

Weaver Wind Project

MDEP Site Location of Development/NRPA Combined Application

SECTION 29: DECOMMISSIONING PLAN

29.0 DECOMMISSIONING PLAN

29.1 ANTICIPATED LIFE OF WIND TURBINES

Vestas warrants the turbines for 30 years, with a minimum design life of 20 years. As the turbines approach the end of life expectancy, it is anticipated that more efficient and cost-effective generators will be available due to advances in technology, which will economically drive the replacement of existing generators.

Following the commencement of project operations, the Applicant will decommission the project or individual turbines if electricity is not generated for a continuous period of 12 months with two exceptions: (1) in the case of a *force majeure* event (as defined below); or (2) if the Applicant provides reasonable evidence that the project has not been abandoned and should not be decommissioned. Decommissioning will be completed in 12 months. If requested in the instance where a turbine is not generating electricity for 12 months, an extension of time for repair or replacement will be made in accordance with 06-096 CMR 382(7)(E).

The Applicant will notify the DEP in writing within 2 days of when it determines that a turbine failure or event will result in a turbine being off line for more than 6 months.

Force majeure, as used herein, will include the following: fire, earthquake, tornado, or other acts of God and natural disasters; strikes or labor disputes; war, civil strife, or other violence; any law, order, proclamation, regulation, ordinance, action, demand, or requirement of any government agency; suspension of operations of all, or a portion of, the project for routine maintenance, overhaul, upgrade, or reconditioning; or any other act or condition beyond the reasonable control of a party.

29.2 ESTIMATED COST OF DECOMMISSIONING

As of this date, estimated cost of decommissioning, without consideration of salvage value, is \$3,317,700.00 (Table 29-1). No cost is assigned to the substation as it is assumed it would be transferred to utility (Bangor Hydro Electric). Further details are provided in Exhibit 29-1.

Table 29-1. Estimated decommissioning costs for the Weaver Wind Project

Project Management (contractor costs, equipment, etc.)	\$1,406,400
Site Work/Civil (site reclamation)	\$241,200
Wind Turbine Foundations	\$229,700
Wind Turbine Generators and Met Towers (towers/hub/nacelle/ blades/etc.)	\$1,377,100
Electrical Collector System	\$63,300
Total	\$3,317,700.00

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29.3 FINANCIAL ASSURANCE AND SITE RESTORATION FUNDS

The Applicant will fully fund the estimated decommissioning cost of \$3,317,700.00 prior to construction. These funds may be in the form of a performance bond, surety bond, irrevocable letter of credit, or other acceptable form of financial assurance (Financial Assurance).

In order to assess any changes in the estimated net cost of decommissioning, the Applicant will reassess the decommissioning costs every two years after commencement of operations, and after decommissioning of any components, unless waived by the Department.

The Financial Assurance will remain in place until the decommissioning work has been completed, provided that, to the extent liquid funds are available, the Financial Assurance may be used to offset the costs of decommissioning.

29.4 DECOMMISSIONING PROCESS

The decommissioning and restoration process includes removal of above-ground structures; removal of underground structures to a depth of 24 inches; grading, to the extent necessary; restoration of topsoil; and seeding. Roads and turbine pads will not be removed. A general description of the decommissioning process follows; a specific plan would be developed at the time of decommissioning.

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 materials may be stored on site in a pre-approved location until the bulk of similar components or materials are ready for transport. These components and materials will be transported to the appropriate facilities for reconditioning, salvage, recycling, or disposal.

Above-ground structures include the turbines, transformers, overhead collector lines, components of the expanded substation, and meteorological towers. Below-ground structures include turbine and collector system foundations, collection system conduit and cable, fiber optic facilities, and subterranean drainage structures (if any). The above-ground and below-ground structures are collectively referred to as the "Wind Project Components".

During or prior to decommissioning and removal of the project components and removals described in Exhibit 29-1, the current owner may request, subject to DEP review and approval, a plan for continued beneficial use of any project components.

29.4.1 Turbine Removal

Access roads to turbines may be widened sufficiently to accommodate the movement of appropriately sized cranes, trucks, and other machinery required for disassembly and removal of the turbines. Control cabinets, electronic components, and internal cables will also be removed. The rotor, nacelle, and tower sections will be lowered to the ground where they may be transported whole for reconditioning and reuse or disassembled for ease of transportation for any salvageable, recyclable, or disposable components.

