Appendix F

Draft Decommissioning Plan

A DECOMMISSIONING PLAN FOR

Lake Charlotte Solar Project

Martin County, Minnesota

APRIL 10, 2025

MPUC DOCKET NO. XX-XXXX/XX-XX-XX

PREPARED FOR:

Lake Charlotte Solar, LLC

PREPARED BY:

Westwood

Westwood

Decommissioning Plan

Lake Charlotte Solar Project

Martin County, Minnesota

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Attachments

1.0 Introduction

Lake Charlotte Solar, LLC ("Applicant" or "Owner") is proposing to construct and operate the Lake Charlotte Solar Project ("Project"), an up to 150-megawatt (MW) alternating current (ac) nameplate solar-energy capacity project paired with a 150 MW-hour battery energy storage system (BESS) located within the approximate 1,277-acre Project Area in Martin County, Minnesota.

The following provisions are intended to ensure that facilities are properly removed after their useful life. This Decommissioning Plan ("Plan") includes provisions for removal of all structures, foundations, underground cables, unused transformers and foundations; restoration of soil and vegetation; and a plan ensuring financial resources will be available to fully decommission the Project.

The Plan was prepared in accordance with the conditions described in the Minnesota Department of Commerce (DOC) Energy Environmental Review and Analysis (EERA) *Recommendations on Review of Solar and Wind Decommissioning Plans (March 16, 2020)*, the EERA *Application Guidance for Site Permitting of Solar Farms (January 2024)*, and in accordance with the Minnesota Public Utilities Commission ("MPUC" or "Commission") Site Permit (MPUC Docket No. XX-XXXX/XX-XX-XX) to be issued for the Project.

1.1 Project Description

The Project is located in Martin County, Minnesota, southwest of the city of Northrop and west of State Highway 15. It is located within Sections 8, 9, 16, 17, and 21 of Township 103 North, Range 30 West. Prior to construction, the Project area and surrounding areas were primarily used for agricultural production.

The Project will consist of approximately 362,256 photovoltaic (PV) solar panels, 175 inverters, 3,536 racking frames, 93,900 linear feet of fencing (around Project facilities), 43,375 linear feet of access roads (including turnarounds), an O&M building, a BESS with 192 containers and 48 inverters, a Project Substation with one main power transformer, an overhead transmission line, and associated equipment. Project facilities are planned to be located within the fenced area of approximately 1,005 acres.

1.2 Decommissioning Objective

The objective of decommissioning is to restore the site to a condition that will facilitate its pre-construction use at the end of operation. Solar panels are expected to have a useful commercial lifespan of approximately thirty (30) years. The system must be decommissioned if: a) it reaches the end of system's serviceable life; or b) the system becomes a discontinued use. After the Site Permit term expires, the Project operation may be extended (upon Commission review and approval) or the Project ceases to operate. The Project Owner will be responsible for removal of all above ground equipment and underground equipment within the Project Area. The Owner will restore and reclaim the site to pre-construction topography and topsoil quality to the extent practical and assumes that most of the site will be returned to farmland and/or pasture after decommissioning.

Decommissioning includes removing the solar panels, solar panel racking, steel foundation posts and beams, inverters, transformers, overhead and shallow underground cables and lines, equipment pads and foundations, equipment cabinets, and ancillary equipment. The civil facilities (access road, security

fence, and drainage structures) are included in the scope. Standard decommissioning practices would be utilized, including dismantling and repurposing, salvaging/recycling, or disposing of the solar energy improvements.

After all equipment is removed, any holes or voids created by poles, concrete pads and other equipment will be filled in with native soil to the surrounding grade, and the Project site will be restored to pre-construction conditions, to the extent feasible, and as provided in the Project Agriculture Impact Mitigation Plan (AIMP) and the Vegetation Management Plan (VMP), as applicable. All access roads and other areas compacted by equipment will be de-compacted to a depth necessary to ensure adequate soil drainage and root penetration, then will be fine graded and tilled to a farmable condition.

In accordance with the Site Permit requirements, the AIMP, and VMP, the Project will have been maintained with perennial native vegetation, which is expected to survive decommissioning activities. Consequently, efforts to restore the site under the arrays, if the land is not returned to row crop agriculture, is expected to be limited to over-seeding. Over-seeding would be completed by a qualified native seeding contractor. Restoration efforts may also include temporary seeding as farmland or re-development of the land for other beneficial uses, based on consultation with the landowner.

