. The surficial geology of the Project Area is composed of glacial till on nearly level to rolling topography. The general character of the landscape is a mosaic of mostly secondary northern hardwood and coniferous forests, open agricultural fields, some mid-successional reverting fields, and large wetland complexes lying in valleys. The Project Area offers a variety of plant communities capable of providing habitat to a broad wildlife population. Wildlife associated with these communities is typical of what would be found throughout much of northern New York State. Wildlife species are present in low numbers throughout the Project Area, as the habitats are somewhat fragmented and vary in size. Other species that thrive in edge communities and in association with agriculture are very common. Further discussion of the wildlife within the Project Area can be found in Section 2.9.2.

Only the forested lands and reverting agricultural lands are discussed in detail in this section because they support the majority of the natural habitats available in the Project Area. A brief discussion of the water bodies and wetlands within the Project Area are provided in Sections 2.5 through 2.8. Detailed discussions of the water bodies and wetlands within the Project Area are provided in Appendix D of this report.

2.9.1 Vegetation

This section provides a discussion of existing vegetative communities and habitat conditions in the Project Area. Section 2.9.1.1 describes upland vegetative communities found in the Project Area. Section 2.9.1.2 discusses wetland and aquatic habitat. Section 2.9.1.3 discusses threatened and endangered plant species in the Project Area.

2.9.1.1 Upland Vegetative Communities

Figure 2-9 is a map depicting the observed ecological communities. Upland communities in the Project Site were categorized according to Edinger et al. (2002), which was developed as part of the Natural Heritage Program (NHP) to provide a standard classification system for environmental impact statements. The classification system in Edinger incorporates the NHP's global (G) and state (S) rarity ranking system, which was developed by the Nature Conservancy. The global rank reflects the rarity of the community throughout the world, and the state rank reflects its rarity within the State of New York. The system is based on a scale of 5 to 1, in which 5 represents secure habitats and 1 represents those that are the most vulnerable. Global ranks for communities are not currently standardized by the Nature Conservancy; thus, the ranks listed in the community descriptions are estimated global ranks (Edinger et al. 2002).

The Project Area is a patchwork of vegetative cover types with large contiguous areas of agricultural and forest land. Nine upland ecological communities were identified during field visits. The dominant woodland community generally is a successional northern hardwood forest as a result of historic clearing for agriculture as well as abandonment from excessive stoniness or slope. Those areas that were not cultivated show evidence of historic silviculture practices based on the species composition and stand age. Timbering activities have continued to occur throughout the area. As a result, forested areas are in various stages of maturity, stem density, canopy cover, and structure. There are also large areas of reverting agricultural land and wetlands. Wetland habitats and water bodies are not specifically described in this Section or delineated on Figure 2-9. Because of the likelihood of crop rotation and conversion of pastureland, the three agricultural uses (cropland/row crops, cropland/field crops, and pasturelands) have been combined into a single category (agricultural) on Figure 2-9.

A detailed description of vegetation associated with each community type, as observed during field surveys, is provided below. To give a more complete overview of the communities, a list of typical wildlife associated with each community type is included in Section 2.9.2.

Successional Northern Hardwood Forest

Rank: (G5) (S5)
Status: Secure

Description. A broadly defined community consisting of deciduous hardwoods or mixed deciduous and coniferous forests. Forest structure is evenly aged with tree sizes ranging from sapling (<6-inch diameter at breast height [DBH]) to 12 inches DBH. Tree species present are moderately shade tolerant to shade intolerant, typically propagate through wind dispersed seeds, and are well adapted to colonizing disturbed areas.

Distribution. Found within the Project Area where clearing and logging activities have impacted forest communities.

Vegetation.

- **Overstory:** The canopy is usually dominated by any variation of quaking aspen (*Populus tremuloides*), red maple (*Acer rubrum*), pin cherry (*Prunus pensylvanica*), black cherry (*Prunus serontina*), green ash (*Fraxinus pennsylvanica*), and American elm (*Ulmus americana*).

- **Understory/Shrub Layers:** A very mixed and diverse layer typically consisting of seedlings of the overstory and usually thick patches of meadowsweet (*Spirea latifolia*) and Viburnums (*Viburnums trilobum*; *V. lentago*; *V. recognotum*).

- **Herbaceous Layers:** Vegetation occurring in this community is sparse and can include goldenrods (*Solidago canadensis*; *S. rugosa*.), timothy (*Phleum pretense*), bluegrasses (*Poa pratense*; *P. compressa*), orchard grass (*Dactylis* *glomerata*), assorted asters (*Aster* spp.), ragweed (*Ambrosia artemisiifolia*), and hawkweeds (*Hieracium* spp.).

Hemlock-Northern Hardwood Forest

Rank: (G4/G5) (S4)
Status: Secure

Description. These mixed forests are usually found on moist, well-drained soil associated with mid elevation slopes of ravines or margins of swamps. The forest structure can be evenly or unevenly aged depending on silvicultural practices. The majority of the trees are mature. Canopy is closed.

Distribution. Found within the steep ravines along the Chateaugay River and Boardman Brook.

Vegetation.

- **Overstory:** The canopy is dominated by hemlock (*Tsuga canadensis*) and may have sparse representatives of yellow birch (*Betula allegheniensis*), sugar maple (*Acer saccharum*), American beech (*Fagus grandifolia*), red maple (*Acer rubrum*), black cherry (*Prunus serontina*), and basswood (*Tilia americana*).

- **Understory/Shrub Layers:** Typically the canopy is thick thus allowing only a sparse shrub layer typically comprised of raspberries (*Rupus* spp.).

- **Herbaceous Layers:** This layer commonly consists of wood ferns and shining clubmoss.

Beech-Maple Mesic Forest

Rank: (G4) (S4)
Status: Secure

Description. A hardwood forest community occurring on moist to well-drained, acidic soils consisting of predominantly mature trees with a complete canopy. The forest structure can be evenly or unevenly aged depending on silvicultural practices.

Distribution. Beech-Maple Mesic Forest is a common community found throughout the Project Area.

Vegetation.

- **Overstory:** Co-dominated by sugar maple (*Acer saccharum*) and American beech (*Fagus grandifolia*). Regional and edaphic variants exist because this is a broadly defined community. Common trees present in smaller numbers are

American elm (*Ulmus americana*), basswood (*Tilia americana*), black cherry (*Prunus serotina*), white ash (*Fraxinus americana*), yellow birch, red maple, and Eastern hop hornbeam (*Ostrya virginiana*). Some hemlock (*Tsuga canadensis*) and a few red spruce (*Picea repens*) can be present in low densities. Hemlock can be locally dominant on steeper slopes within the larger beech-maple forest.

- **Understory/Shrub Layers:** Typically dominated by reproductive sugar maple and beech seedlings and saplings.

- **Herbaceous Layers:** Species in the herbaceous layer include wood ferns (*Dryopteris spps.*) and jack-in-the-pulpit (*Arisaema triphyllum*).

Pine Plantation
Rank: (G5) (S5)
Status: Secure

Description. A stand of pines planted for windbreaks, wildlife habitat, cultivation and harvest of timber products, landscaping, or erosion control. These areas can be monocultures of one species of pine or a mixed stand consisting of a dominant pine species with two or more in lesser percentages. Forest age structure is evenly aged. Canopy is closed.

Distribution. There are a few small pine plantations located in the central and southwest regions of the Project Area.

Vegetation.

- **Overstory:** The pine plantation in the central region of the Project Area consist of white pine (*Pinus strobus*). In the southwest portion of the Project Area, the plantations consist of a mix of white pine and Scotch pine (*P. sylvestris*).

- **Understory/Shrub Layers:** Sparse because of dense overstory and accumulation of acidic leaf litter.

- **Herbaceous Layers:** Sparse because of accumulation of leaf litter.

Spruce-Northern Hardwood Forest
Rank: (G3/G4) (S3/S4)
Status: Secure

Description. A broadly defined community comprised of a mixed coniferous and deciduous forest found on lower mountain slopes and upper margins of flats on glacial till.

Distribution. Found in natural, undisturbed areas.

Vegetation.

- **Overstory:** Red spruce (*Picea repens*), balsam fir (*Abies balsamea*), sugar maple (*Acer saccharum*), yellow birch (*Betula allegheniensis*), and beech (*Fagus grandifolia*) comprise the canopy in variant mixtures depending on location and soil type.

- **Understory/Shrub Layers:** The understory typically consists of seedlings of the above-mentioned trees along with striped maple (*Acer pensylvanicum*), dogwoods (*Cornus* spps.), and viburnums (*Viburnum trilobum*; *V. lentago*; *V. recognitum*).

- **Herbaceous Layers:** This layer typically contains wood ferns (*Dryopteris* spps.), shining clubmoss (*Lyopodium lucidulum*), and goldthread (*Coptis trifolia*).

Balsam Forest

Rank: (G4/G5) (S2/S3)
Status: Certain

Description. A conifer forest almost exclusively composed of balsam fir (*Abies balsamea*) found on flat to moderate slopes with rich mesic, mineral soils. Forest structure is unevenly aged with a closed canopy and a dense understory of young balsam fir.

Distribution. A balsam forest is found in the southern section of the Project Area.

Vegetation.

- **Overstory:** Predominantly balsam fir (*Abies balsamea*) in a pure stand or mixed with a minority of red or black spruce (*Picea rubens*; *P. mariana*), yellow birch (*Betula allegheniensis*), or red maple (*Acer rubrum*).

- **Understory/Shrub Layers:** This layer tends to be sparse of species other than young balsam fir.

- **Herbaceous Layers:** The herbaceous layer consists of heavy mats of moss and sparse clusters of wood ferns (*Dryopteris* spps.).

Successional Shrubland
Rank: (G4) (S4)
Status: Secure

Description. Shrublands are defined as consisting of at least 50% cover of shrubs. Within the Project Area, successional shrublands frequently occur in fields, pastures, or areas of clearing and disturbance. This complex can range from old fields spotted with shrubs to a dense thicket, depending on disturbance or past land use.

Distribution. This community is common throughout the Project Area. It is typical of abandoned farmland and forestland after major removal activities.

Vegetation.

- **Overstory:** None

- **Understory/Shrub Layers:** Characteristic and observed shrubs include hawthorne (*Crataegus* spp.), dogwoods (*Cornus* spp.), choke cherry (*Prunus virginiana*), raspberries (*Rubus* spp.), black choke berry (*Aronia meloncarpa*), sumac (*Rhus glabra*), arrowwood (*Viburnum recognitum*), and meadowsweet (*Spirea latifolia*) - also can have patches of trembling aspen (*Populus tremuloides*).

- **Herbaceous Layers:** The herbaceous layer typically is composed of bluegrasses (*Poa pratensis*; *P. compressa*), timothy (*Phleum pretense*), orchardgrass (*Dactylis glomerata*), reed canary grass (*Phalaris arundinacea*), goldenrods (*Solidago cannadensis*; *S. rugosa*), common milkweed (*Ascelpias syriaca*), and other common opportunistic herbs.

Successional Old Field
Rank: (G4) (S4)
Status: Secure

Description. A meadow community, found in abandoned areas of past clearing or plow activity, dominated by grasses and forbs.

Distribution. Because of the abundance of abandoned agricultural land throughout the Project Area, successional old fields are common.

Vegetation.

- **Overstory:** None

- **Understory/Shrub Layers:** Shrubs may be present but represent less than 50% coverage and include raspberries (*Rubus* spp.), sumac (*Rhus typhina*), arrowwood (*Viburnum recognitum*), and cranberry (*Viburnum trilobum*).

- **Herbaceous Layers:** Vegetation occurring in this community typically includes goldenrods (*Solidago canadensis*; *S. rugosa*.), timothy (*Phleum pretense*), bluegrasses (*Poa pretense*; *P. compressa*), orchard grass (*Dactylis glomerata*), assorted asters (*Aster* spp.), ragweed (*Ambrosia artemisiifolia*), and hawkweeds (*Hieracium* spp.).

Agricultural Lands
Rank: (G5) (S5)
Status: Secure

Description. This joint community encompasses cropland/row crops, cropland/field crops, and pastureland. Cropland/row crops within the Project Area are typically planted with corn, potatoes, and soybeans. Cropland/field crops are agricultural fields planted with alfalfa, wheat, timothy, and oats. Pastureland is agricultural land maintained or recently abandoned for the use of grazing livestock. Pastureland understory can also consists of various tree saplings, shrubs, and bramble (*Rubus* spps.) species depending on location. Pastureland herbaceous layers consist of goldenrods, bluegrasses, orchard grass, and reed canary grass, among others. The Project Area is in a largely agricultural region where land uses periodically change to accommodate the needs of the farmer. A field may be utilized for hay and pasture one year, left fallow and then possibly plowed under for crops. For this reason and the purposes of this report, the three ecological communities mentioned above have been combined under the heading Agricultural Lands.

Distribution. A majority of the Project Area consists of Agricultural Lands.

2.9.1.2 Wetland Vegetative Communities
Several wetland community types exist within the Project Area. Generally, the large wetland complexes found within deep valleys and depressions within the landscape are typically forested wetlands. According to the Cowardin et al. (1979) Classification system, these systems are referred to as Palustrine Broad-Leaved Deciduous Forested and Palustrine Coniferous Forested Wetlands. Many wetlands adjacent to agricultural land exhibit evidence of disturbance such as clearing. The plant community is comprised of shade intolerant species such as trembling aspen, green ash, and meadowsweet and sapling-sized red maple. The understory is productive but not highly diverse and dominated by common species such as soft rush (*Juncus effusus*), wool grass (*Scirpus cyperinus*), and sensitive fern (*Onoclea sensibilis*). Some of these areas have also been influenced by beavers (*Castor canadensis*). The other wetland systems located within large expansive forested areas are typically mature balsam fir and spruce swamps. The un-

derstory consists of a thick *Sphagnum* moss mat with cinnamon fern (*Osmunda cinnamomea*), royal fern (*Osmunda regalis*), and a variety of other herbs.

There are many smaller wetlands located throughout the Project Area. These systems are typically emergent wetlands with some having scrub-shrub components found in slight depressional areas. Many do not have an obvious hydrologic surface connection to a water body and are referred to as isolated. These systems generally exhibit signs of disturbance by agriculture. The disturbance ranges from historic ditching, draining, clearing, and filling, to active farmland. The plant communities are comprised of common species. Frequently observed dominant species include sensitive fern, rough stem goldenrod (*Solidago rugosa*), asters (*Aster vimineous*; *A. novea angliea*; *A. umbellatus*), meadowsweet, raspberry, pussywillow (*Salix discolor*), and Viburnums (*Viburnum lentago*; *V. trilobum*; *V. cassinoides*). Invasive species such as reed canary grass and bluegrasses (*Poa pratensis*; *P. compressa*) are usually co-dominant with the native species listed previously.

A more complete description of each vegetative community is provided in the Wetland Delineation Report, a copy of which is attached to the DEIS as Appendix D.

Aquatic Habitat

There are a relatively few number of streams and ponds within the Project Site. Detailed discussion of these water bodies is presented in Sections 2.5 and 2.6, Water Quality, and Appendix D. A brief discussion is included here to facilitate understanding of the general ecology of the Project Area.

The Chateaugay River is the largest aquatic system and flows through the westernmost portion of the Project Area. The Chateaugay River is a large coldwater river supporting a variety of fish assemblages including brook, rainbow, and brown trout. Boardman Brook is the only other fluvial habitat capable of supporting fish. Boardman Brook is a somewhat high gradient stream confined within a deep valley. Within the Project Area, Boardman Brook demonstrates both perennial and intermittent flow characteristics. Perennial flow occurs only in the western portion of the Project Area. This characteristic predominantly allows for the propagation of only small stream dwelling fishes such as black nose dace (*Rhinichthys atratulus*), common shiner (*Notropis cornutus*), and fathead minnow (*Pimephales promelas*). The aquatic invertebrate community is typical of cool water and gravelly cobble, substrate streams within watersheds of heavy agricultural land use. There is a small riparian wetland adjacent to the stream within the confines of the delineation corridor. Generally, the riparian area has a forested component with low vegetative diversity as a result of the disturbances within the riparian area from agricultural activities adjacent to the stream and within the watershed.

The majority of the streams observed are intermittent or ephemeral tributaries to Boardman Brook, the Chateaugay River, or to wetland complexes. Stream substrate varies and includes boulder, cobble, gravel, sand, silt, and mud. Bank heights range from 0 to 10 feet and widths range from 2 to 20 feet. Since these streams typically flow seasonally or only during high precipitation events, they support little to no aquatic life. Streams observed during field investigations typically occurred within mature forests with a closed canopy or were associated with emergent and scrub-shrub wetlands.

2.9.1.3 Threatened and Endangered Plant Species and Communities

The United States Fish and Wildlife Service (USFWS) and New York State Department of Environmental Conservation (NYSDEC) Natural Heritage Program (NHP) were consulted to determine the potential occurrence of federally and state-listed endangered and threatened species and significant natural communities and habitats within the Project Area (see Appendix C). Federally listed threatened and endangered plant and animal species are protected by the Endangered Species Act of 1973, which is administered by the USFWS. State-listed threatened and endangered plant and animal species are protected by the New York State Environmental Conservation Law, Articles 9 and 11, which is administered by NYSDEC.

The USFWS and NHP provided data detailing the known occurrences of threatened, endangered, and species of concern and rare communities within the Project Area. Existing databases track species that are protected by law as well as unprotected species that are identified as species of concern. The existing databases also track significant community assemblages. Although not specifically protected by law, these areas are recognized for their rare/unique features as well as their greater likelihood of providing habitat for protected species.

According to the USFWS, no federally listed or proposed endangered or threatened plant species are known to occur in the Project Area (Stilwell 2006). In addition, no federally designated or proposed "critical habitat" exists within the Project Area.

Based on correspondence with the NHP, no state-listed or proposed endangered or threatened plant species or plant communities are known to occur in the Project Area.

2.9.2 Wildlife

This section provides a discussion of wildlife in the Project Area. Section 2.9.2.1 lists common wildlife associated with each vegetative community found in the Project Area. Section 2.9.2.2 discusses threatened and endangered species, and Section 2.9.2.3 discusses wildlife of local significance.

2.9.2.1 Common Wildlife Species Associated with Vegetative Communities

The communities delineated and presented on Figure 2-9 are largely determined by the vegetative composition of the Project Area. Section 2.9.1.1 discusses the nine upland ecological communities in the Project Area, and Section 2.9.1.2 briefly discusses wetlands, with more detailed discussions provided in Appendix D. Typical wildlife species are discussed in association with the upland communities and wetlands. However, many species may have habitat requirements that overlap between community types or may have a respective habitat niche that comprises a small portion of the community. Bird species are discussed separately in Section 2.11, Bird and Bat Resources: Environmental Setting.

Table 2.9-1 identifies fauna common to each of the vegetative communities and habitats described in Section 2.5.1 and Appendix D.

Table 2.9-1 Typical Wildlife Species Associated with Vegetative Communities

Successional Shrubland
Eastern cottontail (*Sylvilagus floridanus*), gray fox (*Urocyon cinereargenteus*), hairy-tailed mole (*Parascalops breweri*), least shrew (*Cryptotis parva*), meadow vole (*Microtus pennsylvanicus*), raccoon (*Procyon lotor*), red fox (*Vulpes vulpes*), striped skunk (*Mephitis mephitis*), and white-tailed deer (*Odocoileus virginianus*).
Balsam Forest
Bats (*Lasiurus/Myotis* spp.), black bear (*Ursus americanus*), eastern chipmunk (*Tamias striatus*), fisher (*Martes pennanti*), flying squirrel (*Glaucomys* sp.), gray fox, opossum (*Didelphis virginiana*), porcupine (*Erethizon dorsatum*), raccoon, red squirrel (*Tamiassciurus hudsonicus*), snowshoe hare (*Lepus americanus*), and white-tailed deer. Also American toad (*Bufo americanus*), dusky salamanders (*Desmognathus* spp.), red eft-phase of red-spotted newt (*Notophthalmus viridescens viridescens*), and woodland salamanders (*Plethodon* spp.).
Successional Old Field
Eastern cottontail, gray fox, hairy-tailed mole, least shrew, meadow vole, raccoon, red fox, striped skunk, white-tailed deer, and woodchuck (*Marmota monax*).
Beech-Maple Mesic Forest
Bats, eastern chipmunk, flying squirrel, gray squirrel (*Sciurus carolinensis*), opossum, porcupine, raccoon, and white-tailed deer. Also American toad, dusky salamanders, mole salamanders (*Ambystoma* spp.), red eft-phase of red-spotted newt, and woodland salamanders.
Pine Plantation
Red squirrel and snowshoe hare.
Spruce-Northern Hardwood Forest
Bats, black bear, eastern chipmunk, fisher, flying squirrel, gray fox, gray squirrel, opossum, porcupine, raccoon, and white-tailed deer. Also American toad, dusky salamanders, red eft-phase of red-spotted newt, and woodland salamanders.

Table 2.9-1 Typical Wildlife Species Associated with Vegetative Communities

Agriculture
Big brown bat (*Eptesicus fuscus*), black bear, coyote (*Canis latrans*), eastern cottontail, hoary bat (*Lasiurus cinereus*), red fox, striped skunk, white-tailed deer, and woodchuck.
Successional Northern Hardwood Forest
Eastern chipmunk, eastern cottontail, gray fox, gray squirrel, opossum, porcupine, red bat (*Lasiurus borealis*), red squirrel, and striped skunk. Also, northern red-back salamander (*Plethodon cinereus*) and northern spring salamander (*Gyrinophilus porphyriticus porphyriticus*).
Hemlock-Northern Hardwood Forest
Bats, eastern chipmunk, fisher, flying squirrel, gray fox, gray squirrel, opossum, porcupine, raccoon, red squirrel, and white-tailed deer. Also, American toad, dusky and woodland salamanders, and red eft-phase of red-spotted newt.
Wetland Vegetative Communities
Beaver (*Castor canadensis*), muskrat (*Ondatra zibethicas*), river otter (*Lontra canadensis*), star-nosed mole (*Condylura ristata*), and water shrew (*Sorex palustris*). Also, mole salamanders, northern water snake (*Nerodia sipedon*), and various frog, salamander, toad and turtle species.
Aquatic Habitats
River otter and mink (*Mustela vison*). Also, mudpuppy (*Necturus maculosus*), painted turtle (*Chrysemys picta*), red-spotted newt, and various frogs and toads. Macroinvertebrates and small, warm-water fish species, including blacknose dace (*Rhinichthys atratulus*), creek chub (*Semotilus atromaculatus*), darters (*Etheostoma* spp.), and fathead minnow (*Pimephales promelas*). In addition, trout species may occur in some portions of the Project Area. Class C(t) streams have the potential to contain cold water fish species including brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*), and rainbow trout (*Oncorhynchus mykiss*).

Source: NYSDEC 2006b; DeGraaf and Yamasaki 2001; Chambers 1983.

2.9.2.2 Threatened and Endangered Animal Species and Communities

According to the USFWS, except for transient individuals, no federally listed or proposed endangered or threatened animal species are known to occur in the Project Area (Stilwell 2006). In addition, no federally designated or proposed "critical habitat" exists within the Project Area. According to the USFWS, bald eagles are known to nest 18 miles from the Project Area (Stilwell 2006). Bald Eagles are often found near aquatic systems, such as lakes, reservoirs, and major rivers and tend to nest in large trees near these waterways. The USFWS has expressed concern pertaining to the potential for wind projects, in general, to affect migratory birds and threatened or endangered bat species (such as the Indiana Bat [*Myotis sodalis*]). A more detailed discussion of bird and bat species including an assessment of potential impacts on bird and bat species in the Project Area is provided in Sections 2.11 and 2.12, Bird and Bat Resources, and Appendix F of this DEIS.

In addition to the standard analysis of project areas for potential occurrences of threatened or endangered plant and animal species, the NHP has developed specific criteria for wind power projects. NHP now reports all records of bird species occurring within a 10-mile radius of identified project areas (Ketchum 2005). Records of bat colonies and bat species of concern occurring within a 40-mile radius are also reported.

Based on correspondence with the NHP, state-listed endangered or threatened animal species that are known to occur within 10 miles of the Project Area include upland sandpiper (*Bartramia longicauda*) and common loon (*Gavia immer*). These bird species are discussed under Bird Species in Sections 2.11 and 2.12.

The NHP identified one species of special concern, the eastern small-footed myotis (*Myotis leibii*), within 40 miles of the Project Area. An assessment of potential impacts on bat species is provided in Appendix F and in Sections 2.11 and 2.12 of this DEIS. *Species of special concern* are species of fish and wildlife found by the department to be at risk of becoming either endangered or threatened in New York. Species of special concern do not qualify as either endangered or threatened, as defined in Part 182.2(g) and 182.2(h), at this time and are not subject to the provisions of Part 182. Species of special concern are listed in Part 182.6(c) for informational purposes only. These species are discussed below in Section 2.9.2.3.

Although no significant communities were identified within the Project Area, the NHP identified three bat colonies within 40 miles of the Project Area: one in Bellmont, Franklin County and two in Ausable, Clinton County. No threatened or endangered bat species were specifically identified by NHP.

2.9.2.3 Wildlife or Wildlife Communities of Local Significance

This section presents information on species that are not afforded federal or state protection but are locally important resources or are species of special concern including white-tailed deer (*Odocoileus virginianus*) and black bear (*Ursus americanus*). White-tailed deer wintering concentration areas have local significance because the white-tailed deer is a locally important game species. Black bears (*Ursus americanus*) are discussed because they are the largest mammals with the potential to occur in the Project Area.

Deer Wintering Concentration Areas

Regionally important habitats are habitats that have no specific legal protection but, on a regional level, are important because of their recreational, economic, or ecological value. A prime example of this within the Project Area is deer wintering concentration areas. Although not threatened or endangered, the white-tailed deer is valued from a recreational standpoint.

Despite having a wide-ranging habitat, dense conifer stands play a very important role in deer biology, providing forage and cover during harsh winter conditions. In New York, deer may concentrate into 30% to 60% of their total habitat during mild winters, 13% of their total habitat during moderate winters, and 9.7% of their total habitat during severe winters (Fried et al. 1977). Deer wintering concentration areas are general areas where deer congregate during harsh winter conditions. These areas typically contain a significant coniferous component that offers cover from winter weather.

While hemlock-hardwood mixed forest exists throughout the Project Area, dense coniferous stands within the Project Area are limited. Deer likely congregate in the hemlock hardwood mixed forests and in pine plantations throughout the Project Area during the hardest part of the winter.

Black Bear Habitat

Three areas in New York State are considered Core Bear Ranges by NYSDEC (NYSDEC 2005a): the Adirondack Range, the Catskill Range, and the Allegany Range. Only marginal habitat for the black bear is present in the Project Area based on the preponderance of agricultural land and the lack of larger tracts (consisting of 500+ acres) of contiguous forest.

Black bears are opportunistic omnivores adapted for living on fruits, nuts, insects, and other small items that are easily digestible and low in cellulose. They prefer forested areas with small clearings and dense understory. Water must be readily available and well distributed throughout their range. For this reason, wetland and riparian habitats are usually associated with suitable bear habitats (Rogers and Allen 1987). Although bears are typically found in large, contiguous forests, they will utilize open and developed areas where thick cover is readily available (NYSDEC 2005a).

Based on these habitat requirements and preferences, the majority of the Project Area can be considered potential black bear habitat. The Project Area contains several forested areas but not sizable enough to support a sustainable population of black bear. Raspberry, blackberry, and apple trees are common in the reverting fields and recently logged forested areas, providing an ample food source. Individual bears are likely to wander into the Project Area to feed, but they are not considered residents.

2.10 Biological Resources: Impacts and Mitigation

The following section describes the potential impacts on the ecological communities and associated wildlife species from the construction and operation of the Chateaugay Windpark and Bellmont Windpark. Impacts on aquatic and wetland communities are not emphasized in this section but are discussed in Sections 2.6, Water Quality: Impacts and Mitigation, and 2.8, Wetlands: Impacts and Mitigation. As recognized from other active wind development projects throughout the United States, operation of a Windpark does have the potential to impact bird and bat species. These potential impacts are discussed in Section 2.12, Bird and Bat Resources: Impacts and Mitigation. Where feasible, Noble has sited project facilities to avoid fragmentation of forested habitat, avoid wetlands and aquatic habitat, and minimize impacts on wildlife. A discussion concerning the efforts undertaken to mitigate the potential effects to biological resources in the Project Area is included in section 2.10.3.

2.10.1 Construction Impacts

2.10.1.1 Upland Vegetation

Based on field surveys, the largest percentage of forested vegetation impacted by the Project falls within the beech-maple forest community. Other forest communities affected include spruce-northern hardwood forest, hemlock-northern hardwood forest, balsam forest, and successional northern hardwoods. Although this will result in a local reduction in the amount of available forest habitat, the total reduction in forested areas is minor in comparison to the overall acreage of forested land located in the Project Area (approximately 3,450 acres). In addition, this reduction is generally consistent with tree loss that occurs as a result of logging activities and maintenance of logging roads in these areas. The existing mosaic of land uses within the region, including agricultural lands and early successional stages of forest land indicate that disturbance is a common occurrence in this landscape.

Other upland communities impacted by project facilities include successional old fields, successional shrublands, and agricultural land (cropland and pastureland). These communities are routinely subjected to disturbance or have been subjected to past disturbance, and are a result of revegetation following disturbance.

Primary impacts on upland vegetation will include the removal of existing vegetation through minimal clearing of forested, shrub/scrub, and herbaceous vegetation as part of construction activities. Secondary effects may include increased soil erosion and a localized reduction in available wildlife habitat. Clearing and grading associated with Project construction has the potential to result in mobilization of soil once the vegetation has been removed. Soil mobilization will be most problematic on slopes, which are more susceptible to erosion. These potential impacts are most likely to occur in conjunction with access roads and the collection system because the turbine sites will be located on relatively level ground.

2.10.1.2 Wetlands and Aquatic Habitat

Impacts from construction on aquatic and wetland communities are discussed in Sections 2.6, 2.8, and Appendix D.

2.10.1.3 Threatened and Endangered Plant Species

No threatened or endangered vegetation or plant communities were identified within the Project Area during the field survey efforts. Therefore, no impacts on threatened and endangered plant species are expected as a result of construction of the Project.

2.10.1.4 Common Wildlife

Significant impacts on most wildlife species are not expected as a result of construction of the Project. Most species are expected to avoid the area of the Project Site during the active construction period. Some limited mortality may occur to less mobile species during the course of construction. Indirect impacts on wildlife will also occur as a result of habitat alteration associated with construction of the Project. However, these impacts are not expected to be significant. The anticipated loss of habitat is minimal when compared with available habitat in the Project Area. In addition, the impacts on habitat are consistent with activities that already occur throughout the Project Area such as ground disturbance and tree removal associated with farming and logging activities. It is anticipated that wildlife in the Project Area are accustomed to disturbance of this nature and will either relocate to other adjacent suitable habitat or, upon cessation of construction, make use of areas temporarily disturbed as revegetation takes place.

2.10.1.5 Threatened and Endangered Wildlife Species

Based on consultation with the USFWS and NHP, except for transient individuals, no non-bird threatened or endangered animal species or communities were identified within the Project Area. Therefore, no impacts on non-bird threatened and endangered animal species are expected as a result of construction of the Project. Potential impacts on bird species are discussed in Section 2.12 with a detailed risk assessment in Appendix F.

The NHP identified one non-bird species of special concern, the Eastern small-footed Myotis (*Myotis leibii*), within 10 miles of the Project Area. An assessment of potential impacts on bat species is provided in Appendix F and in Section 2.12 of this report.

2.10.1.6 Species of Local Significance

Direct impacts on deer and black bear as a result of construction of the Project will be temporary and limited to discourage use of the areas where construction occurs. Although the Project will result in the removal of some potential forested habitat, the clearing required for construction and operation of Project facilities will result in new understory growth and additional herbaceous/scrub-shrub habitats. Depending on species composition of the re-growth, these habitats could provide new foraging areas for both deer and bear.

According to NYSDEC, deer typically congregate in the hemlock hardwood mixed forests and in pine plantations throughout the Project Area during the hardest part of the winter. Because construction of the Project will impact only a limited amount of hemlock-hardwood forest and white-tailed deer rely more on the these ecological communities during harsh conditions, the Project is not likely to impact deer wintering concentration areas.

Since it is likely that black bears are only a transient visitor to the Project Area, construction of the Project is not expected to have an impact on black bears. Transient individuals will tend to avoid construction activities.

Within the Project Area, the Chateaugay River has a valuable trout fishery and is important locally for recreation. It also is the only trout spawning habitat within or near the Project Area (See Section 2.5, Water Quality: Environmental Setting). While Boardman Brook is classified by DEC as a trout stream, field investigations reveal the habitat available for cold water fish is poor. Although these trout streams are not directly impacted by the Project, there is limited potential for indirect impacts to spawning habitat in the Chateaugay River. Trout may be affected by the disturbance to the soil within the watershed leading to excessive siltation. A Stormwater Pollution Prevention Plan (SWPPP) will be implemented to prevent and control erosion and sedimentation (see Appendix R for a draft SWPPP).

Any construction or disturbance in or near protected streams or their tributaries must be permitted through NYSDEC and USACE. The conditions contained within the permits issued by the agencies will serve to further protect these important natural resources.

2.10.2 Project Facility Impacts

2.10.2.1 Upland Vegetation

Maintenance of the windpark will result in primary impacts on upland vegetation at some locations. Vegetation will be permanently removed from the turbine pedestal, turbine crane pad, and 12-foot-wide permanent access road corridor. The remainder of the Project footprint will be allowed to naturally revegetate, although it will be subject to periodic removal of woody vegetation to maintain a herbaceous or scrub-shrub state, especially adjacent to access roads and within the collection system corridor. The degree of impact is dependent on the type and amount of vegetation to be cleared, the rate of revegetation, and the frequency of maintenance (clearing/mowing) during operation of the Project.