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29.4.2 Turbine Foundation Removal

Topsoil will be removed from an area surrounding turbine foundations and stored for later placement, as applicable. Turbine foundations will be excavated to a depth sufficient to remove all anchor bolts, rebar, conduits, cable, and concrete 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 will be de-compacted in a manner to adequately restore the topsoil and sub-grade material to the proper density as consistent and compatible with the surrounding area.

29.4.3 Access Roads and Construction Pads

Unless requested otherwise by the underlying landowner, permanent access roads constructed to accommodate the project will remain in place.

29.4.4 Overhead Collector Lines

Conductors, insulators, and other pole-top material will be removed. The supporting poles and anchors 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. Line components may be stored on site during deconstruction of the line but will then be transported off site for salvage or disposal.

29.4.5 Underground Collector Lines

The cables and conduits contain no materials known to be harmful to the environment. As part of the decommissioning, these items will be cut to a depth greater than 24 inches. Cable and conduit buried greater than 24 inches will remain in place and be abandoned, unless required for any future site development.

29.5 SITE RESTORATION PROCESS

Topsoil will be removed from all work areas prior to the removal of structures. Topsoil will be stockpiled, clearly designated, and separated from other excavated material. Topsoil will be de-compacted to match the density and consistency of the immediate surrounding area. Topsoil will be replaced to original depth, and original surface contours will be reestablished, where possible. Any topsoil deficiency and trench settling will be mitigated with imported topsoil consistent with the quality of the affected site.

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

Disturbed areas will be seeded to promote revegetation of the area. Restoration in all areas, as reasonably required, will include leveling, terracing, mulching, and other necessary steps to prevent soil erosion. Such measures will ensure the establishment of suitable grasses and forbs.

At the request of the forest landowners of the project property, new access roads that are installed during project construction will remain in place.

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Exhibit 29-1

Decommissioning Budget

John Phillips
Reed & Reed, Inc.
via e-mail: johnp@reed-reed.com

October 26, 2018

Subject: Weaver Wind Project Decommissioning Budget Update

Dear Mr. Phillips:

Sewall was requested to develop this Decommissioning Budget for the 22 V126-3.45MW Vestas wind turbine generators (WTG) on 117 meter towers at the Weaver Wind project located in Osborn and Eastbrook, Hancock County, Maine. The budget represents an opinion of probable cost (OPC), in today's dollars, for decommissioning based on the assumption that one or more turbines, or in this case, the wind farm as a whole, is no longer generating electricity for a continuous period of 12 months.

Based on information provided from Reed & Reed, we understand that an operation and maintenance (O&M) building is not part of the project; we also understand that ownership of the electrical substation is proposed to be transferred to others and therefore that structure will not be included in decommissioning calculations. Likewise, there are no transmission lines that will require decommissioning, although collector lines will be decommissioned. Additionally, as access roads and crane paths are proposed to remain upon construction completion, they will remain during and at the end of decommissioning.

Information Sources for this Review

This review is based on the civil and electrical site plans and quantity information provided by Reed & Reed, discussions with contractors familiar with this type of construction, and our own experience with wind projects. Wage rates used in these estimates are based on the State of Maine Department of Labor, Bureau of Labor Standards; 2018 Prevailing Wage Rates in Construction, Heavy and Bridge; Hancock County.

Decommissioning Scope

The decommissioning process reflected in this OPC is based on Decommissioning Plans prepared for similar wind projects and MaineDEP wind project decommissioning requirements (06-096 CMR c.382(7)). In summary, the decommissioning and restoration process in the Plan consists of the following steps:

- Disassembly and removal of above-ground structures
- Removal of below-ground structures to a depth of 24 inches (note that per town requirements, component removal in Eastbrook will be to a depth of 36 inches)
- Re-grading and seeding

Above-ground structures include the turbines, transformers, overhead collection lines, and meteorological (MET) towers. Below-ground structures include turbine and MET foundations. Following removal of all above- and below-ground structures, the individual disturbed areas will be re-graded to be consistent with surrounding areas and reseeded to promote re-vegetation.