1.3 Use of Generation Output

Solar generated energy within the PV arrays will be transmitted to the Project Substation, which will connect with an existing point of interconnection via proposed generation tie line (gen-tie). The BESS will also connect to the Project Substation and allow for solar generated energy to be stored temporarily and, as needed, later transmitted to the power grid.

The solar and BESS portions of the Project are planned to operate in tandem as one combined, associated facility. This configuration will reduce the variability of solar energy generation.

2.0 Proposed Future Land Use

Prior to the development of the Project, the land use of the project area was primarily agricultural production. After affected areas are decommissioned, these areas will be restored to pre-construction conditions of agricultural land to the extent practicable in accordance with Site Permit, AIMP, and VMP requirements.

3.0 Notification

The Applicant anticipates operating the Project for 30 years after Site Permit issuance. At the end of the anticipated operation, the Project Owner will be responsible for removing the solar facilities as described in this Plan; however, the Project Owner reserves the right to continue to operate the Project, instead of decommissioning, by applying for an extension of required and applicable permits.

After the Project has reached the end of its useful life, and at least ninety (90) days prior to the start of decommissioning activities, the Project Owner will notify the Commission, landowners, affected parties, counties, and other local units of government in writing, of the intended decommissioning activities and schedule. Applicable permits and approvals will be obtained prior to the start of decommissioning work.

These parties will again be notified once decommissioning activities have been completed.

4.0 Decommissioning Tasks and Timing

Decommissioning will include the removal and transportation of all project components from the Project site. All dismantling, removal, recycling, and disposal of materials generated during decommissioning will comply with rules, regulations, and prevailing Federal, State, and local laws at the time decommissioning is initiated and will use approved local or regional disposal or recycling sites as available. Recyclable materials will be recycled to the furthest extent practicable. Non-recyclable materials will be disposed of in accordance with State and Federal law.

During decommissioning, the landowners will be consulted to identify the extent and type of work to be completed. Some Project infrastructure, such as the access roads, and fencing, may be removed at the discretion of the landowner(s). Underground utility lines, if deeper than 48 inches below ground surface elevation, may be left in place to minimize land disturbance and associated impacts to future land use.

4.1 Decommissioning of Project Components

4.1.1 Solar Modules

Solar modules will be inspected for physical damage, tested for functionality, and disconnected and removed from racking. Functioning modules will be packed, palletized, and shipped to an offsite facility for reuse or resale. Non-functioning modules will be shipped to the manufacturer or a third party for recycling or disposal.

4.1.2 Racking

Racking and racking components will be disassembled and removed from the steel foundation posts, processed to appropriate size, and sent to a metal recycling facility.

4.1.3 Steel Foundation Posts

Structural foundation steel posts will be pulled out to full depth, removed, processed to appropriate size, and shipped to a recycling facility. The posts can be removed using back hoes or similar equipment. During decommissioning, the area around the foundation posts may be compacted by equipment and, if compacted, the area will be decompacted in a manner to adequately restore the topsoil and sub-grade material to a density consistent for vegetation.

4.1.4 Overhead and Underground Cables and Lines

All underground cables and conduits will be removed to a depth of 48 inches as specified in the lease agreements. Facilities deeper than 48 inches may remain in place to limit vegetation and surface disturbance. The underground cables around equipment pads will be completely removed up to a length of 25’ around the perimeter of pads. Topsoil will be segregated and stockpiled for later use prior to any excavation and the subsurface soils will be staged next to the excavation. The subgrade will be compacted per standards. Topsoil will be redistributed across the disturbed area. The steel transmission poles will be felled within the transmission line right-of-way (ROW) and any hardware, bracing, and attachments will be transported along with the poles to a recycling facility. Removed pole locations will

be revegetated with a seed mix specified in the approved Stormwater Pollution Prevention Plan (SWPPP) and VMP.

4.1.5 Inverters, Transformers, and Ancillary Equipment

All electrical equipment will be disconnected and disassembled. All parts will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at the Owner's sole discretion, consistent with applicable regulations and industry standards.

4.1.6 Equipment Foundations and Ancillary Foundations

The ancillary foundations are pile foundations for the equipment pads. As with the solar array steel foundation posts, the foundation piles will be pulled out completely. Duct banks will be excavated to a depth of at least 48 inches. All unexcavated areas compacted by equipment used in decommissioning will be decompacted in a manner to adequately restore the topsoil and sub-grade material to a density similar to the surrounding soils. All materials will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at the Owner's sole discretion, consistent with applicable regulations and industry standards.

