2.0 DESCRIPTION OF PROPOSED ACTION

This Draft Environmental Impact Statement (DEIS) is for a proposed action known as the Marble River Wind Farm (the Project). The proposed project is described below in terms of the purpose, need and benefit, project location and layout. Construction, operation maintenance, and decommissioning are also described and a list of regulatory approvals provided.

2.1 Introduction

The Applicant is proposing to develop a wind-powered electric generating facility of up to 109 turbines each generating a capacity of 2.0 megawatts (MW). The proposed Project is located in the Towns of Clinton and Ellenburg in Clinton County, New York. Approximately 89 of the turbines are proposed to be located in the Town of Clinton and 20 in the Town of Ellenburg. The location of the Project electrical collection station and switchyard facility (substation) is approximately 1 mile north of Star Road on the northern side of the Willis-Plattsburgh NYPA Transmission Line in the Town of Clinton. The wind turbines proposed are model G90 manufactured by Gamesa Eolica (or equivalent machines). Each turbine consists of a 78 meter (256-foot) tall tubular steel tower; a 90 meter (295-foot) diameter rotor consisting of three 44 meter (144-foot) long composite blades; and a nacelle which houses the generator, gearbox, and power train. Each turbine has a maximum height of 410 feet with a rotor blade oriented straight up (including the concrete foundation). A transformer located in the rear of each nacelle raises the voltage of the electricity produced by the turbine generator from 690 volts to 34.5 kilovolts (kV), which is the voltage level of the collection system. The tubular towers used for this Project are conical steel structures manufactured in multiple sections. The towers have a base diameter of approximately 15 feet and a top diameter of approximately 8 feet. Each tower will have an access door and an internal safety ladder to access the nacelle, and will be painted (off-white) to make the structure less visually obtrusive.

In addition to the wind turbines, the Project will involve construction of 41 miles of gravel access roads, 55 miles of underground electric collection cable, an Operation and Maintenance building and a new substation to the north of Star Road at the Town of Ellenburg/Clinton town line adjacent to an existing 230 kV electric transmission line. The Project will be developed on leased private land. Construction is scheduled to start in the Spring of 2007 and be completed by the end of 2007. Initial general land clearing may start earlier, after all required permits and approvals are received, in order to commence road construction as early as possible, after the 2007 spring thaw. Initial soil investigation to support the civil design will also be conducted in 2006. A more comprehensive soil investigation program will be completed by the contractor in 2007, See section 2.6 for more construction detail.

Once built, the wind turbines and associated components operate in almost completely automated fashion. Typically 13-18 onsite personnel are required. Under normal conditions, wind turbines operate automatically at a single speed.

2.2 Purpose and Scope of Environmental Impact Statement

In November 2005, a Full Environmental Assessment Form (EAF) addressing the wind power project was submitted to the Town of Clinton pursuant to the State of New York's State Environmental Quality Review Act (SEQRA). The formal submittal of the EAF initiated the SEQRA process for the proposed action. On January 6th 2006, the Town of Clinton, as the Lead Agency, issued a positive declaration, requiring the preparation of this Draft Environmental Impact Statement (DEIS). On January 4th, 2006, the Town of Ellenburg, as lead agency, issued a positive declaration, requiring the preparation of this Draft Environmental Impact Statement. The Towns have subsequently agreed to act as Co-Lead Agencies for the purpose of this coordinated SEQRA review

The development of this document has been lead by environmental consultants experienced in the preparation of SEQRA Draft Environmental Impact Statements and in the content requirements. The breadth and depth of the analysis and information in the DEIS in consistent with other such documents prepared and deemed complete for a number of wind power projects in New York, and is compliant with the requirements of SEQRA (6 NYCRR Part 617). Although Scoping was not required for this project, a draft informal Scope and Content document was prepared. This DEIS is consistent with that Scope and Content document (refer to Appendix B)

The purpose of the DEIS is to assess the environmental impacts associated with construction of the Project. The SEQRA process for the Project will include the following actions and time frames:

- DEIS accepted by lead agency (Town of Clinton and Town of Ellenburg Town Boards as co-lead agencies);
- File notice of completion of DEIS and notice of public hearing and comment period;
- Discretionary Public hearing on DEIS (must be held at least 14 days after public notice is published);
- Minimum 30-day public comment period;
- Revise DEIS as necessary to address relevant comments received;
- Complete Final EIS (FEIS); document accepted by lead agency;
- File notice of completion of FEIS;
- 10-day public consideration period; and
- Town Boards and Involved Agencies issue Findings Statement, completing the SEQRA process.

2.3 Project Purpose, Public Need and Benefits

The purpose of the proposed Project is to create a wind-powered electrical-generating facility that will provide a significant source of renewable energy to the New York power grid, in order to:

- Meet regional energy needs in an efficient and environmentally sound manner;
- Provide increased stability to the price volatility of fossil-fuel electricity generation in the region;
- Realize the full potential of the wind resource on the lands under lease;

- Promote the long-term economic viability of agricultural areas in New York State's North Country; and
- Assist New York State in meeting its proposed Renewable Portfolio Standard for the consumption of renewable energy in the State (see below).

Originally, the proposed Project consisted of two separate wind energy-generating facilities, each being independently developed by the wind energy development companies Horizon Wind Energy and AES-Acciona NY Windpower, the current project sponsors. In the interest of maximizing both the potential of the regional wind resource and the potential economic benefits to the host communities, Horizon and NY Windpower decided in September 2005 to combine their individual potential wind energy sites into one proposed wind energy-generating facility. Horizon's Clinton County Wind Farm and AES-Acciona NY Windpower's Marble River Wind Farm were joined into the current 109-turbine proposed Marble River Wind Farm, to be jointly owned and operated by the Applicant.