Decommissioning Budget

The decommissioning process has been divided into five (5) general work items:

1. Project Management (contractor costs, equipment, etc.)
2. Site Work/Civil (site reclamation)
3. Wind Turbine Foundations
4. Wind Turbine Generators and MET Towers/Foundations
5. Electrical Collection System

Quantities and unit prices for these individual work items are presented and discussed in detail in the following paragraphs.

1. Project Management

1.1 Mobilization

A. Mobilization and demobilization to setup and breakdown the crane and assist crane estimated to cost a flat fee of \$100,000 per one-way trip, for a total of:	\$ 200,000.00
B. In addition, it is estimated that the cranes will be re-mobilized an additional nine (9) times at an estimated cost of \$63,000 per move to reach all of the turbine sites for a total of:	\$ 567,000.00
C. Mobilization and demobilization of ancillary equipment (i.e. bulldozers, backhoes, etc.) is estimated to be:	\$ 57,000.00
Total estimate for mobilization is:	\$ 824,000.00

1.2 <u>Project Oversight.</u> Oversight of the decommissioning is estimated at:	\$ 149,600.00
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1.3 <u>Incidentals.</u> A budget of approximately 5% of the decommissioning scope is recommended for project incidentals:	\$ 144,300.00
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1.4 <u>Contingency.</u> A contingency of approximately 10% of the decommissioning scope is recommended to cover unknowns:	\$ 288,500.00
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Total opinion of probable costs for Project Management:	\$ 1,406,400.00
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2. Site Work/Civil (Site Reclamation)

2.1 Re-grading of turbine sites.

A. The decommissioning plan includes restoring each of the turbine sites. We are assuming that all excavated areas will be brought up to grade and sloped to drain with suitable fill material generated from the re-grading of the turbine site or from off-site sources. The estimated cost includes additional fill, topsoil or other organic matter to support growth, seed, and mulch.

Approximate disturbed area:	13,950 SF/turbine site
Estimated cost per 1000 SF (1 MSF):	\$ 380.00 /MSF
Total estimated re-grading material cost for all 22 turbine sites:	\$ 116,700.00

- B. This re-grading and restoration work is estimated to take a dozer and operator approximately eight (8) hours to complete at each turbine site.

Labor & equipment rate:	\$	230.00 /hour
Total re-grading and restoration work for all 22 turbine sites:	\$	40,500.00

Total estimate for re-grading turbine sites is: \$ 157,200.00

- 2.2 Road Maintenance. Approximately 1% of the \$8.4 million estimated for road construction is recommended to address dust control, road maintenance, and post construction road repairs.

\$ 84,000.00

The total opinion of probable costs for **Site Work/Civil**: \$ 241,200.00

3. Wind Turbine Foundations

- 3.1 Removal of WTG foundation to 2 feet below grade. Removal of the turbine foundations is assumed to require a hydraulic excavator equipped with hydraulic ram (hoe-ram), an additional excavator with bucket for loading, and various dozers and loaders. (Note that foundations for the eight (8) WTGs in Eastbrook will be removed to 3 feet below grade.)

Total estimated labor & equipment cost:	\$	7,440.00 /site
Total estimate for WTG foundation removal labor for all 22 turbine sites:	\$	163,700.00

- 3.2 Transportation of rubble and disposal. The weighted average of concrete demolition rubble generated at each turbine site is estimated to be approximately 62 cubic yards (based on removal depth of 2 feet below grade, with 3 feet below grade at Eastbrook sites). As it is assumed the steel rebar will be separated from the concrete debris, the rubble essentially becomes an inert material. Therefore, we have assumed that the concrete rubble generated will not be transported offsite, but be used onsite as fill at toes of slopes, for road base or topping material, or at other locations in need of fill as desired by the property owner. Costs to transport the foundation rubble within the project boundaries, in comparison to other decommissioning costs, are assumed to be negligible. However, in the unlikely event the material cannot be used on-site, the material will be transported for offsite use. Costs to transport the foundation rubble to disposal are based on an estimated requirement of five (5) dump truck trips for each turbine site and transported to a location within 2 hours (one-way) at an equipment and labor rate of \$150/hr.

