



## **Decommissioning & Restoration Plan**

Eight Point Wind Energy Center  
Steuben County, New York

September 2017

**Facility Operator:**

NextEra Energy Resources, LLC

700 Universe Boulevard

Juno Beach, FL 33408

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## I. EXECUTIVE SUMMARY

Eight Point Wind, LLC (the Applicant), a subsidiary of NextEra Energy Resources, LLC (NextEra) has prepared this Decommissioning Plan (the Plan) to outline the methods and means to decommission the Eight Point Wind Energy Center Project (the Project) at the end of the Project's useful life. The purpose of the Plan is to identify the methodology to be used to mitigate potential impacts resulting from the cessation of operation of the facility. 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 and decommissioning agreements. The Applicant will obtain any federal, state or local permits required for site restoration prior to decommissioning activities commencing.

The Project will have an economical and technological lifetime of approximately 20 – 30 years. At the end of its life the Project will be decommissioned and wind turbines, ancillary equipment, buildings and infrastructure subsequently removed. Decommissioning would commence if the Project has not generated electricity for a period of 12 continuous months, unless the 12 month period of no energy output is the result of (a) a repair, restoration or improvement to an integral part of the Project that affects the generation of electricity and that repair, restoration or improvement is being diligently pursued by the Developer, or (b) a Force Majeure event. Force majeure includes, but is not limited to, causes or events beyond the reasonable control of, and without the fault or negligence of the Party claiming Force Majeure, including acts of God, sudden actions of the elements such as floods, earthquakes, hurricanes, or tornadoes; sabotage; terrorism; war; riots; explosion; blockades; and insurrection.

In general, facility decommissioning is in the reverse order of facility construction and the general sequence of decommissioning activities are outlined below:

- Dismantling of wind turbines including the blades, nacelle and tower;
- Removal of electrical systems and substation;
- Dismantling and removal of the operations and maintenance (O&M) building;
- Removal of wind turbine pads;
- Removal of generation tie line;
- Removal of access/ service roads; and
- Site reclamation.

Prior to commencing decommissioning, the Project will be shut down, de-energized and disconnected from the generation tie line at the Project collection substation. The Applicant will coordinate de-energization with NYSEG and NYISO to ensure no disruption to the overall electrical system. Additionally, the Applicant will give landowners and the towns of Greenwood

and West Union at least six weeks advance notice prior to commencing decommissioning activity.

All aboveground components including buildings, structures and equipment will be removed during decommissioning. In addition, all foundations will be removed to a depth of at least three feet below ground surface (bgs), backfilled and then covered with topsoil. Based on discussions with landowners, access roads no longer needed will be removed and the disturbed land areas subsequently graded and reseeded.

The wind turbines including towers will be dismantled and either reused at other wind energy facilities, recycled as scrap metal or transported to an approved facility for disposal. Concrete pads and foundations can be fragmented and crushed into aggregate for potential reuse as road base material. After fluid removal, transformers and electrical control devices will be reused at other facilities or recycled as scrap metal while electrical equipment will either be recycled or transported to an approved facility for disposal. Underground electrical and fiber optic control cables will be de-energized and cables that were installed at depths greater than three feet bgs will be left intact at the site.

The goal of decommissioning is the safe and efficient removal of all wind energy facility components and reclamation of the site to conditions as close to pre-construction characteristics as possible including restoration of native vegetation, habitat and/ or land use. The same safety protocols that are used during construction will be used during decommissioning.

The major activities associated with decommissioning the Project are summarized in the following sections. The decommissioning process is expected to take approximately four months. This time includes the two week site mobilization and preparation; six to eight week period to disassemble wind turbines and pad-mount transformers; an additional four weeks is allowed for after the last wind turbine is removed to remove and reclaim turbine foundations and access roads; and two weeks to remove and reclaim the project laydown area/project office and demobilize from the site. During disassembly and removal and for up to four weeks thereafter, reclamation work including grading, backfilling, erosion control activity, reseeding and revegetation will take place. Reclamation monitoring would take place for several months thereafter and additional restoration work would be conducted on an "as needed" basis.