Noble does not expect to use herbicides or pesticides to control vegetation or pests along access roads and turbine maintenance areas. Generally, these areas are not expected to promote vegetation growth because of the use of geotextile fabric and gravel construction as well as the periodic use of the access roads by vehicles. In some cases, herbicidal spot control of invasive species might be required. If herbicide or pesticide use should become necessary, Noble will comply with applicable laws and best practices standards.

2.10.2.2 Wetlands and Aquatic Habitat

Impacts on aquatic and wetland communities are discussed in Sections 2.6, 2.8, and Appendix D.

2.10.2.3 Threatened and Endangered Plant Species

No threatened or endangered plant species or plant communities were identified within the Project Site through consultation with the USFWS and NHP or during the field survey efforts. Therefore, permanent Project facilities will not impact threatened or endangered plant species.

2.10.2.4 Common Wildlife

Significant impacts on most wildlife species are not expected as a result of operation of the Project. As recognized from other active windparks throughout the United States, operation of the windpark does have the potential to impact bird and bat species. These potential impacts are discussed in Section 2.12.

Operation of the Project is expected to result in minimal loss of wildlife habitat as compared with available habitat in the Project Area. In addition, the impacts on habitat are consistent with activities and conditions that regularly occur throughout the Project Area, such as mowing of vegetation, access-road use associated with farming and logging activities, and tree removal. It is anticipated that wildlife in the Project Area are accustomed to disturbance of this nature but if disturbed by operation of the Project will relocate to other adjacent suitable habitat or adapt to post-construction site conditions.

2.10.2.5 Threatened and Endangered Wildlife Species

Based on consultation with the USFWS and NHP, except for transient individuals, no non-bird threatened or endangered animal species or communities were identified within the Project Area. Therefore, no impacts on non-bird threatened and endangered animal species are expected as a result of operation of the Project. Potential impacts on bird species are discussed in Section 2.12. The NHP identified one non-bird species of special concern, the Eastern small-footed Myotis (*Myotis leibii*), within 10 miles of the Project Area. An assessment of potential impacts on bat species is provided in Appendix F and in Section 2.12 of this report.

2.10.2.6 Species of Local Significance

Deer wintering concentration areas are general areas where deer congregate during difficult winter conditions. These areas typically contain a significant coniferous component that offers cover/protection from winter weather. Operation and maintenance of the windpark may slightly increase traffic within these wintering areas. However, use of the access roads will be infrequent and consistent with current winter-use levels throughout the area (i.e., snowmobile trails). While the operation of the windpark may slightly increase traffic and human presence in areas where only minimal disturbance occurs, bears would be expected to avoid direct interaction with humans.

2.10.3 Mitigation

The overall impact of the Project on vegetation and wildlife is anticipated to be minimal because of careful site planning. To minimize impacts on vegetation, aquatic habitat, fish, and wildlife, facilities have been sited, to the extent practicable, within previously disturbed areas such as reverting farm fields and along existing farm roads and areas where recent logging has occurred. Where possible, the access roads and collection system have been located within areas with minimal tree growth, such as edges of active/inactive farm fields or co-located with existing logging roads. After initial siting of the facilities, the Project-component locations were modified during field surveys to avoid sensitive areas such as wetlands and high-quality habitats to the greatest extent practicable. Prior to the submittal of the Applications to the Towns, the facilities were relocated or eliminated to reduce impacts primarily on forested habitat, streams, and wetlands based on field verification and mapping of existing resources and proposed facilities.

Where construction activities will require the removal of any trees of economic value, landowners will be compensated in accordance with their individual easement agreements. Road and collection lines located within forested areas will be periodically maintained to prevent re-establishment of trees or provide adequate overhead clearance for safe access, leaving these corridors in a herbaceous or scrub-shrub state.

Impacts on biological resources will be further minimized through the implementation of BMPs to stabilize the ground surface and allow for successful revegetation following construction of the Project. A more detailed discussion of the BMPs will be included in the SWPPP that will be prepared prior to construction (see Appendix R). The SWPPP will include erosion-control structures that will be utilized to prevent an off-site migration of soil from disturbed areas.

2.11 Bird and Bat Resources: Environmental Setting

A Bird and Bat Risk Assessment (BBRA) was prepared for this project. That document, which is included as Appendix F of this DEIS, provides a detailed discussion of existing environmental setting for birds and bats in the Project Area and an assessment of the potential risks to these resources. The discussions presented in this Section and Section 2.12 summarize the information presented in Appendix F and the supporting field studies.

2.11.1 Birds

2.11.1.1 Seasonal Bird Overview

Migrating Birds (Spring and Fall)

The primary bird migration seasons in the Project Area are spring and fall. Typical of New York State and the northeast in general, the migrations of certain bird groups are as follows:

- Raptors (e.g., hawks, falcons, eagles, and vultures) migrate primarily between mid-March and mid-May and then between September and early November;
- Passerines (i.e., songbirds) primarily migrate between mid-April through May and between late August through October; and
- Waterbirds (e.g., waterfowl, herons, and shorebirds) migrate primarily between mid-March and mid-May and then between September and mid-November.

Raptor migration areas in New York State are well documented and locations where large numbers (thousands to tens of thousands) of migrating raptors occur are already known. There are 13 sites in New York State that regularly report results to the Hawk Migration Association of North America (HMANA) database (hawkwatch.org). Most of these prime raptor migration locations are along the Great Lakes (in spring) and in the lower Hudson Valley (in fall). In spring, raptor migration is concentrated along the southern shores of the Great Lakes as raptors avoid crossing large bodies of water. Migratory raptors are also found in concentrated numbers along prominent ridgelines. There are no raptor monitoring locations (i.e., "hawk watches") in Clinton or Franklin Counties (www.hawkcount.org; Zalles and Bildstein 2000). The closest hawk watch is the Eagle Crossing Hawk Watch along the St. Lawrence River in St. Stanislas de Kostka, Quebec, approximately 25 miles northwest of the Project Area, where modest raptor numbers (fewer than 4,000) are tallied each spring. As the Project Area is not proximate to the shorelines of the Great Lakes, large bodies of water, or lengthy ridgelines, raptor migration is diffuse and without regularly occurring concentration points. There are no geographical or topographical features in the Project Area that attract or concentrate large numbers of migrating raptors.

Migratory raptor surveys (spring and fall) were conducted in the Project Area. A total of 47 raptors of 12 species were recorded during three days of spring 2006 raptor surveys, 40 of which were considered to be migrants. The migratory passage rate was 1.9 raptors/hour. Over the same three survey days, the Eagle Crossing Hawk Watch in southwest Quebec tallied 393 raptors with a passage rate of 18.5 raptors/hour. During surveys in fall 2006, E & E observed a total of 34 migrants and eight local raptors of five species. The migratory passage rate was 1.6 raptors/hour. No concentrated flight paths were identified in either spring or fall and the findings were consistent with the existing knowledge of the bird resources in the region (see Appendix F).

Unlike most migrating raptors, migrating passerines (i.e., songbirds) do not generally avoid crossing large bodies of water or migrate in concentrated numbers along ridgelines. However, they do concentrate in stopover points following nocturnal migration. These stopover points are often along geographical or topographical features (i.e., shorelines of large lakes or oceans) or isolated patches of habitat. No geographical or topographical features in the Project Area that attract or concentrate migrating passerines in greater numbers than elsewhere in the region were identified. Outside of such concentration areas, passerine migration is typically diffuse over a broad front. No information on migration studies (i.e., radar studies) in the Project Area or Franklin County was identified during the literature review. Two nocturnal radar studies in close proximity to the Project Area were conducted in 2005 and were evaluated in the BBRA along with a nocturnal radar study conducted in the Project Area in 2006 (see discussion in Section 2.11.1.2 and in Appendix F). A spring migratory bird survey was conducted at 28 points in the Project Area on May 18, 2006. A total of 389 birds of 53 species were identified. The most numerous species recorded were Red-winged Blackbird (55 birds), American Robin (45 birds), and Song Sparrow (42 birds). The species observed were all expected based on the habitat, location, and time of year, and the findings were consistent with the existing knowledge of the bird resources in the region (see Appendix F).

There are no large water bodies or extensive wetlands with open water in the Project Area to attract substantial numbers of waterbirds (i.e., waterfowl or shorebirds) during migration. The closest areas to the Project Area with wetland habitat conducive for concentrated waterfowl migration are the St. Lawrence River (to the north and west of the Project Area) and Lake Champlain (to the east of the Project Area); however, these locations are distant and do not result in strong passage of ducks or shorebirds through the Project Area. However, there can be concentrated movements of geese. In fall, typically late October and through mid-November, large numbers of geese migrate through Franklin and Clinton counties and often congregate in agricultural fields. There is a repeat pattern in spring, typically from mid-March through mid-April. Northern New York, primarily near Lake Champlain, is a pathway for migration of Canada Geese and Snow Geese (Mitchell and Krueger 1997; Gretch 1990). Mitchell and Krueger (1997) indicated that flocks of Canada Geese numbering in the thousands stop every spring and fall to feed in the fields along Lake Champlain, especially north of Plattsburgh to Rouses Point and also at Lake Alice Wildlife Management Area (WMA). Flocks of about 10,000 Snow Geese use the wetlands along Lake Champlain at Point Au Roche as a staging area (Mitchell and Krueger 1997). Both Canada and Snow Geese are also abundant near the Project Area in the Town of Malone, with thousands being observed approximately 12 miles west of the Project Area (Peterson 2006). Many of the areas of maximum use mentioned are east of the Project Area, but there is still a pronounced migration throughout appropriate habitat in Franklin and Clinton Counties during the peak periods. With the exception of geese, there is not a strong passage of waterbirds in or near the Project Area.

Breeding Birds (Late Spring and Summer)

Late spring and summer is the primary season for avian breeding in the Project Area. Breeding activity in and/or near the Project Area has been documented by the New York State Breeding Bird Atlas projects and the North American Breeding Bird Survey (see Appendix F). E & E also conducted two breeding bird surveys in the Project Area in June 2006. A total of 327 birds of 42 species were recorded during the two surveys and the findings were consistent with the existing knowledge of the bird resources in the region (see Appendix F). Given the relatively uniform habitat in the Project Area, there is not a very high diversity of breeding species.

Wintering Birds

Large concentrations of birds do not winter in the Project Area and diversity is low because of the harsh climate and lack of sufficient food sources. Most species present in other seasons (e.g., warblers, flycatchers, and thrushes) migrate south for the winter, leaving only year-round species that are not seasonally displaced (e.g., Great Horned Owl and Pileated Woodpecker) and some species (e.g., American Tree Sparrow and Rough-legged Hawk) that travel south from more northern climates to winter in northern New York. Regional Christmas Bird Count (CBC) data provide an overview of species that would be anticipated to occur in the Project Area during the winter in appropriate habitat (see Appendix F).

2.11.1.2 Nocturnal Radar Study

Woodlot Alternatives, Inc. (Woodlot) conducted a nocturnal radar study between April 15 and May 31, 2006, and between September 1 and October 15, 2006, to analyze the spring and fall nocturnal migration of birds and bats over the Project Area. The results of the study, including passage rates, flight altitude, and flight direction are summarized in this section and provided in Appendix F in further detail.

Passage Rates

The overall nocturnal radar passage rate from the spring 2006 study was 360 ± 37 targets/km/hr. Nocturnal passage rates were highly variable from night to night, ranging from 54 to 892 targets/km/hr, with a general peak between May 13 and

May 25, 2006. Hourly passage rates had some variation throughout the night and the lowest mean rates occurred during the first hour after sunset and in the hour before sunrise.

The overall nocturnal radar passage rate from the fall 2006 study was 643 ± 63 targets/km/hr. Nocturnal passage rates were highly variable from night to night, ranging from 38 to 1,373 targets/km/hr, with a general peak between September 16 and September 22, 2006. Hourly passage rates had some variation throughout the night, with the maximum mean rates occurring two hours after sunset and the lowest mean rates occurring in the three hours prior to sunrise.

The overall mean passage rates in spring and fall were within the range of historical results from similar radar studies in the northeast (see Appendix F). The spring 2006 passage rate was above average compared to these other studies and was higher than the two spring radar studies conducted within five miles of the survey location in spring 2005. The fall 2006 passage rate was high compared to these other studies and was much higher than the two radar studies conducted within five miles of the survey location in fall 2005. While these data might be interpreted as reflecting site-specific conditions that result in increased migration, Woodlot indicated that passage rates throughout the northeast in fall 2006 were greater than those documented by Woodlot in 2004 and 2005, possibly attributed to fewer nights of optimal migrating conditions because of the extended periods of inclement weather. Woodlot concluded that the results of the 2006 surveys indicate that bird migration patterns are generally similar to patterns observed at other sites in the region.

Flight Altitude

The mean nocturnal flight altitude based on vertical radar sampling in spring 2006 was 409 ± 26 meters agl, with a range among nights of 161 to 790 meters agl. The mean nocturnal flight altitude based on vertical radar sampling in fall 2006 was 431 ± 17 meters agl, with a range among nights of 271 to 673 meters agl. The spring and fall results are very similar, and they are consistent with similar radar studies conducted in the northeast (see Appendix F) and existing literature regarding the flight of nocturnal migrants (Kerlinger 1989; Mabee et al. 2006; Smithsonian Migratory Center 2006). Mean flight altitudes were variable throughout the study periods. There was some variation in mean flight altitudes throughout the night and the lowest mean altitudes occurred just after sunset and just prior to sunrise. Approximately 18% of all nocturnal targets in spring 2006 and approximately 8% of all nocturnal targets in fall 2006 flew below 120 meters agl, a close approximation to the maximum turbine height. These percentages are consistent with similar radar studies conducted in the northeast. The mean flight altitudes were 311 meters and 289 meters higher than the maximum turbine height; therefore, the majority of migration occurs well above the height of the proposed turbines.

Flight Direction

The mean flight direction of targets observed on radar was 48 ± 68° in spring and 212 ± 88° in fall. This indicates that the predominant flight direction was north-northeast in spring and to the southwest in fall, which is consistent with the expected seasonal migration flight directions.

2.11.1.3 Bird Species Identified and Review of Listed Species

During the bird surveys and other activities in the Project Area, E & E identified a total of 87 species in the Project Area (see Table 2.11-1).

Table 2.11-1 Bird Species Identified during E & E Surveys and Site Work in the Project Area

Common Name		
Snow Goose	Alder Flycatcher	Black-throated Blue Warbler
Canada Goose	Least Flycatcher	Yellow-rumped Warbler
Mallard	Eastern Phoebe	Black-throated Green Warbler
Ruffed Grouse	Great Crested Flycatcher	Blackburnian Warbler
Wild Turkey	Eastern Kingbird	Black-and-white Warbler
Great Blue Heron	Blue-headed Vireo	American Redstart
Turkey Vulture	Warbling Vireo	Ovenbird
Osprey (SC)	Red-eyed Vireo	Northern Waterthrush
Bald Eagle (T)	Blue Jay	Mourning Warbler
Northern Harrier (T)	American Crow	Common Yellowthroat
Sharp-shinned Hawk (SC)	Common Raven	Scarlet Tanager
Northern Goshawk (SC)	Purple Martin	Chipping Sparrow
Red-shouldered Hawk (SC)	Tree Swallow	Vesper Sparrow (SC)
Broad-winged Hawk	Barn Swallow	Savannah Sparrow
Red-tailed Hawk	Black-capped Chickadee	Song Sparrow
Rough-legged Hawk	Red-breasted Nuthatch	White-throated Sparrow
Golden Eagle (E)	Eastern Bluebird	Dark-eyed Junco
American Kestrel	Veery	Rose-breasted Grosbeak
Killdeer	Hermit Thrush	Indigo Bunting
Wilson's Snipe	Wood Thrush	Bobolink
Ring-billed Gull	American Robin	Red-winged Blackbird
Rock Pigeon	Brown Thrasher	Eastern Meadowlark
Mourning Dove	European Starling	Common Grackle
Yellow-bellied Sapsucker	American Pipit	Brown-headed Cowbird
Downy Woodpecker	Cedar Waxwing	Baltimore Oriole
Hairy Woodpecker	Nashville Warbler	Purple Finch
Northern Flicker	Yellow Warbler	House Finch
Pileated Woodpecker	Chestnut-sided Warbler	American Goldfinch
		House Sparrow

87 total species observed

State-endangered (E) and threatened (T) species and species of special concern (SC) are noted with parentheses after the common name.

NYSDEC maintains a list of bird species that are considered endangered (9 species), threatened (10 species), or of special concern (19 species) within the State of New York, inclusive of several federally listed species. Information was reviewed from various sources, including E & E field surveys, Breeding Bird Atlas (BBA) projects, Franklin County and Clinton County birding references, and other available data to determine the potential occurrence of endangered, threatened, or special concern species in the Project Area (see Appendix F for more detail).

Eight endangered, threatened, or special concern species have been observed in the Project Area in recent years, including:

- Golden Eagle (state-endangered): It is considered extirpated as a breeder in New York State. E & E observed one second-year eagle in April 2006 during spring raptor surveys. It is a very rare transient or migrant over the Project Area;

- Bald Eagle (state- and federally threatened): This species is a migrant and transient over the Project Area; however, location/habitat within the Project Area is not ideal for breeding. E & E observed one high-flying adult above the raptor survey location in April 2006;

- Northern Harrier (state-threatened): This species is considered fairly common in northern New York. It was categorized as a probable breeder during the 2000-2005 BBA in blocks that include the Project Area and it may breed in the Project Area. This species was observed on multiple occasions during E & E raptor surveys and other field visits;

- Osprey (special concern): It is a migrant and transient over the Project Area; however, the habitat within the Project Area is not suitable for breeding. Migrants were observed by E & E on two occasions in April 2006 during spring raptor surveys;

- Sharp-shinned Hawk (special concern): Location/habitat in the Project Area is suitable for breeding. Four were observed in April 2006 during spring raptor surveys in the Project Area;

- Northern Goshawk (special concern): Location/habitat in the Project Area is suitable for breeding. E & E observed one during spring raptor survey in April 2006 in the Project Area;

- Red-shouldered Hawk (special concern): Location/habitat in the Project Area is suitable for breeding. Two migrants were observed during E & E's spring raptor surveys and two were observed during a fall raptor survey in the Project Area;

- Vesper Sparrow (special concern): Location/ habitat in Project Area is suitable for breeding and it was characterized as a possible and a probable breeder during the 2000-2005 BBA in blocks that include the Project Area. E & E observed at least one singing male in April and May 2006 in the Project Area; and

- Many species (Upland Sandpiper [threatened], Sedge Wren [threatened], Cooper's Hawk [special concern], Common Nighthawk [special concern], Whip-poor-will (special concern), Red-headed Woodpecker [special concern], Horned Lark [special concern], Golden-winged Warbler [special concern], Grasshopper Sparrow [special concern], and Henslow's Sparrow [threatened]) have been observed in nearby towns or counties and/or the habitat is suitable for breeding, but none was observed in the Project Area. Peregrine Falcon (endangered), Short-eared Owl (endangered), and Common Loon (special concern) likely migrate over the Project Area; however, none of these species were documented in the Project Area.

2.11.2 Bats

2.11.2.1 Regional Overview

This section discusses general bat ecology and habitat preference for bat species found in New York State. Very limited information specific to the Project Area was identified during the literature review. Nine species of bats utilize the various landscapes found in the State of New York (see Table 2.11-2).

Table 2.11-2 Bat Species of New York, Habitat Types, and Abundance

Common Name	Scientific Name	Average Body Size (inches)	Preferred Habitats		Abundance
			Summer	Winter	
Small-footed Myotis	*Myotis leibii*	2.9-3.2	Hemlock stands, rock crevices, tree bark, urban structures	Regional hibernacula, rock outcropping	Uncommon; state species of special concern
Indiana Bat	*Myotis sodalis*	2.9-3.9	Exfoliating bark, cavities, dead trees in riparian corridors	Regional Hibernacula	Uncommon; federally endangered
Little Brown Bat	*Myotis lucifigus*	2.4-4.0	Tree cavities, urban structures	Regional Hibernacula	most common
E. Long-eared Bat	*Myotis septentrionalis*	3.2-3.8	Tree cavities, exfoliating bark, barns, eves, shingles	Regional Hibernacula	Uncommon to common
Eastern Pipistrelle	*Pipistrellus subflavus*	3.0-3.6	Tree foliage, leaf litter	Regional Hibernacula	Uncommon to common
Eastern Red Bat	*Lasiurus borealis*	3.6-4.6	Dense riparian tree foliage	Migrates outside region?	Uncommon (status uncertain in NY); most common tree-roosting bat
Hoary Bat	*Lasiurus cinereus*	5.1-5.9	Tree foliage	Migrates outside region?	uncommon (status uncertain)

Table 2.11-2 Bat Species of New York, Habitat Types, and Abundance

Common Name	Scientific Name	Average Body Size (inches)	Preferred Habitats: Summer	Preferred Habitats: Winter	Abundance
Silver-haired Bat	*Lasionycteris noctivagans*	3.6-4.6	Tree cavities, exfoliating bark in coniferous forested stands, and rock crevices	Migrates outside region?	Uncommon (status uncertain)
Big Brown Bat	*Eptesicus fuscus*	3.4-5.4	Tree cavities, exfoliating bark, urban structures	Regional hibernacula, buildings, urban structure	Common

Source: Cornell University 2001; NYSDEC 2005c; Williams et al. 2002.

Habitats utilized by these species include wetlands, agricultural and reverting fields, forests, and cities with a variety of micro-habitats used for foraging, roosting, and maternity roosting. Bats thrive in these various habitats as they are proficient predators of insect populations. Generally bats are solitary outside of mating, hibernation periods, and rearing of young, although some colonial roosting does occur. The most common species of bats (e.g., Little Brown Bat, Big Brown Bat, Eastern Pipistrelle, and Red Bat) have adapted to a multitude of habitat types including human-altered landscapes. As such, these species are assumed to utilize the Project Area.

The remaining bat species tend to be found only in densely forested stands and are not expected to be found regularly in the Project Area. The Indiana Bat, which is federally protected, has not been identified in the Project Area and is not expected to be present.

Specialized habitats required for bats include winter hibernacula, where bat species congregate during hibernation periods (November through March). Identified hibernacula include limestone caves, old mines, and old well shafts. Most bats require a moderated constant temperature and humidity provided by the hibernacula to survive over the winter. Measures have been taken by state and federal agencies in the last decade to protect important bat hibernacula habitats, as any disturbances during critical hibernation periods can be detrimental to large populations of bats as well as individual bat species. Bats return in fall to established hibernacula. Some New York bats migrate relatively short distances to these locations, and some winter in small hibernacula near their summer roosting areas or migrate further south to warmer climates following foraging sources, where shorter periods of hibernation may occur.

Summer roosts are generally daytime or nighttime roosts, where bats will spend the entire day resting or portions of the night resting. Day roosts for New York bats can vary between buildings, exfoliating bark, tree cavities, rock piles, and caves, dependent on species-specific preferences. No roosting areas were found in the Project Area during site visits or as indicated in the literature.

Although no threatened or endangered bat species or significant bat communities were identified within the Project Area, the Natural Heritage Program (NHP) identified three bat colonies within 40 miles of the Project Area. One colony is located south of Upper Chateaugay Lake in the Town of Bellmont, Franklin County, approximately 15 miles south of the Project Area, and two colonies are in the Town of Ausable near Lily Pond Hill and Arnold Hill, both of which are approximately 33 miles southeast of the Project Area (Conrad 2006). No threatened or endangered bat species were specifically identified by NHP at these locations. NHP did identify the Eastern Small-footed Myotis (*Myotis leibii*), a species of special concern within New York State, as being associated with the bat colonies in the Town of Ausable, but not at the Bellmont bat colony. The state- and federally endangered Indiana Bat was not identified as occurring in or near the Project Area; see Section 2.11.2.2 and Appendix F for more information regarding this species.

2.11.2.2 Bat Habitat Surveys

Habitat surveys of the Project Area were conducted during various field efforts throughout spring, summer, and fall 2006. Surveys identified no major rock outcroppings, cave dwellings, or hibernacula where bats may roost within the Project Area. Based on the mosaic of habitat types found throughout the Project Area, suitable habitat was identified for the most common bat species that would be expected to occur in the Project Area. The acoustical monitoring surveys (see next section) confirmed their presence in the Project Area.

No suitable hibernacula were identified within the Project Area, nor were any areas found meeting the specific summer roost and maternity roost habitats for the state- and federally endangered Indiana Bat. The Project Area does not contain significant timber stands of the necessary age or species composition to provide suitable habitat for this species. Silvicultural and agricultural practices have eliminated contiguous tracts of mature timber (with cavities and exfoliating bark). These current land use practices coupled with the lack of defined water courses largely eliminates the potential for suitable habitat to exist within the Project Area. Based on the known locations of Indiana Bat hibernacula and the distance that separates the hibernacula from the Project Area, it is unlikely that there would be any migration through the Project Area. Migration corridors would be expected to trend east of the Project Area, toward the lower Lake Champlain Valley.

2.11.2.3 Acoustical Monitoring for Bats

Woodlot conducted acoustical monitoring for bats with AnaBat detectors between April 16 and June 8, 2006, and between July 25 and October 4, 2006. The results of these studies are summarized in this section and provided in detail in Appendix F.

Spring 2006 Study

Two detectors were deployed at different heights in a met tower in the Project Area from the night of April 16 to the night of June 8, 2006, yielding a total of 108 detector-nights of recordings (54 nights at each of the two detectors, with no downtime). The met tower was located in an open agricultural field with some nearby woodlands. A total of 220 bat call sequences were recorded during the spring sampling. The mean detection rate of all detectors was 2.0 call sequences per detector-night. A similar number of call sequences was recorded by the upper detector (117), which was 40 m (131 feet) above the ground than by the lower detector (103), which was 20 m (66 feet) above the ground. The number of call sequences varied considerably from night to night. In general, the most calls were recorded during late April and late May. The maximum number of call sequences occurred on May 24, 2006, when 16 call sequences were recorded at the low detector and on May 29, 2006, with 17 call sequences at the high detector.

A large proportion (68%, 148 calls) of the call sequences were identified as belonging to the Myotid guild of species, as the call sequences could not be differentiated among *Myotis* species. Approximately 31% (69 calls) of the calls were classified as in the "Big Brown" guild that includes the Big Brown Bat, Silver-haired Bat, and Hoary Bat, and 1% (3 calls) were unknown because the call could not be identified or the call signature was of poor quality. There were no recognized call sequences in the guild containing Red Bat and Eastern Pipistrelle. Several of the recorded call sequences were distinct enough to identify species, rather than just the guild. Three bat species were identified in this manner during the spring surveys, including the Hoary Bat (20 calls), Big Brown Bat (1 call), and Silver-haired Bat (1 call). The 27 other identifiable calls in the big brown guild were either that of the Big Brown Bat or Silver-haired Bat, but definitely not from the Hoary Bat. All three species are found throughout New York State.

Woodlot determined that the peak bat activity at the end of May occurred when wind speeds were lower. Also, there was a statistically significant relationship between temperature and the bat activity, as more calls were detected on nights that were warmer.

The survey results (detections and species) were generally consistent with similar studies conducted in the spring in the northeastern U.S., including studies nearby in Clinton County in spring 2005 (see Appendix F).

Fall 2006 Study

Detectors were deployed at the same height and in the same met tower used during the spring 2006 study. Surveys were conducted from the night of July 25 to the night of October 4, 2006, yielding a total of 102 detector-nights of recordings (some nights of data were lost because of detector failure, which is often typical during remote studies). A total of 518 bat-call sequences were recorded during the fall sampling. The mean detection rate of all detectors was 5.1 call sequences per detector-night. Approximately twice as many call sequences were recorded by the lower detector (345) than by the higher detector (173). The number of call sequences varied considerably from night to night throughout the study period and no seasonal trends were observed. The maximum number of call sequences occurred on September 24, 2006, when 40 call sequences were recorded at the low detector and 19 were recorded at the high detector.

The highest proportion (55%, 287 calls) of the recorded call sequences were labeled as unknown as a result of short call sequences, poor call signature formation, or static interference. Woodlot estimated that approximately 60% of the unknown calls were likely from the Myotis guild. Approximately 28% (147 calls) of the recorded call sequences were classified as coming from the Myotis group; 14% (71 calls) as the guild that includes the Big Brown Bat, Silver-haired Bat, and Hoary Bat; and 3% (13 calls) were that of the guild including Eastern Red Bat or Eastern Pipistrelle. Several of the recorded call sequences were distinct enough to identify species, rather than just the guild. Six bat species were identified in this manner during the fall surveys, including the Little Brown Bat (4 calls), Big Brown Bat (2 calls), Silver-haired Bat (3 calls), Hoary Bat (21 calls), Eastern Pipistrelle (10 calls), and Eastern Red Bat (3 calls). The 45 other calls in the big brown guild were either that of the Big Brown Bat or Silver-haired Bat, but definitely not from the Hoary Bat. All six species are found throughout New York State.

Unlike in the spring, there did not appear to be a strong relationship between bat-call sequence detections and mean nightly wind speed or mean nightly temperature. However, in general, few calls were detected on nights with higher wind speeds and more calls were detected on nights that were warmer.

The detection rates in fall 2006 were higher than in spring 2006 at this site, which was generally anticipated based on previous studies conducted in the northeastern U.S. The species composition was similar between spring and fall and, therefore, the surveys documented the species expected to occur in the Project Area. The fall survey results (detections and species) were generally consistent with similar studies conducted in the fall in the northeastern U.S. including studies nearby in Clinton County in fall 2005 (see Appendix F).

2.12 Bird and Bat Resources: Impacts and Mitigation

There are a number of positive impacts on bird populations that would result from an increased use of renewable energy, including wind energy. Air emissions and global climate change have been cited as serious concerns for North American bird populations (see *A Birdwatcher's Guide to Global Warming* by the National Wildlife Federation and American Bird Conservancy [Price and Glick 2004]). Increased renewable energy use will slow down the negative impacts of global climate change and air emissions on people and wildlife. In addition to the positive impacts noted above, operation of wind energy facilities also has the potential to result in some adverse impacts by causing injury or death to birds through collisions and resulting in habitat loss, degradation, or displacement. While studies have shown that these negative impacts have occurred at a few sites, the results from numerous studies and reviews of avian impacts from wind energy facilities in North America and Europe indicate that mortality rates are low (Erickson et al. 2001; NWCC 2004; GAO 2005).

In November 2004, the National Wind Coordinating Committee (NWCC), a consortium of wind energy developers, researchers, proponents, opponents, and agencies, issued the second edition of a fact sheet, "Wind Turbine Interactions with Birds and Bats: A Summary of Research Results and Remaining Questions" (NWCC 2004). The following, taken from the fact sheet, is part of an overview on the status of bird and bat issues at wind energy facilities that aptly describes the current understanding:

> Wind energy's ability to generate electricity without many of the environmental impacts associated with other energy sources (air pollution, water pollution, mercury emissions, and greenhouse gas emissions associated with global climate change) can significantly benefit birds, bats, and many other plant and animal species. However, the direct and indirect local and cumulative impacts of wind plants on birds and bats continue to be an issue.

In a September 2005 report to congressional requesters, the United States Government Accountability Office (GAO) reviewed the impacts on wildlife from wind power. The GAO report concluded that outside of the Altamont site in northern California, the research to date has not shown bird kills in alarming numbers (GAO 2005). The GAO review of post-construction mortality studies found that bird fatalities ranged from 0 to 7.28 birds per turbine per year. Similarly, the 2004 NWCC fact sheet shows that an average of 2.3 birds per turbine per year (3.1 birds per megawatt [MW] per year) are killed at facilities outside of California (NWCC 2004). For eastern wind farms, the average was 4.3 birds per turbine per year (3.0 birds per MW per year) (NWCC 2004).

The research regarding bats and wind turbines is much more limited. As of 2004, no known collisions of federally endangered or threatened bat species have been documented in conjunction with wind turbines (BCI 2006). Although this report only extends through 2004, anecdotal information from the most recent NWCC conference in November 2006 indicated that this conclusion is still valid. Collisions involving other bat species are typically on the same order as expected for birds with 3.4 bat kills per turbine per year as national average although much higher rates were found during some studies in the Appalachian Mountains (NWCC 2004; GAO 2005). The significance of localized bat mortality from collisions on a population as a whole is largely not understood, and current research is being aimed at addressing this issue.

The USFWS, State Agencies, NWCC, and Bat Conservation International (BCI) are currently trying to determine the biological significance of the large bat kills at the Mountaineer Wind Energy Center in West Virginia in 2003 and 2004. More recently, additional reports of sizeable bat mortalities have been recorded at the Meyersdale facility in Pennsylvania, the Maple Ridge Project in northern New York, and the Summerview Wind Farm in southern Alberta, Canada. However, there is no generally accepted understanding of the interaction of bats and wind turbines. To date, there has been no confirmed correlation between habitat availability and specific atmospheric or seasonal conditions that result in increased mortality, although preliminary data seem to indicate that mortalities are occurring during periods of lower wind speed and that temperature, precipitation, and humidity may also be contributors. Continued monitoring and data analysis associated with operating windparks is necessary to determine the actual biological significance of the local impacts and whether there are any such correlations. It is also anticipated that windpark operations will need to implement management strategies that will evolve throughout the lifespan of windparks as more defined information is developed. As the breadth of knowledge regarding bat/turbine interactions increases, specific mitigation strategies can be developed to allow for the continued operation of windparks as a critical aspect of a global renewable energy approach, while reducing the potential impact on bats.

See Appendix F for more overview information on collisions, habitat loss/degradation, and displacement.

2.12.1 Construction Impacts

Construction-related activities (i.e., clearing for road construction, infrastructure construction, equipment noise, increased vehicle traffic, etc.) can potentially impact birds and bats. Displacement from habitat is the primary concern with construction-related impacts. However, potential impacts from construction are generally only temporary in nature.

2.12.1.1 Migratory Birds

Significant adverse impacts on migratory bird populations including raptors, passerines, and waterbirds are not expected as a result of construction of the Project. The Project Area is not located along a major migratory corridor for birds. Most species are expected to avoid the area of construction during the active construction period. Upon completion of construction, it is anticipated that migratory birds would resume use of the area during migration.