Total estimated labor & equipment cost:	\$	600.00 /dump truck trip
Total estimate for WTG foundation transportation costs for all 22 turbine sites:	\$	66,000.00

The total opinion of probable costs for removal of **WTG Foundations**: \$ 229,700.00

4. Wind Turbine Generators and MET Towers

- 4.1 Disassembly of turbine generators:

- A. Disassembly costs for the WTGs are based on the assumption that it will take a 10-man crew 25 hours to disassemble each tower and turbine, which is roughly equivalent to the labor effort required for tower and turbine assembly.

Estimated labor rate:	\$	25.00 /man-hour
Total estimate for WTG disassembly for all 22 turbines:	\$	137,500.00

- B. Based on an assumption that the two cranes (erector and assist cranes) can disassembly two (2) turbines a week, the crane rental is estimated to be 11 weeks. Two (2) weeks are added for wind day delays.

Estimated rental costs for two cranes:	\$	42,000.00 /week
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Total estimate for WTG disassembly equipment for all 22 turbines:	\$	546,000.00

- C. Additionally, once the towers and turbines are on the ground, they will need to be cut up into manageable sized pieces in preparation for transportation to scrap, recycle, or disposal facilities. We are assuming it will take a 5-man crew 25 hours to do this work per turbine.

Estimated labor rate:	\$	18.00 /man-hour
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Total estimate for WTG dismantling for all 22 turbines:	\$	49,500.00

The total estimate for WTG disassembly is: \$ 733,000.00

- 4.2 Transportation of turbine components to disposal/reclamation site. Cost to transport the tower and turbine components to facilities for scrap, recycling or disposal are based on an estimated requirement of 12 transport vehicles per turbine site (note: transport of new turbine and tower components to a site requires 14 to 16 transport vehicles).

Total estimated labor & equipment cost:	\$	1,600.00 /transport trip
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Total estimate for turbine component transport for all 22 turbine sites:	\$	422,400.00

- 4.3 Nacelle housing, blade, and other component disposal. Disposal of the nacelle housing, blades, and other non-scrapable components are based on an estimated 101,440 lbs/turbine. Disposal fees are generally based on weight (in tons).

Total estimated weight of blades and nacelle:	51 tons per site
Disposal fee (based on Bangor area landfill rates):	\$ 154.00 /ton
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Total estimate for nacelle housing and blade disposal for all 22 turbine sites:	\$ 172,800.00

- 4.4 MET Tower disassembly/removal:

- A. Disassembly costs for the MET towers are based on the assumption that it will take a 5-man crew 20 hours to disassemble each MET tower.

Estimated labor rate:	\$	25.00 /man-hour
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Total estimate for MET disassembly labor cost for five (5) towers:	\$	12,500.00

- B. Additionally, equipment rental is estimated at approximately 20 hours for each MET tower to assist with the disassembly, partially remove foundations, and reclaim the site.

Total estimated labor & equip. rate:	\$	230.00 /hour
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Total estimate for MET disassembly equipment cost for five (5) towers:	\$	23,000.00

Total estimate for MET tower disassembly/removal for five (5) towers is: \$ 35,500.00

4.5 Transportation of MET tower components to disposal/reclamation site.

A. Cost to transport the MET tower components to facilities for scrap, recycling or disposal are based on an estimated requirement of one (1) truck trip for each MET tower.

Total estimated labor & equip. cost:	\$	1,000.00	/trip
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Total estimate for MET component trucking cost for five (5) towers:	\$	5,000.00	

B. Removal of the MET foundations to 2 FT below grade (with foundations for the one (1) MET in Eastbrook removed to 3 feet below grade) is assumed to require a hydraulic excavator equipped with hydraulic ram (hoe-ram), an additional excavator with bucket for loading, and various dozers and loaders.

Estimated rubble per site:		9	CY
Labor & equipment cost:	\$	120.00	/CY
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Total estimated labor & equipment cost:	\$	1,080.00	/site
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Total estimate for foundation removal for all 5 MET sites:	\$	5,400.00	

C. We have assumed that the concrete rubble generated from the foundations (while separating rebar as necessary) will not be transported offsite but be used onsite as fill at toes of slopes, for road base or topping material, or at other locations in need of fill as desired by the property owner. However, in the unlikely event the material cannot be used on-site, the material will be transported for offsite use. Costs to transport the foundation rubble to disposal are based on a weighted average of nine (9) cubic yards of rubble for an estimated one (1) dump truck trip per MET tower site and transported to a location within 2 hours (one-way) at an equipment and labor rate of \$150/hr.

