

---

# Decommissioning Plan

## South Hill Road Wind

---

Villanova Wind 3, LLC  
Villanova Wind 4, LLC  
Villanova Wind 5, LLC

Address:  
South Hill Rd  
Cherry Creek, NY 14723

---

Prepared by:



New Leaf Energy  
22 Century Hill Drive  
Latham, NY 12210

Dated: August 28, 2023

---



## Table of Contents

<b>1.0 Executive Summary</b>	<b>1</b>
<b>2.0 Facilities Removal</b>	<b>1</b>
<b>A. Wind Turbine</b>	<b>1</b>
<b>B. Foundation</b>	<b>1</b>
<b>C. Access Road</b>	<b>1</b>
<b>D. Electrical and Interconnection System</b>	<b>2</b>
<b>3.0 Site Restoration</b>	<b>2</b>
<b>4.0 Summary of Decommissioning Costs</b>	<b>3</b>
<b>5.0 Decommissioning Administration</b>	<b>3</b>

## Table of Appendices

**Decommissioning Estimate**



## 1.0 Executive Summary

Wind turbines are designed to operate for 20 years or more. With regular maintenance and replacement of critical components, wind turbines can be operational for up to 40 years. At the end of the project life, wind turbines may be replaced with updated turbines and equipment. If the turbines are non-operational for a period of time, they will need to be decommissioned. Decommissioning will consist of dismantling of the wind turbine, removal of the wind turbine foundation, removal of the crane pad, removal of the access road, removal of the electrical system, removal of the batteries, and site restoration.

## 2.0 Facilities Removal

### A. Wind Turbine

For the basis of this plan, a Vestas Model V163 4.5MW turbine was used for calculations. The turbine has a hub height of 98 meters (322 ft) and blade length of 80 meters (263 ft). The total height is 180 meters (590 ft), inclusive of the nacelle. The turbine disassembly will be accomplished using large cranes similar to those used for installation. If the turbine components cannot be reused on another project, they will be sold for scrap. Components that are salvaged include steel, copper, and aluminum.

### B. Foundation

The removal depth of the foundation is required to be a minimum of three feet below grade for foundations located in non-agricultural lands and a minimum of four feet below grade for foundations located in agricultural lands. The removal will include anchor bolts, conduits, cable, and concrete. The concrete will be recycled. After removal of the foundation, the area will be filled with clean compatible fill compacted to a density to the surrounding material.

### C. Access Road

Based on preliminary design, approximately 150,800 square feet of access road is included on this project. The access road is approximately 7,540 feet total length, 20 feet wide, and 13 inches thick, constructed of gravel. During decommissioning activities, the roads may be temporarily improved to allow construction vehicle and crane access including clearing, compacting, and grading. Once decommissioning is complete, the access road will be removed unless the landowner requests it remains in place. Removal of the turbine access roads includes the removal of gravel or aggregate and geotextile fabric as well as any culverts that are no longer necessary, followed by de-compaction of the road subgrade and shoulder. The material will be transported off site for separating the salvageable aggregate material.



#### **D. Electrical and Interconnection System**

The electrical collection system consists of the underground cabling between the wind turbines to the above ground utility poles at the point of interconnection. All overhead material will be removed during decommissioning. The underground cabling will be installed 36" or more below grade. As such, the cables will be left in place to minimize environmental disturbance. The cables do not contain any materials that are known to be harmful to the environment. The cables are installed with warning tape and tracer cable that would alert anyone digging in the vicinity of the cables.

Disassembly of the interconnection and storage structures will include the removal of batteries, transformers, switches, conductors, and other equipment/structures that could be reconditioned and reused or sold as scrap.

### **3.0 Site Restoration**

Once all aboveground improvements and access roads are removed, all disturbed areas will be backfilled and graded to its original ground contours. Soils stockpiled during the decommissioning will be used in restoration. Vegetation will be re-established using a native seed mix free of noxious weeds or otherwise addressed pursuant to the specific requests of the landowner pursuant to their lease agreement.



## 4.0 Summary of Decommissioning Costs

Please see the table below for a summary of decommissioning costs for three (3) turbines. A detailed breakdown is included as an attachment to this plan.

