



**December 8, 2022**

Mr. Michael King, Chair  
Town of Wareham Planning Board  
54 Marion Road  
Wareham, MA 02571

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**Re: Adjusted Decommissioning Estimates  
Special Permits and Site Plan Approvals  
Case No. 9-20 – 150 Tihonet Road  
Case No. 7-20 – 27 Charge Pond Road**

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Dear Chairman King and Members of the Planning Board:

In connection with the extension requests for the above-referenced projects, New Leaf Energy (successor-in-interest to Borrego Solar Systems, Inc. and referred to herein as the “Proponent”) is providing the attached revised decommissioning estimates in response to the Planning Board’s request made on November 28, 2022. As the Planning Board is aware, both the 150 Tihonet Road solar project / Case No. 9-20 (the “150 Tihonet Project”) and the 27 Charge Pond Road solar project / Case No. 7-20 (the “27 Charge Pond Project”) were approved by the Planning Board pursuant to the grant of a Special Permit and Site Plan Approval decision for each project. The Proponent has requested that the Planning Board acknowledge the extensions of these decisions based on the good cause demonstrated in prior submittals (including the September 21, 2022 letters delivered by the Proponent, and the November 16, 2022 letter from the undersigned).

Revised Decommissioning Estimates

As the Planning Board is aware, both projects were approved with a condition of approval requiring security for the decommissioning of the projects. Specifically, a decommissioning estimate of \$450,321 was approved for the 150 Tihonet Project and a decommissioning estimate of \$321,492.14 was approved for the 27 Charge Pond Project. These amounts were based on the documentation presented in support of these projects (which was incorporated into the respective decisions), and were subject to an independent peer review.

As requested by the Planning Board, the Proponent has reviewed the decommissioning estimate for both projects and has updated these accordingly. As shown on the estimates attached to this letter, the estimate for the 150 Tihonet Project has increased to \$1,116,811.77 and the estimate for the 27 Charge Pond Project has increased to \$798,900.79. These new estimates reflect pricing adjustments recognized in the industry since the original project approvals and incorporate additional costs associated with removal of the projects.



Response to “Charlton” Letter

The Proponent has received and reviewed the information delivered by the Planning Department relative to certain solar projects in the Town of Charlton. The letter does not appear to present any reliable support for the evaluation of a decommissioning estimate – it is merely a letter from a member of the public that purports to summarize unsubstantiated information. The letter was drafted to the Town of Charlton’s attorney, but was not used as evidence in a court proceeding, nor does it appear to have been used as a basis for any decision made on the Charlton projects. Unlike the Proponent’s original decommissioning estimate, the information was not presented by any person with a semblance of authority or experience in the construction of solar facilities, nor was it subject to any peer review by an independent party. In short, this letter does not present any credible information with respect to the decommissioning of the Proponent’s projects.

Conclusion

Under Massachusetts law, extension of a special permit is not a discretionary request. If construction has not commenced due to “good cause”, the approval is extended. See *Neilson v. Planning Bd. of Walpole*, 9 LCR 57 (2001) (“Nothing in the language of [MGL c. 40A] section 9 provides or even suggests that an affirmative extension is required to prevent an automatic lapse of the special permit...”). As previously submitted to the Planning Board the delay in construction of both of these Projects is solely attributed to the group study and DPU review, the timing of which the Proponent is unable to influence or control, which clearly constitutes “good cause.” Accordingly, the Proponent respectfully requests that the Planning Board acknowledge the extension of the Special Permit and Site Plan Review for each of the 150 Tihonet Project and the 27 Charge Pond Project.

If you have any questions or wish to discuss, please contact me.

Best regards,

**Womble Bond Dickinson (US) LLP**

Gregory Sampson

Attachments

Updated decommissioning estimates

cc: Richard Bowen, Town Counsel

# Decommissioning Estimate/Plan



Date: 12/7/2022

150 Tihonet Rd  
Wareham, MA

This Decommissioning Estimate has been prepared by New Leaf Energy in an attempt to predict the cost associated with the removal of the proposed solar facility. The primary cost of decommissioning is the labor to dismantle and load as well as the cost of trucking and equipment. All material will be removed from the site, including the concrete equipment pads, which will be broken up at the site and hauled to the nearest transfer station.

No salvage values have been assumed in this calculation.