Decommissioning will comply with Greenwood and West Union town requirements:

*Wind Turbine Generator removal shall include removal of all above-ground equipment, removal of foundations to a depth of thirty six inches (36") beneath the soil surface in non agricultural lands and forty eight inches (48") in agricultural lands, restoration of soil conditions, and restoration of vegetation to be consistent and compatible with surrounding vegetation.*

Removal of equipment is also a condition of the lease agreements with Project landowners:

*Operator (Eight Point Wind, LLC) shall remove all physical material pertaining to the facility from the affected Property to a depth of thirty six inches (36") beneath the soil surface in non agricultural lands and forty eight inches (48") in agricultural lands, and restore the area formerly occupied by the facilities to substantially the same physical condition that existed immediately before the construction of the facilities.*

## **II. REMOVAL OF FACILITIES**

### **A. Wind Turbines**

Turbine disassembly would be accomplished using large cranes similar to those used for installation. Components would be removed in reverse-order of installation; blades and rotor hub first, followed by the nacelle, then turbine tower sections. The components are then placed either directly onto trucks for removal from the Project, or onto the ground near the turbine base for eventual loading onto trucks.

If no purchaser of the intact wind turbine components can be identified, they would be disassembled and sold for scrap. The hub, blades, and nacelle would be removed to ground level for a scrap company to break down and strip high value components. Cabling internal to the towers would be removed and scrapped to recover the high value copper conductor materials. Tower sections would be lowered to grade and cut into transportable sections for delivery to a scrap metal purchaser. Control cabinets in the base would be stripped of high value components and the balance turned over to a scrap company for haul and disposal. Any hazardous material such as motor oil or lubricants will be removed in accordance with OSHA standards.

### **B. Electrical Collection System**

Environmental and agricultural impacts are minimized by leaving underground cables in place. The cables are generally three feet or greater below surface. The cables contain no materials that are harmful to the environment. The cable installation would include a warning tape and tracer cable that would warn anyone that could be digging in the area of the cables both during and after project operation. Recorded wind park easements indicating the potential existence of collection cables on the property will be available for future landowners. If requested by a landowner, the company will locate remaining collection lines on a property after decommissioning occurs. The electrical collection system is primarily an underground facility, therefore, decommissioning of the facility would be minimal. Cables less than three feet below surface, such as those directly connected to junction boxes or transformers will be removed. In instances where cables are removed, a trench will be excavated to facilitate the cutting and removal and the cable will be loaded onto trucks for removal from the site. Trenches will be backfilled with native soil.

### **C. Pad-Mount Transformers and Junction Boxes**

Pad-mount transformer and junction box removal would consist of disconnecting the electrical connection systems. The transformers and junction boxes would be disconnected from the underground electrical collector system. Any hazardous material such as motor oil or lubricants will be removed in accordance with OSHA standards. All high value sellable components, such

as the copper conductor materials, would be removed and the remaining cables, equipment and other components would be salvaged for scrap value.

#### **D. Substation and Operations and Maintenance (O&M) Building**

Disassembly of the substation would include the removal of the steel, transformers, switches, conductors, and other materials that could be reconditioned and reused or sold as scrap. All underground electrical collector cables coming to the substation from the surrounding wind turbines would be cut at the perimeter of the substation; with any cables less than three feet deep removed. Any hazardous material such as motor oil or lubricants will be removed in accordance with OSHA standards.

In addition to steel structures, the control building will be disassembled and removed from the site. Fencing around the substation will be broken down and removed. The gravel or aggregate surface at the substation will be loaded onto trucks and removed for sale and reuse.

The O&M building would also be removed, relocated or reconditioned. All equipment, furniture, and materials within the O&M building will be removed prior to demolition. If the O&M building is removed, the foundation will be removed, consistent with the method for the wind turbines. Fencing around the O&M building will be broken down and removed. The gravel from the parking area at the O&M building will also be fully or partially removed and will be sold and reused.

#### **E. Foundations**

Foundations would be exposed using backhoes, bulldozers, and other heavy earth moving equipment. Turbine foundations would be excavated to a depth sufficient to remove anchor bolts, rebar, conduits, cable, and concrete to a depth of at least three feet below grade. After removal of noted foundation materials, the areas would be filled with clean compatible sub-grade material compacted to a density similar to the surrounding sub-grade material. All disturbed areas will be restored to pre-existing conditions and contours.