<b>Task</b>	<b>Cost</b>
Turbine Removal	\$ 360,000.00
Electrical Equipment Loading and Removal	\$ 23,152.60
Break Up Concrete Pads	\$ 37,805.40
Break Up Foundation	\$ 22,403.20
Electrical Wiring Removal	\$ 21,551.83
Power Pole Removal	\$ 21,000.00
Gravel Road Reclamation	\$ 119,044.92
Seed Disturbed Areas	\$ 17,691.40
Trucking to Transfer Station	\$ 29,917.13
<i>Subtotal</i>	<i>\$ 652,566.38</i>
Steel and Copper Salvage	\$ (376,500.00)
<i>Present Value Total</i>	<i>\$ 276,066.38</i>
<b>Grand Total (with 25 Years of Inflation)</b>	<b>\$ 511,811.63</b>

## 5.0 Decommissioning Administration

The Decommissioning Security shall be in the form of an irrevocable letter of credit, cash deposit governed by an escrow agreement, a surety bond, or other form of security, with the type of security determined by the Company and the form of the instrument subject to the reasonable approval of the Town.

The Decommissioning Amount shall be recalculated by the Parties every five (5) years during the first twenty (20) years of the term hereof and every two (2) years following such period, with the first recalculation occurring on the fifth anniversary of the Commercial Operation Date or date that power is first sold which ever occur first. The Company shall reimburse the Town for the cost of such recalculation.

## **Attachment: Decommissioning Estimate**



# Decommissioning Estimate

South Hill Road  
Villanova, NY

Date: 8/28/2023  
Calculated By: LL (initials)

This Decommissioning Estimate has been prepared by New Leaf Energy in an attempt to predict the cost associated with the removal of the proposed wind turbine facility. The primary cost of decommissioning is the labor to dismantle and load as well as the cost of removing the access road. All material will be removed from the site and the site will be restored to its preexisting condition.

The salvage values of the steel and copper have been calculated in this estimate for the turbine components only.

The following values were used in this Decommissioning Estimate:

System Specifications		Equipment & Material Removal Rates	
Number of Turbines	3	Equipment Removal Rate (hr/unit)	1
Number of Disconnect Switches	3	Elect. Wiring Removal Rate (min/LF)	0.5
Number of Transformers	6	Days req. to break up concrete pads	27
Electrical Wiring Length (ft)	7,540	Days req. to break up foundation	16
Number of Power Poles	14	Days req. with Rough Grader	3
Access Rd Material Volume (CY)	3,725	Days req. with Fine Grader	5
Total Disturbed Area (SF)	176,914	Total Truckloads Required	261
Foundation Volume (CY)	369	Round-Trip Dist. to Trans. Sta.(miles)	24.8
Total Battery Enclosures	126	Round-Trip Time to Trans. Sta. (hr)	0.87
Battery Enclosure Weight (lbs)	20,000		
Length of Fence Line (ft)	1704		

Labor and Equipment Costs		Salvage Values	
Turbine Removal Rate (\$/Turbine)	\$ 120,000.00	#1 Heavy Melting Steel (\$/ton)	\$ 250.00
Labor Rate (\$/hr)	\$ 57.30	Copper (\$/lb)	\$ 2.00
Operator Rate (\$/hr)	\$ 77.50		
Bobcat Cost (\$/hr)	\$ 94.00		
Front End Loader Cost (\$/Day)	\$ 780.20		
Excavator Cost (\$/Day)	\$ 1,259.60		
Trucking Cost (\$/hr)	\$ 117.50		
Backhoe Cost (\$/hr)	\$ 94.00		
Power Pole Removal Cost (\$/pole)	\$ 1,500.00		
Grader Cost (\$/day)	\$ 1,222.00		
Gravel Export Cost (\$/YD)	\$ 8.00		
Loam Import Cost (\$/YD)	\$ 20.00		
Seeding Cost (\$/SF)	\$ 0.10		
Fuel Cost (\$/mile)	\$ 0.50		

Labor, Material, and Equipment Costs

**1. Remove Turbines**

The turbine disassembly will be accomplished using large cranes similar to those used for installation. Removal of the turbines include crane operation to dismantle tower, oil removal, cutting the power, and transport. If the turbine components cannot be reused on another project, they will be sold for scrap (included under Salvage).

$$\text{Number of Turbines} \cdot \text{Turbine Removal Rate} = \text{Turbine Removal Cost}$$

**Total = \$ 360,000.00**

**2. Remove and Load Electrical Equipment and Battery Energy Storage System**

Electrical equipment includes transformers and disconnect switch.