The following values were used in this Decommissioning Estimate:

<b>System Specifications</b>		<b>Equipment &amp; Material Removal Rates</b>	
Number of Modules	22,500	Module Removal Rate (min/module)	1
Number of Racks	938	Rack Wiring Rem. Rate (min/mod)	0.25
Number of Inverters	5	Racking Dismantling Rate (min/rack)	20
Number of Transformers	2	Inverter Removal Rate (hr/unit)	0.5
Electrical Wiring Length (ft)	14,215	Transformer Removal Rate (hr/unit)	1
Number of Foundation Screws	3,752	Rack Loading Rate (min/Rack)	10
Length of Perimeter Fence (ft)	14,940	Elect. Wiring Removal Rate (min/LF)	0.5
Number of Power Poles	12	Screw Rem. Rate (screws/day)	300
Access Rd Material Volume (YD)	9,687	Fence Removal Rate (min/LF)	1
Total Disturbed Area (SF)	267,146	Days req. to break up concrete pads	5
Total Fence Weight (lbs)	10,607	Days req. with Rough Grader	3
Total Racking Weight (lbs)	797,300	Days req. with Fine Grader	5
Total Foundation Screw Weight (lbs)	150,080	Total Truckloads Required	49
Total Solar Module Weight (lbs)	1,350,000	Round-Trip Dist. to Trans. Sta.(miles)	11
		Round-Trip Time to Trans. Sta. (hr)	0.75
<b>Labor and Equipment Costs</b>		<b>Energy Storage Decommissioning</b>	
Labor Rate (\$/hr)	\$ 35.00	Number of Energy Storage Units	10
Operator Rate (\$/hr)	\$ 47.00	Battery Disposal Fee	\$ 25,000.00
Bobcat Cost (\$/hr)	\$ 112.30	Battery Loading Prep Time (hr)	32
Front End Loader Cost (\$/Day)	\$ 932.09	Battery Loading Time (hr)	8
Excavator Cost (\$/Day)	\$ 1,504.82		
Trucking Cost (\$/hr)	\$ 140.38		
Backhoe Cost (\$/hr)	\$ 112.30		
Power Pole Removal Cost (\$/pole)	\$ 1,500.00		
Grader Cost (\$/day)	\$ 1,459.90		
Gravel Export Cost (\$/YD)	\$ 5.00		
Loam Import Cost (\$/YD)	\$ 20.00		
Seeding Cost (\$/SF)	\$ 0.10		
Fuel Cost (\$/mile)	\$ 0.50		

Labor, Material, and Equipment Costs

**1. Remove Modules**

The solar modules are fastened to racking with clamps. They slide in a track. A laborer needs only unclamp the module and reach over and slide the module out of the track.

$$\text{Module Removal Rate} \cdot \text{Total Number of Solar Modules} \cdot \text{Labor Rate} = \text{Module Removal Cost}$$

**Total = \$ 13,125.00**

**2. Remove Rack Wiring**

The modules are plugged together in the same manner as an electrical cord from a light is plugged into a wall socket. The string wires are in a tray. A laborer needs only unplug the module, reach into the tray and remove the strands of wire.

$$\text{Wire Removal Rate} \cdot \text{Total Number of Solar Modules} \cdot \text{Labor Rate} = \text{Rack Wiring Removal Cost}$$

**Total = \$ 3,281.25**

**3. Dismantle Racks**

The racking is supported by screw foundations. The racking will be disconnected from the foundation and removed seperately.

$$\text{Number of Racks} \cdot \text{Rack Dismantling Rate} \cdot \text{Labor Rate} = \text{Rack Dismantling Cost}$$

**Total = \$ 10,943.33**

**4. Remove and Load Electrical Equipment**

Electrical equipment includes transformers and inverters.

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

**Total = \$ 716.85**

**5. 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 = \$ 6,540.45**

**6. Load Racks**

Once the racks have been dismantled, they will be loaded onto trucks for removal from the site. The trucking cost associated with this line item represents the additional time a truck will be needed during loading. Please see item # 13 for additional trucking costs.

$$\begin{aligned} & \text{Number of Racks} \cdot \text{Rack Loading Rate} \cdot (\text{Operator Cost} + \text{Front End Loader Cost} + \text{Trucking Cost}) \\ & \qquad \qquad \qquad = \text{Total Rack Removal Cost} \end{aligned}$$

**Total = \$ 46,849.19**

**7. Remove Electrical Wiring**

Electrical wiring will be removed from all underground conduits.