Total estimated labor & equip. cost:	\$	600.00	/dump truck trip
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Total estimate for MET foundation transportation cost for five (5) towers:	\$	3,000.00	

Total estimate for MET tower disposal for five (5) towers is: \$ 13,400.00

The total opinion of probable costs for WTGs and MET Tower removal: \$ 1,377,100.00

5. Electrical Collection System

Note that as the direct-buried underground collector is buried deeper than 3 ft, it will not be removed but be abandoned in place. Also note that transformers are internal to each WTG and their removal cost is included in the disassembly costs above.

5.1 Disassembly of overhead collector lines and associated components:

A. Disassembly and spooling costs for the overhead collector lines and associated components are based on the assumption that the labor effort required will be a 3-man crew working for four (4) hours per 1,000 feet of overhead wire.

Estimated total length of overhead lines:		23,750	feet
Estimated labor rate:	\$	36.00	/man-hour
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Total estimate for overhead collector lines disassembly:	\$	10,400.00	

B. Equipment rates are estimated at the following rate for approximately 12 days.

Estimated equipment rates:	\$	1,900.00 /day
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Total estimate for overhead collector lines disassembly:	\$	22,800.00

C. Wood pole removal and filling of remaining hole, based on the following approximate quantities:

Amount of poles:	96 each
Removal labor and equipment costs:	\$ 180.00 /pole
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Total estimate for overhead collector pole removal:	\$ 17,300.00

Total for disassembly of overhead collector lines: \$ 50,500.00

5.2 Transportation of collector lines and associated components

A. The cost to transport the collector line and associated components to facilities for scrap, recycling or disposal is based on the number of spools required per collector line sizes and lengths for the project, and a capacity of eight (8) spools per truck.

Estimated spools of collector line:	40 each
Estimated labor & equipment cost:	\$ 1,600.00 /truck trip
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Total estimate for collector lines disassembly:	\$ 8,000.00

B. Wood pole removal will be transported at a rate of 30 poles per logging truck. It is assumed that poles will be sold or given away.

Amount of poles:	96 each
Estimated labor & equipment costs:	\$ 1,200.00 /truck trip
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Total estimate for overhead collector pole removal:	\$ 4,800.00

Total for transportation of collector line and associated components: \$ 12,800.00

The total opinion of probable costs for Electrical Collection System removal: \$ 63,300.00

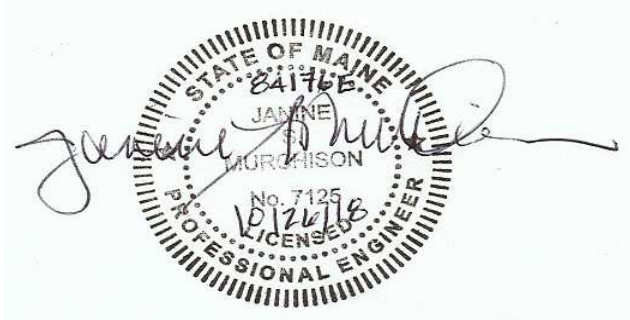
Decommissioning Summary

1. Project Management	\$ 1,406,400.00
2. Site Work/Civil (site reclamation)	\$ 241,200.00
3. Wind Turbine Foundations	\$ 229,700.00
4. Wind Turbine Generator & MET Removal	\$ 1,377,100.00
5. Electrical Collector	\$ 63,300.00
	\$ 3,317,700.00
Total	\$ 3,317,700.00

The estimated opinion of probable cost for decommissioning is:	\$ 3,317,700.00
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Please do not hesitate to contact us with any questions regarding the information contained in this review. We appreciate the opportunity to work with you on this project.

Sincerely,
James W. Sewall Company



Janine S. Murchison, PE
Project Manager
jmurchison@sewall.com
phone: (207)492-1014

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