#### **F. Access Roads**

To perform the decommissioning activities, it may be necessary to return some roads to their construction stage conditions temporarily. This would allow for efficient crane access to the turbine sites and facilitate removal of the wind turbine components by truck. A road survey will be conducted to determine the condition of the roads prior to work decommissioning activities. During the decommissioning process, and where necessary, roads will be cleared, compacted, graded and maintained.

Once decommissioning has been completed, roads would be removed and reclaimed, unless the underlying landowner requests otherwise. Turbine access roads would be removed (unless the landowner requests they remain in place). Removal of turbine access roads includes the

removal of gravel or aggregate, removal of any pervious geo-fabric, and removal of any unnecessary culverts, de-compaction of the road base, and recontouring of larger cuts and fills.

#### **G. Generation Tie Line Infrastructure**

Transmission lines are often reconditioned and used to facilitate the reliable delivery of energy, however, if the transmission line is removed, above-ground elements of the transmission line, such as the overhead poles, conductor and fiber would be removed and the materials would be disposed, recycled, or sold. Underground equipment such as anchors buried less than three feet below grade would be removed.

#### **H. Temporary Decommissioning Facilities**

As with construction, it may be necessary to establish temporary facilities to facilitate project decommissioning. The personnel involved in the decommissioning of the project would require temporary office space, equipment, and material storage. Because the O&M building would be removed as part of the decommissioning, a trailer complex and laydown yards would need to be established similar to those used during the construction stage. These temporary facilities will include standard furnishings, including office section, bathrooms, air conditioning and potable water. Temporary parking will be provided along with security during standard non-working hours.

### III. SITE RECLAMATION

#### A. Reseeding, Revegetation, Backfilling and Grading

After the wind turbines, ancillary structures and associated generation tie line have been removed, site reclamation activities will commence. This includes reseeded and revegetation, including the use of plants endemic to the site. To the extent necessary, topsoil would be removed prior to removal of structures from all work areas and stockpiled and separated from other excavated material. The topsoil would be de-compacted to match the density and consistency of the immediate surrounding area. The topsoil would be replaced to original depth, and original surface contours reestablished where possible. If the disturbed areas will not be used for agricultural purposes, then the areas will be reseeded with native grasses. All disturbed areas will be restored to pre-construction conditions including topography, native grasses and/ or land use. Stabilization measures will be implemented in disturbed areas to control erosion and sedimentation during reclamation of the site.

To prevent the introduction of undesirable plant species into reclaimed areas and ensure slope stability, seeding and site reclamation efforts will utilize seed for grasses native to the area and free of noxious weeds. If mulch is used, the mulch will be certified weed-free prior to use in reclamation efforts. Agricultural seed will likely be secured from a local source. Seed mixtures may be considered in consultation with NY State Department of Agriculture and Markets for use during reclamation of the Project.

All disturbed soil surfaces within agricultural fields would 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 would be restored to a condition and forage density reasonably similar to original conditions. In all areas restoration shall include leveling, terracing, mulching, and other necessary steps to prevent soil erosion, to ensure establishment of suitable grasses and to control noxious weeds and pest. Reseeding will occur on all disturbed surfaces. Restoration methods and Best Management Practices to minimize wind and water erosion will be implemented where practical to maximize revegetation success.

The topsoil will be placed in a roughened condition to prevent erosion and additional erosion control and soil stabilization measures may be required on steeper slopes, areas of erodible soils or areas adjacent to streams and creeks. Topsoil will be scarified, tilled or harrowed to a depth of approximately three to four inches below ground surface to create a suitable seedbed for germination and establishment of seed. In areas not conducive to this method (e.g. steep slopes, rocky areas, etc.), the soil will be dozer-tracked perpendicular to the slope or left with sufficient roughness following topsoil placement to provide microsites for seed germination, capture and retention of available precipitation and reduce soil movement or erosion.