4.1.7 Fence

Fence parts and foundations will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at the Owner's sole discretion, consistent with applicable regulations and industry standards. The surrounding areas will be restored to pre-solar farm conditions to the extent feasible.

4.1.8 Access Roads

Project access roads will be used for decommissioning purposes, after which removal of roads will be discussed with the landowner(s) and one of the following options will be pursued:

1. After final clean-up, roads may be left intact through mutual agreement of the landowner and the Owner unless otherwise restricted by federal, state, or local regulations.
2. If a road is to be removed, aggregate will be removed and shipped from the site to be reused, sold, or disposed of appropriately, at the Owner's sole discretion, consistent with applicable regulations and industry standards. Clean aggregate can often be used as "daily cover" at landfills for no disposal cost. Internal service roads are constructed with geotextile fabric and eight inches of aggregate over compacted subgrade. Any ditch crossing connecting access roads to public roads will be removed unless the landowner requests it remains. The subgrade will be decompacted in a manner to adequately restore the topsoil and sub-grade material to a density consistent for reintroduction of farming. Topsoil that was stockpiled during the original construction will be distributed across the open area. Finally, the access road corridors will be tilled to an agricultural condition.

4.1.9 Substation

Decommissioning of the collector substation will be performed with the rest of the Project. All steel, conductors, switches, transformers, and other components of the substation will be disassembled and taken off site to be recycled or reused. Foundations and underground components will be removed to a

depth of 48 inches. The rock base will be removed using bulldozers and backhoes or front loaders. The material will be hauled from the site using dump trucks to be recycled or disposed at on off-site facility. Additionally, any permanent stormwater treatment facilities (e.g., infiltration ponds and engineered drainage swales) will be removed. Topsoil will be reapplied to match surrounding grade to preserve existing drainage patterns. Topsoil and subsoil will be decompacted in a manner to adequately restore the topsoil and sub-grade material to a density consistent for reintroduction of farming.

4.1.10 Operations and Maintenance Building

The O&M Building is a sturdy, general purpose steel building. If the building is not repurposed, decommissioning will include disconnection of the utilities and demolition of the building structure, foundation, rock base parking lot, and associated vegetated/stormwater handling facilities. All associated materials will be removed from the site using wheeled loaders or backhoes and bulldozers and hauled off site in dump trucks. All recyclable materials will be brought to appropriate facilities and sold; the remaining materials will be disposed of at an approved landfill facility. Subgrade soils will be decompacted in a manner to adequately restore the topsoil and sub-grade material to a density consistent for reintroduction of farming. Topsoil will be reapplied to match existing surrounding grade to preserve existing drainage patterns, and the site will be tilled to a farmable condition.

4.1.11 Battery Energy Storage Systems (BESS)

Prior to commencing decommissioning of the BESS, all personnel on-site during the decommissioning process will receive a site-specific safety briefing and will be made aware of all electrical shock and arc flash risks when working within the battery containers. Hazmat training will also be conducted for all personnel handling lithium-ion batteries during the process.

The battery facility will be fully discharged to the minimum state of charge required for removal and safe transportation as per battery manufacturer specifications. The battery modules will be removed from their racks, repackaged on site, and shipped intact to a regional recycling hub within 500 miles of the Project Site. No disassembly of battery modules will be required on-site, and the battery terminals will be taped off to avoid any potential for a short to occur. In the event of any breakage or damage to individual battery modules, such modules will be placed in individual, non-metallic inner packaging that completely encloses the cell.

The refrigerant/coolant from HVAC units will be collected into separate containers on site as per the code and industry standard practice. The coolant can be reused after processing. The HVAC units will be sent to the metal recyclers along with other recycling material. Similarly, all fire suppression units will be cleared of the suppression fluids and sent to the suppliers for reuse following the industry standard practice. All electrical equipment will be disconnected and disassembled. All parts will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at the Project Owner's sole discretion, consistent with applicable regulations and industry standards.

Finally, aggregate ground cover will be removed and shipped from the Project site to be reused, sold, or disposed of appropriately, at the Applicant/Owner's sole discretion, consistent with applicable regulations and industry standards. Clean aggregate can often be used as "daily cover" at landfills for no disposal cost. All internal service roads are constructed with geotextile fabric and eight inches of aggregate over compacted subgrade. All pile foundations will be pulled out completely. Underground

cables and duct banks will be removed to a depth of four feet. Topsoil will be reapplied to the disturbed area. Soil and topsoil will be de-compacted, and the site will be restored to the pre-construction condition and re-vegetated in accordance with the SWPPP and/or construction stormwater permits.