2.12.1.2 Breeding Birds

Breeding bird populations are not expected to be affected significantly by construction of the Project. If construction begins before the breeding season, it is anticipated that breeding birds will likely avoid areas during the active construction period. If construction begins during the breeding season, because many breeding birds have been exposed to similar disturbance such as farming and logging, they will either be accustomed to disruption of this nature or they will relocate to other adjacent suitable habitat. Indirect impacts on breeding birds will occur as a result of habitat alteration in association with construction of the Project; however, these impacts are not expected to be significant because similar disturbances occur in the Project Area. Further, habitat loss should be minimal because of site planning (i.e., the placement of turbines in agricultural areas). Outside of localized construction disturbance, no significant adverse impacts on breeding birds are anticipated.

2.12.1.3 Threatened and Endangered Species

Based on consultation with the United States Fish and Wildlife Service (USFWS) and the Natural Heritage Program (NHP), except for transient individuals, no threatened or endangered species or communities were identified within the Project Area. During field surveys, several endangered and threatened species including a transient Golden Eagle (state-endangered), a transient Bald Eagle (federally and state-threatened), and Northern Harrier (state-threatened) were observed in the Project Area (in low numbers). Only limited use of the Project Area is anticipated by endangered, threatened, and special concern species during construction as most of any occurrences would be related to migration or transient (i.e., limited) use. Therefore, no significant adverse impacts on these species are expected during construction. The potential impacts on individual species listed by USFWS and the New York State Department of Environmental Conservation (NYSDEC) on the Natural Heritage Program reports are discussed in detail in Appendix F.

If construction takes place in suitable nesting habitat for endangered or threatened species in the spring to early summer – during breeding season – the work area will be surveyed and cleared by an environmental monitor in advance of construction. If nesting threatened or endangered species are found in the immediate proximity of a construction area, Noble will coordinate with the USFWS and/or NYSDEC to develop a mitigation plan to address site-specific occurrences of species of concern. Measures that may be implemented include delaying construction until the young have fledged from the nest or continual monitoring during the initial construction period to ensure that the birds are not impacted. With implementation of monitoring activities, no significant adverse impacts from construction on threatened or endangered species are anticipated.

2.12.1.4 Bats

Significant adverse impacts on bat populations are not expected as a result of construction of the Project. Some potential indirect impacts on bats may occur as a result of habitat alteration or loss in association with construction of the Project; however, these potential impacts are not expected to have a significant adverse affect on bat populations. In addition, the potential impacts on habitat are consistent with activities and conditions that currently occur throughout the Project Area such as ground disturbance and tree removal associated with farming and logging activities. It is anticipated that bats in the Project Area would return to temporarily disturbed areas upon completion of construction.

2.12.2 Project Facility Impacts

Operation of the wind turbines can potentially impact birds and bats through collisions with the rotors and towers, displacement from habitat, or influence on migration, etc. Collisions are typically the primary concern with operation-related impacts. Potential impacts can vary among different bird and bat populations and groups.

2.12.2.1 Migratory Birds

The dynamics of migration and the potential impacts from the operation of wind turbines differ among groups of birds. Therefore, this section contains separate discussions of the potential impacts on the migration of raptors, passerines, and waterbirds. The majority of passerines migrate during the night while raptors migrate almost exclusively during the day. Waterbirds migrate during the day and night (Richardson 1998).

Raptors

Raptor migration is diffuse in the region. There are no geographical or topographical features in the Project Area that attract or concentrate migrating raptors. The Project Area is not proximate to the recognized raptor migration pathways in New York State (i.e., near shorelines of the Great Lakes in spring or select mountainous ridges in fall). Results of the migratory raptor surveys demonstrate that migratory raptor use of the Project Area is very low. No concentrated flight paths were identified in either spring or fall, and the findings were consistent with the existing knowledge of the bird resources in the region. Therefore, very low numbers of migrant raptors are anticipated in the Project Area.

As raptor use in the Project Area is low and the likelihood of turbine avoidance is high, the potential for impacts is very low. No biologically significant adverse impacts on migrant raptors are anticipated from operation of the Project.

Passerines

A collision risk exists for nocturnal migrant passerines at all tall structures, including wind turbines. Nocturnal migrant passerines comprised the greatest number of bird fatalities (34 to 59%) in a review of post-construction mortality studies by Erickson et al. (2001). However, there have been no documented large fatality events of nocturnal migrants at wind energy facilities, with the largest limited to 27 songbirds at a floodlit substation and nearby turbines in West Virginia on a May night with heavy fog (NWCC 2004).

There are no geographical or topographical features in the Project Area that attract or concentrate nocturnal migrant passerines. The Project Area is not proximate to any large waterbodies where nocturnal migrants tend to concentrate at stopover areas. Outside of such concentration areas, passerine migration is typically diffuse over a broad front. Results of the nocturnal radar study are generally consistent with this assessment. The migratory passage rates over the Project Area in spring and fall 2006 were above average but within the values of studies conducted at other locations. The fall 2006 passage rates reported by Woodlot were unusually high which is not consistent with the two radar studies conducted by ABR and Woodlot within five miles of the survey location in fall 2005; however, the increased rates are consistent with what Woodlot has experienced elsewhere in 2006 (Woodlot 2006).

The mean flight altitudes were 311 meters and 289 meters higher than the maximum turbine height in spring and fall 2006, respectively; therefore, the majority of nocturnal migration occurs well above the height of the proposed turbines. The mean flight altitudes in both spring and fall were similar compared to other locations studied. Approximately 18% of all nocturnal targets in spring 2006 and approximately 8% of all nocturnal targets in fall 2006 flew below 125 meters agl, a close approximation to the maximum turbine height. These findings are consistent with recent radar studies in the northeastern U.S.

There are conditions when nocturnal migrants will be more susceptible to collision. There is an increase for potential impacts when adverse weather conditions cause birds to fly at lower altitudes. Studies have shown that bird collisions with communication and television towers (much taller than wind turbines) are increased during low cloud ceilings, heavy fog, and precipitation.

It is likely that nocturnal migrant passerines will make up the majority of the bird kills from the Project. However, the potential mortality risk to migrant passerines is considered low-to-moderate based on the Project location, the passage rate and altitude data from the radar studies (a 2006 study in the Project Area and two studies in 2005 within five miles of the Project Area), and the avoidance behavior of passerines typically exhibited at wind energy facilities. No biologically significant adverse impacts are anticipated for any species from operation of the Project.

Waterbirds

There are risks of potential impacts on migratory geese (Canada Geese and Snow Geese) simply because of their high seasonal abundance at stopover sites in Franklin and Clinton Counties. Migration altitude is typically above maximum turbine height; however, diurnal foraging flights are often lower than the maximum turbine height. Post-construction studies at existing wind energy facilities have shown that waterfowl are less susceptible to collision than other species groups (Erickson et al. 2002; BirdLife 2003). Therefore, despite high seasonal abundance, the potential risk for waterfowl mortality from operation of the Project is estimated to be low. Turbines located where migratory geese forage may produce more potential risk, although any impacts on geese would likely be less than the take from hunting in the area.

2.12.2.2 Breeding Birds

Given the relatively uniform habitat in the Project Area, there is not an extremely high diversity of breeding species. There is some degree of habitat fragmentation already in the Project Area, and several plots were recently de-forested. By minimizing the project footprint, especially near wetlands, potential impacts on resident birds have been reduced.

Much of the Project will be constructed in agricultural and young woodland areas, and breeding birds in these habitats may demonstrate temporary displacement. Long-term displacement in wooded areas is unlikely as breeding species are anticipated to habituate to the turbines. The habituation of grassland-nesting species in agricultural and grassland areas is less certain, although displacement may be limited to the immediate area of each turbine. While habituation of grassland-nesting species is uncertain, and therefore, the potential impacts of displacement are unknown, any potential impacts are anticipated to be much less than the impacts from existing hay mowing and pesticide practices in the same area.

There is a low risk of any substantial negative impact on habitat through loss, degradation, or displacement of breeding birds. No significant adverse impacts on breeding birds are anticipated from operation of the Project.

2.12.2.3 Threatened and Endangered Species

Based on consultation with the USFWS and NHP, except for transient individuals, no threatened or endangered species or communities were identified within the Project Area. During field surveys, a transient Golden Eagle (state-endangered), a transient Bald Eagle (federally and state-threatened), and Northern Harriers (state-threatened) were observed in the Project Area (in low numbers). Little use of the Project Area is anticipated by endangered, threatened, and special concern species. Therefore, no significant adverse impacts on threatened and endangered species are expected from operation of the Project. The potential impacts to species listed by USFWS and NYSDEC on the NHP reports are discussed in Appendix F.

2.12.2.4 Bats

Historically, the average number of bat kills from operation of wind turbines has varied from facility to facility and was considered a function of a number of factors including the proximity to hibernacula, known migration corridors, and topography. Until the Mountaineer (West Virginia) site bat kills in 2003 and 2004, the average had remained low, approximately fewer than 3 bats/turbine/year killed. To date, the average has grown to approximately 3.4 bats/turbine/year with the inclusion of the Mountaineer results of 47 bats/turbine/year (NWCC 2004), and this average is likely to increase as more post-construction mortality study results become available (e.g., Maple Ridge site). Multiplying the national average rate with the proposed number of turbines (86) provides an approximate number of annual bat fatalities for the Project (293). However, the number of bat fatalities could be substantially higher or lower, as it is difficult to predict whether large-scale fatality events will occur at a specific site based on pre-construction studies.

At the present time, a total of approximately 300 bat kills per year is not considered to be biologically significant, especially in consideration of other potential sources of bat mortality such as impacts from agricultural pesticide and herbicide uses and loss and degradation of foraging habitats. However, there are increasing concerns about the cumulative impacts of bat fatalities on specific species as the number of wind energy projects increases and data from ongoing mortality studies are made publicly available. Any impacts will likely be distributed through several species.

Based on the habitat within the Project Area, acoustical monitoring studies performed in and near the Project Area, and the limited post-construction data associated with other similar projects, the potential for significant adverse impacts on bats from the Project is considered low-to-moderate. The greatest concern would be to transient individuals, especially tree-roosting bat species (Hoary Bat, Eastern Red Bat, and Silver-haired Bat) colliding with wind turbines, as preliminary data collected at sites in the eastern U.S. as well as the Canadian prairie would seem to indicate that these species are susceptible to collisions with wind turbines. It is anticipated that there would be much lower risk to the resident/summering populations occurring in the Project Area than to migrants.

New York State is not recognized as containing federal designated priority 1 critical habitat, or for containing large populations of the federally protected Indiana Bat. The Indiana Bat is known to winter only in isolated hibernacula mostly within the eastern portion of New York State. Based on the known locations of hibernacula in New York counties (Albany, Essex, Warren, Jefferson, Onondaga, and Ulster Counties), coupled with the lack of recognized habitat for the Indiana Bat in the Project Area, it is unlikely that Indiana Bats would be found residing in the Project Area and, therefore, any potential impacts are considered remote.

2.12.2.5 Bird and Bat Fatality Approximations

It is anticipated that the bird and bat fatality rates for Chateaugay and Bellmont Windparks will be near the national averages and within the range of the national and eastern results. This prediction is based on the results of the other bird and bat studies and because there are no features in the Project Area that attract or concentrate large numbers of migrating birds or bats. Multiplying the national average and eastern fatality rates for bird kills with the proposed number of turbines provides an approximate number of bird fatalities for the Project (see Table 2.12-1). Likewise, multiplying the national average bat kill rate with the proposed number of turbines provides an approximate number of bat fatalities for the Project (see Table 2.12-2). These are only estimates and there can be considerable variation in fatality rates, especially for bats. The number of bird and bat fatalities can only be determined with post-construction mortality studies; however, this estimate allows an evaluation of the potential impacts.

Table 2.12-1 Approximate Number of Bird Fatalities Based on Average National and Eastern Fatality Rates

Project	Number of Turbines	Approximate Bird Fatalities per Year Based on National Average Rate[1]	Approximate Bird Fatalities per Year Based on Average Eastern Rate[2]
Noble Chateaugay/Bellmont	86	198	370

[1] 2.3 birds/turbine/year (NWCC 2004).
[2] 4.3 birds/turbine/year (NWCC 2004).

Table 2.12-2 Approximate Number of Bat Fatalities Based on National Average Fatality Rate

Project	Number of Turbines	Approximate Bat Fatalities per Year Based on National Average Rate[1]
Noble Chateaugay/Bellmont	86	293

[1] 3.4 bats/turbine/year (low = 0.7; high= 47) (NWCC 2004).

2.12.3 Mitigation

2.12.3.1 Siting Approach

The primary mitigation to avoid or reduce potentially significant bird and bat impacts was Noble's approach to siting. Initially, a 'fatal flaw' study was conducted to identify whether the Project Area held any potential issues related to birds and bats, among many other categories, that could result in unfavorable impacts. In the siting phase, Noble selected available and appropriate locations for turbines that minimized potential impacts on wetlands, habitat, and land use. These considerations will minimize potential impacts on birds and bats. See Section 1.3, Project Alternatives, for details on the siting approach and Project Alternatives.

2.12.3.2 Lighting and Structural Mitigation

During nights of inclement weather and/or poor visibility, passerines may fly at lower altitudes and may be attracted to lights, especially steady (i.e., not blinking) lights. While the reasons for this attraction to lights are not certain, it coincides with evidence from tall structures (e.g., communication/television towers and buildings) that events of increased bird collisions occur on nights with poor visibility at structures with steady light. In order to reduce the potential for collisions, turbines will be equipped with slow-blinking lights on turbines where they are required by the Federal Aviation Administration (FAA).

In addition, Noble will:

- Provide the minimum allowable lighting as per FAA requirements;
- Install slow-blinking red lights rather than steady lights or blinking white lights;
- Avoid use of flood lights at any structures on-site or steady light sources near the turbines; and
- Install modern turbines (i.e., solid tubular structures) that are designed to prevent birds from perching or nesting on them. No guy wires will be required for these turbines.

2.12.3.3 Post-construction Monitoring

Post-construction mortality monitoring will be implemented by Noble to evaluate the actual impacts of the Project on birds and bats. This will help assess the significance of the impacts and, potentially, which weather or environmental conditions or other circumstances contribute to such impacts. Based on real-time, site-specific data collected during the post-construction mortality monitoring, Noble will coordinate closely with NYSDEC to identify and assess potential mitigation strategies that can be implemented to reduce potentially significant adverse impacts, if any. This adaptive management approach will allow mitigative measures to be developed/modified during the course of Windpark operation that are responsive to site-specific conditions and to the growing and evolving data base of information regarding bird/bat interactions with turbines. Noble's work plan for proposed post-construction bird and bat mortality studies is included in Appendix F.

2.12.4 Cumulative Impacts

Beyond the potential impacts of the Project, there is potential for cumulative impacts from all proposed wind projects in the region. These impacts are evaluated in Section 3, Cumulative Impacts and Benefits, of this DEIS as well as in Appendix F. Multiplying the national average and eastern fatality rates for bird kills with the total proposed number of turbines in the region (i.e., combined from five Projects) provides an approximation of 900 to 1,700 annual bird fatalities. Likewise, multiplying the national average bat kill rate with the total proposed number of turbines in the region (i.e., combined from five Projects) provides an approximation of 1,400 annual bat fatalities. These are only estimates, and there can be considerable variation in fatality rates, especially for bats. The number of bird and bat fatalities can only be determined with post-construction mortality studies; however, this estimate allows an evaluation of the potential cumulative impacts.

2.13 Visual Resources: Environmental Setting

To address issues of potential visual impacts associated with the Project, Noble retained the services of Saratoga Associates, Landscape Architects, Architects, Engineers, and Planners, P.C. (Saratoga) to conduct a thorough and detailed Visual Resources Assessment (VRA). The purpose of this VRA is to identify potential visual and aesthetic impacts and to provide an objective assessment of the visual character of the Project, using standard accepted methodologies of visual assessment, from which agency decision makers can render a supportable determination of visual significance. A detailed discussion of existing visual resources and the VRA prepared by Saratoga is provided in Appendix G.

Methodology

Consistent with VRA practice, the report evaluates the potential visibility of the Project and objectively determines the difference between the visual characteristics of the landscape setting with and without the Project in place. The process used follows the New York State Department of Environmental Conservation (NYSDEC) Program Policy Assessing and Mitigating Visual Impacts, or NYSDEC Visual Policy (NYSDEC 2000), and State Environmental Quality Review Act (SEQRA) criteria to identify and minimize potential impacts on visual resources.

The VRA includes both quantitative (how much is seen and from what locations/visual impact) and qualitative (how it will be perceived/aesthetic impact) aspects of visual assessment.

Specifically, the VRA includes the following steps:

- Define the existing landscape character/visual setting to establish the baseline visual condition from which visual change is evaluated;
- Conduct a visibility analysis (viewshed mapping and field investigations) to define the geographic area surrounding the proposed facility from which portions of the project might be seen;
- Identify sensitive aesthetic resources to establish priority places from which further analysis of potential visual impact is conducted;
- Select key receptors from which detailed impact analysis is conducted;
- Depict the appearance of the facility upon completion of construction;
- Evaluate the aesthetic effects of the visual change (qualitative analysis) resulting from Project construction, completion, and operation; and
- Identify opportunities for effective mitigation.

Consistent with the NYSDEC Visual Policy, the visual study area for this VRA generally extends to a 5-mile radius from the outermost turbines (hereafter referred to as the 5-mile radius study area or study area). Beyond this distance it is assumed that natural conditions of atmospheric and linear perspective will significantly mitigate most visual impacts. However, considering the scale of the Project and recognizing that the proposed wind turbines will, at times, be visible at distances greater than 5 miles, site-specific consideration is given to resources of high cultural or scenic importance that are located beyond the typical 5-mile radius.

Visual Character

The visual character of the landscape is defined by the patterns, form, and scale relationships created by lines, colors, and textures. The visible patterns found within the Project region can best be described as representative of the agricultural landscape typical of the northern New York region. Given the rural nature of the study area, visible colors are natural, muted shades of green, brown, gray, and other earth tones. When viewed from a distance, vegetated hillsides maintain a rather uniform and unbroken blending of colors, which tend to fade with hazing of varying atmospheric conditions. The often steep, rolling topography also creates a sinuous naturalistic form.

The Project Area is decidedly rural and minimally developed. The population of the Towns of Chateaugay and Bellmont are just 2,036 and 1,423, respectively. Broad tracts of agricultural land include open crop/pasture and inactive successional old-field/scrubland. Mature second growth deciduous woodland typically covers steep slopes, hilltops, ravines, stream/river corridors, and other areas historically unsuitable for agriculture. Other land cover includes hedgerows, yards, farmsteads, low-density residential uses, streams, and small ponds. Built features typically include low-density single-family residential structures and farmsteads. The Project Area sits on a plateau at about 1,000 feet above the St. Lawrence River at the foothills of the Adirondack Mountains.

Visibility Analysis

The first step in identifying potentially affected visual resources is to determine whether or not the Project would likely be visible from a given location. Viewshed maps were prepared for this purpose. Viewshed mapping identifies the geographic area within which there is a relatively high probability that some portion of the Project would be visible.

One viewshed map was prepared defining the area within which there would be no visibility of the Project because of the screening effect caused by intervening topography (see Figure 1 in the VRA provided in Appendix G). This treeless condition analysis is used to identify the maximum potential geographic area within which further investigation is appropriate. A second map was prepared illustrating the probable screening effect of existing mature vegetation (see Figure 2 in the VRA provided in Appendix G). This leaf-on condition viewshed, although not considered absolutely definitive, acceptably identifies the geographic area within which one would expect to be substantially screened by intervening forest vegetation. As discussed in Section 2.14, Visual Resources: Impacts and Mitigation, identified viewshed areas are further quantified to illustrate the number of turbines that may be visible from any given area.

Inventory of Visually Sensitive Resources

Because it is not practical to evaluate every conceivable location where the Project might be visible, it is accepted visual-assessment practice to limit detailed evaluation of aesthetic impact to locations generally considered by society, through regulatory designation or policy, to be of cultural and/or aesthetic importance. The visually sensitive resources include:

- Resources of Statewide Significance (as required by the NYSDEC Visual Policy);
- Resources of Local Interest (places of local sensitivity or high intensity of use based on local context); and/or
- Other Places for Analysis (including locations not rising to the threshold of statewide significance or local interest that represent isolated pockets of visibility along sparsely populated rural roadways; most are selected based on field observation of open vistas).

Resources of statewide significance, resources of local interest, and other places for analysis were identified though a review of published maps and other paper documents, online research, and an extensive windshield survey of publicly accessible locations. Sixty-five visual resources were identified within the 5-mile study area and are identified in Table 5 of the VRA (Appendix G).

Thirteen resources of statewide significance were identified including such locations as the Adirondack Forest Preserve, U.S. Rout 11 Scenic Byway and Historic Military Trail, the Chateaugay River, and the New York State Forest Preserve. Twenty-seven resources of local importance were identified, including hotels and inns, fishing and recreational resources, camp grounds, scenic vistas, snowmobile trails, NYS Routes 190 and 374, schools, and small hamlets. The remaining 25 visual resources were identified as other places for analysis and included roads in Chateaugay and Bellmont and residential areas in Chateaugay.

Degree of Project Visibility

On November 1, 2006, and November 10, 2006, a field crew drove public roads and visited many of the potentially affected visual resources (as determined through viewshed mapping) to document existing visibility in the direction of Project. Photographs were taken from affected visual resources throughout the Project Area. The location selected for each photograph was judged by the field observer to be the most unobstructed vantage point. To the degree possible, photographs were taken at a time of day when the sun was to the back of the photographer to minimize the effect of glare within the camera's field of view and to maximize visible contrast of the landscape being photographed. To demonstrate how the actual turbines will appear within the study area from a variety of representative distances and locations, 10 photo simulations were prepared and are discussed in Section 2.14.

The nighttime sky in the vicinity of the Project Area is typical of rural areas in New York State. There are scattered vertical structures such as radio and cell towers throughout the region. These structures are illuminated at night with low-intensity, flashing red lights for aviation safety. The degree of Project visibility at night has been evaluated in the VRA and is further discussed in Section 2.14.

2.14 Visual Resources: Impacts and Mitigation

As described in Section 2.13, Visual Resources: Environmental Setting, Saratoga Associates was hired by Noble to conduct a VRA for the Project (see Appendix G). By their very nature, modern windparks are large and highly visible facilities. The need to position these tall moving structures on hilltops and ridgelines cannot be readily avoided. The siting of wind turbines within a rural agricultural area provides increased opportunity for potentially discordant views both near and far. While the use of mitigation techniques will help to minimize adverse visual impacts, the construction of the project will be an undeniable visual presence on the landscape.

This section includes a discussion of construction and operational impacts and mitigation associated with both daytime and nighttime visibility and shadow flicker. Saratoga's Shadow Flicker Analysis and the Federal Aviation Administration (FAA) Lighting Plan are provided in Appendix G and summarized in the discussion below.

2.14.1 Construction Impacts

Construction of the Project will require use of mobile cranes and other large construction vehicles. Components will be delivered in sections via large semi-trucks. However, the construction period is expected to be relatively short. As such, construction-related visual impacts will be brief and are not expected to result in adverse prolonged visual impact on area residents or visitors.

2.14.2 Project Facility Impacts

Visual Character

The Project is comprised of 86 thin vertical structures topped with large rotating blades distributed throughout the landscape. The introduction of such clearly man-made and kinetic structures creates an obvious disruption of the rolling agricultural landscape of the Project Area. The turbines also introduce a contrasting and distinct perpendicular element into the existing horizontal line formed by extended vistas over an agricultural plain. Views will commonly include a composition of one or more turbines ranging from proximate foreground distances, at times receding to middle ground and background distances. Turbines will be distributed somewhat randomly throughout the landscape.

The neutral white or off-white color of the proposed turbine tower, nacelle, and blades will be most often viewed against the background sky. For the most part, under these conditions the turbines would be compatible with the hue, saturation, and brightness of the background sky and distant elements of the natural landscape. Color contrast will decrease with increasing distance and/or periods of increased atmospheric haze or precipitation. The proposed wind turbines will be the tallest visible elements on the horizon and will be disproportionate to other elements commonly visible on the regional landscape.

Visibility Analysis

Viewshed maps indicate that one or more of the proposed turbines will be visible from approximately 24% of the 5-mile radius study area. Approximately 76 percent of the study area will likely have no visibility of any wind turbines. Visibility is most common in the agricultural uplands from cleared lands with down slope vistas in the direction of turbine groupings.

Views within the Village of Chateaugay will be partially screened by intervening vegetation and localized structures, although filtered or framed views are likely through foreground vegetation and buildings in isolated locations. Direct views are more prevalent on the fringes and outskirts of the Village where localized residential and commercial structures, streets, trees, and site landscaping are less likely to provide a visual barrier.

Views of the Project will be available from elevated locations, along many of the adjacent roadways and agricultural fields as well as from the Adirondack high peaks. Many of these views along the roadways may be long distant (background view) and fleeting as viewers pass in vehicles. Many of these views may be 5 miles or more and will be 15 miles or more from elevated locations within the Adirondack Forest Preserve.

No views will occur on the backside of the many hills and within ravines found throughout the study area. Where topography is oriented toward turbine groupings, dense forest cover commonly prevents distant views.

The area most directly affected by views of the Project will be the agricultural upland within immediate proximity of the Project. The rural areas along Cooper Road, Smith Road, Douglas Road, No. 5 Road, Cassidy Road, Tourville Road, Seymore Road, Sancomb Road, NYS Route 190, U.S. Route 11, NYS Route 374, and other roads in these areas will experience a high degree of visibility. Residents and visitors will regularly encounter proximate views of one or more turbines within the foreground and near-middle ground distances (i.e., 0.5 to 1.5 miles)—the distance where the visual contrast of the turbines will be greatest. Along portions of NYS Route 190 as well as No. 5, Cassidy, Cooper, and Sancomb/Seymore Roads turbines may be located on both sides of the viewer. Within such close proximity, turbines will frequently appear and disappear behind intervening foreground landform and vegetation as viewers move about the Project Area.

Visually Sensitive Resources

Sixty-five visual resources were inventoried within the 5-mile study area. Based on the viewshed analysis, 16 resources would likely be screened from the Project by either intervening landform or vegetation/structures and are thus eliminated from further study. Table 6 of the VRA in Appendix G summarizes the factors affecting visual impact (landscape unit, viewer group, distance zone, and duration/frequency/circumstances of view) for each visual resource determined to have a potential view of the Project within the 5-mile study area.

Resources of Statewide Significance. The viewshed analysis and field investigation determined that several visual resources of Statewide Significance would be affected by the Project.

The one site listed on the National Register of Historic Places (NRHP), U.S. Route 11 Scenic Byway/Historic Military Trail, will experience a variety of views of the Project ranging from open views to filtered views to no views. Such views will generally be momentary as motorists pass through the viewshed at speeds up to 55 mph (with the exception of within the Village of Chateaugay). Within the Adirondack Preserve, most visibility will be limited to a few sections of roadways and portions of the Lower Chateaugay Lake. Turbines will also likely be visible from 58 National Register Eligible (NRE) properties and one NRE Historic District, 18 contributing NRE properties, and 21 properties possibly eligible for listing on the NRE. The visual impacts on these structures and potential mitigation measures are discussed in more detail in Section 2.31, Cultural Resources: Impacts and Mitigation, and Appendices O and R.

Resources of Local Interest. Because of the number, scale, and geographic distribution of proposed turbines, some portion of the Project will be visible from places of local interest that do not necessarily meet the broader statewide threshold for visual significance. Most commonly affected are roadside views along various state and county highways.

Views were found along U.S. Route 11 and NYS Routes 190 and 374 within the study area. Several county and local roads will have views of proposed turbines at varying distances. Most local parks, playgrounds, and recreational facilities as well as the Village of Chateaugay will have limited views.

While few tourist facilities will be affected by the Project, numerous State, County, and local roads will have discrete views of one or more turbines across agricultural lands. For many visitors, the scenic value of the drive is an important part of their trip. While some visitors may believe a wind farm is an unacceptable disturbance to an attractive agricultural landscape, others may find the presence of a large clean, renewable energy project an interesting and exciting part of their touring experience.

Other Resources for Analysis. Portions of the turbines will be visible from some resources that represent isolated pockets of visibility along sparsely populated rural roadways. Many of the views along these roadways may be long distance (background view and fleeting as viewers pass in vehicles). Although possibly of interest to local residents, such locations are not considered representative of an aesthetically significant place and are, therefore, not typically heavily weighted or required to be reviewed in DEC guidelines for the evaluation of aesthetic impact.

Affected Viewers

The study area is decidedly rural and minimally developed. While the Project will be frequently visible to local residents, workers, and travelers, the total number of potentially affected viewers within the study area is relatively small when compared to other regions of New York State.

The overall number of recreational users affected by the project will be relatively minor. The public recreational facilities, with the exception of U.S. Route 11, within 5 miles of the Project Area that may have a potential view of the Project include the Chateaugay Fish Hatchery, athletic fields associated with the Chateaugay School District, High Falls Park, and various locations within the Adirondack Forest Preserve and along segments of designated fishing streams. Hunters and snowmobiles on private lands will likely view turbines at varying distances.

Photo Simulations

To demonstrate how the actual turbines will appear within the study area from a variety of representative distances and locations, 10 locations were identified for simulations. Table 2.14-1 provides a listing of Key Receptors that were selected for photo simulations. The Map ID corresponds to Figure 1 of the VRA in Appendix G. The specific locations of these simulations were chosen for their relevance to the factors affecting visual impact (viewer/user groups, landscape units, distance zones, and duration/frequency and circumstances of view). Because the visibility of wind turbines will most commonly affect local residents from rural homes and during daily travel along local roads, and most open vistas of the project typically occur in isolated locations along rural roadways, views selected for photo simulation favor such views even though the number of viewers will not be large. The appearance of the turbines is based on the specifications of GE 1.5MW turbines with 80-meter (263-feet) high towers and 77-meter (123 feet) rotor diameter. To be conservative, the turbine model was constructed so that the apex of the blade is 393 feet above ground elevation. The detailed methodology and actual photo simulations can be found in the VRA provided in Appendix G.

Table 2.14-1 Key Visual Receptors

Map ID	Receptor
12	Seymore Road
16	U.S. Route 11 (Chateaugay Fish Hatchery Entrance)
20	Chateaugay Central Schools Parking Lot/Athletic Fields
25	White Street
29	Chateaugay Park
39	Campground Ponderosa
43	Drew Lane
51	Hamlet of Brainardsville
52	NYS Route 190

Table 2.14-1 Key Visual Receptors

Map ID	Receptor
56	Earville/Summit Roads

Source: Visual Resource Assessment, Appendix G.

Project Visibility (Lighting)

The turbines would be compatible with the hue, saturation, and brightness of the background sky and distant elements of the natural landscape under most conditions. In accordance with FAA regulations, turbines must be illuminated for aviation safety. Daytime lighting of the turbines is not required; however, the magnitude of the impact on nighttime visibility will depend on how many lighted turbines are visible at a specific location and existing ambient lighting conditions present within the view. Local residents quietly enjoying the rural nighttime setting will likely be more affected by this condition than would motorists traveling thorough the area after dark. These are federally mandated safety features and cannot be omitted or reduced.

A viewshed map was created to assist in evaluating potential nighttime visibility (see Figure 3 in the VRA provided in Appendix G). This map used the same methodology as described above; however, the map was created using the approximate height (265 feet) of the FAA-required strobe lights as the control point for 27 turbines. These 27 turbines were selected based on a preliminary lighting plan prepared by Noble. In addition, the viewshed map took into account the screening potential of intervening topography and vegetation.

The viewshed map clearly indicates that one or more of the 27 proposed lights will be theoretically visible from approximately 19% of the 5-mile radius study area. Approximately 81% of the study area will likely have no visibility of any proposed light sources. Visibility will be most evident in the agricultural uplands from cleared lands with down slope vistas in the direction of the Project, participating project properties with lit turbines, and long roadways such as, but not limited to, U.S. Route 11, NYS Routes 190 and 374, No. Five Road, Sancomb Road, and Seymore Road.

While aviation obstruction lighting is relatively low intensity and will not create atmospheric illumination (sky glow), 27 red lights flashing on turbines at close range or in the distance from any given location will be conspicuous and somewhat discordant with the current dark nighttime conditions.

Shadow Flicker

Wind turbines can cause a flickering effect when the rotating turbine blades cast shadows that move across the ground and nearby structures. This can cause a disturbance within structures when the repeating pattern of light and shadow falls across the windows of buildings, particularly when occupants are reading or watching television. The effect, known as shadow flicker, is most conspicuous when windows face a rotating wind turbine and when the sun is low in the sky (e.g., shortly after sunrise or shortly before sunset). Because of constantly changing solar aspect and azimuth, shadows will be cast on specific days of the year and will pass a stationary receptor relatively quickly. Flicker will not be an everyday event or be of extended duration when it does occur. For receptors located to the west of a turbine, a residence is more likely to fall within the shadow zone shortly after sunrise when affected residents are typically asleep with shades drawn. For receptors located to the east of a turbine, as residence is more likely to fall within the shadow zone area shortly before sunset.

There are no state or federal regulations or guidelines that establish an acceptable degree of shadow-flicker impact on a potential receptor. However, in parts of Europe, 30 hours is used as a maximum limit to the number of acceptable shadow flicker hours. The methodology used for shadow flicker is discussed in detail in the Shadow Flicker Analysis provided in Appendix G. The analysis conservatively evaluated receptors within 2,952 feet of the turbines. Because residences outside of the viewshed will not experience shadow flicker caused by the project, they were not included in the calculation. Table A1 in the Shadow Flicker Analysis provided in Appendix G summarizes the maximum number of potential hours per year and day that is expected for each shadow receptor (residence) that has visibility of the Project. It should be mentioned that the maximum potential hours per day, in theory, could occur only once or a few times per year and would not be a daily occurrence.