The Project will facilitate compliance with the objectives of New York State Public Service Commission (PSC) Order 03-E-0188 issued on September 24, 2004, which established the New York State Retail Renewable Portfolio Standard to increase the proportion of electricity from renewable energy sources used in New York State to 25 percent by the end of 2013. Implementation of the Order is coordinated by the New York State Energy Research and Development Authority (NYSERDA). The Project also responds to objectives identified in the 2002 State Energy Plan (New York State Energy Planning Board, 2002). These objectives include stimulating economic growth, increasing energy diversity, and promoting a cleaner and healthier environment. The benefits of the proposed action include positive impacts on:

- **Socioeconomics**: The Project will result in increased tax revenues to local municipalities; annual revenues to participating landowners and Project neighbors; and direct and indirect job creation during the development, construction, and operation of the wind farm;
- **Air quality**: Operation of the Project will result in air quality improvements by offsetting emissions from fossil-fuel-burning power plants; including estimated annual reductions of 375 tons of nitrogen oxides, 485 tons of sulfur dioxide, and 11 tons of particulate matter.
- **Climate change:** Carbon dioxide emissions which contribute to global warming, will be reduced by 350,350 tons due to the operation of the Project. By eliminating air pollutants and greenhouse gases, the Project provides a benefit to ecological and water resources and human health.

For a more detailed analysis of the socioeconomic benefits of the proposed Project, please refer to Section 3.11, Socioeconomics. For more information on the environmental benefits of the proposed Project, please refer to Section 3.9, Air Quality.

2.4 Project Description and Location

The Project will be located the Towns of Clinton and Ellenburg, Clinton County, New York. The regional location of the Project is depicted in Figure 1. The project area is located on the Churubusco plateau generally around the Hamlet of Churubusco in the Town of Clinton NY. The southern boundary of the Project area runs east to west 1 mile north of the village of Ellenburg Center in Ellenburg NY. The northern boundary of the Project area runs east to west approximately 0.5 miles south of the Canadian border (see Figure 2). The general project area is uplands that extend between the Chateugay River to the west and the Chazy River to the South East. The bulk of the site (approximately 90%) occurs in the township of Clinton with the northern boundary of the Project running east to west along the Canadian border. The smaller portion (approximately 10%) occurs in the north western portion of the township of Ellenburg, north of the blue line that delineates the northern outskirts of the Adirondack Park. The Site is located on a plateau with limited relief in topography. Site elevations range from 800 feet above mean sea level (MSL) in the northern portion of the site and 1,640 feet MSL in the southern portion of the site. Brandy Brook, Crystal Creek and the English River drain the eastern portion of the Site. Tributaries to the Great Chazy River drain the southern portion of the Site and Hinchinbrook, Dry Brook and the Marble River drain the Western portion of the Site.

Highways that bisect include US 11 and State Highways 189 and 190. Major local roads including Frontier, Liberty Pole, Merchia, Whalen, Looby, Lagree, Campbell, Gagnier, Brandy Brook, Sancomb, Ryan Number 5, Bohon, Clinton Mills, and Jones Roads and season use roads including Soucia, Robare Pond Road, Patnode and Jones Road occur within the Project boundaries.

Project facilities will be located on individual leased land parcels totaling approximately 19,310 acres located within a larger project area of approximately 29,726 acres. A total of 109 wind turbines will be constructed on 130 parcels of leased private land. 89 wind turbine sites are located in the Town of Clinton, and 20 are in the Town of Ellenburg.

Land use in the Project area is dominated by agricultural, with farms and single family rural residences occurring along road frontage.

2.4.1 Project Lease/Easements Terms and Conditions

Approximately 75 individuals own the 130 land parcels that make up the Project area (see Figure 3). Each landowner is familiar with the proposed Project and has consented to participating in this process. Additionally, the Applicant will assure compliance with all town setbacks prior to commencement of construction. Wind easements provide the Applicant with exclusive rights to include the landowner's property in the studies, siting, construction and operation and maintenance of a commercial scale wind farm. The wind lease provides the landowner with an annual monetary consideration for hosting a wind turbine, access road, interconnect cable, operation and maintenance shed or any other associated project component. Significant terms within the wind lease include:

1. Annual payment to the participating landowner, based on signed acreage, during the development phase prior to construction;
2. Bi-annual Project construction payment during the proposed construction period; and

3. Annual payments to the landowner are royalties from sales of green electricity or a payment based on presence of project components.

The Project boundary includes approximately 80 non-participating landowners that own property adjacent to or within 500 feet of participating land owners. These "neighboring" land owners will be offered the opportunity to participate in the Marble River Wind Farm with a "neighbor agreement." The neighbor agreement is a mechanism that allows local landowners within the Project area that lack the acreage to participate in the Project, to participate in the financial benefits of the Project. Financial consideration for neighbor agreements is based on the landowner's proximity to the proposed Project components.

2.5 Proposed Facility Layout and Design

The following section describes the Project boundary and layout as shown in Figure 4 and provides a description of the major components of the proposed Project.

The Marble River Wind Farm will consist of up to 109 wind turbines and will also include 41 miles of access roads, 55 miles of underground electrical lines, a substation facility, a lay-down yard and an Operations and Maintenance ("O&M") facility. The turbines will have a maximum height of approximately 410 feet from the tip of the rotor blade at the uppermost position to ground level, and the rotor diameter will be a maximum of 90 meters. There are seven temporary meteorological towers with guy wires currently on the site that will be removed when Project construction is complete. Existing roads would be used to the extent feasible to bring equipment and material to the site (as described in section 3.4 Transportation/Traffic), new roads would be constructed to serve as access roads from the existing road network to the turbines.

2.5.1 Wind Turbines

The wind turbines proposed for this project are the 2.0 MW G-90 manufactured by Gamesa-Eolica. Additional information regarding the characteristics and general operation of these turbines is included in Appendix A. Each wind turbine consists of three major components; the tower, the nacelle, and the rotor. The height of the tower, or "hub height" (height from foundation to top of tower) is approximately 256 feet. The nacelle sits atop the tower, and the rotor hub is mounted to the nacelle. The total turbine height (i.e., height at the highest blade tip position) is approximately 410 feet including any grading and pedestal height, and the entire turbine weighs roughly 300 metric tons. Descriptions of each of the turbine components are provided below.