$$\begin{aligned} & \text{Cable Length} \cdot \text{Cable Removal Rate} \cdot (\text{Operator Cost} + \text{Backhoe Cost}) = \\ & \qquad \qquad \qquad \text{Total Cable Removal Cost} \end{aligned}$$

**Total = \$ 18,870.41**

**8. Remove Foundation Screws**

Foundation screws will be backed out of the ground and loaded onto a truck to be removed from site.

$$\begin{aligned} & (\text{Total Number of Screws} / \text{Daily Screw Removal Rate}) \cdot (\text{Operator Rate} + \text{Excavator Cost}) = \\ & \qquad \qquad \qquad \text{Total Screw Removal Cost} \end{aligned}$$

**Total = \$ 23,522.79**

**9. Remove Fencing**

Fencing posts, mesh, and foundations will be loaded onto a truck and removed from site. Trucking costs included in this line item are for the removal process. Trucking to a recycling facility are included in item #13.

$$\begin{aligned} & (\text{Total Length of Fence} \cdot \text{Fence Removal Rate}) \cdot (\text{Operator Rate} + \text{Bobcat Cost} + \text{Trucking Cost}) = \\ & \qquad \qquad \qquad \text{Total = $ 74,619.08} \end{aligned}$$

**10. Remove Power Poles**

Power poles will be removed and shipped off site.

$$\begin{aligned} & \text{Number of Power Poles} \cdot \text{Pole Removal cost} = \\ & \qquad \qquad \qquad \text{Total Power Pole Removal Cost} \end{aligned}$$

**Total = \$ 18,000.00**

**11. 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.

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

*Gravel Road Reclamation Cost*

**Total = \$ 256,853.87**

**12. 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 racking foundation removal.

$$Seeding\ Cost \cdot Disturbed\ Area =$$

*Total Seeding Cost*

**Total = \$ 26,714.60**

**13. Truck to Transfer Station**

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

$$(Total\ Truckloads \cdot Roundtrip\ Distance \cdot Fuel\ Cost) + (Total\ Truckloads \cdot Round\ Trip\ Time \cdot Trucking\ Cost) =$$

*Total Trucking Cost to Transfer Station*

**Total = \$ 5,428.28**

**14. Remove and Dispose of Energy Storage Equipment**

The battery units will be prepared for shipment and loaded onto a truck. A disposal fee will also be required for the disposal company to accept the batteries.

$$Number\ of\ Battery\ Units \cdot ((Loading\ Prep\ Time \cdot Labor\ Cost) + Loading\ Time \cdot (Labor\ Rate + Bobcat\ Cost + Trucking\ Cost) + Disposal\ Fee) =$$

*Total Energy Storage Removal and Disposal Cost*

**Total = \$ 284,214.00**

Salvage Values

Salvage Value Not Included

Panel Disposal

**2S. Solar Panel Disposal Cost**

The panels can be disposed of at facilities which accept electronics. They will be trucked to Wareham Town Transfer Station.

*(Total Panel Weight)/2000 • Cost per Ton of disposal =*

**Total =** \$ 101,250.00

**Summary of Decommissioning Costs and Salvage Values**

Line Item	Task	Cost
1	Module Removal	\$ 13,125.00
2	Rack Wiring Removal	\$ 3,281.25
3	Rack Dismantling	\$ 10,943.33
4	Electrical Equipment Loading and Removal	\$ 716.85
5	Break Up Concrete Pads	\$ 6,540.45
6	Load Racks	\$ 46,849.19
7	Electrical Wiring Removal	\$ 18,870.41
8	Foundation Screw Removal	\$ 23,522.79
9	Fence Removal	\$ 74,619.08
10	Power Pole Removal	\$ 18,000.00
11	Gravel Road Reclamation	\$ 256,853.87
12	Seed Disturbed Areas	\$ 26,714.60
13	Trucking to Transfer Station	\$ 5,428.28
14	Energy Storage System Removal	\$ 284,214.00
<b>Sub Total =</b>		<b>\$ 789,679.10</b>

Additional Item	Task	Value
Salvage Values Not Included		
2S	Solar Panel Disposal Cost	\$ 101,250.00
<b>Additional Item Subtotal</b>		<b>\$ 101,250.00</b>
<b>Present Value Total with 1.25% Adder =</b>		<b>\$ 987,098.87</b>

Task	Future Value
<u>Inflation</u>	
# of Years= 5	
Inflation Rate= 2.5%	
<i>Total • (1+ Inflation Rate)^Number of Years =Grand Total</i>	
<b><u>Grand Total = \$ 1,116,811.77</u></b>	





# Decommissioning Estimate/Plan

Date: 12/7/2022

27 CHARGE POND ROAD  
WAREHAM, MA

This Decommissioning Estimate has been prepared by New Leaf Energy in an attempt to predict the cost associated with the removal of the proposed solar facility. The primary cost of decommissioning is the labor to dismantle and load as well as the cost of trucking and equipment. All material will be removed from the site, including the concrete equipment pads, which will be broken up at the site and hauled to the nearest transfer station.

