

Waterford Solar Decommissioning

Abandonment and Decommissioning/Removal

When operation of the proposed solar facility has been discontinued or the facility has been decommissioned, or has reached the end of its useful life, the Applicant/Owner plans to remove the facility within 150 days of discontinued operations. The Applicant/Owner will notify the Council and appropriate Town officials of the proposed date of discontinued operations and will provide plans for removal. In the event of major damage, Applicant/Owner plans to initiate repairs within 30 days of the damage. Major damage means damage to the facility caused by no fault of the Applicant/Owner.

Decommissioning consists of physical removal of all facility components, such as solar arrays, equipment (e.g. batteries, inverters, and transformers), structures, security barriers and fencing, facility signage and transmission lines from the site. In addition, Applicant/Owner will dispose of all solid and hazardous waste in accordance with all applicable regulations. Decommissioning will also include restoration of the site. Applicant will stabilize and re-vegetate the site as necessary to minimize erosion. If desired, Applicant/Owner would seek Council approval to leave landscaping or specified below-grade foundations in order to minimize erosion and site disturbance.

Once all Project equipment has been removed, additional activities will occur to return the property back to conditions similar to pre-construction. Reclamation will restore vegetative cover and hydrological function after the closure of the facility. Any excavated areas remaining after the removal of equipment pads, access road based material, or fence posts will be backfilled with locally imported soil to match existing onsite soils. Once landform features and soils are restored, a seed mix will be applied to match the existing onsite groundcover.

Decommissioning Costs

Key assumptions include the fact that fencing, electrical cabinetry, solar racks, solar panels, wiring and all other equipment are one hundred percent recyclable, therefore, the primary cost of decommissioning is the labor to dismantle and load as well as the cost of trucking. The concrete pads will be broken up at the site and hauled to a nearby facility where it will be accepted, most likely without charge. The following items from the array will be recycled, and many of these will have a salvage value in 20 years that exceed the cost of labor to remove them:

- 45,000 Solar Panels
- 344 Inverters
- 9 Transformers
- 4500 Racks
- 4000 Linear Feet of Fencing
- 5000 Linear Feet of Cable
- 12 Utility Poles

The estimated cost of labor is:

- Bobcat cost at \$250/day, labor at \$28/hour
- Trucking cost at \$72/hour
- Backhoe cost at \$1,000/week
- Grader cost at \$2,500/week
- Front end loader/excavator cost of \$1,000/week.

Labor / Materials / Equipment Costs

1. Remove Panels:

rack. Panels are clamped in on a sliding track. A laborer will unclamp each panel and slide it out of the rack.

Panel Removal Rate x Total Number of Panels x Labor Rate = Removal Cost

$$1 \text{ min/panel} \times 45,000 \text{ panels} \times (1\text{hr}/60\text{min}) \times \$35/\text{hr} = \text{Total} = \$26,250.00$$

2. Remove Rack Wiring

Electrical wires lay in a tray. A laborer will reach into the tray and remove the strands of wire.

Panel Removal Rate x Total Number of Panels x Labor Rate = Rack Wiring Removal Cost

$$1 \text{ min/panel} \times 45,000 \text{ panels} \times (1\text{hr}/60\text{min}) \times \$35/\text{hr} = \$ \text{Total} = \$26,250.00$$

3. Dismantle Racks (For Removal)

Total Number of Racks x Rack Removal Rate x Labor Rate = Rack Dismantling Cost

$$4500 \text{ Racks} \times 30 \text{ min/rack} \times \$35/\text{hr} = \$ \text{Total} = \$78,750.00$$

4. Remove and Load Electrical Equipment (Includes Transformers and Inverters)

Total Number of units: 9 Transformers = 9 Units

Elec. Equip. Removal Rate x Total Units x (Labor rate+Bobcat Cost+Trucking Cost) = Total Elec. Equip. Removal Cost

$$1 \text{ Unit/hr} \quad 9 \text{ Units} \times (\$35/\text{hr} + \$31/\text{hr} + \$72/\text{hr}) = \$ \text{Total} = \$714$$

5. Break Up Concrete Pads:

Using an excavator and Jackhammer:

2 days x (Front end loader/excavator cost + Labor Cost) = total Concrete Pad Removal

$$2 \text{ days} \times [(\$135/\text{hr}) + \$35/\text{hr}] = \text{Total} = \$2,720.00$$

6. Load Racks

Total racks x Rack Removal Rate (Labor Cost + Bobcat Cost + Trucking Cost) = Total Load Rack Removal

$$4500 \text{ Racks} \times 20 \text{ min/rack} \times (1\text{hr}/60\text{min}) (\$35/\text{hr} + \$39/\text{hr} + \$72/\text{hr}) = \text{Total} = \$219,000$$

7. Remove Cable:

Total Cable Linear Footage x Cable Removal Rate x (Labor Cost + Bobcat Cost)

= Total Cable Removal Cost

$$5000 \text{ ft.} \times 4 \text{ min/ft} \times (1 \text{ hr}/60 \text{ min}) \times (\$35/\text{hr} + \$39/\text{hr}) = \$$$

Total = \$23,333

8. Remove H Beams and Power Poles:

$[(\text{Total Number of Racks} / \text{Rack Removal Rate}) \times (\text{Labor Cost} + \text{Excavator Cost}) + [\text{Total Number of poles} \times \text{Pole Removal Rate}]] = \text{Total H Beam and Power Pole Removal Cost}$

$$[(4500 \text{ Racks} / 100 \text{ Racks/Day}) \times (\$35/\text{hr} + \$25/\text{hr})] + (12 \text{ Poles} \times \$500/\text{Pole}) =$$

Total = \$8,700

9. Remove Fence:

$\text{Total Fence Length} \times \text{Fence Removal Rate} \times (\text{Labor Cost} + \text{Bobcat Cost} + \text{Trucking Cost}) = \text{Total Fence Removal Cost}$

$$4000 \text{ ft} \times 2 \text{ min/ft} \times (1 \text{ hr}/60 \text{ min}) \times (\$35/\text{hr} + \$59.25/\text{hr} + \$72/\text{hr})$$

Total = \$22,266

10. Grading:

$\text{Rough Grading} (\text{Days} \times \text{Grader Cost}) + \text{Fine Grading} (\text{Days} \times \text{Grader Cost}) = \text{Total Grading Cost}$

$$(3 \text{ Days} \times \$2,500/\text{week}) + (1 \text{ Day} \times \$2,500/\text{week}) =$$

Total = \$2,000

11. Seed Disturbed Areas:

$\text{Reseeding Time} \times \text{Labor Cost} = \text{Total Seeding Disturbed Area Cost (Includes Cost of Seed at \$x)}$

$$24 \text{ hr} \times \$35/\text{hr} =$$

Total = \$840

12. Trucking:

$$\text{Total Truckloads @ 2hr each} \times \$72/\text{hr} =$$

$$180 \text{ truckloads @ 2hrs} \times \$72/\text{hr} =$$

Total = \$25,920