Tower: The tower is a 78-meter tall tubular conical steel painted structure that is manufactured in multiple sections. Towers for the Project will be fabricated, delivered and erected in at least three sections. A service platform at the top of each section allows for access to the tower's connecting bolts for routine inspection. An internal ladder runs to the top platform of the tower just below the nacelle. A nacelle ladder extends from the machine bed to the tower top platform allowing nacelle access independent of its orientation. The tower is equipped with interior lighting and a safety glide cable alongside the ladder. The tower design is certified by experienced and qualified structural engineers who have designed several generations of turbine towers that have proven themselves well in some of the most aggressive wind regions of the world. The towers and foundations are designed in accordance with the International Electrotechnical Committee (IEC) standard, which was developed specifically for wind turbines through extensive study and verification. Foundation design will also be checked against the requirements of the American Concrete Institute's Building Code Requirements for Structural Concrete (ACI 318).

Nacelle: Figure 5 shows the general arrangement of a typical nacelle that houses the main mechanical components of the wind turbine. The nacelle consists of a machine platform mounted on a roller bearing sliding yaw ring that allows it to rotate (to "yaw") to keep the turbine pointed into the wind to maximize energy capture. A wind vane and anemometer are mounted at the rear of the nacelle to signal the controller with wind speed and direction information. The main components inside the nacelle are the drive train, the gearbox, generator and transformer. The nacelle is housed by a fully-enclosed steel reinforced fiberglass shell that protects internal machinery from the environment and dampens noise emissions. The housing is designed to allow for adequate ventilation to cool internal machinery such as the gearbox and the generator. Attached to the top of some of the nacelles, per specifications of the Federal Aviation Administration (FAA), will be a single, medium intensity aviation warning light. The Lighting Plan is described in Appendix A. These lights will be flashing red strobes (L-864) and will be operated only at night.

Rotor Assembly: A rotor assembly is mounted to the nacelle to operate upwind of the tower. Each rotor consists of three composite blades approximately 144 feet in length. The total rotor diameter is 295 feet, including the width of the hub. The rotor attaches to the drive train emerging from the front of the nacelle. Hydraulic motors within the rotor hub feather each blade according to wind conditions, which enables the turbine to operate efficiently at varying wind speeds. The rotor spins clockwise at varying speeds (between 9.0 and 19.0 rpm) to operate more efficiently at lower wind speeds and to reduce wear and tear on the blades and drive train in higher wind conditions. The wind turbines begin generating energy at wind speeds as low as 6.7 mph and shut down if winds continuously exceed 47 mph. Turbines produce full power at wind speeds above 29 mph.

2.5.2 Turbine Spacing

The proposed location and spacing of the wind turbines and support facilities was determined based on a wind resource assessment and on a review of the site's zoning constraints (see Section 3.5, Land Use and Zoning). When planning the facility, the Applicant took into account the setback requirements contained in the November 2005 Ordnances put into effect by the Towns of Clinton and Ellenburg. Factors considered when siting the turbines included:

Wind resource assessment: The Applicant used computerized modeling software that incorporates wind resource factors from meteorological poles collected in the Project area, long-term weather data, project area topography, and environmental factors. The wind turbines are sited to optimize exposure to wind from all directions, with emphasis on exposure to the prevailing wind direction in the Project area. A Wind Map of the Project area is presented in Figure 6.

Sufficient spacing: Siting arrays or groups of turbines too close to one another can result in decreased electricity production, or reduced turbine life, due to the creation of "wake," or wind turbulence between and among the turbines. The first step in modeling wake flow through an array of wind turbines is to calculate the wake of a single machine. Immediately downstream of the rotor, there is a momentum deficit with respect to free-stream conditions, which is equal to the thrust force of the wind on the machine. As the flow proceeds downstream, there is a spreading of the wake and recovery to free-stream conditions. Thus if turbine arrays are sited sufficiently far apart to allow the return of wind to free-stream conditions, the electricity potential of the Project area can be maximized. Pursuant to this goal, the Project turbines will be sited and constructed with enough space between wind turbine towers to minimize array and wake losses. This also minimizes turbulence which can increase wear and tear on the turbines and extends the useful life of the turbines.

Distance from residences: The turbine locations were selected to maintain a minimum setback of approximately 1,200 feet from the center of any tower foundation and the nearest outer wall an existing occupied residence (see Figure 7). The turbine setback minimizes the visual and sound effects of the turbines.

Distance from Non-participating Land Parcels: The turbine locations were selected to maintain a minimum setback of 500 feet from the boundary line of all non-participating local landowners, in accordance with the Wind Turbine siting ordinances of the Towns of Clinton and Ellenburg, New York.

Distance from roads: The turbine locations were also selected to maintain a minimum setback from existing road rights-of-way. The minimum setbacks, as measured from the centerline of the tower foundation, are at least 500 feet from all Town roads and 1,000 feet from State Routes 11 and 189. These setbacks are based on and in accordance with the wind turbine siting ordinances of the Towns of Clinton and Ellenburg.

Visual impacts: Special consideration was given to siting all turbines in order to minimize the potential visual impact on neighborhood landowners and residents. For more detailed discussion of the visual impact assessment, please refer to Section 3.8, Visual Resources/Community Character.

2.5.3 Access Roads

Road access to the Project area is currently provided by a number of existing public roads, as described in section 3.4, Transportation/Traffic. The project road design has been prepared to minimize the overall disturbance footprint. Since the Project site currently has an extensive network of existing state, county and local roads, wherever it is practical existing roads will be utilized to minimize new ground disturbances. While the Applicant is currently developing the Project construction plan, it is estimated that several miles of existing roads will be improved during the process of project construction. In addition to using the existing public roads, the Project will utilize existing and new private roads. To access the turbines, the Applicant proposes to minimize the construction of new, private roads throughout the Project area. The proposed access road system is shown in Figure 4 (Project Layout). The Applicant will be responsible for all maintenance of any new private roads.

2.5.4 Underground Electrical Collection System

Power from the wind turbines will likely be generated at 690 volts and fed to a step-up transformer, which steps the voltage up to 34.5 kilovolts (kV). The power is transported through underground cables that connect groups of turbines together electrically. The underground collection cables feed to larger feeder lines that run to the Project substation. In locations where two or more sets of underground lines converge, pad-mounted junction panels will be utilized to tie the lines together into one or more sets of larger feeder conductors. At the Project substation, the electrical power from the entire wind plant runs through a station transformer and is converted to 230 kV for interconnection with the system transmission line.