Based on the analysis, the following impacts are expected: 71% of the receptors will be impacted less than 10 hours per year; 19% will be impacted 10 to 20 hours per year; 7% will be impacted 20 to 30 hours per year; and 3% will be impacted more than 30 hours per year.

As noted, there will be five receptors that theoretically will be impacted for more than 30 hours per year. These receptors include:

- Receptor no. 65 (32:15 hrs/yr) – west of turbine T-39;
- Receptor no. 71 (31:07 hrs/yr) – west of turbine T-73;
- Receptor no. 105 (35:15 hrs/yr) – east of turbine T-15;
- Receptor no. 148 (33:06 hrs/yr) – west of turbines T-76/T-78; and
- Receptor no. 214 (34:20 hrs/yr) – west of turbine T-68/T-69.

For those five receptors, identified above, where shadow flicker may exceed 30 hours per year, this impact might be considered a nuisance when noticed by residents. Four of these residents have waived mitigation in writing, in the form of easements that are signed by the affected landowner. Receptor no. 71 is the only resident that is not under easement.

2.14.3 Mitigation

The Project design has been continuously evaluated, and the proposed location of turbines reflects guidance from landowners, agencies, local authorities, and project consultants. By their very nature, modern windparks are large and highly visible facilities. The need to position wind turbines on hilltops and ridgelines cannot be readily avoided because those are the areas where the wind resources are the best. Given the scale of projects and character of the community, overall visual impacts could not be noticeably reduced through the relocation of individual turbines. Turbines have been sited at a minimum setback from residential structures in order to reduce impacts on individual receptors. Such separation of uses assures maximum screening benefit of existing woodland vegetation, where such exists, and minimizes the potential for extended-duration shadow flicker on nearby residences. Furthermore, Noble has entered into easement agreements with property owners and their adjacent property owners to compensate for potential impacts from development of the Project.

Mitigation measures will be taken where shadow flicker or other adverse visual impacts pose a significant problem for the landowner. Mitigation measures to be considered will include installation of natural and artificial screening devices such as landscaping and fencing, awnings, or other window treatments on affected landowners' property. Noble will work with the Towns through the complaint procedure for processing claims from affected homeowners and provide the funds to pay for mitigation.

To minimize visual impacts, certain aspects were included in the professional design of the turbines. Tubular style towers have been specifically selected rather than skeletal (or lattice) frame towers to minimize textural contrast and provide a simpler, more visually appealing form. The proposed turbines will not be used for commercial advertising or include conspicuous lettering or corporate logos identifying the project owner or equipment manufacturer. The color of the blades, nacelle, and tower will either be a neutral white or off-white, as per FAA guidelines. While the FAA mandates this color for aviation safety, this color is well suited to minimize visual contrast with the background sky. Wind turbine towers will be painted, metal structures and blades will be painted fiberglass composite. Where specifications permit, non-specular paint will be used on all outside surfaces to minimize reflected glare.

How a landscape and structures in the landscape are constructed and maintained has aesthetic implications to the long-term visual character of a project. Where project access roads are to be constructed on hillsides through existing woodland, roads will be designed in a serpentine alignment to avoid long, straight vegetative cuts. Roads will also be designed to generally follow topographic contours to minimize cut and fill and will be located in agricultural lands to the greatest extent possible to minimize vegetative cuts. Noble places a high priority on facility maintenance, not only for operational purposes but for aesthetic appearance as well. Recognizing that its public image will be directly linked to the outward appearance of its facilities and desiring to be a welcomed member of the community, Noble will implement a strict policy of maintenance, including materials and practices that ensure a clean and well-maintained appearance over the full life of the facility. To further mitigate impacts on visual resources, a Decommissioning Plan has been developed that addresses the removal of turbines when the Windpark is taken out of service (see Section 2.28, Decommissioning Plan, and Appendix M). The Plan provides detailed cost estimates and specific steps taken to remove the wind turbines including the tower, nacelle, transformer, cabling, substation, concrete foundations, collection lines, switchyard, and maintenance roads/rigging map. Restoration of these areas after removal will include revegetation to return the area to as near its present condition as possible.

2.15 Sound: Environmental Setting

Hessler Associates, Inc. was retained by Noble to evaluate potential noise effects from the operation of the proposed Noble Windparks in Chateaugay and Bellmont on sensitive receptors in the vicinity of the Project Area. The full report of Hessler's findings is found in Appendix H. A summary of the existing environmental setting with respect to sound is provided below.

2.15.1 Background Sound Level Survey

A sound level study was completed to determine background sound levels in the Project Area. Sound levels were measured in consecutive 10-minute intervals over a 14-day survey.

In an effort to evaluate existing background sound levels over this fairly large area, five monitoring stations were selected to cover the site in a reasonably uniform manner. It was not practical to measure at every house potentially affected by the project – nor was it typically necessary because rural areas, such as this, removed from any major sources of man-made noise, generally experience similar natural background sound levels over wide areas. Each of the measurement positions is described in Appendix H.

The survey period began at noon on 11/2/06 and continued 24 hours a day for 14 days, or until noon on 11/16/06. Rion NL series integrating sound level meters were used to carry out the survey. The microphones were protected from rain and self-induced wind noise by special WS1-80T high density foam windscreens intended for long-term outdoor service. All equipment was calibrated at the beginning and end of the survey with a Brüel & Kjær Type 4230 Calibrator, which was recently laboratory tested for validity.

The weather conditions during the survey were generally mild for the season with daytime temperatures in the 40s and 50s (deg. F). The first week of the survey was fair while the second week was characterized by periods of intermittent light rain. The only significant rain events occurred on 11/11 and 11/14 during periods of very light wind. Relatively strong winds, typically out of the north or west occurred on the 11/10 and 11/12 when there was little or no rain.

2.15.2 Site Description and Measurement Positions

The proposed Windpark lies primarily within the limits of NYS Route 374 to the west, Brainardsville and the Adirondack Park line to the south. The northern boundary of the Project is essentially U.S. Route 11 and the eastern boundary is County Line Road. The overall Project Area is roughly 5 miles north to south and 3 miles east to west. The site vicinity can generally be characterized as open farm land interrupted by occasional wooded areas. There are no significant hills or valleys - only gently undulating terrain - and from a noise-propagation perspective, the site can be considered essentially flat. The area is not densely populated but there are numerous farms and individual residences distributed fairly evenly along the roads that crisscross the site.

2.15.3 Background Measurement Results

The 10-minute, A-weighted L90 sound levels for all five measurement positions were plotted against the average on-site wind speed at 10 meters for the entire survey period. The plots are available in Appendix H. The sound levels at all five locations, some many miles apart and in diverse settings, follow nearly identical trends and have very similar values at any given time. This clearly demonstrates that the entire Project Area experiences a more or less uniform natural background level, often referred to as a macro-ambient, or wide-area ambient. From the measurements at these five positions evenly distributed over the site, it can reasonably be assumed that the sound level at any location on the site would have a value similar to that at the discrete measurement points. In effect, this result indicates that were it somehow practical to monitor at every potentially affected residence within the Project Area, a similar level-versus-time-plot scenario would be produced.

Another important aspect revealed by the plots is that the sound levels parallel the wind speed – generally rising when the wind increases and falling when the wind diminishes. This relationship shows that background sound levels in the site area are largely driven by natural, wind-induced sounds, such as trees and grass rustling.

From the data collected over the survey period, it was possible to determine the A-weighted residual (L90) and L10 sound levels that are likely to occur over all wind speeds up to about 8.5 m/s (as measured at the reference height of 10 meters). The wind speed range of interest with respect to noise from the particular turbine model proposed for this project is from the cut in speed of 3 m/s at 10 meters, when the turbines just begin to operate, up to about 7 m/s at 10 meters when the noise level essentially levels off at a constant, maximum value.

The plots shown in Appendix H show a clear trend of increasing background sound level with wind speed. A mean value for the L90 background level can be predicted with reasonable accuracy from the trend line shown at any wind speed up to about 8.5 m/s. A background sound level of 30 dBA (the A-weighted decibel level) is associated with the cut in speed of the turbines (3 m/s) and 40 dBA when the GE 1.5sle rotor first reaches maximum speed and first begins to produce the maximum amount of noise. Beyond this wind speed, background noise would continue to increase while turbine noise would remain constant. Consequently, during periods of very high wind, turbine noise would be progressively less perceptible above natural background sounds.

2.15.4 Regulatory Standards/Guidance

Local regulatory noise limits and the noise assessment guidelines published by New York State Department of Environmental Conservation (NYSDEC) establish quantitative standards applicable to the Project.

Local Regulatory Noise Limits

Essentially identical local laws have recently been adopted in the Towns of Chateaugay (Chateaugay Local Law No. 7 2006) and Bellmont (Bellmont Local Law No. 2 2006) that place various restrictions on Wind Energy Facilities.

Section 15 of both documents limits noise exclusively caused by any wind project to a statistical L10 level of 50 dBA "at the nearest residence located off the Site"; i.e., at any non-participating residence. The limit of 50 dBA is only effective if the background sound level is equal to or less than 50 dBA. If the L10 background level is found to be higher than 50 dBA, then project noise may exceed the background level by up to 5 dBA. In addition, the law states that for the non-participating residences, "independent certification shall be provided before and after construction demonstrating compliance with this requirement." The L10 levels reported and discussed in Appendix H have been provided to satisfy this pre-construction measurement requirement. The data indicate that the L10 background level is likely to be less than 50 dBA up to the wind speed at which the turbines first begin to generate the maximum amount of noise (7 m/s), therefore the 5 dBA increase does not appear to be applicable to the Project. However, because the survey results show that the L10 background level at 7 m/s is close to 50 dBA (i.e., 49 dBA), contemporary measurement of the background level using the turbine-on/turbine-off approach could yield a background level of more than 50 dBA.

Both laws also place a restriction on tonal noise. Unacceptable pure tones are defined to exist when a one-third octave band noise level exceeds the arithmetic average of the two adjacent one-third octave band levels by the following frequency dependent values:

Frequency Band Range	Exceedance
31.5-125 Hz	15 dB
160-400 Hz	8 dB
500-8000 Hz	5 dB

There are no other overarching county, state, or federal noise regulations that would apply to the Project.

NYSDEC Guidelines

In the Program Policy Assessing and Mitigating Noise Impacts published by NYSDEC (2001) a methodology is described for evaluating potential community impacts from any new noise source. As opposed to an absolute noise limit, the NYSDEC method is fundamentally based on the perceptibility of the new source above the existing background sound level at the nearest residences or other potentially sensitive receptor locations, such as schools or churches.

For a new broadband, atonal noise source, such as a wind turbine, a cumulative increase in the total sound level of 5 or 6 dBA at a given point of interest is required before the new sound begins to be clearly perceptible or noticeable to most people. As mentioned previously, cumulative increases of between 3 and 5 dBA are generally regarded as negligible or hardly audible, and sound levels lower than 3 dBA are completely "buried" in the existing background sound level and are totally inaudible.

According to NYSDEC guidelines, a cumulative increase in the total ambient sound level of 6 dBA or less is unlikely to constitute an adverse community impact. This threshold means that noise from the project could exceed the existing background level by up to 5 dBA before there is a need for closer analysis.

The program policy outlines an incremental approach toward evaluating cumulative increases and potential impacts. Once the background sound level is established by means of a field survey, a First Level Noise Impact Evaluation is carried out where noise from the future Project is modeled in a simple and conservative manner that considers only the reduction in sound level with distance. The analysis does not consider intervening terrain, vegetation, etc. The purpose of this first level analysis is to simply identify the area, defined by the 6-dBA cumulative increase contour line, that needs to be looked at in greater detail to see if any sensitive receptors are present.

If any residences or other potentially sensitive receptors are identified as being within the area of potential concern, a Second Level Noise Impact Evaluation noise modeling study is carried out. Unlike the first level noise impact evaluation, the Second Level considers all normal sound propagation loss mechanisms (in addition to pure distance losses). In this case, any receptors outside the 6 dBA cumulative increase contour are considered to have a low probability of disturbance while any receptors inside the contour might be adversely impacted and some form of mitigation should be investigated.

2.16 Sound: Impacts and Mitigation

An evaluation of the potential operational noise impacts from the Project on residents in the vicinity of the Project Area began with the background sound level survey described in Section 2.15, Sound: Environmental Setting. The evaluation was completed using a computer modeling analysis of turbine sound levels based on the Project design. The model was used to predict the sound level contours associated with the Project over the Project Area, to determine if any residents will be able to hear the turbines above the pre-existing background levels and, if so, what adverse impacts might result. The results of this assessment are presented in detail in Appendix H and are summarized below.

An evaluation of construction impacts was performed using typical noise levels for construction equipment as reported in the Power Plant Construction Noise Guide (Empire State Electric Energy Research Corp. 1977)

2.16.1 Construction Impacts

Noise from construction activities associated with the Project is likely to temporarily constitute a moderate unavoidable impact at some, if not most, of the homes in the Project Area. Because construction activities will constantly be moving from place to place around the site, it is unlikely that there will be significant impacts at any single receptor for an extended period of time. The sound levels expected for each phase of construction are shown in Table 2.16-1 below and are compared to local regulatory noise limits, which impose a threshold of 50 dBA at the nearest non-participating residence.

Table 2.16-1 Construction Equipment Sound Levels by Phase

Equipment Description	Typical Sound Level at 50 ft., dBA (Ref. 6)	Est. Maximum Total Level at 50 ft. per Phase, dBA*	Max. Sound Level at a Setback Distance of 1320 ft., dBA	Distance Until Sound Level Decreases to 50 dBA, ft.
Road Construction and Electrical Line Trenching				
Dozer, 250-700 hp	88	92	59	2,800
Front End Loader, 300-750 hp	88			
Grader, 13-16 ft. blade	85			
Excavator	86			
Foundation Work, Concrete Pouring				
Piling Auger	88	88	55	2,100
Concrete Pump, 150 cu yd/hr	84			
Material and Subassembly Delivery				
Off Hwy Hauler, 115 ton	90	90	57	2,400
Flatbed Truck	87			

Table 2.16-1 Construction Equipment Sound Levels by Phase

Equipment Description	Typical Sound Level at 50 ft., dBA (Ref. 6)	Est. Maximum Total Level at 50 ft. per Phase, dBA*	Max. Sound Level at a Setback Distance of 1320 ft., dBA	Distance Until Sound Level Decreases to 50 dBA, ft.
Erection				
Mobile Crane, 75 ton	85	85	52	1600

* Not all vehicles are likely to be in simultaneous operation. Maximum level based on reasonable expectation of simultaneous vehicle use.

As Table 2.16-1 indicates, depending on the particular activity, sounds from construction equipment are likely to be significant at distances of up to 5,500 feet, which means that construction will occur close enough to many homes within the Project that construction noise will be noticeable during certain periods of construction. At the very worst, however, sound levels ranging from 52 to 59 dBA may occur at an individual residence on a temporary basis over a several-week period. Such levels would not generally be considered acceptable on a permanent basis or outside of normal daytime work hours but as a temporary daytime occurrence construction noise of this magnitude should not unusual.

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

2.16.2 Project Facility Impacts

No significant or sustained adverse noise impact is expected at any home in the Project vicinity. This sub-section describes the turbine noise level, assessment criteria against which noise modeling was compared, and the noise modeling results.

2.16.2.1 Turbine Noise Level

The sound power level produced by the GE 1.5sle wind turbine are known from field tests carried out by independent acoustical engineers for General Electric. These values are reported in the document Technical Documentation, Wind Turbine Generator System GE 1.5sl/sle 50 and 60 Hz, Noise Emission Characteristics (Appendix H, Ref. 7). Sound power level is based on the measured sound pressure level at a given point and effective radiating surface or wave front area at that point. Knowledge of the sound power level allows the sound pressure level (SPL) of the source and the quantity perceived by the ear and measured with instruments, to be determined at any point.

The noise output of the GE 1.5sle turbine varies with wind speed. As shown in Table 2.16-2, for an 80-meter hub height, as is planned for this Project, the following sound power levels are published, as a function of wind speed at the standardized measurement height of 10 meters.

Table 2.16-2 GE 1.5sle Sound Power Levels vs. Wind Speed

Wind Speed at 10 m Height, m/s	Sound Power Level, dBA re 1 pW
3 (Cut In)	< 96
4	<96
5	99.1
6	103.0
7 to Cut Out	104.0

As seen in Table 2.16-3, the highest sound level of <104.0 dBA occurs at a wind speed of 7 m/s. This sound level and the associated octave band frequency sound levels in Table 2.16-3 were used in the analysis.

Table 2.16-3 GE 1.5sle Sound Power Level Spectrum during a 7 m/s Wind

Octave Band Center Frequency, Hz	63	125	250	500	1k	2k	4k	8k	dBA
Sound Power Level, dB re 1 pW	111.3	110.1	105.8	101.8	97.9	93.3	86.3	79.2	104.0

2.16.2.2 Assessment Criteria

There are two metrics against which the predicted noise from the Project were compared to determine whether any adverse environmental impacts might occur. The first of these measures is the local regulatory noise limit and the second is a set of noise assessment guidelines published by NYSDEC. Each of these criteria is described in Section 2.15 and has been applied to the noise modeling results detailed in Appendix H and summarized below.

From the field survey it was determined that the background sound level varies with wind speed. It was also determined that the turbine sound level also varies with wind speed. In order to carry out the ambient-based NYSDEC assessment procedure, some specific background levels were established against which to compare project noise and calculate cumulative increases.

Using the sound power levels, several worst-case, maximum noise level contour plots for the site were calculated. The software used allows the Project and its surroundings to be realistically modeled in three dimensions. Although the terrain at this site is relatively flat and inconsequential, the topography has been incorporated into the model. Each turbine is represented as a point noise source at a height of 80 m above the local ground surface.

A somewhat conservative ground absorption coefficient of 0.75 was assumed in the model because all of the intervening ground between the turbines and potentially sensitive receptors essentially consists of open farm fields or pasture land with a few wooded areas. Ground absorption ranges from 0 for water or hard concrete surfaces to 1 for absorptive surfaces such as farm fields, sand, or dirt. Consequently, a higher absorption coefficient could be justified here; however, for conservatism a lower value was used. In addition, any additional attenuation that might result from wooded areas has been completely neglected in all calculations.

The noise level from each turbine was conservatively assumed to be the downwind sound level in all directions simultaneously. This approach yielded a contour plot that shows the maximum possible sound level at any given point and sometimes also shows levels that cannot possibly occur, such as between two or more adjacent turbines, because the wind would have to be blowing in opposing directions at the same time.

The model also allows for certain atmospheric conditions that are likely to occur from time to time that may favor the propagation of sound relative to average conditions. Sound levels that are lower than those predicted in the modeling plots are actually expected to occur almost all of the time.

Comparison to NYSDEC Guidance

Preliminary noise modeling using NYSDEC guidelines indicated that the potential for community noise impacts exists with this Project. This early modeling work essentially performed the function of the First Level Noise Impact Assessment in the NYSDEC assessment procedure and made it clear that a Second Level assessment was necessary because nominal increases of 6 dBA or more were evident at a number of residences. A Second Level noise model was performed to consider the actual circumstances of the site including any attenuation that might be afforded by such factors as terrain, vegetation, or man-made barriers.

The overall results of the Second Level model show that many of the homes in the Project Area lie outside of the 42 dBA sound contour line, which represents the region where noise from the Project where the cumulative sound level may be 6 dBA or more above the pre-existing or ambient level. Approximately 40 residences are located on the edge of or within this potential impact zone. Theoretical exposures range from 42 to 43 dBA in the vast majority of cases and are below 45 dBA in all cases. Five residences, all of which have entered into easement agreements with Noble, might theoretically experience a Project sound level as high as 45 dBA. A list of the specific receptors and the predicted sound level at each are shown in Section 3.5 of Appendix H.

A sound level of 45 dBA is normally considered "quiet" and is a value that commonly appears in regulatory standards and guidelines worldwide as an acceptable nighttime noise level. In summary, however, the model predictions ostensibly indicate that Project noise might be audible at a number of houses but the circumstances required for this to occur would happen only rarely at best. Consequently, no significant or sustained adverse impact is expected at any home in the Project vicinity as a result of Project noise.

Comparison to Local Regulatory Limits

Plots 1A and 2A (Appendix H) demonstrate that a Project-only sound level of 50 dBA or more will not occur at any homes or other sensitive receptors, such as churches or schools, within the Project Area as required by the Towns of Chateaugay and Bellmont. The 50 dBA sound contours generally occur at a distance of about 350 feet from each turbine, which is well below the minimum setback distance of 1000 feet from on-site residences.

The limited frequency resolution of the octave band power level spectrum for the GE 1.5sle Wind Turbine does not provide significant information as to whether the turbine noise is tonal or not. A finer 1/3 octave band, or better, spectrum is needed to see if any prominent discrete tones exist. A plot of the 1/3 octave spectrum published by GE for this model turbine during a 7 m/s wind indicates that the expected turbine noise is distinctly broadband in nature; i.e., evenly distributed over the audible frequency spectrum. Therefore, tonal noise is not expected to be an issue during Project operations.

2.16.2.3 Low Frequency Noise

Modern wind turbines of the type proposed for this Project do not generate low frequency or infrasonic noise to any significant extent and no impact of any kind is expected from this. Appendix H, Annex B, contains an analysis performed by Dr. Geoff Leventhal, a highly respected acoustician in the field of low frequency noise, where measurements in the extreme low end of frequency spectrum were taken at four separate wind turbine sites including the Fenner Project in Madison County, New York, which uses the same GE 1.5sle turbine proposed for the Project. The data presented in this study show that the low frequency content in the sound level produced by a typical wind turbine at a few hundred feet is well below the audibility threshold and of insufficient magnitude to cause any sort of adverse impact.

2.16.3 Mitigation

Potential impacts from noise were considered and avoided to the extent possible through prudent Project design, turbine selection, and development of responsible construction schedules.

The Project Site was selected through a systematic process that considered the presence of environmental constraints, including noise impacts. During the consideration of alternative Project designs (discussed in more detail in Section 1.3, Project Alternatives), areas were eliminated from consideration as turbine sites if they were located too close to a residence to comply with noise requirements. The final proposed location of turbines and associated facilities reflects input and guidance received from landowners and Project consultants focusing on noise impacts.

Impacts from noise were considered during turbine model selection. Economies of scale dictate that optimally sized proven turbines that meet the regulatory requirements and fully utilize the available wind resource be selected for the Project. GE 1.5 turbines were ultimately selected because they meet these criteria and are among the quietest operating machines currently available.

Construction activities will be confined to the hours of 7:00 am to 7:00 pm in order to minimize and avoid unnecessary impacts on the community from construction noise.

For the duration of the Project, an on-site contact person will be identified to address and resolve any landowner complaints related to Project construction or operation, including any issues involving impacts from noise. Noble will work with a specialist, as required, to address and resolve any problems.

2.16.4 Cumulative Impacts

Several wind projects being developed by Noble and at least one other company are planned in the area immediately to the east of the Project, across County Line Road in Clinton County. Because some of the turbines from these projects are quite close to the eastern edge of the Chateaugay site, there is a possibility that some of the residences potentially affected by Chateaugay noise may experience cumulative sound impacts from other Clinton County Projects as well. In order to quantitatively assess this possibility, the noise model was expanded to include the turbines from the other projects east of County Line Road and new contour maps were plotted showing predicted sound levels if all projects become operational. A cumulative noise contour map is presented in Appendix H.

In most cases, the difference between the project impacts alone and the cumulative impacts if all projects become operational is either zero or negligible at 1 dBA. A change of *at least* 3 dBA is required before any difference in sound level begins to be perceptible. Nevertheless, what is likely to change is the general prominence of wind turbine noise relative to the background level. For example, a receptor with a Project-only sound level of 42 dBA would be right on the threshold of perception where Project noise is only likely to be intermittently audible when conditions are right. But if the level increases to 44 dBA at this same receptor because of the other projects, then turbine noise in general will begin to be more readily noticeable above the background level.

In summary, noise from the adjacent projects may well have a significant effect on some residences within the eastern part the Chateaugay and Bellmont Project Area. The net impact is likely to be an increased probability of annoyance from wind turbine noise, although it will be subjectively difficult to ascribe the source of the noise to one project or the other.

2.17 Climate and Air Quality: Environmental Setting

2.17.1 Climate

The Project Area is situated north of the Adirondack Mountains, at the edge of the Great Lakes Plain, a lowland region at the northern and western boundaries of New York State that adjoins the St. Lawrence River, Lake Ontario, and Lake Erie. The Project Area itself is at an elevation of approximately 1,000 feet above sea level, but nearby in Essex County, to the southeast, the elevation rises to between 4,000 and 5,000 feet. The highest point in Essex County, Mount Marcy, reaches a height of 5,344 feet above sea level.

The climate of New York State is broadly representative of the humid continental type, which prevails in the northeastern United States; however, differences in latitude, character of the topography, and proximity to large bodies of water have pronounced effects on the climate. Under most conditions, cold, dry air travels from the north or winds from the south and southwest transport warm, humid air, which has been conditioned by the Gulf of Mexico and adjacent subtropical waters. Nearly all storm and frontal systems moving eastward across the continent pass through or in close proximity to New York State. Lengthy periods of either abnormally cold or warm weather can result from the movement of great high pressure (anticyclonic) systems into and through the eastern United States. Cold winter temperatures prevail over New York whenever Arctic air masses, under high barometric pressure, flow southward from central Canada or from Hudson Bay (New York State Climate Office 2006).

The average annual mean temperature is 40° Fahrenheit in the Adirondacks, and in January the average mean temperature is approximately 16° Fahrenheit in the Adirondacks and St. Lawrence Valley. The Adirondack region records from 35 to 45 days with below zero temperatures in normal to severe winters, with a somewhat fewer number of such days occurring near the St. Lawrence River and Lake Champlain, which is situated in the Champlain Valley between the Adirondacks and the Green Mountains of Vermont. The summer climate is cool in the Adirondacks. The average length of the freeze-free season varies from 100 to 120 days.

Average annual amounts of precipitation in excess of 50 inches occur in the western Adirondacks, Tug Hill area, and the Catskills. In northern New York, the Adirondack region has an average seasonal snowfall in excess of 90 inches, but amounts decrease to 60 to 70 inches in the lowlands of the St. Lawrence Valley and to about 60 inches in the vicinity of Lake Champlain.

2.17.2 Air Quality

Air quality data for New York State are published annually by the New York State Department of Environmental Conservation (NYSDEC) Division of Air Resources. The most recent summary of air quality data available in the vicinity of the Project Area is the 2005 Annual New York State Air Quality Report - Ambient Air Monitoring System (NYSDEC 2005b). The report includes the most recent ambient air quality data and long-term monitoring trends in air quality collected and compiled from various monitoring stations in New York State.

There are no ambient air quality monitoring stations in Franklin or Clinton Counties; therefore, the Project Area and the counties are considered in attainment/unclassified for all criteria pollutants. The nearest air quality monitoring station is located at Whiteface Mountain in Essex County, which has demonstrated borderline compliance with the 8-hour ozone standard. The Environmental Protection Agency (EPA) has designated Essex County nonattainment for ozone (EPA 2006a). Data collected from other nearby air quality monitoring stations located at Piseco Lake in Hamilton County and Nick's Lake in Herkimer County, New York, provide 2005 and historical data for Sulfur Dioxide (SO_2), inhalable fine Particulate Matter (PM10 and PM2.5), and ozone and show that other locations in the region are in compliance with state and federal standards (NYSDEC 2005b).

The region does suffer from acid rain deposition, high levels of mercury in fish, and other problems caused primarily by power plant pollution. A number of reports have noted the effects of acid rain deposition in the Northeast, in particular the Adirondack Mountains and surrounding areas (Johnson 2001). Federally mandated air-emissions standards and regulations (e.g., the Clean Air Act Amendments of 1990) have been enacted in an attempt to reduce air emissions from coal burning power plants, which are seen as primary acid-rain sources.

Table 2.17-1 shows emissions of carbon dioxide (CO_2) (the leading greenhouse gas associated with global warming) from the leading fuel-based sources of electricity in the United States.

Table 2.17-1 Carbon Dioxide Emissions

Fuel	CO_2 Emitted per Kilowatt Hour (kWh) Generated (in pounds)	KWh Generated, 2004 (billions)	CO_2 Emitted, Total Generation (million pounds)
Coal	2.13	1,978	4,213,000
Natural Gas	1.03	709	730,000
Oil	1.56	99.9	156,000

Source: USDOE EIA 2005.

See Table 2.17-2 for sulfur dioxide (SO_2) emissions, the leading precursor on acid rain.

Table 2.17-2 Sulfur Dioxide Emissions

Fuel	SO_2 Emitted per kWh Generated (in pounds)	KWh Generated, 2004 (billions)	SO_2 Emitted, Total Generation (million pounds)
Coal	0.0134	1,978	26,505

Table 2.17-2 Sulfur Dioxide Emissions

Fuel	SO_2 Emitted per kWh Generated (in pounds)	KWh Generated, 2004 (billions)	SO_2 Emitted, Total Generation (million pounds)
Natural Gas	0.000007	709	5
Oil	0.0112	99.9	1,119

Source: USDOE EIA 2005.

See Table 2.17-3 for nitrogen oxides (NO_X) emissions, another acid rain precursor and the leading component of smog.

Table 2.17-3 Nitrogen Oxides Emissions

Fuel	NO_x Emitted Per kWh Generated (in pounds)	KWh Generated, 2004 (billions)	NO_x Emitted, Total Generation (million pounds)
Coal	0.0076	1,978	15,033
Natural Gas	0.0018	709	1,276
Oil	0.0021	99.9	210

Source: USDOE EIA 2005.

In the year 2000, about 79,000 gigawatt hours (GWh) of electricity, or slightly more than 50% of the electricity used in New York State, was produced by fossil fuel-fired generating plants in the State. On a statewide basis, 25% came from natural gas, 15.7% from coal, and 9.8% from oil (NYSERDA 2002).

2.18 Climate and Air Quality: Impacts and Mitigation

The U.S. Department of Energy and New York State Public Service Commission have mandated that renewable energy sources, such as wind turbines, will provide an increasing percentage of the nation's electricity in the coming years. Meaningful development of renewable wind energy will reduce reliance on fossil fuel combustion and nuclear fission facilities and result in reduction in air pollutants and greenhouse gasses. This Project as proposed will help to meet a small part of this ambitious federal and state objective to provide an environmentally friendly and renewable energy source to help meet the growing energy needs for New York State residents and business.

2.18.1 Construction Impacts

Minor, temporary adverse air quality impacts are anticipated during site preparation and construction. The operation of construction equipment and vehicles will produce emissions from engine exhaust and fugitive dust generation during travel on unpaved roads and construction activities. These operations will be temporary and distributed throughout the Project Site and, therefore, are not expected to create significant impacts on air quality.

2.18.2 Project Facility Impacts

Operation of Project facilities are expected to have a beneficial impact on air quality, by displacing emissions of competing fuel-burning power plants. Electric generation by fossil fuel-fired facilities contributes to serious environmental and health problems from CO_2, SO_2, NO_x, particulate matter, and mercury emissions. The adverse environmental and health effects of air emissions from combustion of fossil fuels are well documented and include global warming, acid rain, smog, respiratory health effects, and significant long-term impacts on wildlife. Air emissions and global warming have been cited as serious concerns for bird populations in North America in *A Birdwatcher's Guide to Global Warming* (Price and Glick 2004). Wind energy's most important environmental benefit is its complete lack of the emissions of both air pollutants and greenhouse gases that are associated with conventional fuel-based methods of generating electricity. Moreover, when wind-generated electricity displaces more costly fuel-based sources in the competitive electric power market, power plant pollution is reduced. The Project will have a significant long-term beneficial impact on air quality and climate by producing 129 MW of electricity without any emissions to the atmosphere. Specifically, the Project is expected to reduce power plant air pollution in New York State by about 6,000 tons of NO_x; 12,250 tons of SO_2; and 3,600,000 tons of CO_2 over 20 years, by displacing dirty fossil fuel-based electric generation (GE Energy 2005).

2.18.3 Mitigation

Best Management Practices (BMPs) will be followed during site preparation and construction to control fugitive dust emissions, including using water to wet down open soil surfaces to prevent dust emission (NYSERDA 2002) and limiting the travel speed of vehicles on private access roads to 15 miles per hour during construction and operations. Revegetation of temporarily disturbed areas and reasonable rates of speed of the occasional maintenance vehicles on the access roads eliminate the need for long-term mitigation.

2.19 Communication Signal Study: Environmental Setting

For the purpose of evaluating the interaction of wind turbines and communication signals, microwave signals in the Project Area are classified into two groups: those with narrow targeted paths of definable dimensions and those with broadcast (omni-directional or partially directional) characteristics. Because of their restricted pathway, the narrow beam signals are more susceptible to interference from an object, such as a wind turbine blade, placed in their path. This type of signal is present at higher frequencies, namely 940 megahertz (MHz) to 23 gigahertz (GHz).

2.19.1 Narrow Beam Microwaves

Noble engaged Comsearch of Ashburn, Virginia, to identify Federal Communication Commission (FCC)-licensed transmitters and repeaters whose definable paths crossed through the area planned for wind turbine development. Comsearch identified five beams occupying three pathways through the Project Site, exhibiting Worst Case Fresnel Zones (WCFZ) of 10.8 to 34.8 meters. The WCFZ is essentially the radius of the beam's cross-section. Noble took this information into account in the Windpark design. Knowing the beam's dimension and location, an exclusion corridor with a width of two times the WCFZ, or 22 to 70 meters, was established for each pathway. No turbines were sited within one blade radius (38.5 meters) of that corridor.

The microwave signals' exclusion corridor and Chateaugay wind turbine blade "footprints" are displayed in Comsearch's report, included as Appendix J, Exhibit 1. In all of Appendix J, note that the area of interest designated as Chateaugay Windpark includes both Noble Chateaugay Windpark, LLC and Noble Bellmont Windpark, LLC.