Grading activities will be limited to the minimal area required to complete site restoration of disturbed areas using a bulldozer, grader or similar earth moving equipment. Disturbed areas will be graded and contoured to restore the natural topography and drainage of the site prior to construction of the wind energy facility.

## **B. Erosion Control and Storm Water Management**

Erosion control and storm water management during site reclamation will utilize similar measures and best management practices (BMPs) outlined in the Project's stormwater pollution prevention plan and in accordance with New York State Standards and Specifications for Erosion and Sediment Control in order to maintain downstream water quality and manage storm water runoff during decommissioning of the Project. The best method for preventing soil erosion and sedimentation during decommissioning and site reclamation is to keep soil in place through establishment of vegetation, erosion control blankets and any other similar method which prevents soil from being dislodged during storm events. Selection and design of erosion and sedimentation controls will account for climate, topography, soils and vegetative cover to be re-established at the site following decommissioning.

Silt fencing, straw bales or other similar storm water structures will be installed as needed to control soil erosion and sedimentation while re-establishing vegetation in seeded areas. Reclamation will likely include the installation of storm water control structures (i.e. berms, hay bales, mulch, etc.) to prevent soil erosion and/ or sedimentation during the seeding and re-establishment of native grasses at the Project.

Upon completion of restoration and reclamation activities, any silt fences or barriers used to facilitate reseeding will be removed when no longer needed for erosion and sedimentation control. To the maximum extent possible, native grasses will be utilized to stabilize disturbed areas and control storm water runoff during site reclamation.

Erosion controls are the primary method for preventing impacts to storm water runoff quality while sediment controls provide a secondary method of protection to erosion controls by facilitating containment of any sediment in storm water runoff. Commonly used BMPs that may be employed at the site during reclamation will include:

- Minimize disturbed areas and protect natural features of the site (native soil, topsoil, vegetation, topography and drainage areas);
- Control storm water runoff and flow to and from disturbed areas;
- Stabilize soils as quickly as possible following decommissioning of the facility; and
- Protect slopes and exposed soil;
- Protect culvert inlets, drainage structures and nearby surface water features;
- Establish perimeter controls around disturbed soil zones;

- Retain sediment to prevent transport off-site in storm water runoff; and
- Maintain controls including removal or accumulated sediment during re-establishment of vegetation.

Non-structural BMPs include seeding, mulching, geotextiles, sod stabilization, protection of native vegetation including trees, preservation or storm water drainage features, soil stabilization and other similar BMPs. Structural BMPs include diversion structures to divert storm water runoff away from disturbed areas, earthen diversion dikes/berms, silt fences (filter fabric or straw/hay bales), drainage swales sediment traps, check dams, culvert inlet/outlet protection, gabions, and soil retaining systems used to control erosion and sedimentation during site reclamation.

In general, straw bales or fiber rolls will be placed at approximate 100-foot intervals or other approved interval depending on slopes in drainage swales. The BMPs will remain intact and maintained until site reclamation is complete.

Riprap, gabions and/ or similar structures may be used to secure banks or steep slopes from erosion. The source of riprap may include rock materials removed during grading, turbine pad removal, and/ or excavation activities associated with construction of the Project.

### **C. Debris, Waste Management and Cleanup**

Following cleanup and seeding, vegetative debris (woody and non-woody) will be reused as mulch over reclaimed areas. Trees and other shrubs will not be permanently windrowed along the edge of disturbed areas. Burning of this debris may be conducted in accordance with local and state requirements.

During decommissioning, solid and industrial wastes may result from the dismantling of wind energy equipment and structures including fluids drained from wind turbine drivetrain components (lubricating oils, hydraulic fluids, etc.). These fluids will be managed and transported to an approved facility for disposal.

Solid waste management will include the provision of trash containers and regular site cleanup for proper disposal of solid waste (scrap metal, food, containers, etc.) during decommissioning and site reclamation. Trash and bulk waste collection areas with containers (dumpsters, rolloff containers or similar waste receptacles) will be designated at the site and materials will be recycled when possible (paper, wood, concrete, etc.). Litter, bottles and assorted trash will be removed daily from decommissioning areas and placed in designated trash containers for disposal. Trash, debris and any other solid waste generated during decommissioning will be minimized and managed in accordance with applicable regulations and routinely removed from the site, as needed.