2.5.5 Substation and Interconnection Facilities

The main functions of the substations and switchyard are to step up the voltage, to switch and meter the electricity delivered, and to protect the system (the wind turbines, the collection lines and the electricity grid) so that the electricity can be reliably interconnected to Willis-Plattsburg 230kV transmission line owned by the NYPA.

The main elements of each collector substation are a control house, a power transformer, outdoor medium voltage and high voltage breakers, relaying and protection equipment, high voltage bus work, steel support structures, and overhead lightning suppression conductors and a sub-surface grounding grid.

The main elements of the switchyard are a control house, utility quality metering, outdoor high voltage breakers, relaying equipment, 230kV bus work, dead-end steel support structures, and overhead lightning suppression conductors and a sub-surface grounding grid.

All structural elements will be installed on concrete foundations. Each station consists of a graveled footprint area, a chain link perimeter fence, and an outdoor lighting system. Appendix A provides a schematic depicting the proposed Project Substation facility layout. The final design of the collector substations and the switchyard and attachment facilities to the 230kV line will be finalized based on a facility study conducted by the NYPA and the New York Independent System Operator (NYISO) in accordance with the Federal Energy Regulatory Authority Tariff.

2.5.6 Operations and Maintenance Facility

The Applicant will construct an O&M facility to house operations personnel, the Supervisory Control And Data Acquisition (SCADA) system and all required tools and equipment. Final designs for the structure are not yet complete, but the Applicant will design the building in a style that blends with the local architecture.

2.6 Construction

The following section describes the various activities that will occur as part of project construction. To assure compliance with all environmental protection commitments and permit obligations, Marble River will hire environmental inspectors to oversee construction (and post-construction) activities. Prior to the start of construction at any given site, an environmental inspector, the contractor, and any subcontractors will conduct walk-downs of areas to be affected, or potentially affected, by proposed construction activities. This pre-construction walk-down will identify sensitive resources to avoid (e.g., wetlands, archeological or agricultural resources), limits of clearing, proposed stream crossings, location of drainage features (e.g., culverts, ditches), and the layout for sedimentation and erosion control measures. Upon identification of these features, specific construction procedures will be determined, and any modifications to construction methods or locations will be proposed before construction activities begin. Landowners and agency representatives will be included on these walk-downs or consulted as needed.

Project construction will be performed in several stages and will include the following main elements and activities:

- Grading of the field construction office and substation areas;
- General clearing and Construction of access roads, crane pads and turn-around areas;
- Construction of turbine tower foundations and transformer pads;
- Installation of the underground electrical collection system;
- Assemble and erection of the wind turbines;
- Construction and installation of the substation;
- Plant commissioning and energization; and
- Final grading and drainage

Figure 8 presents representative photos of construction activities and Appendix A provides representative construction cross-sections and diagrams.

The proposed project construction schedule summary showing the major tasks and key milestones is included in Table 2.6-1 below. Also included below is the number of estimated onsite personnel to perform each of the key tasks. It is expected that project construction will occur over an approximate one-year period from the time of permit approval to commercial operation, and will require the involvement of more than 250 personnel. The period of time of intensive construction activities from the beginning of access road construction to plant energization is typically six to nine months, as outlined below. It is worth noting that several of the milestone time durations listed below overlap. Attached in Appendix A is a level one milestone construction schedule for the Project.

Table 2.6-1: Major Construction Tasks, Durations and Man-Hours

	Task/Milestone	Duration (Weeks)	Approximate On-Site Manpower for Task
1	Engineering/Design/Specifications/Surveys	14	18
2	Order/Fabricate/Start Delivery of Turbines	26	0
3	Order/Fabricate/ Deliver Substation Transformer	30	0
4	Road Construction	23	30
5	Foundation Construction	23	60
6	Electrical Collection System Construction	23	40
7	Substation Construction	16	20
8	Wind Turbine Assembly and Erection	13	40
9	Plant Energization and Commissioning	9	30
10	Plant Substantial Completion	0.5	0
11	Construction Punchlist Clean-Up	4.5	15
Total			**253**

The following construction procedures will be followed for the design and installation of the various facilities for the Project.

2.6.1 Engineering, Surveying and Geotechnical Investigation

Before construction can commence, a site survey will be performed to stake out the exact location of the wind turbines, access roads, electrical cables, access entryways from public road and substation areas. Once staking is completed, a detailed geotechnical investigation will be performed to identify subsurface conditions which will dictate much of the design specifications of the access roads, foundations, underground trenching and electrical grounding systems. The scope of services for the geotechnical investigation will include drilling test borings at designated locations to evaluate subsurface stratigraphy and groundwater conditions, performing field tests and geotechnical laboratory tests on recovered samples to evaluate the physical and engineering properties of the strata encountered, and perform engineering analyses to develop design and construction recommendations relating to foundations, site subgrade and fill preparation. Soil borings are required at each wind turbine location, substation, O&M building and at designated locations on roads. Typically, three-inch nominal diameter borings are drilled with truck mounted rotary drilling equipment and borings range in depth from 20 to 45 feet. The bore holes will be filled in accordance with local requirements which typically involves filling the bore holes with grouted. Trial test pits are also excavated using a back hoe and are nominally 1 to 9 feet deep. Testing is also done to measure the soil's electrical properties to ensure proper grounding system design and thermal characteristics to maintain the underground collection system within acceptable cable operating temperatures.

2.6.2 Design and Construction Specifications

Using all of the data gathered for the Project including geotechnical information, environmental and climatic conditions, site topography, etc., the Applicant will establish a set of site-specific construction specifications for the various portions of the Project is prepared. The design specifications are based on well proven and established sets of construction standards set forth by the various standard industry practice groups such as:

- American Concrete Institute (ACI);
- Institute for Electrical and Electronic Engineers (IEEE);
- International Electrotechnical Committee (IEC);
- National Electric Code (NEC);
- National Fire Protection Agency (NFPA); and
- Construction Standards Institute (CSI)

The design and construction specifications are custom tailored for site-specific conditions by qualified technical staff and engineers. The project engineering team will ensure that all aspects of the specifications as well as the actual on-site construction comply with all applicable federal, state and local codes and good industry practice.