$$(\text{Number of Transformers} + \text{Number of disconnect Switches}) \cdot (\text{Equipment Removal Rate}) \cdot (\text{Operator Rate} + \text{Bobcat Cost}) = \text{Electrical Equipment Removal Cost}$$

**Total = \$ 23,152.50**

**3. Break Up Concrete Pads**

Concrete pads are broken up using an excavator and jackhammer.

$$\text{Number of Demolition Days} \cdot (\text{Excavator Cost} + \text{Operator Cost}) = \text{Total Concrete Pad Removal}$$

**Total = \$ 37,805.40**

**4. Break Up Turbine Foundation**

The turbine foundation is removed to a maximum depth of four (4) feet. It is broken up using an excavator and jackhammer.

$$\text{Number of Demolition Days} \cdot (\text{Excavator Cost} + \text{Operator Cost}) = \text{Total Foundation Removal}$$

**Total = \$ 22,403.20**

**5. Remove Electrical Wiring**

All electrical wiring and underground conduits will be removed to a depth of 48 inches.

$$\text{Cable Length} \cdot \text{Cable Removal Rate} \cdot (\text{Operator Cost} + \text{Backhoe Cost}) = \text{Total Cable Removal Cost}$$

**Total = \$ 21,551.83**



**6. Remove Power Poles**

Power poles will be removed and shipped off site.

$$\text{Number of Power Poles} \cdot \text{Pole Removal cost} = \text{Total Power Pole Removal Cost}$$

**Total = \$ 21,000.00**

**7. Gravel Road Reclamation**

Reclamation of the gravel access road will entail removing the gravel material and exporting it off site. The area will then be backfilled with loam and graded.

$$(\text{Days with Rough Grader} + \text{Days with Fine Grader}) \cdot (\text{Grader Cost per Day} + \text{Operator Cost per Day}) + [\text{Roadway Material Volume} \cdot (\text{Gravel Export Cost} + \text{Loam Import Cost})] = \text{Gravel Road Reclamation Cost}$$

**Total = \$ 119,044.92**

**8. Seed Disturbed Areas**

Seeding cost includes labor and materials for reseeding all disturbed areas including the reclaimed gravel road area, former electrical areas, and areas disturbed by turbine removal.

$$\text{Seeding Cost} \cdot \text{Disturbed Area} = \text{Total Seeding Cost}$$

**Total = \$ 17,691.40**

**9. Truck to Transfer Station**

All material will be trucked to the nearest Transfer station that accepts construction material. The nearest transfer station is Dayton Transfer Station

$$(\text{Total Truckloads} \cdot \text{Roundtrip Distance} \cdot \text{Fuel Cost}) + (\text{Total Truckloads} \cdot \text{Round Trip Time} \cdot \text{Trucking Cost}) = \text{Total Trucking Cost to Transfer Station}$$

**Total = \$ 29,917.13**

**1S. Salvage**

The steel and copper components of the turbine are recyclable and can be sold for salvage.

$$(\text{Total Steel Weight} \cdot \text{Steel Salvage Value}) + (\text{Total Copper Weight} \cdot \text{Copper Salvage Value}) = \text{Total Salvage Value}$$

**Total = \$ (376,500.00)**

**Summary of Decommissioning Costs and Salvage Values**

Line Item	Task	Cost
1	Turbine Removal	\$ 360,000.00
2	Electrical Equipment Loading and Removal	\$ 23,152.50
3	Break Up Concrete Pads	\$ 37,805.40
4	Break Up Foundation	\$ 22,403.20
5	Electrical Wiring Removal	\$ 21,551.83
6	Power Pole Removal	\$ 21,000.00
7	Gravel Road Reclamation	\$ 119,044.92
8	Seed Disturbed Areas	\$ 17,691.40
9	Trucking to Transfer Station	\$ 29,917.13
		Subtotal = \$ 652,566.38

Additional Item	Task	Value
1S	Steel and Copper Salvage Value	\$ (376,500.00)
		Additional Item Subtotal \$ (376,500.00)
		<b>Present Value Total = \$ 276,066.38</b>

Task	Future Value
<u>Inflation</u>	
# of Years= 25	
Inflation Rate= 2.5%	
<i>Total • (1+ Inflation Rate)^Number of Years =Grand Total</i>	
	<b><u>Grand Total = \$ 511,811.63</u></b>