In addition to licensed microwave transmitters, existing transmitters operated by the departments of the United States Government are not subject to FCC licensing and, therefore, are not visible in the public record. Acting through the Department of Commerce National Telecommunications and Information Administration (NTIA), Noble advised federal government agencies of the planned wind turbine development area. This action allows government agencies to respond with any concerns over interference with their non-licensed installations, such as National Oceanic and Atmospheric Administration (NOAA) Doppler radar. By letter dated June 16, 2006, NTIA advised that, based on the information provided, no interference was anticipated. Correspondence between Noble and the NTIA is included in Appendix J, Exhibits 2 and 3.

The NTIA review process includes some government-operated radar sites but does not include those radar sites operated by the FAA, the Department of Defense (DOD), or the Department of Homeland Security (DHS). The Federal Aviation Administration (FAA) conducts its own review of radar obstruction when wind turbines are registered with them in the process of seeking a "Determination of No Hazard." As required, Noble will submit a Notice of Proposed Construction to the FAA for review. During the review process, the FAA also circulates the application data to DOD and DHS, and these government agencies will have an opportunity to provide determination of potential interference or obstruction prior to construction.

2.19.2 Broadcast Microwaves

Because of the spreading or omni-directional nature of broadcast microwaves, it is not possible to select wind turbine locations that avoid their paths. However, the spreading nature of broadcast microwaves also means that the influence of potential obstructions is diminished. Consideration of the influence on specific types of broadcast communication signals is discussed below and in Section 2.20, Communication Signals: Impacts and Mitigation.

AM/FM Radio

Within 15 miles of the Chateaugay Project Site, there are two amplitude modulation (AM) radio broadcast transmitters and five frequency modulation (FM) radio transmitters. Comsearch's report on AM and FM radio signals is included in Appendix J, Exhibit 4.

TV

The stations that will most likely produce broadcast coverage to the Franklin County area, including the Project Area will be those stations at a distance of 40 miles or less. In this range, there are four licensed and operational TV stations providing programming to the Chateaugay area from the United States. Two are full-power and two are low power. All of the United States stations are analog at this time. There are six full-power analog TV stations and seven digital TV stations providing programming to the Chateaugay area from Canadian stations. A full report on Chateaugay area TV coverage is included in Appendix J, Exhibit 5.

Land Mobile Radio (LMR)

Comsearch identified 96 LMR licenses located at 11 sites in the Chateaugay Study Area. These are grouped into two clusters in Chateaugay (four sites) and Ellenburg/Brainardsville (seven sites). These sites are listed in the Comsearch report shown in Appendix J, Exhibit 6.

Mobile Phones

Two cellular and fourteen personal communication system (PCS) operating licenses were identified in the Chateaugay development area (see Appendix J, Exhibit 6). The details regarding coverage areas of these systems are proprietary and not available in the public record.

Communication Towers

Three communication towers are registered in the Comsearch database within 10 miles of the Chateaugay development area (see Appendix J, Exhibit 7). These sites are simply registrations for the physical towers. Their licensed users would have been described in the text above.

2.20 Communication Signals: Impacts and Mitigation

Wind turbines have the potential to cause interferences such as signal obstruction, attenuation, or other signal alteration to some types of communication systems. There is potential for interference with television coverage in the Project Area. No impacts are expected to FCC-licensed transmitters and receivers, AM or FM radio transmissions, or LMR and cellular and/or personal communication systems. There may be potential for interference with, or obstruction of non-licensed transmitters and receivers (such as those operated by the FAA, DOH, or DHS). Impacts are described in Section 2.20.2, and mitigation or avoidance of these impacts is described in Section 2.20.3.

2.20.1 Construction Impacts

Construction of the Project will not result in impacts to communication signals in the Project Area.

2.20.2 Project Facility Impacts

Television coverage from terrestrial stations may be altered at certain locations in the Franklin County area because of the presence of wind turbines. The extent of the impact will depend on the relative location of the TV transmission antennas, wind turbines, and reception point. Such impacts have occurred at other locations in the country where wind energy turbines have been installed. The effects are video ghosting, signal attenuation, and an effect called "shimmering." Mitigation of these impacts is discussed in Section 2.20.3.

Operation of the Project is not expected to result in impacts on narrow beam microwave transmissions, AM or FM radio transmissions, LMR, cellular, or PCS licensees.

Audio signals from FM broadcast are not discernibly degraded by wind turbines because wind turbines have the effect of influencing the amplitude of the signal but not its frequency. While audio signals from AM broadcast can interact with wind turbines at close range (1 to 3 km), no impacts are expected as the AM transmitters identified by Comsearch are outside this range.

The frequencies of operation of the LMR repeaters are generally unaffected by the presence of wind turbines. Very little, if any, change in the coverage of the repeaters will occur when the wind turbines are installed. However, if there is a reported change in coverage, this can be easily corrected by repositioning the affected repeater, or by adding a repeater to the LMR system.

Telephone communications in the cellular and PCS frequency bands are unaffected by the presence of wind turbines. This is not only because of the frequencies used but because cell communications are designed to function as a system, passing the signal to a different cell if it is weakened at the first. If a cellular system or PCS operator finds that its coverage has been compromised by the presence of wind turbines, coverage can be restored by adding an additional cell or an additional sector antenna to an existing cell.

Transmitters operated by some departments of the U.S. Government are not visible in the public record. Because obstruction or interference with government-operated radar may compromise homeland defense and security, the FAA circulates an applicant's Notice of Proposed Construction to the DHS and DOD for review prior to approval. The FAA application has not yet been submitted for this project, so specific impacts, if any, will be identified in connection with the FAA review.

2.20.3 Mitigation

Noble will be able to avoid interference with most communication signals for the following reasons:

- The careful positioning of the turbine towers with respect to the beam patterns of microwave links avoids interference with narrow beam microwave transmissions;
- The separation distance between planned turbine towers and AM or FM radio transmission antennas is great enough so that no alteration of radio coverage in the area will occur; and
- No discernible change in operation will occur to LMR, cellular, and/or PCS because of the nature of their operation and the frequency bands of operation.

However, if there is a reported change in LMR coverage, the change can be easily corrected by repositioning the affected repeater or by adding a repeater to the LMR system. If a cellular system or PCS operator finds that its coverage has been compromised by the presence of wind turbines, coverage can be restored by adding an additional cell or an additional sector antenna to an existing cell. Submission of claims for signal interference by turbines will be accepted up to one year after tower commissioning, utilizing a complaint resolution procedure that will be developed by Noble and the Towns of Bellmont and Chateaugay. The initial validity of claims will be evaluated by line of sight analysis of the communication tower, turbine tower, and receptor.

Because there is potential for interference with television coverage, Noble will develop pre-construction baseline TV reception data. Post-construction, Noble will confirm and address on-site TV reception interference issues on a case-by-case basis. TV reception from cable and satellite providers may be offered as an alternative for those homes whose television reception from terrestrial stations is found to be degraded.

If any of the proposed turbines are anticipated to interfere with air route or security surveillance government radar, or should any other unforeseen impacts be identified during FAA review, Noble's application for FAA Determination of No Hazard will be rejected. In this event, Noble will remove, modify, or re-position turbines and the Project will be reviewed again by the FAA. There is some possibility that this triggers an iterative process as Noble revisits any new environmental impacts that result.

2.21 Traffic and Transportation: Environmental Setting

Noble has prepared a Traffic and Transportation Plan for the Project (Appendix K). Major traffic and transportation routes were identified in the Project vicinity. This section describes ground and aviation transportation within the vicinity of the Project Area.

2.21.1 Ground Transportation

Franklin and Clinton Counties are serviced by a well-developed transportation network that contains a mix of federal, state, and county roads. These include U.S. Route 11, NYS Route 374, and NYS Route190. U.S. Route 11 is closest to the site where there will be significant construction-vehicle activity. The most recent traffic count measures for this route were recorded by the NYS Department of Transportation (NYSDOT) in September 2004 and June 2005. Weekday travel between the daylight hours of 7:00 a.m. and 7:00 p.m. ranged from 93 vehicles per hour to 195 vehicles per hour, one way, with an average of 151 vehicles per hour. Table 2.21-1 shows average traffic counts for U.S. Route 11, NYS Route 374 and NYS Route190. The primary travel routes for the construction of the Project and during Project operation are discussed in Section 2.22, Traffic and Transportation: Impacts and Mitigation.

The use of state- or federally funded roads for transport of oversized loads requires permission from NYSDOT. Prior to the use of state- or federally funded roads, Noble's transportation provider will apply for the necessary permits from NYSDOT. The application process will produce a detailed haul route survey identifying obstructions, roadway modifications, utility coordination, private property easements, safety precautions, and traffic control. The resulting NYSDOT permit(s) will be provided to the Town(s). In addition, the condition of local roads will be evaluated during the preparation of road-use agreements between Noble and the Towns of Bellmont and Chateaugay. These agreements will identify whether and where any pre-construction improvements are needed as well as formalize the process for post-construction repairs by Noble.

2.21.2 Aviation Transportation

Prior to locating individual turbines, Noble commissioned Aviation Systems, Inc. to conduct an Area Study Report of the air space in the Project Area. The purpose of the study was to identify and avoid protected airspace such as airport takeoff and landing lanes. The nearest public use or military airfield to the Project Area is the Malone-Dufort Airport, located approximately 14 miles from the Project Area. The Area Study Report is provided in Appendix K.

Table 2.21-1 NYSDOT Traffic Counts

	Traffic Counts - Vehicles per Hour, 7:00 a.m. to 7:00 p.m.														
	7-8:00	8-9:00	9-10:00	10-11:00	11-12:00	12-1:00	1-2:00	2-3:00	3-4:00	4-5:00	5-6:00	6-7:00	Min	Max	Avg
U.S. Route 11, between Franklin County Line and Route 189, Monday 9/13/2004 – Thursday 9/16/2004															
N-bound avg	132.3	139.6	158.3	164.3	180	148.3	168.3	171.6	198.6	194	152	112.6	112.6	198.6	160
S-bound avg	102.6	131.3	123	145.3	151.3	147.3	152	159.3	165.6	177	175.6	156.6	102.6	177	148.9
2-way avg	234.9	270.9	281.3	309.6	331.3	295.6	320.3	330.9	364.2	371	327.6	269.2	234.9	371	308.9
1-way avg	117.45	135.45	140.65	154.8	165.65	147.8	160.15	165.45	182.1	185.5	163.8	134.6	117.45	185.5	154.45
U.S. Route 11, between NYS Route 374 Chateaugay and Clifton County Line, Thursday 6/16/2005 – Wednesday 6/22/2005															
N-bound avg	131.6	149.8	145	183.8	195.8	184.3	192.2	205.6	195	168.3	153.8	140.3	131.6	205.6	170.46
S-bound avg	122	133.2	148.6	173.6	188.8	183.6	199.8	201.6	170	206.8	181.5	170	122	206.8	173.3
2-way avg	253.6	283	293.6	357.4	384.6	367.9	392	407.2	365	375.1	335.3	310.3	253.6	407.2	343.76
1-way avg	126.8	141.5	146.8	178.7	192.3	183.95	196	203.6	182.5	187.55	167.65	155.15	126.8	203.6	171.87
NYS Route 374, between U.S. Route 11 and NYS Route190, Thursday 6/16/2005 – Wednesday 6/22/2005															
N-bound avg	66.2	55.6	58.2	69.8	63.2	59.7	57.7	54.8	68.8	53.3	54.2	51.2	53.3	69.8	59.4
S-bound avg	28.5	35.8	43.5	57.6	69.7	62.7	57.5	67	63.7	71	60.2	46	28.5	71	55.3
2-way avg	94.7	91.4	101.7	127.4	132.9	122.4	115.2	121.8	132.5	124.3	114.4	97.2	91.4	132.9	114.7
1-way avg	47.35	45.7	50.85	63.7	66.45	61.2	57.6	60.9	66.25	62.15	57.2	48.6	45.7	66.45	57.3
NYS Route 190, between Clinton County Line and County Road 5, Monday 6/21/2004 – Monday 6/28/2004															
E-bound avg	36.6	44.9	35.3	36.7	41.4	43.9	41.9	42.1	51	52.4	49	39.6	35.3	52.4	42.9
W-bound avg	26.4	29.9	31.9	35.3	37.9	39	48.9	45.3	61.9	70.9	73.6	43.9	26.4	73.6	45.4
2-way avg	63	74.8	67.2	72	79.3	82.9	90.8	87.4	112.9	123.3	122.6	83.5	63	123.3	88.3
1-way avg	31.5	37.4	33.6	36	39.65	41.45	45.4	43.7	56.45	61.65	61.3	41.75	31.5	61.65	44.15
NYS Route 190, between Franklin County Line and County Road 5, Monday 6/7/2005 – Thursday 6/10/2005															
2-way avg	73.3	99	73	66.7	70.7	65.5	64	72.8	79.8	82	123	90	64	123	80
1-way avg	36.65	49.5	36.5	33.35	35.35	32.75	32	36.4	39.9	41	61.5	45	32	61.5	40

Source: NYSDOT 2006.

2.22 Traffic and Transportation: Impacts and Mitigation

The nature of the communities in the Project Area is rural/agricultural. As supported by NYSDOT traffic count data, local road traffic is well below average traffic counts for the area (see Table 2.22-1). Delivery of Project components, principally blades, tower sections, nacelles, and transformers, is expected via U.S. Route 11 and NYS Route190. A Traffic and Transportation Plan is included in Appendix K and contains a description of these primary travel routes for the construction of the Project, vehicle and road requirements, known limiting road conditions, and the weights and heights of loaded vehicles. Appendix K also contains a haul route map and figures depicting the transportation of major Project components. Construction-related traffic impacts, aviation impacts, and mitigation measures are described below.

2.22.1 Construction Impacts

Ground Transportation

There is little to no congestion on the roads in the Project Area; thus, minimal delay for local traffic is expected. Traffic associated with the construction of the Project will consist of delivery vehicles for turbine components, materials associated with turbine site construction and assembly, access road construction, and personal vehicles for workers.

Delivery vehicles will range in size from oversized load tractor trailers (to deliver tower sections, turbine nacelle, rotor blades, and cranes) to smaller vehicles such as dump trucks, concrete trucks, fuel-delivery trucks, mechanics vans, and pickup trucks. Personnel vehicles will consist of automobiles and light trucks.

Small construction vehicles will be used on a regular basis during the construction period to deliver supplies, personnel, and other Project necessities. Suppliers for the Project have not yet been selected but are expected to be local contractors using the most direct route to the Project Site. Small construction vehicles will not have difficulty reaching the Project Site using any local roads while complying with all Town, County, and State ordinances. Concrete trucks are expected to be the heaviest of these small construction vehicles, requiring a road capable of safely handling a vehicle with a gross weight of approximately 80,000 pounds (40 tons).

For the Project size of 86 turbines, estimates of vehicles with scheduled deliveries are provided as follows:

- 8,131 gravel trucks for road building at 18 cubic yards (cy) each;
- 708 gravel trucks for crane pads at 18 cy each;
- 21 gravel trucks for road removal to final width (additional 4,483 trucks for road removal are recycled to road building and crane pad formation);

Table 2.22-1 Noble Windparks in Chateaugay and Bellmont - Estimated Construction Traffic, Round Trips per Vehicle, 2-week Intervals

Week	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	TOTALS
Gravel loads – road building	291	301	464	672	877	1028	1084	1028	877	672	464	303	70	8131
Gravel loads – crane pads		24	34	51	71	86	95	97	86	71	51	31	11	708
Gravel loads – road removal				100	199	414	676	862	862	676	414	199	102	4504
Gravel removal reused in road building*				-100	-199	-414	-676	-862	-862	-676	-414	-199	-81	-4483
Concrete trucks				58	116	232	377	493	464	377	232	116	29	2494
Tower section delivery				6	12	12	24	39	51	48	39	24	3	258
Nacelle delivery				2	4	4	8	13	17	16	13	8	1	86
Blade delivery				3	3	6	12	18	27	24	18	12	6	129
Hub delivery				2	2	4	8	13	17	16	13	8	3	86
Controller Cabinet delivery					1	3	5	5	5	5	3	2		29
Transformer delivery					1	3	5	5	5	5	3	2		29
NET R/T Traffic	291	325	498	794	1087	1378	1618	1711	1549	1234	836	506	144	11971
Trucks per day	**29.1**	**32.5**	**49.8**	**79.4**	**108.7**	**137.8**	**161.8**	**171.1**	**154.9**	**123.4**	**83.6**	**50.6**	**14.4**	

* When loads are recycled within the Project Area from road removal to road building, we eliminate one load leaving the Project Area (1/2 round trip) and one load entering the Project Area (1/2 round trip). Net savings of one round trip (-1).

- 2,494 concrete trucks at 9 cy each;
- 258 tower section delivery vehicles;
- 86 nacelle delivery vehicles;
- 129 blade delivery vehicles;
- 86 hub assembly delivery vehicles;
- 29 controller cabinet delivery vehicles;
- 29 transformer delivery vehicles; and
- Crane mobilization and relocation.

During weeks of peak construction activity, vehicles are expected to total 171 per day over 8 hours per day. Using the most conservative assumption possible (that all traffic will be on U.S. 11) the peak Project transportation period (weeks 11 through 20) will result in about 14% increase in hourly daytime traffic on U.S. 11. Table 2.22-1 shows the estimated distribution of construction traffic throughout the duration of the Project. Construction vehicle traffic will be limited to between the hours of 7:00 a.m. and 7:00 p.m. and will typically be scheduled between 7:00 a.m. and 4:00 p.m. except along school bus routes from 7:00 to 8:30 a.m. and 2:30 to 4:00 p.m. While trucks pass through or make turns at road intersections, temporary stoppage of traffic may be needed to allow the truck to safely complete the turn by utilizing the complete road width. In this case, appropriate measures will be taken to safely stop traffic temporarily on affected roads (see Section 2.22.3 for detailed mitigation measures).

Cumulative impacts may also occur by overlapping of the Chateaugay/Bellmont construction schedule with Noble's Clinton and Ellenburg projects. These impacts are further discussed in Section 3, Cumulative Impacts and Benefits, of this DEIS.

Aviation Transportation
With regard to impacts on air transportation, a study was completed for the air space in the vicinity of the Project Area. The purpose of the study was to identify and avoid protected airspace such as airport takeoff and landing lanes. The study confirmed that a 390-foot structure was feasible for siting anywhere within the Project boundary. As such, construction of the Project will not impact air transportation or protected airspace in or near the Project Area.

2.22.2 Project Facility Impacts

Ground Transportation

During Project operation, traffic and transportation impacts will be limited to light trucks for service and maintenance personnel. The incremental traffic impacts during the operation of the Project will be negligible.

Aviation Transportation

Permanent Project facilities will not impact air transportation or protected airspace within or near the Project Area.

2.22.3 Mitigation

Ground Transportation

For ground transportation, the following mitigation techniques will be implemented to minimize impacts on homes, schools, and businesses:

- If construction vehicles must utilize the complete road width, appropriate measures will be taken (e.g., flagging) to safely stop traffic temporarily (typically for under 5 minutes) on affected roads;

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

- Scheduled transport vehicles will be confined to the approved travel routes, designated in road-use agreements;

- Delivery schedules will avoid periods of school-bus activity. Construction traffic will avoid school-bus arrival and departure times by coordinating with Chateaugay Central School District personnel on affected routes;

- Parking at the turbine construction sites will be restricted to company vehicles; a shuttle service for laborers and contractors will connect centralized, off-site parking areas with the active turbine sites;

- Gravel drive-offs from site access roads will serve to remove much of the tire mud from vehicles leaving the construction areas; mechanical street sweepers will be deployed as required to remove mud from local streets as it accumulates;

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

- Mandatory safety orientation for contractors and employees shall include discussion of vehicle safety concerns; and

- Noble will comply with Town, County, and State traffic safety measures with the design of their traffic control measures.

In the permitting process with the respective Towns and NYSDOT, a final route survey will be developed that identifies road improvements necessary to accommodate delivery and construction vehicles when rerouting is impractical. These improvements commonly include the widening of narrow roads, rounding of corners at intersections, and reinforcing crossings at culverts and bridges. Route structural conditions, including road bearing capacity, bridge crossings/bridge conditions, and culvert crossings/culvert conditions will be assessed by NYSDOT, a qualified transportation logistical planner and in consultation with the Towns as transport details are developed. This assessment will include an inventory of the number of bridge and culvert crossings, including those represented in access roads. Appropriate mitigation measures will be identified. The updated haul route survey will be provided to the Town, the Highway Superintendent, and the Town's engineers prior to the completion of the Road Use Agreement between Noble and the affected Towns. The agreement will designate approved routes and commit the cost of both improvements and repairs to Noble's account. The process of creating a road use agreement will also allow the municipalities' plans for scheduled paving and resurfacing to be coordinated with improvements and repairs by Noble.

The final route survey will also identify utility lines that need to be raised to accommodate safe passage of the delivery vehicles and their loads. If utility lines need to be raised, the appropriate utility will be contacted to perform this operation.

During and prior to Project execution, interested parties may obtain vehicle routing information the following ways:

1. Noble's Application for a Wind Energy Facility to the Towns of Chateaugay and Bellmont, on file at the municipal offices, contains a section describing the planned haul route.

2. The same Application described above will be accessible to view as a link to Noble Environmental Power's corporate Web page (www.noblepower.com).

3. A toll-free telephone number (1-888-NOBLE06), established for public information and for complaint reporting, will provide answers to questions on this topic.

4. There is a discussion of this topic in Appendix K of this DEIS.

Aviation Transportation

While Noble utilized the air transportation study (Appendix K) to design the Project to avoid impacts on protected airspace, a lighting plan was prepared to comply with applicable Federal Aviation Administration (FAA) regulations to minimize risk of collision by passing aircraft (see Appendix G). FAA approval of this plan will be obtained prior to construction.

2.23 Land Use: Environmental Setting

2.23.1 Regional Land Use Patterns

The Project is located primarily in the Towns of Chateaugay and Bellmont in Franklin County in northeastern New York State. The Project will utilize some components situated in the Towns of Clinton and Ellenburg in neighboring Clinton County to the east, all of which were subject to a full environmental review by those Towns culminating in a Joint Findings and Decision that was adopted in August 2006. Because the Clinton County segment of the Project Site represents a small portion of the entire Project Area, and the differences in land use between Clinton County and Franklin County are insignificant, Clinton County is not considered separately. Section 1.2, Detailed Description of Proposed Action, details the Project components situated outside of the Towns of Chateaugay and Bellmont.

These communities are rural and characterized by forested land, agricultural uses, and rural-residential uses, with commercial/industrial development limited to widely scattered rural businesses. The more concentrated areas of residential and commercial development in Franklin County are the Village of Chateaugay (pop. 798), Tupper Lake, Saranac Lake, and the Village of Malone. Population and development is more densely concentrated along major routes such as U.S. Route 11 and NYS Route 374.

The City of Plattsburgh (pop. 18,750), in Clinton County, is located approximately 30 miles southeast of the Project Area, and although in an adjoining county, is the regional center of commerce, industry, government, and culture. The northern boundary of the Adirondack Park, a six-million-acre protected region of mixed public and private lands, is the southern boundary of the Project Area.

2.23.2 Project Area Land Use

Land use was evaluated using information gained during field review and interpretation of United States Geological Survey (USGS) Land Use/Land Cover base maps, aerial photographs and Town maps. The Project Area is bounded generally by U.S. Route 11 to the north, NYS Route190 to the south, County Line Road to the east (border of Franklin and Clinton counties), and NYS Route 374 to the west and southwest (see Figure 2-23). Cassidy Road bisects the Project Area from north to south, and Sancomb Road, Seymore Road, Tourville Road, Cooper Road, and Number Five Road traverse the Project Area from east to west. Cooper Road marks the division between the Town of Chateaugay to the north and the Town of Bellmont to the south.

The approximately 8,620-acre Project Area is characterized by a combination of agricultural (60%) and forested land (40%). Agricultural activities primarily support dairy operations, which consist of annual crop production, pastureland, and hay/alfalfa production. The Project Area is located in state-designated Agricultural District FRA01 (see Sections 2.3 and 2.4, Soils, for discussion of agricultural districts and New York State Department of Agriculture and Markets [NYSDAM] consultation).

Forested land in the Project Area consists of a mixture of upland and wetland forest and has a variety of forest communities ranging from early successional forest and reverting agriculture land to mature evergreen and deciduous forest communities.

Residential development within and adjacent to the Project Area is typical of rural areas with residences and farms clustered at crossroads hamlets, located on individual agricultural properties, or as mentioned previously, situated along state, county, and local highways such as County Line Road, NYS Route190, and U.S. Route 11. The Village of Chateaugay is northwest of the Project Area boundary.

Community Facilities

As a whole, Franklin County is served by a full range of community facilities and services. Fire protection is provided by Chateaugay Volunteer Fire and Rescue Company, and police services are provided by the Franklin County Sheriff's Department and the New York State Police. Other community facilities include the Alice Hyde Medical Center, which is located in nearby Malone; the Adirondack Medical Center in Saranac Lake; and the Chateaugay Central School District. The Chateaugay Correctional Facility is located within the Project Area on the corner of U.S. Route 11 and Cassidy Road. The facility is a medium-security Alcohol and Substance Abuse Correctional Treatment Center (ASACTC). One recreation facility, the Chateaugay Town Recreation Park, is located immediately to the west of the Project Area boundary on NYS Route 374. While there are no churches within the Project Area, there are several just outside the site boundary, including St. Patricks and Chateaugay Brainardsville United Methodist in Chateaugay and Healing Ministry of Lord in Bellmont. There are two cemeteries, East Side Cemetery and Brainardsville Cemetery, within the Project Area and two outside of the Project Area, Evergreen Cemetery and Bigelow Cemetery.

2.23.3 Local Land Use Plans, Zoning and Laws

Development in the Towns of Chateaugay and Bellmont is primarily rural-agricultural and is not regulated by zoning regulations. The Towns of Chateaugay and Bellmont do not have a land use, comprehensive, or master plan; however, each Town has enacted local laws to comprehensively regulate development of wind energy facilities as described below. Franklin County does not have a planning department or planning board. While the County does not have a land use or master plan, the Franklin County Industrial Development Agency developed the Franklin County Comprehensive Economic Development Strategy 2005-2009 (Franklin County 2004). Based on the amount of unused land that was formerly and is currently engaged in agricultural employment, wind farm development is identified in this plan as a significant opportunity for many of the County's farming and other large land-holding interests.

As mentioned above and described in Section 1.1, Project Description, a small portion of the Project Area (2.5 miles of collection line and 900 feet of access road) extends into the Towns of Clinton and Ellenburg in adjacent Clinton County. While development in Clinton is not regulated by zoning controls, development in the Town of Ellenburg is controlled by zoning regulations outlined in the Ellenburg Zoning Law. The Zoning Law has minimum area requirements on lot sizes, front yard depth, side yards, and rear yards, and also has maximum height requirements of certain principal buildings.

Neither the Town of Clinton nor the Town of Ellenburg has a land use, comprehensive, or master plan, but Clinton County has a land use plan which was last updated in 1979. The Clinton County Land Use plan identifies 11 categories of land use, with specific goals for each category, including preservation of agricultural land, intelligently managed and utilized forest resources, support of new industries to the County, maximization of the quantity and quality of existing services, and working to ensure that the long-term energy needs of the County are met. Wind energy projects are consistent with these goals in that they support a new industry to the County with zero emissions or waste discharge; use no fuels or water; and meet the energy needs of the County and the surrounding region. The use of renewable energy supports sustainable agricultural, forest management, and public service maximization. The lease payments to farmers from wind power projects preserve agricultural land by helping to keep farms in operation and the land in agricultural use and add to property owners' net worth.

The Towns of Bellmont and Chateaugay approved Wind Energy Facility laws in November 2006 and December 2006, respectively, to "promote the effective and efficient use of the Towns' wind energy resources through Wind Energy Conversion Systems (WECS), and to regulate the placement of such systems so that the public health, safety, and welfare will not be jeopardized" (Bellmont Local Law No. 2 of 2006, Chateaugay Local Law No. 7 of 2006). According to the laws, project applicants must submit an application for a Wind Energy Facility Permit to construct, maintain, and operate a wind energy facility in the Town (see Appendix I of this DEIS for each Local Law). Article II of the laws describe the requirements of a wind energy permit application, including setback and plot plan requirements; the application review process; standards for WECS; and required safety measures. In addition to the plot plan and associated data, the following must be submitted with a wind energy permit application:

- Plans for any proposed landscaping, depicting existing vegetation and describing any areas to be cleared and the proposed additions;
- A lighting plan showing FAA-required lighting and other proposed lighting, and all associated FAA correspondence;
- A list of property owners and mailing addresses within 500 feet of the boundaries of the proposed site;

- A decommissioning plan;
- A description of the complaint resolution process;
- A construction schedule;
- A description of routes to be used by construction and delivery vehicles; and
- Part 1 of a State Environmental Quality Review (SEQR) Full Environmental Assessment Form.

The laws also specify safety requirements including manual and automatic controls on each WECS to limit the speed of the rotor blade, fencing and warning signs to restrict access to each WECS or WECS cluster, height requirements for climbing pegs or tower ladders, and locked access doors to electrical and mechanical components. In addition, the minimum allowable distance between the ground and any part of the rotor blade is 30 feet.

Article II of the local laws also establishes setback requirements for each WECS, measured from the center of the WECS. The setback requirements differ in each Town and are identified in Table 2.23-1.

Table 2.23-1 Towns of Chateaugay and Bellmont WECS Setback Requirements

Setback Requirement	Town of Bellmont	Town of Chateaugay
Site Boundary Lines	500 ft (First 100 ft must be a green buffer zone [i.e., left naturally vegetated]. Cutting and clearing is prohibited except as necessary to construct and maintain access roads and collection lines).	600 ft (First 100 ft must be a green buffer zone [i.e., left naturally vegetated]. Cutting and clearing is prohibited except as necessary to construct and maintain access roads and collection lines).
U.S. Route 11, NYS Route 374	1,200 ft	1,200 ft
Other public roads	500 ft	600 ft
Nearest Non-Participating Residence	1,000 ft	1,320 ft
Property line of school, hospital, nursing facility	N/A	2,500 ft
Church (not including church-owned cemetery)	1,200 ft	1,320 ft
Participating Residence	1,000 ft	1,200 ft
Any non-WECS structure or above-ground utilities	1.5 times total height of WECS	1.5 times total height of WECS

Source: Chateaugay Local Law No. 7 of 2006; Bellmont Local Law No. 2 of 2006.

The Application for a Wind Energy Permit submitted to the Town of Bellmont requests a waiver of setbacks for Turbine 73. The proposed location of this turbine is 974 feet from Route 374, 226 feet less than the 1,200-foot setback. The Application for a Wind Energy Permit submitted to the Town of Chateaugay requests a waiver of setbacks for Turbines 20 and 21. The proposed locations are 1,025 and 1,060 feet, respectively, or 175 and 140 feet less than the 1,200-foot setback, respectively). These locations are the optimal locations for the turbines in terms of minimizing environmental concerns by utilizing previously disturbed areas.

The Towns of Ellenburg and Clinton also have passed Wind Energy Facility laws with similar requirements and setbacks (see Appendix I for Ellenburg Local Law No. 4 and Clinton Local Law No. 1 of 2005). Because Ellenburg enforces zoning regulations, WECSs can only be constructed in a Wind Overlay Zone, which may be created in the RU (rural use) and RA (rural arterial) zones. All of the Project components proposed for Clinton and Ellenburg are located within the boundaries of previously permitted Windparks; thus, the portion of the Project extending into Ellenburg is already in a Wind Overlay Zone. Project activities planned for this component will involve substation expansion and tie-in to the existing transmission line (see Section 2.24, Land Use Impacts and Mitigation, for a more detailed discussion).

2.24 Land Use: Impacts and Mitigation

This section describes the impacts that construction and operation of the Project will have on land use within the Project Area as well as potential mitigation measures. Overall, the Project is compatible with local and regional land use and community character, as it will not preclude existing uses or interfere with planned, future uses. The Project will result in Site-specific temporary/construction-related impacts as well as permanent, operations-related impacts. Table 2.24-1 presents a summary of the impacts of the Project on current land use/land cover at the Project Site.

Table 2.24-1 Project Land Use Impacts

Land Use/ Land Cover[1]	Construction Impacts (acres)	Operational Impacts (Permanent Impacts) (acres)[2]	Areas to Be Restored after Construction (Temporary Impacts) (acres)
Turbines			
Agricultural	48	4	44
Forested	31	31	0
Access Road			
Agricultural	99	26	72
Forested	49	49	0
Collection System			
Agricultural	22	0	22
Forested	15	15	0
Total	**264**	**125**	**138**

1 0.01 acres of Commercial/Industrial/Transportation land use will also be permanently impacted by the Project.

2 It is important to note that in the context of wetland impacts, impacts on forested wetlands are considered a permanent conversion (see Section 2.8 for a more detailed discussion of wetland impacts) rather than a permanent impact. In the context of land use, however, the conversion of natural areas to built facilities and the conversion of one vegetative community to another is considered a permanent impact because forested areas will not grow back immediately to their original pre-construction condition.

2.24.1 Construction Impacts

Project Site Land Use

Activities associated with construction of turbines, access roads, collection lines, and substation expansion will result in temporary impacts, described below. These temporary impacts have an estimated duration of two years until the land reverts to its pre-construction condition.

Turbines. Locations of the turbines were chosen to minimize the loss of active agricultural land and the interference with farm operations. An approximately 200 by 200-foot staging area (maximum) will be required at all turbine locations during construction. The staging areas, which include turbine pedestals, crane pads, and workspaces for construction equipment, will temporarily disturb a total of approximately 48 acres of agricultural land (43 acres in Chateaugay and 5 acres in Bellmont) and 31 acres of forested land (23 acres in Chateauga, and 8 acres in Bellmont) during construction of the turbines. Other than the turbine pedestals and the turbine crane pads, disturbed areas within the staging area will be restored with subsoil and stockpiled topsoil after turbine erection.