No salvage values have been assumed in this calculation.

The following values were used in this Decommissioning Estimate:

<b>System Specifications</b>		<b>Equipment &amp; Material Removal Rates</b>	
Number of Modules	20,440	Module Removal Rate (min/module)	1
Number of Racks	852	Rack Wiring Rem. Rate (min/mod)	0.25
Number of Inverters	2	Racking Dismantling Rate (min/rack)	20
Number of Transformers	2	Inverter Removal Rate (hr/unit)	0.5
Electrical Wiring Length (ft)	4,053	Transformer Removal Rate (hr/unit)	1
Number of Foundation Screws	3,408	Rack Loading Rate (min/Rack)	10
Length of Perimeter Fence (ft)	8,751	Elect. Wiring Removal Rate (min/LF)	0.5
Number of Power Poles	1	Screw Rem. Rate (screws/day)	300
Access Rd Material Volume (YD)	6,408	Fence Removal Rate (min/LF)	1
Total Disturbed Area (SF)	175,710	Days req. to break up concrete pads	2
Total Fence Weight (lbs)	6,213	Days req. with Rough Grader	2
Total Racking Weight (lbs)	724,200	Days req. with Fine Grader	3
Total Foundation Screw Weight (lbs)	136,320	Total Truckloads Required	44
Total Solar Module Weight (lbs)	1,226,400	Round-Trip Dist. to Trans. Sta.(miles)	9.6
		Round-Trip Time to Trans. Sta. (hr)	0.58
<b>Labor and Equipment Costs</b>			
Labor Rate (\$/hr)	\$ 35.00		
Operator Rate (\$/hr)	\$ 47.00		
Bobcat Cost (\$/hr)	\$ 112.30		
Front End Loader Cost (\$/Day)	\$ 932.09		
Excavator Cost (\$/Day)	\$ 1,504.82		
Trucking Cost (\$/hr)	\$ 140.38		
Backhoe Cost (\$/hr)	\$ 112.30		
Power Pole Removal Cost (\$/pole)	\$ 1,500.00		
Grader Cost (\$/day)	\$ 1,459.90		
Gravel Export Cost (\$/YD)	\$ 5.00		
Loam Import Cost (\$/YD)	\$ 20.00		
Seeding Cost (\$/SF)	\$ 0.10		
Fuel Cost (\$/mile)	\$ 0.50		
<b>Energy Storage Decommissioning</b>			
Number of Energy Storage Units			2
Battery Disposal Fee	\$	25,000.00	
Battery Loading Prep Time (hr)			32
Battery Loading Time (hr)			8

Labor, Material, and Equipment Costs

**1. Remove Modules**

The solar modules are fastened to racking with clamps. They slide in a track. A laborer needs only unclamp the module and reach over and slide the module out of the track.

$$\text{Module Removal Rate} \cdot \text{Total Number of Solar Modules} \cdot \text{Labor Rate} = \text{Module Removal Cost}$$

**Total = \$ 11,923.33**

**2. Remove Rack Wiring**

The modules are plugged together in the same manner as an electrical cord from a light is plugged into a wall socket. The string wires are in a tray. A laborer needs only unplug the module, reach into the tray and remove the strands of wire.

$$\text{Wire Removal Rate} \cdot \text{Total Number of Solar Modules} \cdot \text{Labor Rate} = \text{Rack Wiring Removal Cost}$$

**Total = \$ 2,980.83**

**3. Dismantle Racks**

The racking is supported by screw foundations. The racking will be disconnected from the foundation and removed seperately.

$$\text{Number of Racks} \cdot \text{Rack Dismantling Rate} \cdot \text{Labor Rate} = \text{Rack Dismantling Cost}$$

**Total = \$ 9,940.00**

**4. Remove and Load Electrical Equipment**

Electrical equipment includes transformers and inverters.

