

## Decommissioning Plan for the Marble River Wind Farm

### Anticipated life of turbines

Megawatt-scale wind turbine generators available on the market today have a life expectancy of more than 20 years. The tubular steel towers supporting the generators are of simple design and with basic routine maintenance will serve well beyond that of the generators.

As the generators approach the end of their expected life, technological advances should make available more efficient and cost effective generators that will economically drive the replacement of the existing generators.

### Estimated costs of decommissioning

The cost of decommissioning the wind turbines is offset by the salvage value of the towers and turbine components.

Decommissioning costs per tower (in current dollars):

Removal of a Tower	
200 man hours x \$65/hour	\$13,000
Crane 5 days x \$2,900/day	\$14,500
Remove concrete to 36" below grade	
100 man hours x \$50/hour	\$5,000
Equipment 3 days x \$1,500/day	\$4,500
Remove access roads: (average of 1986 feet/turbine)	
100 man hours x \$65/hour	\$6,500
Equipment 6 days x \$1,500/day	\$9,000
Seeding and re-vegetation:	
80 man hours x \$30/hour	\$2,400
	<u>\$54,900</u>
Salvage value of a turbine: (based on Gamesa G90)	
Scrap value of tower steel (200 tons x \$200/ton)	\$40,000
Scrap value of generator components	\$5,000
	<u>\$45,000</u>
Estimated cost of decommissioning minus salvage value	<u>\$9,900</u>

### Ensuring decommissioning and site restoration funds

The Applicant will continuously maintain a surety bond or equivalent financial security instrument payable to the Town for the removal of non-functioning turbines and appurtenant facilities, in a form and amount approved by the Town Board for the period of the life of the facility. Prior to the issuance of a building permit, The Applicant will, in writing, request approval of a proposed surety bond or financial security instrument in a proposed amount not less than \$200,000 for the removal of non-functioning turbines and associated facilities. The Applicant will fully fund the approved bond or financial instrument prior to issuance of a building permit for the Marble River Wind Farm. The Applicant recognizes that the Town may include a condition in any approval of the Project that prohibits transfer of the Project permits/approvals unless the Town

Board reasonably approves a decommissioning bond or financial security instrument for the prospective Transferee.

The costs associated with decommissioning and restoration will be studied by an independent licensed engineer retained by the town and paid by the applicant on a cycle beginning after the operations date of the wind farm and every five years thereafter for the life of the wind farm. A report of each study will be submitted to the Town Board. Any adjustment in the security value recommended by the engineer's report will be made within 60 days of delivery of the report to the Town Board.

### **Decommissioning process description**

All decommissioning and restoration activities will adhere to the requirements of appropriate governing authorities and will be in accordance with all applicable federal, state, and local permits.

The decommissioning and restoration process comprises removal of above-ground structures, below-ground structures to a depth of 36 inches or greater, removal of access roads if required by the landowner, restoration of topsoil, re-vegetation and seeding, and a two year monitoring and remediation period.

Above-ground structures include the turbines, transformers, overhead collection lines, wind farm owned portions of the substation, maintenance buildings, and access gates. Below-ground structures include turbine foundations, collection system conduits, drainage structures, and access road sub-base material.

The process of removing structures involves evaluating and categorizing all components and materials into categories of recondition and reuse, salvage, recycling, and disposal. In the interest of increased efficiency and minimal transportation impacts, components and material may be stored on site in a pre-approved location until the bulk of similar components or materials are ready for transport. The components and material will be transported to the appropriate facilities for reconditioning, salvage, recycling, or disposal.

**Turbine removal.** Access roads to turbines will be widened to sufficient width to accommodate movement of appropriate sized cranes or other machinery required for the disassembly and removal of the turbines. Control cabinets, electronic components, and internal cables will be removed. The blades, hub and nacelle will be lowered to grade for disassembly. The tower sections will be lowered to the ground where they will be further disassembled into transportable sections. The blades, hub, nacelle, and tower sections will either be transported whole for reconditioning and reuse or disassembled into salvageable, recyclable, or disposable components.