Access Roads. The Project will include construction of approximately 22 miles of access roads, which will impact approximately 49 acres of forested land (36 acres in Chateaugay, 12 acres in Bellmont, and <1 acre in Ellenburg) and approximately 98 acres of agricultural land (88 acres in Chateaugay, 10 acres in Bellmont, and <1 acre in Ellenburg). Approximately 72 acres of agricultural land will be restored following construction. The forested land cleared on each side of the access road will result in the permanent conversion to other vegetation communities (i.e., herbaceous or successional shrubland). Temporary access roads will be installed within a maximum 60-foot-wide construction right-of0way (ROW) (40 feet in wetlands), as described in Section 1.2, Detailed Description of the Proposed Action. A 30-foot temporary, graveled access road will be sited within this 40- to 60-foot-wide construction corridor.

Collection System. Collection line impacts will generally be temporary in nature. Approximately 85% of the collection lines will be buried underground within the construction corridor as close to the permanent road as possible to a depth of 4 to 5 feet. Where underground collection lines are not installed along access roads, a temporary ROW will be cleared of vegetation (22 feet for one circuit, 32 feet for two circuits). Approximately 22 acres of agricultural lands (16 acres in Chateaugay, 3 acres in Bellmont, 2 acres in Clinton, and <1 acre in Ellenburg) and 15 acres of forested land (8 acres in Chateaugay, 4 acres in Clinton, and 3 acres in Bellmont) will be impacted by the construction of collection lines. Following installation of the buried line, vegetation in the ROW will be permitted to return to its preconstruction condition in agricultural areas. Therefore, future agricultural usage will not be impacted by construction of the collection system. Installation of the collection lines will result in the permanent conversion of forested land to other vegetation communities (i.e., herbaceous or successional shrubland). Construction of these lines will not result in significant impacts and will not impede future development on the surrounding land.

Substation. Construction of the Clinton Substation was previously evaluated pursuant to SEQRA including the adoption of a Joint Findings Statement and Decision by the Towns of Altona, Ellenburg, and Clinton in August, 2006. No new land use impacts are anticipated to this portion of the Project.

Construction activities (staging-area, access-road, and collection-line ROWs) will impact a total of approximately 169 acres of agricultural land and 95 acres of forested land (see Table 2.24-1).

Community Facilities
Construction activities will not have any impact on healthcare facilities, parks, cemeteries, churches, or other facilities in or near the Project Area.

Local Land Use Plans, Zoning, and Laws
Construction of the Project will not impact local laws, or where applicable, local zoning or land use plans. Construction activities will be conducted in accordance with the design and siting requirements of the local wind energy facility laws of each Town in the Project Area. The necessary building permits and other approvals will be obtained from each Town prior to construction.

2.24.2 Project Facility Impacts

Project Site Land Use
Permanent impacts during the operational period will be limited to the turbine facilities (crane pads and pedestals), permanent access roads, and collection lines in forested areas. Permanent operational impacts will preclude agricultural production or development on only a small portion of the Project Area and generally will not impact land use in the areas adjacent to the turbines or impede future development on the surrounding land. Occasional maintenance and repair activities will not interfere with ongoing farming operations.

Turbines. Operational facilities of the turbines will result in approximately 35 acres of permanent disturbance. Turbine facilities (crane pads and pedestals) will permanently impact nearly 4 acres of agricultural land and approximately 31 acres of forested land. As discussed in the previous subsection, other disturbed areas at each turbine site will be restored with subsoil and stockpiled topsoil and allowed to revegetate naturally.

Access roads. Approximately 26 acres of agricultural land and 49 acres of forested land will be impacted by the permanent access roads. Agricultural production and development will be precluded in the areas occupied by the 12-foot road, but land use in the areas adjacent to the road will not be impacted. The construction ROW within forested areas will be periodically maintained to prevent reestablishment of trees and provide adequate overhead clearance for safe access, leaving these corridors in an herbaceous or scrub-shrub state.

Collection System. Installation of the collection system will not significantly impact land uses within the Project Area. There will be no permanent impacts on agricultural land uses. Operation and maintenance of the collection system consists primarily of vegetation management and occasional repairs. Maintenance of the collection ROW will result in permanent impacts on 15 acres of forestland. The ROW will be allowed to naturally revegetate; however, occasional removal of woody vegetation will be required for line safety.

Substation. Expansion of the substation is consistent with the permitted use of this parcel.

Community Facilities

Local services such as emergency response (fire protection and ambulance), utilities, and healthcare facilities are considered adequate to serve the rural community where the Project Area is located. Operational facilities of the Project will have a positive impact on community facilities and services by providing a significant new revenue source for the Towns, County, and the local school districts through PILOT payments and host community agreements (also discussed in Section 2.26, Socioeconomics: Impacts and Mitigation, of this DEIS).

Local Land Use Plans, Zoning, and Laws

The Towns of Chateaugay and Bellmont do not have land use plans or zoning. The Project complies with the requirements of Bellmont and Chateaugay local laws, which allow for development of turbines upon obtaining a wind energy permit from each Town board. An application for a wind energy permit has been submitted to each Town board (see Appendix B for related SEQR documentation). Wind energy easements have been granted by participating landowners and adjacent property owners whose property may be affected by the placement of turbines. Under these easement agreements, landowners are compensated for the Project's use of their land. The project is consistent with the goals of the Franklin County Comprehensive Economic Development Strategy 2005-2009, as windfarm development is identified in this plan as a significant opportunity for many of the County's farming and other large land-holding interests.

While significant residential, commercial, and industrial development is not planned for the area, the Project likely will not preclude future development activities and may actually assist in the success of various local businesses, as more services are required by people operating, maintaining, and visiting the Project. Property owners who will have turbines on their properties are aware of the setback requirements of the Project. Minimal limitations are imposed on future development activities.

Project activities occurring in Clinton County include construction of approximately 3 miles of overhead collection line (Towns of Clinton and Ellenburg), 900 feet of access road (Town of Ellenburg), and expansion of the Clinton substation (Town of Clinton). These actions are consistent with relevant goals of the Clinton County Land Use Plan in that they will not conflict with the rural character of the Project Area; will not impact existing residential uses; and will not interfere with planned development activities.

2.24.3 Mitigation

Locations of the turbines, access roads, and collection system were chosen to minimize the loss of active agricultural land, interference with farm operations, and impacts on forest, wetland, and other significant environmental communities.

During Project siting, Noble also considered community character, which is described as agricultural and rural residential. The overall impact of the Project on community character is not expected to be significant because Project components have been sited in accordance with local setback requirements; the Project is generally compatible with, or will not preclude, existing and planned uses.

On agricultural land, all construction activities will be conducted in accordance with NYSDAM Agricultural Mitigation for Windpower Projects (NYSDAM 2003), which provides guidance for avoidance of impact, mitigation, and restoration of agricultural areas. A maximum 60-foot wide construction corridor is utilized to accommodate two-way construction traffic and additional road width for parking on the road. This ROW width is supported by NYSDAM because it eliminates the need to park construction vehicles on cropland and/or pastures, which can lead to a compaction issue that may be overlooked in restoration. The entire 60-foot construction corridor, with exception of the permanent access road, will be restored per NYSDAM guidelines. In areas adjacent to agricultural fields, plans for revegetation or seeding/mulching will be discussed with individual farmers and in accordance with NYSDAM guidelines so that the reestablishment of vegetation complements each farmer's operation.

On non-agricultural land, disturbed areas will be allowed to naturally revegetate whenever possible, as this is more likely to result in the establishment of naturally occurring native plants because of existing seed banks and adjacent plant communities. In areas where natural revegetation is not possible, annual rye seed or mulch may be used to stabilize the soil.

Revegetation of both agricultural and non-agricultural areas is further discussed in Section 2.4.3 of this DEIS.

Compliance with the local laws, regulating the development of wind power facilities will reduce the impacts on land use. The Town laws regulating wind energy facilities require the developer to follow the agricultural mitigation measures based on the NYSDAM guidelines.

In forested areas, facilities have been sited, to the extent practicable, within previously disturbed areas such as, existing landowner access roads, existing logging roads and areas where recent logging has occurred. This is intended to minimize the clearing of forested areas. Where the removal of any trees of economic value is necessary, landowners will be compensated based on their individual easement agreements. More detailed mitigation measures for forested areas are discussed in Section 2.10, Biological Resources: Impacts and Mitigation, of this DEIS.

2.25 Socioeconomics: Environmental Setting

Socioeconomic information is described in terms of population, economy and employment, community facilities and services, and taxes. The Project Area is primarily in the Towns of Chateaugay and Bellmont in Franklin County, New York. A small portion of the Project Area extends into the Towns of Clinton and Ellenburg in Clinton County, New York. This includes 2.5 miles of collection line corridor to the Clinton substation and 900 feet of access roads in Ellenburg. With respect to socioeconomic considerations within the Project Area, the differences between the Clinton County and Franklin County are insignificant. Since the Clinton County portion represents a small portion of the entire Project Area, it is not considered separately, and Franklin County is discussed in this sub-section.

2.25.1 Population and Housing

According to the 2000 Census, Franklin County had a total population of 51,134, which represents a 9.9% increase between 1990 and 2000. In 2000, the Towns of Chateaugay and Bellmont had populations of 2,036 and 1,444, respectively. The population density was approximately 41 persons and 17 housing units per square mile in Chateaugay and approximately 9 persons and 8 housing units per square mile in Bellmont. These densities are significantly different, and bracket the population density of Franklin County as a whole, which had an average population density of 31 persons and 15 housing units per square mile.

Project construction will require temporary housing for a significant influx of construction workers. There are a number of hotels/motels located within a reasonable commuting radius of 30 miles from the Project Area. The vacancy rates of these hotels vary from season to season, with higher vacancy rates in the winter and lower vacancy rates in the summer. In addition, there is an influx of visitors during hunting season. Table 2.25-1 lists accommodations within 30 miles of the Project Area for which capacity information is available. There are also a number of campgrounds in the area, available for temporary lodging during warmer months.

Table 2.25-1 Motel/Hotel Capacity

Motel/Hotel	Address	Number of Rooms
Malone Area		
Northern Adirondack Motel	5591 Rt. 11, Ellenburg, NY	8
Super 8 Motel	42 Finney Blvd., Malone, NY	44
DreamLand Motel	East Main St., Malone, NY	15
Four Seasons Motel	206 West Main, Malone, NY	26
Gateway Motel	14413 Finney Blvd., Malone, NY	18
Sunset Motel	3899 East Main, Malone, NY	8
Crossroads Motel	Rt. 11, Moira, NY	43
Econo-Lodge	West Main St., Rt. 11, Malone NY	39
Best Western University Inn	90 East Main St., Canton, NY	99

Table 2.25-1 Motel/Hotel Capacity

Motel/Hotel	Address	Number of Rooms
Great View Motel	Rt. 37, Fort Covington, NY	26
Plattsburgh Area		
Days Inn	Rt. 87 and Tr. 3, Plattsburgh, NY	106
Baymont Hotel	16 Plaza Blvd., Plattsburgh, NY	103
Best Western	446 Rt. 3, Plattsburgh, NY	122
Quality Inn	19 Booth Dr., Plattsburgh, NY	104
Econo Lodge	528 Rt. 3, Plattsburgh, NY	85
Holiday Inn	412 Rt. 3, Plattsburgh, NY	102
Comfort Inn	411 Rt. 3, Plattsburgh, NY	111
Microtel Inns	544 Rt. 3, Plattsburgh, NY	58
Beacon Motel	7431 Rt. 9, Plattsburgh, NY	12
Golden Gate Motel	432 Margaret St., Plattsburgh, NY	50
Super 8 Motel	7129 Rt. 9 North, Plattsburgh, NY	61
Rip Van Winkle Motel	11 Cumberland Head Rd., Plattsburgh, NY	36
Stonehelm Motel	Exit 40 @ 187, Plattsburgh, NY	40
Saranac Lake Area		
Adirondack Motel	248 Lake Flower Ave., Saranac Lake, NY	14
Best Western Mt. Lake Motel	Lake Flower, Saranac, NY	69
Lake Side Motel	27 Lake Flower Ave., Saranac Lake, NY	12
Lake Placid Lodge	Main St., Lake Placid, NY	11
The Point	Lake Flower Ave., Saranac Lake, NY	11
Bed and Breakfasts		
McGregor House	5066 Rt. 11, Ellenburg Depot, NY	4
Kilburn Manor	59 Milwaukee St., Malone, NY	7
Marshall House	115 Court St., Plattsburgh, NY	4
Point Au Roche Lodge B & B	463 Point Au Rouche Rd., Plattsburgh, NY	8
Cochran's Cabins B & B	1150 Kiwassa Lake, Saranac Lake, NY	4
Overlook Park and B & B	1560 Spear, South Burlington, VT	4
Campsites (number of sites)		
Ranchside Park	5617 Rt. 11, Ellenburg, NY	75
Blue Haven Campground	5253 Rt. 11, Ellenburg Depot, NY	50
High Falls Park	34 Cemetery Rd., Chateaugay, NY	45
Ponderosa Campsite	Town Line Rd., Chateaugay, NY	50
Fineburg Park	Devils Den Rd., Altona, NY	28
Riverside Campsite	Rt. 11, Mooers Forks, NY	25
Pine Ridge Campsite	212 Rt. 122, Constable, NY	40
Babbling Brook Camp Grounds	1623 Cty Rt. 4, Westville, NY	30
Malletts Bay Campground	Malletts Bay, Colchester, VT	109
Total Rooms		**1,916**

2.25.2 Economy and Employment

The majority of Franklin County's employment is associated with the agricultural industry, community services, or manufacturing. Major public sector employers include Franklin County, the agriculture/timber industry, local school districts, hospitals, prisons, and the Board of Cooperative Educational Services (BOCES).

According to the U.S. Census Bureau, unemployment rates for Franklin County were 10.6% in 2000, 7.7% for the Town of Chateaugay, 8.6% for the Town of Bellmont, and 9.8% for the nearby Village of Chateaugay.

Median household income for Franklin County was estimated at $31,517 in 1999, and $32,609 and $33,417 for the Towns of Chateaugay and Bellmont, respectively. Income in the Village of Chateaugay was slightly higher, at $34,000 for the same year.

2.25.3 Municipal Budgets and Taxes

Tax revenues in the Project Area accrue from both sales taxes and real property taxes. A total sales tax of 8.0% is levied on purchases in Franklin County. New York State takes 4% and Franklin County retains the balance. In 2004, Franklin County sales tax revenues were $12.5 million.

Landowners in the area surrounding the Project Site are subject to several local taxes, depending on the location of their property. Taxes include a County tax, a Town tax (either from Chateaugay or Bellmont), and a school tax (Chateaugay Central School District). Table 2.25-2 indicates the local tax rates typical for the Project Area.

Table 2.25-2 Property Tax Rates

2005	Tax Rate (per $1,000)
Franklin County Tax Rate	
in Town of Chateaugay	$6.52
in Town of Bellmont	$7.02
Town of Chateaugay	**$9.87**
Town of Bellmont	**$5.55**
Village of Chateaugay	**$7.75**
Chateaugay Central School District	
in Town of Chateaugay	$19.85
in Town of Bellmont	$19.59

Source: New York State Office of Real Property Services 2006.

For the year ended December 31, 2004, Franklin County's total revenue received was approximately $75.6 million from all sources. County expenditures over the same time period totaled $79.8 million. The County ended with a deficit of $4.2 million for the 2004 financial year.

The local tax base for the Towns of Chateaugay and Bellmont rests primarily on real property taxes. Other major contributors to the local tax base are sales taxes, licensing and fees, and intergovernmental transfers. Table 2.25-3 details the Towns' tax revenues allocations for fiscal year 2004, which is the most current data available.

Table 2.25-3 Revenue for the Towns of Chateaugay and Bellmont

Fiscal Year 2004	Town of Chateaugay	Town of Bellmont
Real Property Taxes	$507,526	$626,895
Sales Tax	$0	$0
Other Non-Property Taxes	$0	$0
State Aid	$110,405	$126,699
Federal Aid	$0	$56,811
Other Government	$75,800	$86,978
Interest Earnings	$3,594	$3,733
Other and Unclassified Revenue	$41,302	$21,252
Total Revenues	**$738,627**	**$922,368**

Source: Office of the State Comptroller, Division of Local Government Services and Economic Development 2006.

A breakdown of the Towns' expenditures is presented in Table 2.25-4.

Table 2.25-4 Expenditures for the Towns of Chateaugay and Bellmont

Fiscal Year 2004	Town of Chateaugay	Town of Bellmont
General Government	$183,403	$127,770
Education	$0	$0
Transportation	$548,317	$743,166
Police/Fire/Public Safety	$35,237	$102,872
Health	$1,050	$818
Community Services	$98,455	$94,515
Economic Assistance	$3,000	$4,496
Culture/Recreation	$30,838	$588
Debt Service	$20,998	$23,911
Total Expenditures	**$921,298**	**$1,098,135**

Source: Office of the State Comptroller, Division of Local Government Services and Economic Development 2006.

2.25.4 Budgets

The size of the tentative 2007 budget for Franklin County is estimated to be $81 million. The Chateaugay and Bellmont Town budgets for 2006 were $892,305, and $1,046,053, respectively. The total taxes raised will be $544,993 for Chateaugay and $728,110 for Bellmont.

The total real property tax rate for the Towns of Chateaugay and Bellmont services (general fund, highway, and fire protection) is about $9.87 and $5.55 per $1,000 of assessed value, respectively.

The Project lies within the Chateaugay Central School District. For the 2004-2005 school year, the Chateaugay Central School District had revenues amounting to $8.2 million. Of this, approximately $1.8 million came from local revenue (primarily real property taxes), with the difference coming from state and federal aid (National Center for Education Statistics 2004).

The New York State Department of Education (NYSDOE) produces a series of reports that focus on fiscal spending by school districts across the state. As a result of inherent lags in publication of these reports, the most recent available report is from the 2003-2004 school year for the Chateaugay Central School District. Information on expenditures per pupil for both general education and special education was compared to a similar school district group of schools within New York State. The grouping of similar schools is based on factors such as grade range of students served by the school, school district capabilities, and the needs of the school student population. The Chateaugay Central School District is described as "high need/resource capacity rural." Table 2.25-5 indicates the expenditures for the Chateaugay School District, calculates the average spent per pupil, and compares the district to the average expenditures of similar districts.

Table 2.25-5 Comparison of School District Expenditures per Pupil

	General Education	Special Education
Chateaugay Central School District		
Instructional Expenditures Total	$4,088,696	$1,523,529
Pupils	611	98
Expenditures Per Pupil	$6,692	$15,546
Similar District Group		
Instructional Expenditures Total	$1,238,349,436	$411,113,388
Pupils	177,931	27,200
Expenditures Per Pupil	$7,213	$15,114

Source: New York State Department of Education 2005.

The per pupil expenditures for general education is below the average spending for similar district groups, and special education expenditures are slightly higher.

2.25.5 Environmental Justice

According to New York State Department of Environmental Conservation (NYSDEC) Commissioner Policy 29 (the Policy) on Environmental Justice and Permitting, a potential environmental justice area is defined as a minority or low-income community that bears a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, or tribal programs and policies (NYSDEC 2004).

The Policy expands upon Executive Order 12898, issued by President Clinton on February 11, 1994, which requires that impacts on minority or low-income populations are accounted for when preparing environmental and socioeconomic analyses of projects or programs that are proposed, funded, or licensed by federal agencies.

The Policy defines a minority population as a group of individuals that are identified or recognized as African American, Asian American/Pacific Islander, American Indian, or Hispanic. Hispanic refers to ethnicity and language, not race. A minority community exists where a census block group, or multiple census block groups, has a minority population equal to or greater than 51.1% in urban areas or 33.8% in rural areas. The Chateaugay Study Area meets NYSDEC's definition of a rural area. General racial/ethnic statistics for the Project Area include 16.0% minority and 4.0% Hispanic populations in Franklin County. Minority populations account for approximately 10.1% of total population in the Town of Chateaugay, with 5.6% of the total population of Hispanic origin; in the Town of Bellmont there is a 1.3% minority and no persons of Hispanic origin (U.S. Census Bureau 2006).

A low-income population is defined as a group of individuals having an annual income that is less than the poverty threshold established by the U.S. Census Bureau. A low-income community is a census block group, or area with multiple census block groups, having a low-income population equal to or greater than 23.6% of the total population. General poverty statistics for the Project Area include 14.6% of persons below poverty level in Franklin County. For the Towns of Chateaugay and Bellmont, there are approximately 17.5% and 9.8% below poverty, respectively (U.S. Census Bureau 2006).

2.26 Socioeconomics: Impacts and Mitigation

A study of Project socioeconomic impacts demonstrates that its development will have a positive impact on the local economy through the creation of new, high paying, temporary and permanent jobs; payment of payments in lieu of taxes (PILOT) and other revenues to local taxing jurisdictions; payment of easement revenues to local landowners; increased economic activity; and the contribution of other community benefits. Total countywide economic benefits, based upon regional multipliers applied to direct Project expenditures in original capital investment and ongoing operational expense, are estimated to be $152.9 million over 20 years. The benefits are divided into short-term construction impacts and long-term operational impacts, described below.

The addition of the Project to the New York Power Pool could result in substantial savings to New York customers through the displacement of older, inefficient fossil fuel-based plants and consequent reduction in wholesale energy costs.

2.26.1 Construction Impacts

Population and Housing

Project construction may have short-term impacts on local lodging. It is estimated that during the estimated 8-month construction period there will be a temporary influx of construction workers to the area surrounding the Towns that will cause an increase in the demand for temporary lodging. The number of construction workers for the Project is expected to peak at approximately 540. This estimate does not include personnel delivering equipment or materials. Local contractors and labor will be utilized to the extent practicable to maximize the benefit to the community, and these individuals will commute to the Project Site. Construction workers coming from outside the area for the construction phase of the Project will probably reside in motels/hotels in the vicinity of the Project Area. It is not expected that the demand for temporary lodging from out-of-town laborers will negatively impact the local tourism industry.

Local Economy and Employment

Project construction will create an increase in economic activity, including purchases of room-nights at local motels/hotels, automotive fuel, meals, and other necessities. The Project is expected to spend a total of $50.4 million countywide during construction. Total economic benefits during construction are estimated at $76.2 million, including payrolls, supplies, materials, hotel stays, meals, and economic multiplier effects.

Construction of the Project also result in the direct employment of up to 540 electrical workers, crane operators, equipment operators, carpenters, and other construction workers (with a total estimated payroll and benefits of $24.5 million) and will create an estimated 320 additional direct, indirect, and induced jobs countywide (with a total estimated payroll and benefits of $9 million). As mentioned in the previous subsection, where practicable, employment of local contractors and labor and the use of locally available supplies will maximize the economic benefit to the community.

2.26.2 Project Facility Impacts

Population and Housing

Once the Project is operational it is not expected to have any impact on housing and population, as local labor will be employed to the maximum extent practicable to manage and support plant operations. In the event individuals from outside the region are hired for operation of the Project, the local housing market will be able to absorb any minor increase in population.

Local Economy and Employment

During plant operations, the Project will spend an estimated $1.1 million annually, exclusive of property taxes. Total annual economic benefits during operation are estimated at about $3.8 million, including payrolls, supplies, materials, windpark easement payments, and economic multiplier effects.

During plant operations the Project will employ 9 skilled operators, managers, and administrative personnel and create 38 more direct, indirect, and induced jobs countywide (with a total estimated payroll and benefits of $1.7 million). The company also has several wind energy projects in development in upstate New York and is in the process of establishing a regional operations center that will provide additional employment. To the extent practicable, local labor will be used to fill these positions to maximize the benefit to the local community. It is anticipated that individuals in the local community would be trained to complete the necessary tasks, and current residents would fill the majority of these jobs. The exception would be any specialized wind farm managers where an individual would need to be brought to the Project Area if there was no one qualified within the community. This, or any, increase in the local population would be negligible.

Municipal Budgets and Taxes

Noble anticipates entering into a PILOT agreement for the Project with the Franklin County Industrial Development Agency (IDA), as well as Host Community Agreements under which annual payments will be made to the Towns of Chateaugay and Bellmont for local needs. PILOT and host community payments from the Project will represent a significant increase to Town revenues (Town of Chateaugay 2005).

Residential Property Values

As required by the Town of Chateaugay Local Law No. 7 and Town of Bellmont Local Law No. 2, Noble has retained an independent licensed property, the KLW Group of Buffalo, New York to prepare an analysis of the Project's potential impact on property values. The KLW Group property value reports for each Town are attached as Appendix L of this DEIS.

The reports compared sales data within an approximate 5-mile radius surrounding three existing wind farms located throughout New York State. Two of the wind farms are located in Madison County, New York, and one is located in Wyoming County, New York. The surrounding land uses at each of the wind farms in the study are similar to the land use in the Project Area (i.e., predominantly agricultural with interspersed residential development).

Two types of analysis were used to determine if wind farms impact local real estate values: a "relative comparison" qualitative analysis, comparing sales five years prior to the construction of the respective wind farms to sales five years subsequent to the construction and operation of the wind farm, and a "paired sales analysis" technique, which compares sales and resales of the same property before and after the construction of the respective wind farms.

The report found that:

- The sales data for all three wind farm markets indicate there is no influence on property values since the construction and operation of the wind farm. Average sales prices have, on the whole, increased, indicating that the existence of the wind farm has not diminished real property values in this submarket;
- As is evident by correlated sales in the wind farm submarkets, there appears to be little to no effect on real estate values of the respective properties subsequent to the construction and operation of the facilities; and
- There appears to be no evidence that would indicate that the wind farm facilities have a detrimental effect on real property values. Each of the studies concluded that prices continued to increase in value within the respective submarkets after construction and the on-going operation of the facility. In addition, sales and resales of the same property within the respective submarkets indicate that the majority of the properties were unaffected by the existence of the wind farms (Klauk, Lloyd & Wilhelm, Inc. 2006).

These findings are consistent with the two major studies that have been conducted on the effect of wind energy projects on residential property values nationwide (ECONorthwest 2002).

In addition to the KLW report, P. Barton DeLacy, MURP, MAI, CRE, FRICS of Cushman & Wakefield (Portland, OR) prepared "Impacts of the Dairy Hills Wind Farm Project on Local Property Values" (May 26, 2006) in response to a 60-turbine wind farm proposed for the Towns of Covington, Perry, and Warsaw, all in Wyoming County. This detailed report includes a statistical analysis of property value trends within the Dairy Hills Wind Farm Project area as well as other comparable communities that already host wind farms. Similar to the KLW report, the evaluation of area properties and existing conditions suggested that the economic impact of the wind farm will be positive. The report is available in Appendix K of this DEIS and online at http://www.horizonwind.com/projects/whatweredoing/newyork/dairyhills/AppendixO-PropertyValueImpacts.pdf.

Environmental Justice

As mentioned in Section 2.25, Socioeconomics: Environmental Setting, a preliminary screen was conducted to assess the potential for disproportionate impacts on low-income or minority populations in the vicinity of the Project Site. Based on the preliminary screen for environmental justice issues, it was determined that the Study Area did not meet the screening criteria for a minority or low-income community.[5] As such, the Project will not result in impacts to environmental justice communities.

2.26.3 Mitigation

Local Services

In order to mitigate any potential impacts on the local service sector, Noble will notify local merchants and the lodging industry of the anticipated influx of workers so that they may properly prepare for any periods with a high number of out-of-town workers. Noble will also apprise construction subcontractors of the availability of services, including lodging, within a 30-mile radius of the Project Area, and will seek to mitigate overburdening local services through construction scheduling.

To help create positive socioeconomic impacts for the local population, local contractors and labor will be utilized to the extent practicable in Project construction. These individuals will commute to the Project Site and will not necessarily require temporary housing.

Local and Regional Economic Impacts

As detailed above, the prospective economic impacts of the Project on local communities and the region are overwhelmingly positive. PILOT and Host Community payments from the Project are expected to substantially augment Town, School, and County revenues for property tax reduction or increased municipal services. High quality temporary and permanent jobs will be created, and economic stimulation from the Project will lift virtually all sectors of the local economy.

2.26.4 Cumulative Impacts

There is potential for coincident construction of several wind projects in the vicinity of the Project Area. This can result in cumulative socioeconomic impacts during both construction and operations of the Project. For example, local resources

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[5] The initial screen for minority status revealed disproportionately high minority and Hispanic populations in one census block. Upon further analysis, it was determined that the data was skewed by the presence of Chateaugay Correctional Facility, which contains a transient population. When this block was excluded from the analysis, the Study Area did not meet the screening criteria.

such as the labor force and local lodging may be temporarily stressed during periods of construction. In addition, benefits of multiple projects in the area include the provision of more jobs and significant economic benefits. Local communities will experience additional spending in their stores, lodges, and restaurants during the construction and operations phases. There is also the potential for municipalities and school districts to receive portions of multiple PILOT payments from these various projects. Potential cumulative impacts of coincident project construction and their mitigation is discussed further in Section 3, Cumulative Impacts and Benefits, of this DEIS.

2.27 Description of Proposed Construction Plan

All engineering and construction activities will be conducted in accordance with federal, state, and local regulations. All necessary permits and approvals will be obtained prior to the start of construction. All unavoidable stream and wetland crossings will be performed in accordance with the requirements of permits issued by the New York State Department of Environmental Conservation (NYSDEC) and the U.S. Army Corps of Engineers (USACE). A Project-specific Stormwater Pollution Prevention Plan (SWPPP) and a Notice of Intent (NOI) will be filed in accordance with NYSDEC State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity (GP-02-01) requirements (see Appendix R for a Draft SWPPP). Necessary permits will be obtained from the New York State Department of Transportation (NYSDOT), the Franklin County Highway Department, or the respective Town with jurisdiction over the roadway to address the areas of interface with existing roads and shoulders to support the construction of new access roads prior to the start of construction.

2.27.1 Construction-Related Transportation

Construction of the Project is scheduled to take place during an 8-month (32-week) period from approximately August 2007 to April 2007 (see Figures 2.27-1 and 2.27-2, Construction Schedules for Bellmont and Chateaugay). As described in Section 2.22, Traffic and Transportation: Impacts and Mitigation, and in Appendix K, Project components arriving from the west will be delivered to the Project Site via U.S. Route 11. Deliveries from the south will follow I-87 to NYS 974, west to NYS Route 190, and then north to U.S. 11. Deliveries arriving through Canada will enter New York on I-87 and will then proceed south on U.S. 11. To support construction, turbine components and critical materials, which include the tower sections, nacelles, rotor blades, rotor hubs, main control cabinets, and pad-mount transformers will be delivered to off-site equipment laydown areas (see Figure 1-3 of this DEIS). The potential impacts and proposed mitigation for these laydown areas were previously analyzed in the State Environmental Quality Review Act (SEQRA) review and approved in the Joint Statement of Findings and Decision for the Clinton, Ellenburg, and Altona Projects. No additional disturbance is necessary in order to utilize these areas for the Project.

The laydown areas will facilitate necessary steps that include quality receipt inspections, erection staging, possible trailer reconfigurations, and/or steps to address required rigging plans. Per NYSDEC regulations, SWPPPs have been developed (or will be prior to use) for these laydown areas where disturbance exceeds one acre (see Appendix R).

Each turbine location will receive equipment and planned support capabilities for the erection of a site-specific turbine. Other Project materials will be staged at these same laydown areas to support a just-in-time delivery scenario to specific sites as needed to support associated, scheduled construction.

2.27.2 Construction of Access Roads

New access roads will be built to a maximum temporary width of 30 feet during construction. Access road right-of-way (ROW) disturbance widths will be 60 feet to allow for construction of the temporary access road, storage of topsoil, and safe passage of equipment. The maximum 60-foot-wide construction corridor is being utilized in agricultural areas to accommodate two-way construction traffic and additional road width for parking on the road. The use of this road width is supported by the New York State Department of Agriculture and Markets (NYSDAM) because it eliminates the need to park construction vehicles on cropland and/or pastures. Modifications within the maximum 60-foot ROW and outside of the 30-foot temporary roadway will be limited to compaction and minor grading, and the extended temporary width of the road will be restored per NYSDAM guidelines. The construction corridor width will be adjusted to minimize impacts on streams and/or existing wetlands configurations in accordance with NYSDEC and USACE recommendations. Once construction is completed, the temporary 30-foot access roads will be reduced to a permanent width of 12 feet to provide access for the operation and maintenance of the turbines. In most cases, access roads will be installed at grade and will not require sloped shoulders. However, in low-lying areas such as wetlands, 2-foot shoulders on either side of the road may be required to meet the existing grade (see Appendix A).

The construction/access roads for the Project are gravel roads designed to meet the load-bearing requirements of truck traffic transporting concrete, gravel, and turbine components to the wind turbine sites over the life of the Project. The required gravel road base section will be constructed using site-specific geotechnical information that considers the intended load-bearing requirements of construction traffic and equipment delivery. Components of the planned geotechnical study are listed in Section 2.1.2. The gravel roads will be constructed on suitable, undisturbed, native soils and filled with aggregate to the desired elevation to meet the desired loading factors. Geotextile fabric, or a comparable product, will be used to separate the native soil/fill from the base material to prevent fine soil particles from migrating into the gravel base material and to preserve road base integrity.

Roads will be constructed with culverts as needed to maintain a water table elevation below the base material to ensure roadbed stability (see Appendix A). Roadside ditches will be constructed as dictated by the terrain to convey storm water runoff away from the roadways. During construction, to prevent access by the general public, construction/access roads will be gated within approximately 30 to 60 feet of where they intersect public roads, depending upon the layout of the access road entrance and landowner wishes. At the end of the project, permanent gating may be installed depending primarily upon landowner wishes and/or the sensitivity to off-road access.

2.27.3 Installation of Turbines

Generally, all components of the Project will be permanently installed. In preparation for the installation of each turbine, a 200 x 200-foot area will be cleared and graded (if necessary) to a slope not to exceed 5% (see Appendix A). This area may be further minimized or modified to avoid impacts on wetlands or other sensitive resources. A gravel crane pad approximately 120 x 40 feet will be constructed with a slope of 1% or less in all directions. This gravel crane pad will be located within the 200 x 200-foot turbine site. After turbine installation is completed, the crane pad will remain in place for future maintenance. Other disturbed areas at the turbine site will be restored with subsoil and stockpiled topsoil. All foundations and underground infrastructure will be in place for the life of the Project.