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

**Total = \$ 477.90**

**5. 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 = \$ 2,616.18**

### 6. Load Racks

Once the racks have been dismantled, they will be loaded onto trucks for removal from the site. The trucking cost associated with this line item represents the additional time a truck will be needed during loading. Please see item # 13 for additional trucking costs.

$$\text{Number of Racks} \cdot \text{Rack Loading Rate} \cdot (\text{Operator Cost} + \text{Front End Loader Cost} + \text{Trucking Cost}) = \text{Total Rack Removal Cost}$$

**Total = \$ 42,553.85**

### 7. Remove Electrical Wiring

Electrical wiring will be removed from all underground conduits.

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

**Total = \$ 5,380.36**

### 8. Remove Foundation Screws

Foundation screws will be backed out of the ground and loaded onto a truck to be removed from site.

$$(\text{Total Number of Screws} / \text{Daily Screw Removal Rate}) \cdot (\text{Operator Rate} + \text{Excavator Cost}) = \text{Total Screw Removal Cost}$$

**Total = \$ 21,366.12**

### 9. Remove Fencing

Fencing posts, mesh, and foundations will be loaded onto a truck and removed from site. Trucking costs included in this line item are for the removal process. Trucking to a recycling facility are included in item #13.

$$(\text{Total Length of Fence} \cdot \text{Fence Removal Rate}) \cdot (\text{Operator Rate} + \text{Bobcat Cost} + \text{Trucking Cost}) =$$

**Total = \$ 43,707.60**

### 10. 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 = \$ 1,500.00**

**11. 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.

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

*Gravel Road Reclamation Cost*

**Total = \$ 169,383.20**

**12. 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 racking foundation removal.

$$Seeding\ Cost \cdot Disturbed\ Area =$$

*Total Seeding Cost*

**Total = \$ 17,571.01**

**13. Truck to Transfer Station**

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

$$(Total\ Truckloads \cdot Roundtrip\ Distance \cdot Fuel\ Cost) + (Total\ Truckloads \cdot Round\ Trip\ Time \cdot Trucking\ Cost) =$$

*Total Trucking Cost to Transfer Station*

**Total = \$ 3,793.57**

**14. Remove and Dispose of Energy Storage Equipment**

The battery units will be prepared for shipment and loaded onto a truck. A disposal fee will also be required for the disposal company to accept the batteries.

$$Number\ of\ Battery\ Units \cdot ((Loading\ Prep\ Time \cdot Labor\ Cost) + Loading\ Time \cdot (Labor\ Rate + Bobcat\ Cost + Trucking\ Cost) + Disposal\ Fee) =$$

*Total Energy Storage Removal and Disposal Cost*

**Total = \$ 56,842.80**

Salvage Values

Salvage Value Not Included

Panel Disposal

**2S. Solar Panel Disposal Cost**

The panels can be disposed of at facilities which accept electronics. They will be trucked to Wareham Town Transfer Station.

*(Total Panel Weight)/2000 • Cost per Ton of disposal =*

**Total =** \$ 91,980.00

**Summary of Decommissioning Costs and Salvage Values**

Line Item	Task	Cost
1	Module Removal	\$ 11,923.33
2	Rack Wiring Removal	\$ 2,980.83
3	Rack Dismantling	\$ 9,940.00
4	Electrical Equipment Loading and Removal	\$ 477.90
5	Break Up Concrete Pads	\$ 2,616.18
6	Load Racks	\$ 42,553.85
7	Electrical Wiring Removal	\$ 5,380.36
8	Foundation Screw Removal	\$ 21,366.12
9	Fence Removal	\$ 43,707.60
10	Power Pole Removal	\$ 1,500.00
11	Gravel Road Reclamation	\$ 169,383.20
12	Seed Disturbed Areas	\$ 17,571.01
13	Trucking to Transfer Station	\$ 3,793.57
14	Energy Storage System Removal	\$ 56,842.80
		<b>Sub Total = \$ 390,036.75</b>

Additional Item	Task	Value
Salvage Values Not Included		
2S	Solar Panel Disposal Cost	\$ 91,980.00
		Additional Item Subtotal \$ 91,980.00

**Present Value Total with 1.25% Adder = \$ 487,545.94**

Task	Future Value
<u>Inflation</u>	
# of Years= 20	
Inflation Rate= 2.5%	
<i>Total • (1+ Inflation Rate)^Number of Years =Grand Total</i>	
<b><u>Grand Total = \$ 798,900.79</u></b>	