#### **D. Reclamation Monitoring**

Following completion of site reclamation, routine monitoring will be implemented at the site to ensure native vegetation, habitats and/ or land use is re-established in the areas disturbed during decommissioning of the Project and that the site has successfully been restored to pre-construction conditions.

Reseeded areas will be routinely monitored and inspected to ensure storm water controls remain effective while vegetation is re-established for slope stability and erosion control. Once vegetation is established, any silt fences or barriers used to facilitate the process will be removed when no longer needed for erosion and sedimentation control.

Invasive species and noxious weeds will be managed during site reclamation to control and/or prevent the establishment of invasive species and noxious weeds within reclaimed areas. To prevent the establishment and spread of noxious and invasive weeds in reseeded areas, routine monitoring and control of weeds will be implemented at the site following completion of decommissioning activities. Vegetation control may include manual, mechanical, biological or chemical treatment methods and if herbicides were deemed necessary, the application and use will comply with applicable federal, state, and county guidelines.

#### **IV. Summary of Decommissioning Costs**

The estimated decommissioning costs per turbine were prepared using available information from NextEra's experience decommissioning other wind projects and from information and input from NextEra's general contractors and consulting engineers. The current cost of decommissioning turbines is estimated to be approximately \$100,000 per turbine, although this cost will be offset by the salvage value of the towers and the turbine components. The estimated salvage value of the each wind turbine was based upon the worst case scenario assuming the only salvage value of the wind turbine is from scrapping the steel and copper. The estimate was based on the weight of each wind turbine and associated components which consists primarily of steel. Also, there would be opportunities for re-sale for reuse of all or some wind turbines or their components.

The estimated decommissioning costs for the balance of plant (BOP) including collection line, substation, access roads and transmission line, plus reclamation activities for the entire Project were also based on NextEra's experience decommissioning other wind projects and from information and input from NextEra's general contractors and consulting engineers. The total cost of BOP decommissioning is estimated to be \$1,612,520 and includes all costs exclusive of turbines costs discussed above. Since most collection is buried greater than 36 inches deep and will not be removed, there are no salvage values associated with collection. The substation is primarily steel and parts will either be reused or the steel sold for scrap. The transmission line poles are also primarily steel and will likely be sold for scrap. Finally, crushed rock surfacing will be removed from access roads, will be loaded into trucks and sold for reuse.

The Applicant will pay for all decommissioning costs using cash on hand. The table on the following page summarizes decommissioning costs.

<b>Table 1. Decommissioning Cost Summary (in current dollars)</b>		
Removal of a wind turbine:	Crane operation to dismantle tower. Preparation of tower to dismantle, oil removal, cut power, etc. tower dismantle and salvage preparation. Crane operation and breakdown, and transport.	\$80,000
Removal of concrete to 36" below grade in non-ag land and 48" in ag land:	Demolition of footings and foundations, including grading.	\$20,000
	<b>Total per unit</b>	<b>\$100,000</b>
	<b>Total 31 turbines</b>	<b>\$3,100,000</b>
Collection Line	Removal of collection line where necessary, including all overhead collection.	\$100,000
Transmission Line Decommissioning	Removal of utility poles, guy wires and conductors.	\$800,000
Substation Removal	Removal of the substation equipment, power circuit breakers. Etc.	\$250,000
Reclamation of Access Roads	Removal of gravel, regrading, hauling and disposal of gravel. Decompacting and re-vegetation. Assumes approximately 60% of roads reclaimed at a cost of \$5.75 per foot.	\$212,520
Mobilization and other site restoration	Mobilization, backfill, grading, reseeding, revegetation, erosion control, etc.	\$250,000
	<b>Total Project BOP</b>	<b>\$1,612,520</b>
	<b>TOTAL DECOMMISSIONING COSTS</b>	<b>\$4,712,520</b>
Total Project Salvage Value	Scrap value of major steel components (\$202/ton) and copper components (\$1.92/lb.)	<b>\$3,194,550</b>
	<b>TOTAL NET DECOMMISSIONING COST</b>	<b>\$1,517,970</b>