Preparation of each turbine site for installation of the foundations will involve excavation of surface materials. Extra care will be used to ensure that topsoil and subgrade materials are kept separated and stockpiled to guarantee that the land is returned to its original use. Topsoil stockpile areas will be clearly designated in the field and on the on-site "working set" of construction drawings. When topsoil is stripped, the soil will be stockpiled at the end of access roads or access-road spurs rather than dozed flat. Windrow stockpiling will not be used for extended periods of time in order to minimize the possibility of ponding and/or creating additional undesired runoff paths along access roadways. No topsoil will be removed from the immediate site area. Topsoil and sub-grade material will be segregated in the field based on a visual inspection during excavation in conjunction with Noble's Quality Assurance Plan. Dewatering is not expected to be required but will be used if required to maintain the strength of the subsurface load-bearing materials. Glacial sandstone bedrock is a common subsurface material occurrence in northeastern New York. After specific geotechnical investigations are conducted (components of the planned geotechnical study are listed in Section 2.1.2), a number of construction options will be utilized to remove this subsurface material to support foundation preparation. The primary choices for removal of this material will include loosening by drilling and removal with either an excavator with a rock bucket attachment or, in more severe cases, an excavator equipped with a hydraulic/pneumatic breaker and/or grinding attachment. A last resort possibility would be the selection of drilling and blasting to loosen rock during excavation of bedrock materials. Should blasting become necessary, a detailed blasting plan will be prepared and submitted to the Town and to the Franklin County Emergency Response Coordinator, the Franklin County Health Department, and any other applicable agency for review . The blasting plan will include, at a minimum, the requirements as set forth in Occupational Safety and Health Administration (OSHA) Standard 1910.109 and other applicable New York State Standards. No activities requiring blasting will proceed until full approvals have been obtained.

The pad-mounted transformers located at each turbine will be situated so that there is a minimum 6 feet of clearance between the transformer and any other component. The transformers will be installed in accordance with industry standards.

During the Project construction phase, the large turbine components (i.e., tower sections, nacelle, and rotor blades) will be delivered to an off-site equipment laydown and inspection area(s) for verification of match marking, a quality receipt inspection, and any necessary rigging adjustments prior to site delivery. From those areas, site-specific equipment will be delivered to individual turbine staging areas for erection. Each turbine site will serve as the primary staging area for the erection of that specific turbine. Materials such as cable reels and power poles will be staged at an off-site location. These materials will be transported to the sites as they are needed and utilized for construction.

The majority of construction crews will be bussed to the work sites, while the rest will park off the public roads on the Project's previously disturbed and designated areas such as access roads and turbine sites, as required.

2.27.4 Installation of Collection and Transmission System Components

The electrical power generated by the Project will be transformed and collected through a network of overhead and underground cables that terminate at the Clinton substation. These overhead and underground cables will be installed to establish a multi-circuited collection system for the Project. Each collection system circuit will consist of approximately 20 turbines or 30 megawatts (MW) of power and will run independently to the substation. The electrical collection system will be constructed in accordance with the guidelines of the Institute of Electrical and Electronics Engineers, the National Electric Safety Code, the National Fire Protection Association, and the New York State Power Authority (NYPA) requirements.

The underground portion of the collection system will be installed, to the greatest extent possible, within the 60-foot area of temporary access-road disturbance. In areas where underground collection lines will not be installed adjacent to an access road, an ROW width of 22 feet for one circuit or 32 feet for two circuits will be required.

Underground collection cables will be installed using a patented specialty-contractor trenching system that utilizes a continuous system of excavation and trench closure in a single-step process. The cables will generally be buried to a depth of 4 to 5 feet.

Overhead collection lines will be utilized where it is necessary to cross an existing road, along existing roadways, where underground collection is not feasible, and wherever necessary to minimize environmental impacts in sensitive areas (see Figure 2.27-3). Installation of overhead lines will require a 25-foot ROW where located adjacent to existing roadways or 35 feet in other areas. The ROW will be cleared of any trees and large woody vegetation that may pose a hazard to the line.

Where overhead lines are located adjacent to existing roadways, installation will take place from the edge of the road and the poles will be located approximately 10 feet from the road shoulder.

2.27.5 Environmental Monitoring

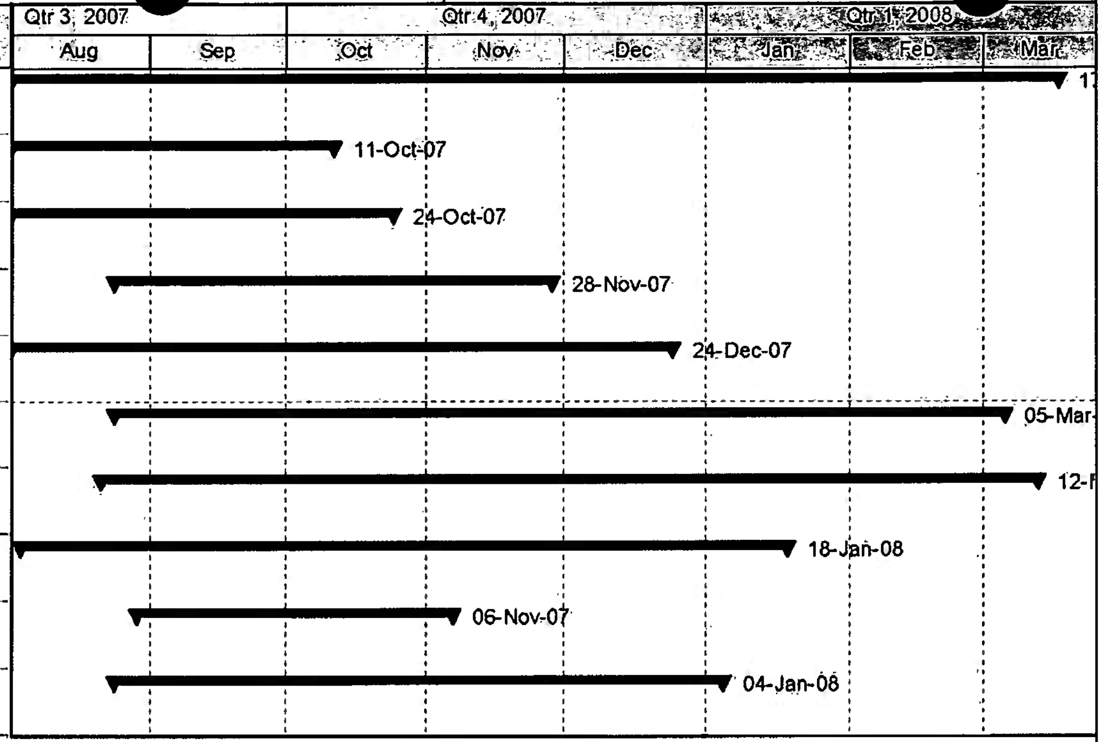
Construction activities will be monitored to ensure compliance with applicable permits, the Stormwater Pollution Prevention Plan (SWPPP), and Best Management Practices (BMPs). A compliance monitoring plan will be included as part of Noble's Quality Assurance Plan. This plan will contain permit conditions and other commitments made by Noble during the SEQRA review and agency permit review processes including those associated with wetland and stream disturbance, vegetation removal, storm water management, erosion control, and agricultural impacts. Noble will retain an environmental monitor whose duties will include coordination of environmental monitoring activities, documentation and implementation of mitigation activities as they are conducted, and preparation of a final report available to involved and interested parties.

Temporary impacts include clearing of vegetation, grading, and temporary side-casting of soils and other construction materials. It is recognized that active measures including reseeding or replanting of native species may be required to facilitate the restoration of some wetlands temporarily impacted by construction activities. Specific revegetation measures including invasive-species controls will be required in the wetland permits that will be issued by NYSDEC and USACE for this Project. Noble will adhere to those conditions. Concrete trucks will not be allowed to rinse on site. They will return to their respective plants to utilize appropriate wash out areas. Concrete placement will be monitored through the Noble Quality Assurance Plan to ensure that these operations will comply with the applicable environmental standards. If dewatering is required prior to pouring of concrete, the dewatering and discharge thereof would follow the detailed erosion- and sediment-control plans included in the SWPPP prepared in accordance with the requirements of the State Pollutant Discharge Elimination System (SPDES) General Permit Permit for Stormwater Discharges from Construction Activity (GP-02-01) (see Appendix R for a Draft SWPPP).

If construction takes place in suitable nesting habitat for endangered or threatened species in the spring to early summer (during breeding season), the work area will be surveyed and cleared by an environmental monitor in advance of construction. If nesting threatened or endangered species are found in the immediate proximity of a construction area, Noble will coordinate with the USFWS and/or NYSDEC to develop a mitigation plan to address site-specific occurrences of species of concern. Measures that may be implemented include delaying construction until the young have fledged from the nest or continual monitoring during the initial construction period to ensure that the birds are not impacted. With implementation of monitoring activities, the potential impact of construction on threatened and endangered species is considered low.

BELLMONT - Pr d Construction Schedule | Data Date: 01-Aug-07 | 06-Fe 19:23

Activity ID	Original Duration	Start	Finish
GENERAL	193	01-Aug-07	17-Mar-08
ENTRANCE ROAD	61	01-Aug-07	11-Oct-07
ACCESS ROAD	72	01-Aug-07	24-Oct-07
CABLING & TRENCHING	82	24-Aug-07	28-Nov-07
FOUNDATIONS	123	01-Aug-07	24-Dec-07
MECHANICAL ERECTION	163	24-Aug-07	05-Mar-08
ELECTRICAL INSTALLATION	172	21-Aug-07	12-Mar-08
SUB-STATION INSTALLATIC	141	03-Aug-07	18-Jan-08
OVERHEAD COLLECTION S	59	29-Aug-07	06-Nov-07
OVERHEAD TRANSMISSION	111	24-Aug-07	04-Jan-08



Summary

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Figure 2.27-1

NOBLE ENVIRONMENTAL POWER

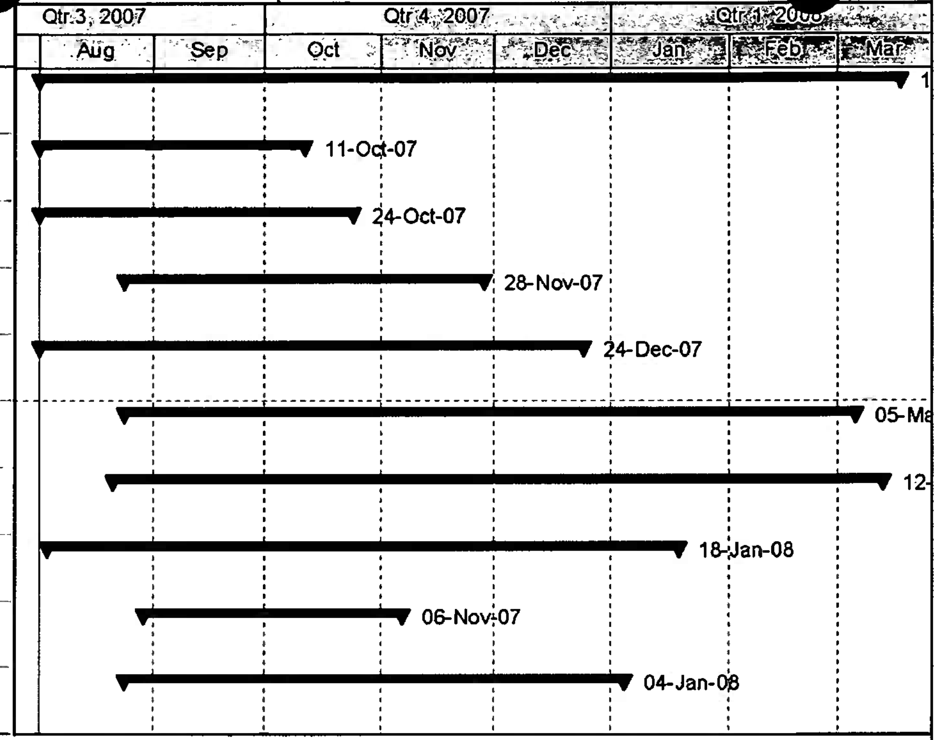
BELLMONT - PROPOSED CONSTRUCTION SCHEDULE

(All dates are subject to change based upon actual field condition; Noble will update the schedule as events/changes occur)

Noble ENVIRONMENTAL POWER

CHATEAUGAY osed Schedule | Data Date: 01-Aug-07 | 30-Ja 23:47

Activity ID	Original Duration	Start	Finish
GENERAL	193	01-Aug-07	17-Mar-08
ENTRANCE ROAD	61	01-Aug-07	11-Oct-07
ACCESS ROAD	72	01-Aug-07	24-Oct-07
CABLING & TRENCHING	82	24-Aug-07	28-Nov-07
FOUNDATIONS	123	01-Aug-07	24-Dec-07
MECHANICAL ERECTION	163	24-Aug-07	05-Mar-08
ELECTRICAL INSTALLATION	172	21-Aug-07	12-Mar-08
SUB-STATION INSTALLATION	141	03-Aug-07	18-Jan-08
OVERHEAD COLLECTION SYSTEM	59	29-Aug-07	06-Nov-07
OVERHEAD TRANSMISSION LINE	111	24-Aug-07	04-Jan-08



Summary

Figure 2.27-2

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NOBLE ENVIRONMENTAL POWER

CHATEAUGAY - PROPOSED CONSTRUCTION SCHEDULE

(All dates are subject to change based upon actual field condition, Noble will update the schedule as events/changes occur)

Noble ENVIRONMENTAL POWER

2.28 Decommissioning Plan

Noble has entered into easement agreements with property owners requiring Noble to remove all aboveground machinery, equipment, and fixtures from the property within 6 months after the end of operation of the turbine.

The expected useful physical life of the primary Project components is approximately 20 years. The wind turbines could conceivably be repaired indefinitely to extend their useful life; however, economic obsolescence resulting from advancements in technology within this period of time may well make earlier replacement of the turbines desirable. The wind resource is not expected to change much over time and is expected to maintain its value as competing sources of energy continue to be more costly. Thus, the wind turbines would most likely be maintained or replaced as economics dictate. If it were desirable to relocate turbines for any reason, Noble is aware that any affected individual turbine would need to be re-permitted.

To facilitate removal of any turbine at the end of its useful economic life, Noble has developed a Decommissioning Plan, which is included in this DEIS as Appendix M. Decommissioning work will be performed in accordance with all federal, state, and local requirements, and the appropriate permits will be obtained prior to conducting decommissioning activities.

The Decommissioning Plan for the Project includes detailed cost estimates for the removal of the wind turbines including the tower, nacelle, transformer, cabling substation, concrete foundations, and maintenance roads. The Plan also describes the specific steps that will be taken in removing the turbine, including the tower, nacelle, transformer, cabling substation, concrete foundations, gravel crane pads, and maintenance roads/rigging pads. Revegetation of the disturbed areas will also be part of the restoration of the area to surrounding land use in the same manner as described for restoring areas temporarily impacted during construction. The turbine-removal cost analysis estimates the resale value of the turbine components today as well as the cost of removing them. Noble proposes to provide a surety bond or equivalent financial security instrument from a licensed New York State financial institution (Removal Security) in the amount of $13,600.00 per wind energy conversion system (WECS) prior to construction of the Project. Noble will revise the turbine removal cost analysis every three years during Project operations, and renew the Removal Security for the estimated net removal cost as revised.

Noble acknowledges that this commitment for turbine removal security will likely form a condition to its Wind Energy Permit and that this condition would apply to any successor permittee of the Noble Chateaugay Windpark and Noble Bellmont Windpark or their successor permittee, and they will have to revise the turbine removal cost analysis annually. Any changes in equipment salvage value caused by political or any other changes will be accounted for in this annual revision. Noble will reimburse the Town of Chateaugay's or the Town of Bellmont's reasonable costs of an independent qualified appraiser to review and suggest revisions to the turbine removal cost analysis. Noble or its successor permittee will attempt to resolve any disagreements with the appraiser over suggested revisions in the turbine removal cost analysis. Any disagreements that cannot be resolved between these parties may be submitted for mediation. Noble does not envision selling the electric output from the Project at fixed contract prices but rather at market-clearing prices in the New York State wholesale electricity market. Thus, there is nothing foreseeable in Project revenue levels that would create a potential step off in the value of the Project or its component equipment.

In addition to this express covenant in the easement agreements, the Town of Chateaugay wind energy law provides the following:

> **§17 Abatement**
>
> A. If any WECS fails to generate electricity for a continuous period of one year the Town Board may determine that it is "non-functional or inoperative", and require the Owner *(or the purpose of this Section 17 an Owner is the holder of the Wind Energy Permit)* to remove said WECS at its own expense. Removal of the WECS shall include at least the entire above ground structure and connected facilities down to 4 feet below grade, including transmission equipment and fencing and such other associated parts as the Town Board may direct. This provision shall not apply if the Town finds that the Owner has been making good faith efforts to restore the WECS to an operable condition, or if the non-functional or inoperative condition is the result of a force majeure event beyond the Owner's control. Nothing in this provision shall limit the Town's ability to order a remedial action plan after hearing. The Town shall provide Owner with at least 15 days notice of the hearing. The Owner may present evidence at the hearing on the functioning or operation of the system, or explanation for delay in repair during such period. At such hearing, in order to warrant decommissioning of the system or any part thereof, the Town must first find by a preponderance of the evidence submitted and presented, that the WECS or any part thereof has been non-functional or inoperative continuously for 12 months. The Town after such hearing may order the removal of the WECS system or any part thereof (down to 4 feet below grade) that it finds has been non-functional or inoperative. Upon any direction by the Town Board to an Owner of a WECS to remove any system or part thereof and the failure of the Owner to comply with such directive or to substantially commence such removal within 30 days of the directive, then the Town may proceed against the Decommissioning Bond or Fund as established hereinafter in compliance with paragraph 17(3) hereof.

C. <u>Decommissioning Fund</u>. The Owners shall continuously maintain a fund, letter of credit or bond payable to the Town, in a form and from a Provider approved by the Town for the removal of non-functional towers and appurtenant facilities, in an amount to be determined by the Town, for the period of the life of the facility. This Decommission Fund shall be adjusted every three years for changes in costs of decommissioning and restoration as well as adjusted for inflation. The Fund shall be issued or maintained by bank licensed and authorized to do business in the State of New York or such other financial institution so authorized and approved by the Town Board. All costs of the financial security shall be borne by the Owner. All decommissioning fund requirements shall be fully funded before commencement of construction of any portion of WECS. Any Wind Energy Permit issued shall restrict construction until the Fund has been approved and accepted by the Town Board.

§21 Applications for Wind Measurement Towers (A)(5)

An application for a Wind Measurement Tower shall include a Decommissioning Plan, including a security bond for removal.

The Town of Bellmont wind energy facilities law contains the following provisions:

§17 Abatement

A. If any WECS fails to generate electricity for a continuous period of one year the Town Board may determine that it is "non-functional or inoperative", and require the Owner *(or the purpose of this Section 17 an Owner is the holder of the Wind Energy Permit)* to remove said WECS at its own expense. Removal of the WECS shall include at least the entire above ground structure and connected facilities down to 3 feet below grade, including transmission equipment and fencing and such other associated parts as the Town Board may direct. This provision shall not apply if the Town finds that the Owner has been making good faith efforts to restore the WECS to an operable condition, or if the non-functional or inoperative condition is the result of a force majeure event beyond the Owner's control. Nothing in this provision shall limit the Town's ability to order a remedial action plan after hearing. The Town shall provide Owner with at least 15 days notice of the hearing. The Owner may present evidence at the hearing on the functioning or operation of the system, or explanation for delay in repair during such period. At such hearing, in order to warrant decommissioning of the system or any part thereof, the Town must first find by a preponderance of the evidence submitted and presented, that the WECS or any part thereof has been non-functional or inoperative continuously for 12 months. The Town after such hearing may order the removal of the WECS system or any part thereof (down to 4 feet below grade) that it finds has been non-functional or inoperative. Upon any direction by the Town Board to an Owner of a WECS to remove any system or part thereof and the failure of the Owner to comply with such directive or to substantially commence such removal within 30 days of the directive, then the Town may proceed against the Decommissioning Bond or Fund as established hereinafter in compliance with paragraph 17(3) hereof.

C. Decommissioning Fund. The Owners shall continuously maintain a fund, letter of credit or bond payable to the Town, in a form and from a Provider approved by the Town for the removal of non-functional towers and appurtenant facilities, in an amount to be determined by the Town, for the period of the life of the facility. This Decommission Fund shall be adjusted every three years for changes in costs of decommissioning and restoration as well as adjusted for inflation. The Fund shall be issued or maintained by bank licensed and authorized to do business in the State of New York or such other financial institution so authorized and approved by the Town Board. All costs of the financial security shall be borne by the Owner. All decommissioning fund requirements shall be fully funded before commencement of construction of any portion of WECS. Any Wind Energy Permit issued shall restrict construction until the Fund has been approved and accepted by the Town Board.

§21 Applications for Wind Measurement Towers (A)(5)

An application for a Wind Measurement Tower shall include a Decommissioning Plan, including a security bond for removal.

2.29 Health and Safety

2.29.1 Emergency Services

The Franklin County Office of Emergency Services administers fire coordination, emergency medical coordination, emergency management, County radio communications, and 911 dispatch as well as maintenance and supplies training, resources, and education for Franklin County and the surrounding area. The Chateaugay and Bellmont areas are served by a combination of ambulance services from Franklin and Clinton Counties. There are seven ambulance squads and volunteer fire departments (VFDs), with stations located within approximately 20 miles of the Project Area. These include Chateaugay VFD, Burke VFD, Constable VFD, Malone Call Fireman (paid and volunteer), Churubusco VFD, Lyon Mountain VFD, and Ellenburg Center VFD. These stations provide mutual aid but most are not staffed full-time. Generally, emergency response capabilities are adequate and can serve the Project Area during construction and operation. Ambulatory emergencies would be taken to Alice Hyde Hospital, Malone, New York, where critical care emergency evaluations can be given and from where life flights for special emergency services can originate.

2.29.2 Health and Safety Planning

The development and implementation of plans for the safe design, construction, and operation of all Project facilities is integral to Project operations. The implementation of the Health and Safety Plan (HASP) is an ongoing process, from the first design effort through procurement to construction and operations. A draft HASP has been developed in four phases as described below.

Design Phase

During the design phase (ongoing), the elements of the Project are being defined and specific details are being confirmed. The detailed requirements for each of the elements will be depicted in specifications and drawings, including features required for safe operations.

Procurement Phase

All equipment and materials will be purchased in accordance with documents prepared during the design phase. A check will be performed to ensure compliance with health and safety requirements. Any enhancements recommended by the suppliers will be evaluated and added as appropriate. All contractors will be evaluated based on safety record histories, commonly referred to by New York State Insurance carriers as an EMR (Experience Modification Rate). This EMR will be evaluated using the most recent 3 years of experience. An EMR of 0.9 or less will be used as the acceptance baseline. An EMR of 1.0 or greater usually indicates a substandard record which will lead to that contractor being excluded from participating in the Project.

Construction Phase

Prior to the start of construction, a complete risk analysis that includes information from the area's first responders and other service providers to define a site-specific Emergency Preparedness and Fire Prevention Plan (EPFPP) for the identified risks will be completed. The EPFPP will identify all actions and resources required and confirm availability and proper training for the construction phase risks. This plan will detail the actions to be taken by the site manager and staff should an emergency or fire occur and will set forth the lines of communication in the event of a fire or other emergency.

Operations Phase

Prior to the initiation of commissioning and immediately after completion of the construction planning and finalization of equipment selection, a complete review of the original risk analysis shall be completed, with the area first responders and other service providers participating, to determine if any modifications to the EPFPP for any newly identified risks are needed. Based on these plans, all required actions and resources required shall be identified, availability confirmed, and proper training provided for the Operations Phase risks.

Section 13 of Local Law No. 7 of the Town of Chateaugay and Local Law No.2 of the Town of Bellmont requires safety measures that include manual and automatic controls on each turbine to limit the speed of the rotor blade; 6-foot fencing and warning signs to restrict access to the substation and each turbine or turbine cluster, unless it can be demonstrated to the Town that the turbines are "non-climbable and otherwise safe"; locked access doors to electrical and mechanical components incorporated into the final Project design; and a minimum distance of 30 feet between the ground and any part of the rotor blade system. These standards will be met.

A copy of the HASP for the Project is included as Appendix N of this DEIS.

2.29.3 Fire Safety Planning

The Project's HASP incorporates the fire safety planning requirements of the Town of Chateaugay, Bellmont, and Clinton Wind Energy Facilities laws to ensure that fire safety planning is incorporated into the design, construction, and operation of all facilities.

2.29.4 Design Requirements

The electrical power generated by the wind turbines is transformed and collected through a network of underground and overhead cables (the collection system), which will terminate at the Clinton substation in the Town of Clinton, Clinton County. Impacts from construction and operation of the Clinton substation was previously evaluated and approved by the Towns of Ellenburg and Clinton during the SEQRA review of those Projects in the Joint Statement of Findings and Decision dated August 17, 2006. The Clinton substation has received New York Power Authority (NYPA) approval of the associated one- and three-line diagrams as well as associated major equipment. A building permit for the substation access road entrance has been submitted for and approved through the Town of Clinton's Engineers, Conestoga Rovers and Associates, allowing access to the substation area to complete site layout and finalize associated geotechnical work for foundation and grounding designs. The main function of the substation facility is to step up the 34.5-kilovolt (kV) collection voltage to the NYPA transmission level of 230 kV and to facilitate the functional cable interconnect to the grid. The Clinton substation is currently under construction. The engineering and NYPA interface to support the Chateaugay facility expansion will be incorporated into this substation configuration with modular equipment and no additional disturbance to the Noble Chateaugay Windpark. The overall electrical system and substation expansion will be designed and constructed in accordance with the Guidelines of the National Electric Code (NEC), National Fire Protection Agency (NFPA), and host utility (NYPA) requirements.

The turbines will each be located on a parcel of cleared land that occupies approximately 1 acre. The cleared land will be free of combustible materials during construction, thus minimizing the potential spread of a fire, should one start.

Fire protection features of each turbine include indication and control components within the nacelle that monitor bearing, oil, and nacelle temperatures. These components will be connected to the turbine supervisory control and data acquisition (SCADA) system. The SCADA system will monitor these temperatures and automatically shut the turbine down and send an alarm to the control room if predetermined set points are exceeded. In addition to the monitoring system, each nacelle and each service vehicle is equipped with a fire extinguisher. In the very remote possibility that components in the nacelle catch fire, the first responder action plan would be to cordon off the area and allow the fire to burn itself out while protecting field, forest, and shrubbery growth below with conventional firefighting equipment and procedures. New York State does not regulate wind energy generating facilities, but the Towns have adopted local laws incorporating overall building permits into the local Wind Energy Law. However, the submission of plans and their professional review will be conducted to reduce the exposure to fire and other hazardous risks that can affect the Towns and County. Noble will also comply with all other Local, County, state, and federal laws/directives that will apply to a normal Building Permit structure.

2.29.5 Ice Shed

Ice shed is caused by the buildup of ice on the turbine's blades and can occur under certain conditions; however, according to the American Wind Energy Association (AWEA), typical setbacks are sufficient to protect against danger to the public. Published literature (Seifert et al. 2003) reports typical drag coefficients for ice particles at 1.2. The report described observed ice fragment throws, the longest of which was slightly less than 410.1 feet (125 meters). Trajectories for ice shedding are estimated to be approximately 426.5 feet (130 meters) horizontal displacement from the 80-meter turbines. As required by each Town's local law, all turbine setbacks from residences and public roads exceed these distances.

The horizontal displacement of ice fragments is limited by the effect of ice on the blade airfoil itself. Ice buildup slows a turbine's rotation and will be sensed by the turbine's control system, emitting a vibration warning condition that will cause the equipment to shut down. In addition, the Project is located on private property and access by the general public is restricted and will, therefore, restrict the possibility of injury. The operations staff working in and around the turbines may be at risk of ice shed from the blades if they are beneath the blades when icing conditions exist; however, the staff will be trained in recognizing this condition and will not be working around the turbine areas when such conditions exist.

2.29.6 Other Safety Considerations

The facility will have a continuous grounding system installed that will tie each turbine independently into the grounding loop that will include grounding transformers, greatly reducing the potential for any stray voltage created by the Project. In addition to having a site-specific grounding system, the power distribution system for the Project will be buried a minimum of 4 feet in the ground, and the pad-mounted transformers will be encased in a grounded base frame. In areas where the distribution cables are aboveground, the cables will be designed in accordance with standard utility specifications with appropriate shielding.

2.30 Cultural Resources: Environmental Setting

As part of the cultural resources investigation, Panamerican Consultants, Inc. (Panamerican) was hired by Noble to conduct an architectural survey and a Phase I cultural resources study for the Project. These studies were performed in order to identify known and potential cultural resources in the vicinity of the Project Area in accordance with the New York State Historic Preservation Office (NYSHPO) Guidelines for Wind Farm Development Cultural Resources Survey Work (NYSHPO 2006), National Historic Preservation Act, New York State Historic Preservation Act, and all relevant state and federal legislation. The methodology for these studies was approved by NYSHPO prior to commencement of the investigations (see Appendix C). The known and potential cultural resources identified by the Panamerican studies are summarized below and discussed in detail in Appendices O and P. The architectural survey and Phase 1 cultural resources study were submitted to NYSHPO on January 10, 2007, for review and approval. NYSHPO approval of the archeological study was received and is included in Appendix C.

In addition, although the Project is not within or adjacent to tribal lands, formal consultation was initiated with Native American Tribes to initiate formal consultation in accordance with Section 106 of the National Historic Preservation Act. A response was received from the Stockbridge-Munsee Tribal Historic Preservation Office on January 18, 2007, indicating that the Project Area is not located in an area of concern and, therefore, no further consultation is required (see Appendix C).

2.30.1 Architectural Resources

As described in Appendix O, an architectural survey was conducted in accordance with NYSHPO guidelines dated January 2006. As a part of the survey, a 5-mile visual Area of Potential Effect (APE) was established to define the geographic scope of the survey. The visual APE and survey methodology were established in consultation with SHPO based on the Guidelines for Wind Farm Development.

Prior to initiation of the architectural survey, New York State and National Register of Historic Places (S/NRHP) were reviewed to identify previously recorded historic and architectural resources within the Project Area and visual APE. A viewshed analysis map (or Zone of Visual Influence [ZVI]) was developed to determine where turbines would be visible in the visual APE, based solely on topography (see Figure 1-2 of Appendix O). Buildings and districts in the APE and the positive ZVI (i.e., one or more turbines could be viewed from the location) were then reviewed and surveyed to identify properties, sites, or districts that are already listed or possibly eligible to be listed on the S/NRHP. Local sources, references, and historic maps were consulted to formulate a historic context of the region in order to supplement National Register Eligible (NRE) evaluations. In some cases, additional information about specific buildings, farms, complexes, or families was supplied by the owner of the property or other interested/informed residents of the community. A detailed discussion of the methodology used for the study is provided in Appendix O.

The survey also took into account the APE that was established and approved for the Clinton and Ellenburg Windparks, which overlapped the Chateaugay/Bellmont 5-mile APE. A total of 58 NRE properties and 18 contributing properties (farmhouse outbuildings, etc.) comprising the NRE Chateaugay Main Street Historic District were determined NRE in September 2006 as a part of the Clinton and Ellenburg surveys. These properties were also reviewed against the positive ZVI.

A complete list of known and possibly eligible NRE sites was provided to the SHPO on January 10, 2007. Twenty-one individual properties, including cemeteries and other structures, are being recommended for the first time as possibly eligible for listing on the NRHP.

2.30.2 Archaeological Resources

A Phase I investigation was conducted in order to determine if any previously recorded or as-yet unidentified documented archeological resources are present within the Project Area. The investigation included archival, documentary, and historic map research, a site file and literature search, the examination of properties listed in the New York S/NRHP, an intensive walkover reconnaissance, photographic documentation of conditions, and shovel testing throughout a 1-mile archeological APE following NYSHPO guidelines.

The work plan for field investigations was submitted to and approved by NYSHPO in October 2006 (see Appendix C, Agency Correspondence). Photographs of the field investigation are presented Appendix P.

2.30.2.1 Known Prehistoric Resources

The Project Area is most comparable to the interfluves (uplands) environmental zone, which is not particularly sensitive for prehistoric sites. The Project Area is generally sensitive for small seasonal camps and processing stations. Habitation of this area was likely influenced by seasonality, i.e., based on hunting groups moving into the uplands in search of deer and other game during the winter months. The Project Area is not characteristically sensitive for quarry workshops. The likelihood of finding rock shelter sites is low as this region is not characteristically sensitive for rock overhangs. Sensitivity for burials is generally low because the larger settlements (e.g., base camps, villages) are more likely found in the valleys.

2.30.2.2 Known Historic Resources

The Project Area and its surroundings are and have been historically used for agriculture. Sensitivity for historic middens is considered moderate to low. While the proposed turbine locations are generally set well behind existing and map-documented farmsteads, some historic farmsteads may be crossed by proposed access roads and collection lines that follow existing roads. Areas considered sensitive for historic sites are in proximity to map-documented structure (MDS) locations. Appendix P lists 17 MDS locations or reported sites within the 1-mile APE.

2.30.2.3 Phase 1B Survey Results

Shovel tests were conducted within 34 of the 86 proposed wind turbine locations and 13 segments of proposed access road and collection right-of-way (ROW) (see Section 3.1 of Appendix P for detailed methodology). A total of 4,592 shovel tests were dug initially at 5-meter intervals within the 1-mile APE. Despite the large number of shovel tests, prehistoric artifacts were not found. Although a number of MDS locations are in proximity to the archeological APE, no remarkable artifacts or features were found through shovel tests. A few historic artifacts were found scattered in parts of the archeological APE, but they were isolated and found in plow-zone contexts. These unremarkable artifacts were found in areas adjacent to roads where such materials are common.