2.6.3 Access Road Installation

The Project will include approximately 41 miles of gravel access road construction. Wherever possible, existing roads and farm drives will be upgraded for use as project access roads in order to minimize impacts to both active agricultural areas and wetland/stream areas. Where an existing road or farm drive is unavailable or unsuitable, new gravel- surfaced access roads will be constructed. Road construction will typically involve topsoil stripping and grubbing of stumps, as necessary. Stripped topsoil will be stockpiled along the road corridor for use in site restoration. This topsoil is stored along the road corridor so as to assure that the topsoil is not unnecessarily mixed with sub-soil or gravel. This practice has been developed to assure that the topsoil, when replaced, retains its unique characteristics. This procedure was developed during the construction of past wind projects in NYS and sanctioned as best-practice New York State Department of Agriculture & Markets.

For the purposes of this DEIS, it is assumed that access road construction will disturb an area of soils 40 feet in width. Associated disturbance to, or clearing of, vegetation could occur within a 75 foot wide corridor along the centerline of the proposed access roads. Any grubbed stumps or cleared trees will be chipped and properly spread on-site or hauled to off-site location for disposal; or further processing. Following removal of topsoil, subsoil will be graded, compacted, and surfaced with a minimum of 12 inches of gravel or crushed stone in accordance with the requirements of the wind turbine supplier and recommendations from the geotechnical engineer based upon the soil investigation. (See Gamesa's access road specifications in Appendix A). As required by design specifications, geotextile fabric or grid will be installed beneath the road surface to provide additional support. The typical access road will be 16 feet in width, with wider cross-sections at turning radius and for occasional wider pull-offs on narrow roads to accommodate passing vehicles. For purposes of the DEIS, it is assumed that the maximum permanent road width including graded side-slopes will be 20 feet. Appropriately sized culverts will be placed in any wetland/stream crossings in accordance with state and federal permit requirements. In other locations culverts may also be used to assure that the roads do not impede cross drainage. Where access roads are adjacent to, or cross, wetlands, streams or drainage ditches/swales, appropriate sediment and erosion control measures (e.g., silt fence) will be installed.

Project road construction will involve the use of several pieces of heavy machinery including bulldozers, track-hoe excavators, front end loaders, dump trucks, motor graders, water trucks and rollers for compaction.

2.6.4 Foundation Construction

Once the roads are complete for a particular array of turbine sites, turbine foundation construction will commence on that completed access road section. Foundation construction occurs in several stages including drilling, hole excavation, outer form setting, rebar and bolt cage assembly, casting and finishing of the concrete, removal of the forms, backfilling and compacting, , if required, and foundation site area restoration. Excavation and foundation construction will be conducted in a manner that will minimize the size and duration of excavated areas required to install foundations. Portions of the work may require over-excavation and/or shoring. Foundation work for a given excavation will commence after approval by the engineers field inspectors. On-site materials will be utilized for backfill, to the extent possible. Figure 8 provides representative construction photographs.

Wind turbine installation will typically involve stripping and stockpiling topsoil within a 200-foot radius around each tower (area of disturbance of 2.9 acres). Following topsoil removal, backhoes will be used to excavate a foundation hole. In agricultural areas excavated subsoil and rock will be segregated from stockpiled topsoil. If bedrock is encountered it is anticipated to be rippable, and will be excavated with backhoe. If the bedrock is not rippable, it will be excavated by pneumatic jacking, hydraulic fracturing or blasting. The foundation may be either a concrete caisson or a spread footer or equivalent, as specified by the Project geotechnical/civil engineer. It is currently anticipated that the spread foot foundation will be used. This foundation is approximately 7 to 10 feet deep and approximately 50 to 60 feet in diameter. Each requires approximately 320 cubic yards (cy) of concrete. Once the foundation is cured, it is buried and backfilled with the excavated on-site material. The top of the foundation is an approximate 16-

foot diameter pedestal that may extend 6 to 8 inches above grade. At the base of each tower, a rectangular area approximately 100 feet by 60 feet, will be developed as a gravel crane pad. Based on preliminary calculations and depending on the type of foundation used, approximately 100 cubic yards of excavated soil remain from each turbine foundation excavation. The material will be used as backfill for the foundations, or to level out low spots on roads and wind turbine erection areas.

2.6.5 Buried Cable Installation

As mentioned previously, electrical interconnects will generally follow project access roads, but will also follow field edges and, where necessary, cut directly across fields. Where buried cable is proposed to cross active agricultural fields, the location of any subsurface drainage (tile) lines will first be determined (through consultation with the landowner) to assure that these lines are not damaged during cable installation. Direct burial methods via cable plow, rock saw and/or trencher will be used during the installation of underground interconnect lines whenever possible. Direct burial via a cable plow will involve the installation of bundled cable (electrical and fiber optic bundles) directly into the ground via a "rip" created by the plow blade. The rip disturbs an area approximately 12-36 inches wide with bundled cable installed to a minimum depth of 36 inches. An area approximately 15 feet wide centered on the cable path must be cleared of tall-growing woody vegetation for equipment access. The area within this 15 foot wide corridor will be disturbed by cable installation machinery. However, this disturbance does not involve excavation of the soil. Generally, no restoration of the rip is required, as it closes in on itself following installation. Similarly, surface disturbance associated with the passage of machinery is typically minimal. However, should surface restoration be required, it will closely follow the installation, which will consist of equipment such as a Bobcat or small bulldozer, which will ride over the rip, smoothing the area.

Direct burial via a trencher or rock saw involves the installation of bundled cable in a similar fashion to cable plow installation. The trencher or rock saw uses a large circular blade or "saw" to excavate a small open trench. The trencher blade creates a 14-inch-wide trench with a sidecast area immediately adjacent to the trench. Similar to cable plow, this direct burial method installs the cable a minimum cover of 36 inches deep and requires only minor clearing and surface disturbance (up to 15 feet wide from the installation machinery and any stockpiled brush). In active agricultural land, up to two parallel cables can be installed by trenching without the need to strip and segregate topsoil (in accordance with NYS Department of Agriculture and Markets guidance). Sidecast material will be replaced via a Bobcat or small bulldozer fitted with an inverted blade. All areas will be returned to pre-construction grades, and restoration efforts will be as described above for cable plow installation. Where three or more cables run parallel through active agricultural fields, the topsoil will be stripped and stockpiled prior to cable installation, and replaced, re-graded, and stabilized by seeding and mulching following installation. Any tile lines that are inadvertently cut or damaged during installation of the buried cable will be repaired as part of the restoration effort. A typical cross-section of under-ground trenching is presented in Appendix A.