**Turbine foundation removal.** Topsoil will be removed from an area surrounding the foundation and stored for later replacement. Turbine foundations will be excavated to a depth sufficient to remove all anchor bolts, rebar, conduits, cable, and concrete to a depth of 36 inches below grade. The remaining excavation will be filled with clean sub-grade material of quality comparable to the immediate surrounding area. The sub-grade material will be compacted to a density similar to surrounding sub-grade material. All unexcavated areas compacted by equipment used in decommissioning shall be de-compacted in a manner to adequately restore the topsoil and sub-grade material to the proper density consistent and compatible with the surrounding area.

**Underground collection cables.** The cables and conduits contain no materials known to be harmful to the environment and will be cut back to a depth greater than 36 inches. All cable and conduit buried greater than 36 inches will be left in place and abandoned.

**Overhead collection lines.** The conductors will be removed and stored in a pre-approved location. The supporting poles will be removed and the holes filled in with compatible sub-grade material. In areas where environmental damage from complete removal may outweigh the benefits, the poles will be sawed flush with the surrounding grade (determined by appropriate governing authority). The poles will be stored in a pre-approved location. Stored conductors and poles will be later removed and transported to appropriate facilities for salvage or disposal.

**Substation.** Disassembly of the substation will include only the areas owned by the Applicant (any System Upgrades made by the Applicant and conveyed to the New York Power Authority or any improvements made to the local NYSEG distribution system will remain in place). Steel, conductors, switches, transformers, etc. will be reconditioned and reused, sold as scrap, recycled, or disposed of appropriately depending upon market value. Foundations and underground components will be removed to a depth of 36 inches and the excavation filled, contoured, and re-vegetated.

**Access roads and construction pads.** After decommissioning activities of a turbine site are completed, access road and construction pad removal shall commence. Gravel will be removed from access roads and construction pads and transported to a pre-approved disposal location. Drainage structures integrated with the access road or construction pad will be removed and backfilled with sub-grade material, the topsoil replaced, and the surface contoured and re-vegetated.

Access gates shall remain operational until completion of decommissioning at which time they will be removed unless requested by the landowner that they remain. Ditch crossings connecting access roads to public roads will be removed unless requested that they remain by the landowner.

Improvements to Town and County roads that were not removed after construction at the request of the Town or County will likely remain in place.

### **Site restoration process description**

Topsoil will be removed prior to removal of structures from all work areas and stockpiled, clearly designated, and separate from other excavated material. Prior to topsoil replacement, all rocks 4 inches or greater will be removed from the surface of the subsoil. The topsoil will be de-compacted to match the density and consistency of the immediate surrounding area. The topsoil will be replaced to original depth and original surface contours reestablished where possible. All rocks 4 inches or larger will be removed from the surface of the topsoil. Any topsoil deficiency and trench settling shall be mitigated with imported topsoil consistent with the quality of the affected site.

In accordance with guidelines provided by New York State Department of Agriculture and Markets, topsoil de-compaction and replacement will be avoided after October 1, unless approved by the landowner in consultation with Ag. and Markets since areas restored after October 1<sup>st</sup> may not obtain sufficient growth to prevent erosion over the winter months. If areas are restored after October 1<sup>st</sup>, provision will be made to restore any eroded areas in the springtime to establish proper growth.

Following decommissioning activities, the sub-grade material and topsoil from all affected agricultural areas will be de-compacted and restored to a density and depth consistent with the surrounding fields or to a depth of 18 inches. The affected areas will be inspected, thoroughly cleaned, and all debris removed.

All disturbed soil surfaces within agricultural fields will be seeded with a seed mix agreed upon with the landowner in order to maintain consistency with the surrounding agricultural uses. All other disturbed areas will be restored to a condition and forage density reasonably similar to original condition. In all areas restoration shall include, as reasonably required, leveling, terracing,

mulching, and other necessary steps to prevent soil erosion, to ensure establishment of suitable grasses and forbs, and to control noxious weeds and pests.

In accordance with the guidelines of the New York State Department of Agriculture and Markets, a monitoring and remediation period of two years immediately following the completion of any decommissioning and restoration activities will be provided. The two-year period allows for the effects of climatic cycles such as frost action, precipitation and growing seasons to occur from which various monitoring determinations can be made. Any remaining agriculture impacts can be identified during this period and follow-up restoration efforts will be implemented.