2.31 Cultural Resources: Impacts and Mitigation

As described in Section 2.30 (Cultural Resources: Environmental Setting), Panamerican Consultants, Inc. (Panamerican) was hired by Noble to conduct a cultural resources investigation for the Project and to complete an architectural survey of the 5-mile APE around all project components. The potential impacts on cultural resources identified during these surveys and proposed mitigation measures are summarized below and discussed in detail in the Panamerican reports provided in Appendices O and P, which were submitted to NYSHPO office on January 10, 2007.

As previously mentioned, 21 individual properties were identified and are being recommended to the NYSHPO as possibly eligible for listing on the NRHP for the first time. Fifty-nine properties and 18 contributing properties were previously determined eligible for listing by the NYSHPO as part of the review of the architectural survey reports for the proposed Noble Clinton and Noble Ellenburg Windparks. Should the NYSHPO determine that a structure within the 5-mile APE is potentially eligible for the NRHP, further consultation and documentation of the impacts on these structures may be required. At this time, approval of the architectural survey and a determination of affect have not been received from the NYSHPO. The architectural study will most likely be considered in conjunction with review of the DEIS, before NYSHPO will make a final determination on affect. NYSHPO approval of the archeological study is included in Appendix C, Agency Correspondence. Noble recognizes that a determination of affect must be completed before state or federal agencies can issue permits related to Project construction and operation.

2.31.1 Construction Impacts

2.31.1.1 Architectural Resources

Construction of the Project will not impact architectural resources. As presented in Appendix O, no structures or buildings will be demolished or physically altered in connection with the Project. While there is some potential for visual and noise impacts on structures possibly eligible for listing on the S/NRHP as a result of construction activities, it is unlikely that these impacts will be significant because of their temporary nature (see discussions of visual and noise impacts during construction in sections 2.14 and 2.16, respectively.)

2.31.1.2 Archeological Resources

No archeological resources will be impacted by construction of the Project. As discussed in Section 2.30 and in Appendix O, no prehistoric or historic archaeological sites or prehistoric artifacts were found during site investigations. While a few historic artifacts were found scattered in parts of the APE, they were isolated and found within plow-zone contexts. These unremarkable artifacts were found in areas adjacent to roads where such materials are common. In the event of an unanticipated discovery of potentially significant archaeological resources during construction, Noble will stop work immediately and contact the NYSHPO for further guidance. A Plan for Unanticipated Discoveries is provided in Appendix P.

2.31.2 Project Facility Impacts

2.31.2.1 Architectural Resources

Operation of the Noble Chateaugay Windpark and Noble Bellmont Windpark will have a visual effect on 58 individual NRE properties and one NRE Historic District, 18 contributing NRE properties, and 21 properties possibly eligible for listing on the NRE. Forty-five or more turbines will be visible from the majority of these properties. While some of these properties are grouped together within municipalities, along roads, or in associated complexes such as farmsteads, on the whole, they are spread out across the area.

Determining the actual impact of the Noble facilities on such properties is difficult for a number of reasons. First, it is possible that modern intrusions may have already compromised some historical settings. Telephone poles, electrical-distribution lines, water towers, cellular/personal communication system (PCS) and /or radio/TV towers, and other vertical, modern visual intrusions are located throughout the Project Area. In addition, because the ZVI is topography based and does not include vegetative cover, it likely overestimates the number of visible turbines and the area from which they can be seen. The actual impacts on these resources will vary with the surrounding topography, distance from the turbines and electrical lines, existing landscaping and vegetation, and surrounding land uses.

Nevertheless, the data presented suggest that turbines are likely to be visible from each of these properties. All 86 turbines may be visible from 19 individual properties located in the Towns of Chateaugay, Bellmont, and Clinton. In addition, the Federal Aviation Administration (FAA)-required lighting on some turbines will also be visible from many locations.

Thus, the Project has the potential to change the visible landscape of the region and create a distinct visual impact. The most significant visual impacts will be on open farm land (rural agricultural landscapes), historic properties on ridges, cemeteries, and historic properties within nearby villages and hamlets. The turbines will be unique and prominent visible features of the landscape in many locations where there are not or never have been other types of vertical, manmade features.

While there may be some screening afforded by mature tress, shrubbery, and other plants during the growing season, the prominent features of the turbines will be visible from at least some properties of concern during periods of dormancy (Section 2.14, Visual Resources: Impacts and Mitigation, and Appendix G provide a more detailed discussion of visual impacts).

2.31.2.2 Archeological Resources

No prehistoric or historic archaeological sites or prehistoric artifacts were found during this investigation. As mentioned above, the few historic artifacts found scattered in parts of the APE were isolated and found within plow-zone contexts.

As such, Project facilities and maintenance of the Project will not impact archeological resources.

2.31.3 Mitigation

2.31.3.1 Architectural Resources

Noble is required to consult with the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) pursuant to Section 106 of the National Historic Preservation Act (NHPA) because federal permits are required; Article 14 of the New York Parks, Recreation, and Historic Preservation Law because state approvals are required; Article 8 of the New York State Environmental Conservation Law (ECL); and 6 NYCRR Part 617. As part of that consultation, Noble will be obligated to mitigate adverse visual effects to NRE and Listed properties. The NYSDEC mitigation was also triggered by the inclusion of part of the Adirondack State Park within the 5-mile APE. Because NRE properties are within the ZVI, indirect mitigation for visual impacts will be required.

As part of the consultation process, NYSHPO will approve an appropriate combination of mitigative actions, which Noble will be required to implement as a condition of its NYSDEC and USACE permits. Proposed mitigative strategies are included in the Architectural Survey Report submitted to NYSHPO (see Appendix O) and include the following:

- Historic resources survey;
- Monetary contributions;
- Heritage tourism;
- Educational activities; and
- Historic activities.

Based on these mitigative strategies, Noble has developed a Historic Resource Impacts Mitigation Plan that is provided in Appendix O. The Plan identifies specific strategies that can help preserve historical resources in the affected communities and make them accessible to local residents and visitors, including:

- Evaluation of the Rutland Railroad Train Depot in Chateaugay for use as a Historical Society headquarters and community center;
- Evaluation of the Chateaugay Town Hall for historical restoration;
- Completion of a historic resources survey of the entire area affected by the Project; and
- Construction of a Town Historical Society information kiosk in Bellmont.

Noble recognizes that local community input is vital to the success of any mitigation strategy; as such, it has already begun a dialogue regarding historic resource mitigation with local officials, including Town Supervisors, local historians, and interested Town Council members. The final mitigation plan will be submitted to NYSHPO prior to construction.

2.31.3.2 Archeological Resources

No mitigation strategies are necessary for the Project because archeological resources will not be impacted during the construction and operation of the Project.

3

3 Cumulative Impacts and Benefits

3.1 Introduction

Cumulative impacts arise when two or more individual environmental effects, which, when taken together, are significant or compound or increase each other. Cumulative impacts are most likely to result when concurrent actions are proposed for the same location or overlapping locations. The analyses presented in this section examine the potential impacts associated with the Noble Chateaugay Windpark and Noble Bellmont Windpark (Project) in the context of the full range of potential cumulative impacts from other wind energy projects proposed or approved in the region.

Several wind energy development projects are in the planning and development phases within 20 miles of the Project (see Table 3-1). No other similar actions have been identified in the northeastern New York region. For the purposes of assessing these potential cumulative impacts, this analysis assumes that all of the indicated projects will be approved and constructed as proposed.

Table 3-1 Proposed Windparks, Franklin and Clinton Counties, New York

Windpark Name	Number of Turbines[1]	Approximate Distance of Project Boundary from Noble's Chateaugay and Bellmont Project
Altona Windpark	68	20 miles (Southeast)
Clinton Windpark	68	<1 mile (East)
Ellenburg Windpark	54	<1 mile (East)
Marble River Wind Farm	109	2 miles (Northeast)
Beekmantown Wind Farm	13	20 miles (Southeast)

[1] Sources: Horizon Wind Energy 2006; Noble Environmental Power 2006.

This cumulative impact analysis is based, where possible, on publicly available project information. The impacts of the Noble Altona, Clinton, and Ellenburg Windparks were investigated jointly in an FEIS approved on July 26, 2006. The Noble Altona, Clinton, and Ellenburg Projects are scheduled to start construction in April 2007. Construction will be completed by November 2007. The impacts of Horizon Energy's Marble River Wind Farm were evaluated in a DEIS that was deemed complete on April 6, 2006. A Special Use Permit was prepared for the Wind Horse Beekmantown project but no DEIS was required, as the project was issued a SEQRA Negative Declaration. The Wind Horse project is scheduled to begin construction in 2007. The Marble River project is expected to begin construction in spring 2008. Construction of the Noble Chateaugay and Bellmont Project is scheduled to begin in August 2007 and be completed in March 2008.

In conducting this cumulative impact analysis, the following assumptions have been made:

- Because the Noble Altona Windpark and the Windhorse Beekmantown project are located approximately 20 miles away from the Noble Chateaugay and Bellmont Windparks, no cumulative construction impacts are expected from these projects;
- The Noble Ellenburg and Noble Clinton Windparks will be constructed concurrently on a 7-month schedule, beginning in April, 2007, and will overlap with construction of the Noble Chateaugay and Bellmont Project for a period of approximately 4 months; and
- Construction of the Horizon Marble River Wind Farm will not begin until the construction of the Noble Clinton, Ellenburg, and Chateaugay and Bellmont Windparks has been completed.

3.2 Wetlands

Existing New York Department of Environmental Conservation (NYSDEC) and National Wetland Inventory (NWI) wetland mapping shows a significant distribution of wetlands throughout the region. As described in Section 2.8, Wetlands: Impacts and Mitigation, Noble sited its Project so as to minimize wetland impacts. Because of the overall distribution of wetlands in the Project Area, complete avoidance of wetland resources was not feasible. However, Noble's Chateaugay and Bellmont Project will permanently disturb less than 0.1 acres of wetland. Noble has developed a Conceptual Compensatory Wetland Mitigation Plan to mitigate long-term impacts resulting from wetland acreage losses. The plan is provided in Appendix E of this DEIS.

Complete avoidance of wetlands also is not feasible at the Noble Altona, Clinton, and Ellenburg Windparks or the Horizon Marble River Wind Farm projects for the same reason identified above. As such, wetlands will be disturbed during construction of these wind power projects to provide sufficient access to accommodate construction equipment and staging areas at various turbine locations, access roads, and collection lines to safely and efficiently erect and construct the facilities. Impacts during construction include all temporary and permanent impacts related to clearing, grading, and placement of fill. Construction of the Noble Altona, Clinton, Ellenburg, Chateaugay, and Bellmont Windparks and the Horizon Marble River Wind Farm will result in the disturbance of 56.6 acres of wetlands in the region, of which 47.3 acres will be restored to pre-existing conditions. The remaining 9.3 acres of wetlands will be permanently impacted by placement of fill for access roads or other project components. Wetlands will not be impacted by the Beekmantown project.[6]

Project facilities at each site will have minimal individual impacts on wetlands. Maintenance activities associated with the operation of the projects will result in the conversion of a limited amount of forested wetlands to scrub-shrub or emergent wetlands as a result of periodic removal of woody vegetation that may interfere with the operation of the facilities at each site.

Although minor localized and temporary impacts on wetland function and values may result within each individual project area, there will not be potentially significant adverse cumulative impacts to wetlands in the region. No potentially significant adverse cumulative impacts are expected because wetland impacts will be distributed across the landscape and will be small in comparison to the amount of wetland acreage in the region. Furthermore, in accordance with NYSDEC and U.S. Army Corps of Engineers (USACE) regulations, developers of any wind power project in the region will be required to avoid, minimize, and mitigate for wetland impacts. It is expected that the functional uplift resulting from implementation of mitigation will offset the impacts resulting from the projects, resulting in no net loss of wetland functions and values. Therefore, it is expected that any localized wetland impacts will be offset by mitigation that will enhance wetland values in the region.

3.3 Wildlife

Construction of multiple projects will alter localized habitat to some degree during construction, and less so over time; however, neither the individual project impacts nor the cumulative impact from all proposed projects are expected to be significant. Most species are expected to avoid the various project sites during periods of active construction. Some limited mortality may occur to less mobile species during the course of construction. Indirect impacts on wildlife will also occur as a result of habitat alteration in association with construction of the projects; however, these impacts are not expected to be significant as wildlife will likely relocate to adjacent suitable habitat, and return to project sites post-construction.

Cumulatively, operation of the projects will result in minimal loss of habitat as a percentage of habitat within the region. In addition, the impacts on habitat are consistent with activities and conditions that regularly occur throughout the region as a result of normal farming and logging activities.

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6 Wetland impacts for the Altona, Clinton, and Ellenburg Windparks were obtained from the Supplemental Joint Applications for Permits for each Project; wetland acreages for Marble River were obtained from the Marble River DEIS.

3.4 Birds and Bats

Construction-related activities at each of the projects (e.g., clearing for road construction, infrastructure construction, equipment noise, and increased vehicle traffic) can potentially impact birds and bats. Displacement from habitat is the primary concern with construction-related impacts. However, potential impacts from construction are generally only temporary in nature and will only occur for limited periods of time. As such, potentially cumulative project construction impacts to birds and bats are not expected to be significant as a result of these projects.

It is anticipated that the bird and bat fatality rates as a result of the operation of each of the proposed projects will be within the range of the national and eastern averages for wind energy facilities. Thus, multiplying the national average and eastern fatality rates for bird kills by the proposed number of turbines provides a reasonable estimate of cumulative bird fatalities expected if all of the projects were to become operational (see Table 3-2). Likewise, multiplying the national average bat kill rate with the proposed number of turbines provides a reasonable estimate of total bat fatalities expected if all the proposed projects were to become operational (see Table 3-3). These are only estimates, and there can be considerable variation in fatality rates, especially for bats at individual turbines.

Given the relatively low numbers of birds and bats potentially affected by the proposed wind projects in the region, the overall cumulative impact of these projects on bird and bat species is considered low. Further, the impacts of bird and bat fatalities will likely not be species-specific, rather, the impacts will be distributed among several species.

Table 3-2 Approximate Number of Bird Fatalities Based on Average National and Eastern Fatality Rates

Project	Number of Turbines	Approximate Bird Fatalities Per Year Based on National Average Rate[1]	Approximate Bird Fatalities Per Year Based on Average Eastern Rate[2]
Noble Chateaugay/Bellmont	86	198	370
Noble Clinton	68	157	293
Noble Ellenburg	54	125	233
Noble Altona	68	157	293
Horizon Marble River	109	251	469
Beekmantown	13	30	56
TOTAL	398	918	1714

1 2.3 birds/turbine/year (NWCC 2004).
2 4.3 birds/turbine/year (NWCC 2004).

Table 3-3 Approximate Number of Bat Fatalities Based on National Average Fatality Rate

Project	Number of Turbines	Approximate Bat Fatalities Per Year Based on National Average Rate[1]
Noble Chateaugay/Bellmont	86	293
Noble Clinton	68	232
Noble Ellenburg	54	184
Noble Altona	68	232
Horizon Marble River	109	371
Beekmantown	13	45
TOTAL	398	1357

[1] 3.4 bats/turbine/year (low = 0.7; high= 47) (NWCC 2004).

Further, the estimated annual cumulative loss of birds is not considered to be biologically significant when compared to estimated bird mortality in the region from other factors. The U.S. Fish and Wildlife Service (USFWS) estimates that a minimum of 10 billion birds breed in North America (USFWS 2002). There are many widespread sources of bird mortality. However, it is challenging to compare predicted mortality from a proposed wind project site to other sources of mortality, because it is only a prediction and local mortality rates from other sources are rarely quantified to allow comparison. On a national scale, the annual bird mortality associated with wind energy facilities (estimated at 33,000 birds per year in 2002) is slight compared to other sources of mortality that may occur in the region, such as:

- vehicles (60 million or more deaths per year);
- power and transmission lines (conservatively tens of thousands deaths per year, possibly closer to 174 million deaths per year);
- communication towers (conservatively 4 to 5 million deaths per year, possibly closer to 40 to 50 million deaths per year);
- electrocution (estimated tens of thousands per year);
- pesticides (at least 72 million deaths annually, likely far more), oil spills (hundreds of thousands of deaths per year);
- house cats (hundreds of millions of deaths per year);
- agricultural practices (i.e., hay mowing); and
- hunting (Erickson et al. 2001; USFWS 2002).

The number of bird and bat fatalities can only be determined with post-construction mortality studies. Impacts of bird and bat fatalities at wind power projects are becoming better understood as the number of wind projects increase and data from ongoing mortality studies become publicly available. While bird fatalities have been studied and estimated, we are not aware of similar studies for bats. Impacts of bat fatalities on specific species are starting to be evaluated as the number of wind projects increase and data from ongoing mortality studies are made publicly available. Post-construction monitoring programs will be established at each of the Noble Windparks to determine if bird and/or bat collision fatalities are occurring as a result of project operation, and if so, the rate of mortality. These data will be correlated with pre-construction data, including radar data to determine whether any mitigation is required. Information from these studies will also be a valuable resource for wildlife agencies and will provide needed data that can be used to assess the siting of future wind projects.

The cumulative decrease in habitat availability resulting from the proposed projects has also been evaluated. Birds and bats will either be accustomed to disruption of this nature or they will relocate to other adjacent suitable habitat. Indirect impacts on breeding birds will occur as a result of habitat alteration in association with construction of these projects; however, these impacts are not expected to be significant.

3.5 Threatened and Endangered Species

Based on consultation with the USFWS and the National Heritage Program (NHP), except for transient individuals, no threatened or endangered species or communities were identified within the Project Area. However, during field surveys, two threatened bird species, including bald eagle (federally and state-threatened) and northern harrier (state-threatened); and one state endangered bird species, the Golden Eagle, were observed in the Project Area. Little use of the Noble Chateaugay and Bellmont Project Area is anticipated by endangered, threatened, or special concern bird species. Therefore, no significant adverse impacts on threatened and endangered species are expected from construction and operation of the Noble Bellmont and Chateaugay Project. Potential impacts on bird species of concern (i.e., osprey, northern goshawk, sharp-skinned hawk, and red-shouldered hawk), and those listed by USFWS and NYSDEC on the NHP reports (i.e., upland piper and common loon) within 10 miles of the Project Area are further discussed in Appendix F.

Both the USFWS and NHP were consulted for the Noble Altona, Clinton, and Ellenburg Windparks and Horizon Marble River Wind Farm. Except for transient individuals, no listed bird or bat species or significant communities were identified within these project areas (E & E 2006; Horizon Wind Energy 2006). At the Horizon Marble River Wind Farm project site, two state-listed threatened bird species (northern harrier and bald eagle) and five state-listed bird species of special concern (sharp-shinned hawk, Cooper's hawk, horned lark, grasshopper sparrow, and osprey) were observed during the field surveys.

As with the Noble Chateaugay and Bellmont Project, only limited use of these areas is anticipated by endangered, threatened, and special concern bird species; therefore, the potential cumulative risk to threatened and endangered bird species is considered low.

3.6 Visual

Noble retained Saratoga Associates to evaluate the potential cumulative impact of the Chateaugay and Bellmont Project along with all the proposed projects identified above. The detailed cumulative visual analysis is provided in Appendix G of this DEIS and the findings are summarized below.

Construction of each of the projects will require use of mobile cranes and other large construction vehicles. Components will be delivered in sections via large semi-trucks. The Noble Clinton and Ellenburg Windparks and the Horizon Marble River Wind Farm, are located in close proximity to the Noble Chateaugay and Bellmont Project Area. As previously stated, the construction schedules of the Noble Clinton and Ellenburg Windparks will occur concurrently and will overlap with the Noble Chateaugay and Bellmont Project construction schedule. Construction of the Marble River project will not begin until after the Chateaugay and Bellmont Project has been completed. The Noble Altona and the Wind Horse Beekmantown projects are located at a sufficient distance from the Chateaugay and Bellmont Project that they will not contribute to cumulative visual impacts during construction. As the project construction period is expected to be relatively short (approximately 8 months), construction-related visual impacts at any given receptor location will be brief and are not expected to result in adverse prolonged visual impacts to area residents or visitors.

To the extent these proposed wind energy projects are constructed, they will create cumulative visual impacts from certain viewpoints. Cumulative visual impacts are also expected during operation of the projects. If all the proposed projects were constructed there would be 398 thin vertical structures distributed throughout the landscape; topped with large rotating blades. The introduction of such clearly man-made and kinetic structures would create an obvious disruption of the rolling agricultural landscape of the region. In mitigation of this effect, the neutral colors of the turbines will be highly compatible with the hue, saturation, and brightness of the background sky and distant elements of the natural landscape. Furthermore, tubular style towers have been specifically selected at each site to minimize textural contrast and provide a more simple visually appealing form.

To assess the cumulative visual impacts resulting from operation of the projects, a series of viewshed maps was created to show where there might be a possibility to see the multiple projects from a specific location within 5 miles of the Chateaugay and Bellmont Project. These viewshed maps are provided in Appendix G. Based on these maps it was calculated that one or more turbines would be visible from approximately 36% of the entire five-mile project study area (comprised of 98,545 acres). A viewshed map was also created to assist in further evaluating potential nighttime visibility. Based on this map it was calculated that, one or more lights would be visible from approximately 43.5% of the entire five-mile project study area.

There is no viewpoint from which all turbines will be visible within. For instance, if a viewer is standing east of the Noble Chateaugay and Bellmont Project and is looking in a westward direction, the viewer may need to rotate 180-degrees to view the Marble River Wind Farm. Generally, increased visibility of turbines will occur at higher elevations along road corridors or open agricultural lands. To demonstrate how the actual turbines will appear within the study area from a variety of representative distances and locations, two locations were identified for photo simulations. The simulations are provided in Appendix G.

Based on an evaluation of the aesthetic resources, land uses, users groups, and visual simulations, it is apparent that the wind power projects will change the visible landscape of the region and create a distinct visual aspect. Generally, visibility of all the wind power projects may be found on higher elevations along road corridors or open agricultural lands. The cumulative impact of multiple wind power projects will be highly variable depending on: the number of turbines visible; the proximity of the turbines to the viewer, whether or not the viewer is stationary or moving, and the landscape setting.

3.7 Sound

Noble retained Hessler Associates to evaluate the potential cumulative noise impacts of the proposed projects (see Appendix H of this DEIS). The Noble Altona Windpark, Horizon Marble River Wind Farm, and Wind Horse Beekmantown projects were not included because they are located at a sufficient distance to not contribute to cumulative noise impacts on the Noble Chateaugay and Bellmont Project Area.

Construction of the Chateaugay and Bellmont Project will contribute to minimal noise impacts in the vicinity of the Project Area. As mentioned previously, construction of the Noble Clinton and Noble Ellenburg Windparks may overlap with construction of the Noble Chateaugay and Bellmont Project. Any cumulative noise impacts resulting from construction of the projects would be considered localized and temporary in nature.

Operational noise impacts will be localized to the area of the proposed turbines at each project. There is a possibility that some of the residences potentially affected by Chateaugay and Bellmont noise may experience cumulative sound impacts from turbines in Noble's Clinton and Ellenburg Windparks, which form the eastern boundary of the Chateaugay and Bellmont Windpark. Noise modeling was done to evaluate this effect and it was determined that the difference between the project impacts alone and the cumulative impacts if all projects become operational is either zero or negligible at 1 dBA. A change of *at least* 3 dBA is required before any difference in sound level begins to be perceptible. One participating residence (receptor no. 13 on County Line Road) may experience a 4-dBA increase. The impact is likely to be an increased probability of annoyance due to cumulative noise.

3.8 Traffic and Transportation

Temporary increases in traffic volumes will occur during construction of the proposed projects due to equipment and material deliveries at each windpark. No major or extended road closures are expected to be required to construct any of the projects. As indicated in Table 2.22-1 of this DEIS, during weeks of peak construction activity (weeks 11 through 20), construction traffic due to the Chateaugay and Bellmont Project will result in about 14% increase in hourly daytime traffic on Route 11. Other traffic routes include NYS Route 190. Because there is currently little or no congestion on the roads in the Project Area, minimal delay for local traffic is expected. Similarly, roads within the vicinity of the other proposed wind projects in the region normally carry low traffic volumes and the addition of construction traffic volumes will not have a significant adverse impact on traffic flows.

The cumulative transportation impacts associated with the construction of the Noble Ellenburg and Clinton Windparks with the Noble Chateaugay and Bellmont Project are summarized in Table 3-4. The construction schedules of these projects are expected to overlap between weeks 13 and 30, where there will be an approximately 21% increase in hourly daytime traffic on U.S. Route 11. As indicated in the table, during weeks of peak construction activity (17 and 18), vehicles are expected to total 256 round trips per day during 8 hours per day.

Because the Horizon Marble River Wind Farm is being constructed after the Chateaugay/Bellmont Windparks, it is not expected to contribute to any cumulative construction impact. Construction of Noble's Altona Windpark and Wind Horse's Beekmantown project is not expected to significantly contribute to cumulative transportation-related impacts based on their distance from the Chateaugay and Bellmont Project.

In the Project permitting process, existing road and route surveys will be conducted to identify preconstruction road improvements necessary to accommodate equipment and material deliveries through the construction timeline when rerouting is impractical. These will be coordinated with road-use agreements between the developer, the Towns and the County. The process of creating a road use agreement will allow the Towns to plan scheduled paving and resurfacing that will also be coordinated with improvements and repairs by the Windparks' developers.

Table 3-4 Clinton, Ellenburg, and Chateaugay Windparks – Estimated Construction Traffic, Round Trips per Vehicle, 2-week Intervals

Week	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37-38	Total
Gravel loads - road building	210	248	420	651	906	1128	1551	1561	1592	1578	1528	1448	1332	1133	877	672	464	303	70	17672
Gravel loads - crane pads	0	14	29	43	69	96	116	155	166	167	167	155	138	126	100	71	51	31	11	1705
Gravel loads - road removal	0	0	0	0	0	110	219	455	742	1045	1145	1156	1131	1081	974	676	414	199	102	9449
Gravel removal reused in road building	0	0	0	0	0	-110	-219	-455	-742	-1045	-1145	-1156	-1131	-1081	-974	-676	-414	-199	-81	-9428
Concrete trucks	0	0	0	105	158	321	527	672	672	584	437	387	429	493	464	377	232	116	29	6003
Tower section delivery	0	0	0	0	10	43	49	51	54	57	63	55	35	39	51	48	39	24	3	621
Nacelle delivery	0	0	0	0	4	14	16	17	18	20	20	18	12	13	17	16	13	8	1	207
Blade delivery	0	0	0	0	5	22	25	25	25	30	28	28	18	18	27	24	18	12	6	311
Hub delivery	0	0	0	0	4	14	16	17	18	20	18	18	12	13	17	16	13	8	3	207
Controller cabinet delivery	0	0	0	0	2	5	6	7	7	7	6	5	5	5	5	5	3	2	0	70
Transformer delivery	0	0	0	0	3	4	5	7	7	6	6	7	5	5	5	5	3	2	0	70
NET R/T traffic	210	262	449	799	1161	1647	2311	2512	2559	2469	2273	2121	1986	1845	1563	1234	836	506	144	26887
Trucks per day	**21**	**26.2**	**44.9**	**79.9**	**116.1**	**164.7**	**231.1**	**251.2**	**255.9**	**246.9**	**227.3**	**212.1**	**198.6**	**184.5**	**156.3**	**123.4**	**83.6**	**50.6**	**14.4**	

Existing road traffic within the Franklin and Clinton Counties is comfortably below capacity and existing traffic conditions are light. A limited number of light trucks will occasionally access the projects for service and maintenance; therefore, operation of the projects is not expected to have permanent impacts on local traffic and transportation.

3.9 Land Use

Activities associated with the projects will result in some impacts to land use. Impacts will be greater during construction due to the need to build wider temporary access roads to support construction vehicles and reduced during operation when the widths of these roads are reduced. At each of the projects, locations of the turbines were chosen in large part to minimize the loss of active agricultural land and the interference with farm operations and other environmental resources.

Although cumulatively the wind power projects will significantly change the appearance of the landscape, the projects are generally consistent with land use patterns within the region. Land use in the region of the proposed projects is described as rural-agricultural. The regional rural character is generally defined by its wide open agricultural parcels and limited residential density due to the presence of farms. The projects will occur in areas dominated by active agricultural and forest lands. Therefore, impacts to residential, commercial, and recreational land use have been minimized.

The projects are compatible with agricultural land use which dominates the region. The total acreage of prime farmland that will be permanently impacted by conversion to nonagricultural uses is minimal and will not significantly affect these soil resources in the Counties. Furthermore, while the impacts to land use generally occur on agricultural lands, future use of the land for agricultural uses will not be precluded.

Full compliance with the local laws regulating the development of wind power facilities will ensure that cumulative impacts on land use are minimal. The Town laws regulating wind energy facilities have specific agricultural mitigation measures based on the NYSDAM guidelines which include locating structures along field edges where possible, locating access roads along ridge tops, avoid dividing larger fields into smaller fields, and avoidance and maintenance of all existing drainage and erosion control structures.

3.10 Socioeconomics

The construction of the wind projects in the region is not expected to adversely impact housing and population.

It is estimated that during the eight-month construction period, approximately 540 construction workers will be required for the Chateaugay and Bellmont Project. Approximately 242 construction workers will be required for the Noble Clinton

Project, and an additional 194 will be used for the Noble Ellenburg Project. Given the overlapping construction schedules, the maximum estimated number of construction workers that will be employed at any time for the three Projects is 976. Of this amount it is estimated that a percentage of these workers will commute to the construction site. Local contractors and labor will be used to the extent practicable, but construction workers coming from outside the Project Area will be necessary to supplement the local work force. The primary locale for housing will be within 30 miles of the sites (see Figure 3-1 for a map showing the areas included in a 30-mile radius and in a 55-mile radius.) Within the 30 miles, conventional hotel/motel accommodations totaling at least 1, 916 rooms have been identified (see Table 2.25.1). Not included in the 1,229 total are apartment rentals, mobile home rentals, or any locations in Canada. Given this excess capacity, the demand for temporary lodging from out-of-town laborers will not place a significant burden on local hospitality resources.

Towns with viable lodging availability within a 55-mile radius of the Project Area are Malone, Plattsburgh and Saranac Lake, N.Y. and Burlington, VT. While the commute from Burlington to the Chateaugay and Bellmont Project might be strenuous for construction contractors, it is reasonable to assume that certain traveling workers would stay in Burlington due to proximity of a commercial airport serving the Northeast.

As mentioned previously, construction of the Marble River Wind Farm will occur after construction of the Noble Chateaugay and Bellmont Project. It is assumed that many of the Noble Windpark workers will be employed by Horizon after completion of the Chateaugay and Bellmont project.

The regional economy will experience several cumulative benefits from the construction of the projects including an increase in local economic activity, purchases of automotive fuel, meals and other items. The Noble Projects (Altona, Clinton, Ellenburg and Chateaugay and Bellmont) are expected to spend a total of about $136.4 million during construction. Total regional economic benefits, based upon regional multipliers applied to direct Project expenditures in original capital investment and ongoing operational expense, are $513.8 million over 20 years. While these figures are not known for the non-Noble projects, it is accurate to say that cumulatively, indirect and direct project expenditures will result in significant economic benefits to the region, both during construction and over the life of each project,

The Projects are not expected to have a long-term impact on housing and populations in the region. The sales data collected in existing wind farm markets indicate that the construction and operation of wind farms has no influence on property values (see Section 2.26 and Appendix K). Furthermore, the Windparks will have a positive long-term cumulative impact on the local economy in the form of PILOT payments to local municipalities, license agreements with host communities, and lease revenues to participating landowners. .

3.11 Cultural Resources

The construction and operation of the Chateaugay and Bellmont Project will not have any impacts on archeological resources in the Project Area. The project design was modified to avoid potentially sensitive sites identified during the Phase 1 archeological survey. Since there will be no project specific impacts there is no potential for contribution to cumulative archaeological impacts of the other proposed projects in the area.

Construction of the Chateaugay and Bellmont Project will not have any direct impacts on architectural resources (i.e., demolition of any NR listed or Eligible buildings) and no direct impacts have been identified in connection with the Marble River Wind Farm. There is however a potential for each of the proposed projects to have visual and noise impacts on structures potentially eligible for NRHP due to construction activities. It is unlikely that these impacts will be significant due to their temporary nature (see discussions of visual and noise impacts during construction in Sections 2.14 and 2.16, respectively). It is assumed that direct impacts to NR-listed or eligible structures will be minimized during siting and design of the Wind Horse Beekmantown project.

Operation of each of the projects in the region will result in visual impacts on NR eligible and listed properties within the region. Noble's archeological and architectural resource consultants, Panamerican, identified 58 NR eligible structures, 18 contributing properties, one NRE Historic District, and 21 properties possibly eligible for listing on the NRE within the 5-mile Noble Chateaugay and Bellmont Project study area. One or more turbines may be visible from most of the locations. The visual impacts on these NR eligible structures resulting from the operation of the other projects will be additive in the sense that more turbines are potentially visible from each property. The impact will vary depending on the number of turbines from the other projects in the region may be visible from a given property. The cumulative impacts to these resources may be reduced by a number of factors including topography, distance from the turbines, existing landscaping and vegetation, and surrounding land uses. Mitigation will be required as a condition of the construction of each of the projects to offset these impacts. An Historic Resource Impacts Mitigation Plan for the Project is provided in Appendix S.

3.12 Environmental Benefits

Construction and operation of the projects will have significant long-term beneficial effects on the use and conservation of energy resources. The construction and operation of the projects in Franklin and Clinton Counties clearly contributes to New York State's Renewable Portfolio Standard Policy which calls for an increase in renewable energy used in the State to 25% by the year 2013 (NYSERDA 2002). Collectively, the projects will generate approximately 360 MW of electricity from a renewable resource without any fossil-fuel emissions. Increased renewable energy use will slow down the negative impacts of global climate change and air emissions on people and wildlife.

4

4 References

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5

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