Installation of utility lines via an open trench will be used only in areas where the previously described direct burial methods are not practicable. Areas appropriate for open trench installation will be determined at the time of construction and may include areas with unstable slopes, excessive unconsolidated rock, and standing or flowing water. Open trench installation will be performed with a backhoe and will generally result in a disturbed trench 36 inches wide and a minimum cover of 36 inches deep. The overall temporary footprint of vegetation and soil disturbance may be a maximum of 15 feet due to machinery dimensions, stockpiled brush, and backfill/spoil pile placement during installation. In agricultural areas, all topsoil within the work area will be stripped and segregated from excavated subsoil. Replacement of spoil material will occur immediately after installation of the buried utility. Sub-grade soil will be replaced around the cable, and topsoil will be replaced at the surface. Any damaged tile lines will be repaired, and all areas adjacent to the open trench will be restored to original grades and surface condition. Restoration of these areas will be completed through seeding and mulching of all exposed soils.

Although not currently anticipated, portions of the collector system could be installed above ground. This would only be done in areas where below-ground installation was not economically feasible or could result in significant environmental impacts (e.g., crossing a buried gas line or a steep ravine). In these instances, the cables will be brought above ground and carried on treated wood poles (similar to existing roadside utility poles). Because no overhead electrical lines are currently proposed, the dimensions of any such structures have not been designed..

2.6.6 Wind Turbine Assembly and Erection

The wind turbine consists of 3 main components: the towers, the nacelles and the rotor blades (see Figure 8). Other smaller components include hubs, nose cones, cabling, control panels and tower internal facilities such as lighting, ladders, etc. All turbine components will be delivered to the Project site on uncovered transport trucks and main components will be off-loaded at the individual turbine sights. Turbine erection is performed in multiple stages including: setting of the bus cabinet and ground control panels on the foundation, erection of the tower (usually in 4 sections), erection of the nacelle, assembly and erection of the rotor, connection and termination of the internal cables and inspection and testing of the electrical system prior to energization. If provided in the turbine supply contract, the bus cabinet and ground control panels are the initial turbine components set on the foundation.

Turbine assembly and erection involves mainly the use of large track mounted cranes, smaller rough terrain cranes, boom trucks and rough terrain fork-lifts for loading and off-loading materials. The erection crane(s) will move from one tower to another along a designated crane path. This path will generally follow existing public roads and project access roads, but in a few places may traverse open fields without any permanent roads. In such areas, a proof roller will be used to test soil stability and level and compact the soil prior to crane passage. If this approach is not feasible, topsoil will be stripped and stockpiled in accordance with Agriculture &

Markets requirements and the 40-foot-wide temporary roads will be installed in these areas or an alternate stable route will be selected. In some places, the crane will be partially disassembled and carried from one tower site to another by a specialized flatbed tractor-trailer. The crane transport will not require a 34-foot-wide travel surface, but could require some additional clearing and grading adjacent to narrow width roads to accommodate the width of the crane tracks (which will extend well beyond the edges of the trailer). Other methods of crane transport can be accommodated on 16 foot wide access roads, with the tracks removed without any additional clearing. The Balance of Plant (BOP) contractor will optimize the number or crane breakdowns on the Project. Upon departure of the crane from each tower site, all required site restoration activities will be undertaken. Restoration of crane paths will include removal of all temporary fill and gravel materials as required. In agricultural fields, restoration will also include subsoil de-compaction (as necessary) and rock removal, spreading of stockpiled topsoil, and reestablishing pre-construction contours. Exposed soils at restored tower sites and along roads and crane paths will be stabilized by seeding and/or mulching.

2.6.7 Collection Station/Substation/Interconnection Facility

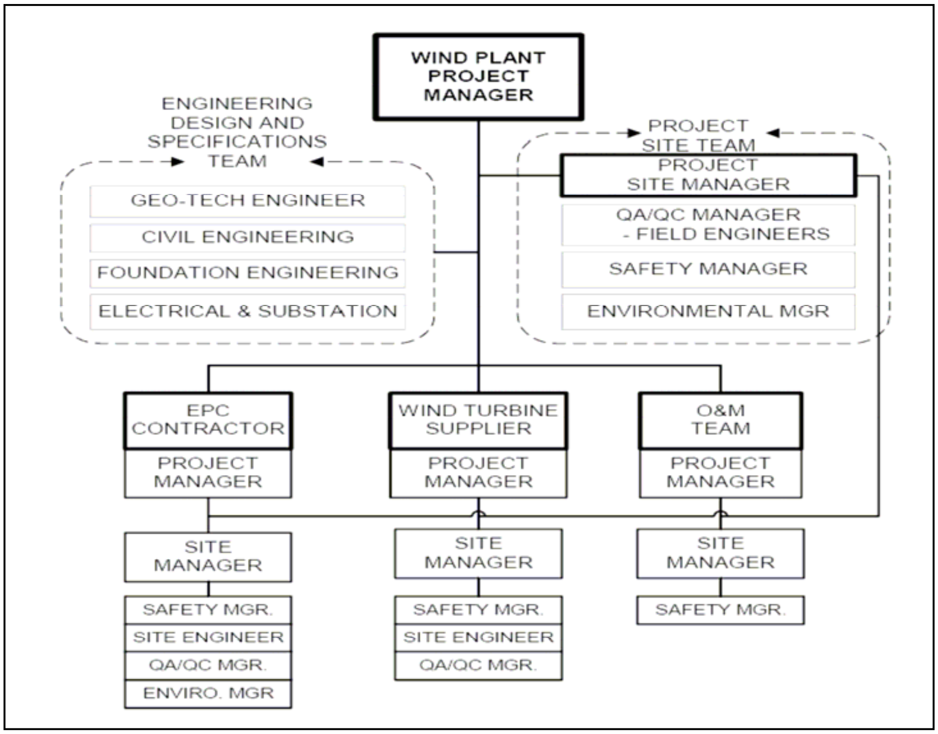
The Collection Stations are the connection point for the underground 34.5kV collection feeders. There will be two collection stations to the north of the POI station, each approximately 136 feet by 173 feet. There will be a control house and common parking area between the two collector stations, which will be accessed from Star Road to the south East via a new access Road. A road gate to limit public access will be installed in accordance with guidelines from Homeland Security and the road will turn 90 degrees near the end so as not to terminate directly at the station fence or gate. A clear space of at least 10 feet will be maintained outside the fence. The substation facility will be monitored by intrusion alarms.

The Point of Interconnect Station (POI) will be approximately 267 feet by 690 feet in size and is proposed to be located adjacent to the North of the NYPA 230 kV transmission line Right of Way. The POI will connect to the New York Bulk Power System and will be in compliance with the Northeast Power Coordinating Council (NPCC) regulations. A continuous ground grid will be installed covering both station yards and extending beyond the station fence. Both yards will be covered with crushed stone for weed control and to mitigate the step-touch potentials.

2.6.8 Project Construction Management

The Project Management organizational structure will include two support groups: an engineering-and-design specifications team, and a field site management team. Organization Chart 1 illustrates the construction management organizational structure for the Project. The Project Manager will handle contractual aspects of the agreements with the project managers of the wind turbine supplier and the BOP Contractor. The exact organization may change after award of the turbine supply contract, the BOP contract and other subcontracts.

Organization Chart 1.0



2.6.9 Field Site Management Team

The field site management team will oversee construction on-site and will ensure that construction on-site is done in accordance with the engineering plans and specifications, regulatory requirements and good industry practices. The field site team will generally be involved in day-to-day issues as they arise throughout the construction phase.

2.6.10 BOP Contractor's Construction Management Team

The BOP Contractor will be responsible for managing all construction subcontractors, including those involved in the BOP contract, including items such as the roads, electrical and communications system infrastructure, substation and O&M Facility. The BOP Contractor will be required to implement and perform a safety plan, a Quality- Assurance/Quality-Control (QA/QC) plan and an environmental protection plan, which includes the Storm Water Pollution Prevention Plan (SWPPP).

2.6.11 Wind Turbine Supplier's Construction Management Team

The wind turbine supplier will be responsible for the supply, delivery, erection, and commissioning of the wind turbines. The turbine supplier's construction team will include a lead Project Manager, a Site Manager, transportation specialists and several lead technicians. The turbine supplier's site team will be supported by their own quality assurance and quality-control specialists and site safety officers. Please refer to Section 3.13, Safety and Security for QA/QC Construction Program Characteristics

2.7 Operations and Maintenance

The Project will be operated and maintained by a team of qualified local personnel consisting of the following staff positions:

Table 2.7-1: Estimated Permanent Operation Personnel

Position	Estimated Number of Project Personnel (218 MW)
Owners Representative	1
Service Manager	1
Service Supervisor	1
Turbine Technicians	9-13
Service Administrator	1-2
Total	13 - 18

Operation of the wind turbines and associated components is almost completely automated. However, the Project will employ a staff of approximately 13 to 18 administrative, operations and maintenance personnel. As described earlier, under normal conditions, the proposed wind turbines "cut in" at wind speeds of 3m/s (6.7mph) and have a normal operational speed range of 9 to 19 rpm. The turbine blades will pitch/feather when the wind speed goes above approximately 11 m/s (25mph) and will turn 90 degrees to the wind and the generator will shutdown when wind speeds reach 21m/s (47mph). The turbines are equipped with two fully independent braking systems that can stop the rotor either acting together or independently. The braking system is designed to be fail-safe, allowing the rotor to be brought to a halt under all foreseeable conditions. The system consists of aerodynamic braking by the rotor blades and by a separate hydraulic-disc brake system. Both braking systems operate independently, such that if there is a fault with one, the other can still bring the turbine to a halt. Each wind turbine has a computer to control critical functions, monitor wind conditions, and report data back to the SCADA system.

The facility is expected to be generating power about 90% of the time, with an average annual capacity of approximately 29% to 33% of name plate capacity, which is competitive for commercial wind farms in New York. Total green electricity expected to be delivered to the grid is anticipated to be approximately 550,000 MWhr per annum, equivalent to the annual consumption of approximately 40,000 homes.

The Operations and Maintenance (O&M) team will staff the Project during core operating hours eight hours per day, five days per week, with weekend shifts and extended hours as required. In the event of turbine or plant facility outages, the SCADA system will send alarm messages to on-call technicians via pager or cell phone to notify them of the outage. The Project will always have an on-call local technician who can respond quickly in the event of any emergency notification or critical outage. Operating technicians will rotate the duty of being on-call for outages. The wind turbines have been chosen in part for their high functional reliability. Each wind turbine manufacturer studies and reports on the frequency of operation problems and malfunctions that arise when the turbines are generating electricity. The data on the turbines' reliability is summarized by the manufacturer in the turbine's availability rating, which estimates the percentage of time that the manufacturer's turbines will function successfully. Modern turbines typically have an availability rating of 97 percent. For more detailed specifications on the wind turbines under consideration for the Project, please see Appendix A. Each wind turbine will receive scheduled preventative maintenance inspections during the first year of operation and twice a year in subsequent years. Given the high availability rating of the turbines, the Applicant estimates that once operational, individual wind turbines will require maintenance and repair calls an average of three to six times per year in addition to their scheduled inspections. Routine turbine maintenance and repair usually involves a two-person maintenance crew working eight-hour shifts for two days, for a total of 32 man-hours of repair. In certain circumstances, heavy maintenance equipment such as a lifting crane may need to be brought into the site to effectively repair any exposed turbine problems (such as, in rare instances, nacelle component replacement).

A Post-Construction Monitoring, Operation and Maintenance Plan will be prepared prior to commencement of continuous operations. The goal of this plan is to set out guidelines to ensure that the Applicant monitors and maintains "best practices" to comply with local, state and federal permits. The project applicant has a proven operating track record in commercial scale wind farms. The applicant's expertise and experience in operating commercial scale wind farms should be considered as assurance that project maintenance and repair work is completed as quickly and with as little impact to the surrounding community and landowners as possible.

2.8 Decommissioning

The Project will be designed to meet utility-grade standards as well as a number of other stringent codes and requirements. As a result, the design life of all of the major equipment such as the turbines, transformers, substation and supporting plant infrastructure is at least 20 years. Based on the site conditions, it is expected that the proposed turbine technology will continue to perform well into its third decade of operation. The current trend in the wind energy industry has been to replace or "re-power" older wind energy projects by upgrading older equipment with more efficient turbines. A good portion of the value in the Project is in its proven wind resource, land agreements and in-place infrastructure. It is likely that after mechanical wear takes its toll the Project would be upgraded with more efficient equipment and therefore will be capable of sustaining a design life far beyond 20 years. Except for the underground collection system (which is provided for under a perpetual easement), the Applicant's lease agreements with the landowners provide that all wind project facilities will be removed following the end of the Project's useful life. The decommissioning plan required by the Local Laws of the Towns of Clinton and Ellenburg has been provided in Appendix

C. To guard against the worst-case possibility that the Project will be unable to meet its obligation to dismantle the wind project, a decommissioning fund will be established in compliance with the decommissioning guidelines provided in the wind ordinances of Clinton and Ellenburg.

2.8.1 Decommissioning Economics and Financial Surety

Experience with older wind plants that have been decommissioned and/or repowered has shown that the scrap value of the materials and equipment contained in the Project infrastructure (steel towers, electric generators, copper wires/cables, etc.) would exceed the cost of dismantling the Project, based on historic and current scrap prices. As described in the Applicant's agreements with Project landowners, all foundations would be removed to a depth of 40 inches below grade and unsalvageable material would be disposed at authorized sites. The soil surface would be restored as close as reasonably possible to its original condition. Reclamation procedures would be based on site-specific requirements and techniques commonly employed at the time that the area is to be reclaimed, and would include re-grading, adding topsoil, and re-vegetation of all disturbed areas. Re-vegetation would be done with appropriate seed mixes, based on vegetative cover in the Project area. Decommissioned access roads would be reclaimed or left in place based on landowner preferences, and rights-of-way would be vacated and surrendered to the landowners.

Any future use of the Project site will be consistent with the planned uses described in the Wind Turbine Siting Ordinances of the Towns of Clinton and Ellenburg.

Demolition or removal of equipment and facilities, to the extent necessary, will occur to meet environmental and health regulations, to salvage economically recoverable materials or to recycle the Project site for future uses.

2.9 Regulatory Approvals

Implementation of the Project will require certain permits and/or approvals from local, state, and federal agencies. The permits and approvals that are expected to be required are listed in the following Table.

Table 2.9-1: Permits and Approvals for the Marble River Wind Farm

Agency	Description of Permit or Approval Required
Towns	
Town of Clinton Town Board	Acceptance of DEIS, FEIS, and issuance of findings (as Co-Lead Agency under SEQRA).
Town of Clinton Town Board	Wind Energy Facility Permit approval under Local Law No. 1 of 2005.
Town of Clinton Town Board	Approval of height variance and turbine setback distance variance.
Town of Clinton Departments (Public Works, Codes, etc.)	Issuance of building permits. Review and approval of highway work permits.
Town of Ellenburg Town Board	Acceptance of DEIS, FEIS, and issuance of findings (as Co-Lead Agency under SEQRA). Creation of Wind Overlay District.
Town of Ellenburg Departments (Public Works, Codes, etc.)	Issuance of building permits. Review and approval of highway work permits.
Town of Ellenburg Town Board	Acceptance of DEIS, FEIS, and issuance of findings (as Lead Agency under SEQRA).
Town of Ellenburg Town Board	Creation of Wind Overlay Zone and Special Use Permit under Local Law No. 4 of 2005 and approval of turbine setback distance variance.
Clinton County	
Highway Department	Highway work permits.
Clinton County IDA	PILOT approval. Issuance of SEQRA Findings
Clinton County Planning Board	Recommendation pursuant to General Municipal Law 239-m.
New York State	
Department of Environmental Conservation	Article 24 Permit for disturbances to state- regulated wetlands. Article 15 Permit for disturbance of protected streams. SPDES General Permit. Section 401 Water Quality Certification. Issuance of SEQRA Findings.
Department of Transportation	Special Use Permit for oversize/overweight vehicles. Highway work permits.
Department of Agriculture & Markets	Submit Notice of Intent for work in an Agricultural District.
Public Service Commission	PSL §68 Certificate. Issuance of SEQRA Findings.
NYSERDA	Renewable Portfolio Standard.
NYSOPRHP	Consultation.
Federal Agencies	
FAA	Lighting Plan.
U.S. Army Corps of Engineers	Section 404 Individual Permit for placement of fill in federal jurisdictional wetlands/waters of the U.S. NEPA compliance.
Occupational Safety and Health Administration (OSHA)	29 CFR 1910 regulations (standard conditions for safe work practices during construction).

2.10 Public and Agency Involvement

Extensive agency interaction and public outreach has preceded the formal submittal of this DEIS. The Applicant has had numerous informational sessions, meetings, and discussions with the Towns of Clinton and Ellenburg regarding the Project since March 2004. Several formal and informal meetings have been held with the Town Board and Town Planning Board. In addition, the Developer has met with various county/regional agencies throughout the project development process, including the Clinton County Planning Department, the Clinton County IDA and the Northern Adirondack School Board. The first meetings with local residents were held in October of 2004, and 3 public information sessions regarding the proposed Project held between October 2004 and March 2006. Citizens of the Town, including some members of the Town Board were hosted by the Applicant on a visit to the Fenner (NY) wind power project on May 2005.

Marble River Wind Farm, LLC has also had numerous meetings with participating landowners and project neighbors, and the Project has also been covered by articles in local newspapers, as well as stories carried by local radio and TV stations.

A further important aspect of the Applicant's interactions with involved agencies has been the meetings held with the New York State Department of Environmental Conservation (DEC), New York State Historic Preservation Office (SHPO) and the New York State Public Service Commission (PSC).