In all cases, Owner, or their subcontractor as applicable, shall ensure all applicable OSHA, security, safety and health requirements are complied with during the removal and decommissioning of the BESS and its related equipment.

The United States Environmental Protection Agency ("U.S. EPA") has guidelines for responsible disposal and recycling of lithium-ion batteries that have reached end of life (Title 40 Code of Federal Regulations Part 273: Standards for Universal Waste Management). Additionally, lithium-ion batteries are classified by the US Department of Transportation (DOT) as Class 9 hazardous materials. All applicable requirements related to the packaging, labelling, transportation, and disposal or recycling of the lithium-ion batteries will be followed during the decommissioning process. contained in the Code of Federal Regulations, Title 49, Subchapter C, Parts 171-180, or the applicable regulation will be followed.

4.2 Component Disposal

Project components removed from the Project site will be resold, reused, recycled, or scrapped to the greatest extent possible.

- Metal components will be processed to size, sorted, and hauled to a recycling facility (Pooley's Scrap Iron & Metal in Fairmont, Minnesota, approximately 5.6 miles from the Project site) to be processed as scrap. This includes:
    - Steel components, including steel piles and trackers, chain-link fencing, structural steel from the substation, steel from the O&M Facility, and smaller components from recycled equipment.
    - Underground and overhead collection, transmission, and grounding cables, typically composed of aluminum and copper.
    - Copper windings from transformers and inverters, and the copper ground grid from the substation.
- Other electrical equipment may be assessed for its condition and either sold for reuse or scrapped from its components.
- Fluids, such as transformer oils, will be drained and shipped off-site to an approved recycling facility.
- Solar panels will be resold or recycled to the greatest extent possible, based on their age and condition, as well as market conditions around resale of solar panels and advancements in recycling technologies. For the purposes of this cost estimate, it is assumed that 95% of panels will be resold to another party for reuse or recycling. The estimate further assumes that 5% will be damaged beyond repair and will be hauled to a landfill that accepts solar module components as approved wastes.
- If possible, clean gravel removed from the site may be re-used to improve public roads or used by local landowners to improve driveways or be used as clean fill. For the purposes of this cost estimate, it's assumed that the gravel will be hauled to a landfill.

Project components that are not recyclable may include items composed of mixed materials, certain plastic components, materials that have been contaminated, and certain general municipal wastes. It

may not be feasible for concrete to be recycled due to the distance between the Project site and a sufficient recycling facility. For the purposes of this Plan, it is assumed that these materials will be hauled to Ponderosa Landfill, located in Mankato, Minnesota, approximately 46.5 miles from the site.

4.3 Reclamation

The Owner will restore and reclaim the site to the pre-Project condition consistent with the site lease agreements, AIMP, and VMP, as applicable. The Owner assumes that most of the Project site (1,277 acres) will be returned to farmland and/or pasture after decommissioning and will implement appropriate measures to facilitate such uses. Areas that consisted of non-agricultural vegetation prior to construction of the Project will be restored and reseeded to match pre-construction conditions to the greatest extent possible. If no specific use is identified, the Owner will plant unvegetated portions of the site with a seed mix specified in the approved SWPPP, AIMP and VMP, as applicable. The goal of restoration will be to restore natural hydrology and plant communities to the greatest extent practicable, while minimizing new disturbance and removal of native vegetation or vegetation established during operation of the Project. The decommissioning effort will implement construction stormwater best management practices (BMPs) to minimize erosion and to contain sediment on the Project to the extent practicable, including the following:

1. Minimize new disturbance and removal of native vegetation to the greatest extent practicable.
2. Remove solar equipment and all access roads up to a minimum depth of 48”, backfill with subgrade material, and cover with suitable topsoil to allow adequate root penetration for plants, and so that subsurface structures do not substantially disrupt ground water movements.
3. Any topsoil that is removed from the surface for decommissioning will be stockpiled to be reused when restoring plant communities or agricultural land. Once decommissioning activity is complete, topsoil will be re-spread to assist in establishing and maintaining plant communities.
4. Stabilize soils and return them to agricultural use, according to the landowner direction.
5. During and after decommissioning activities, install erosion and sediment control measures, such as silt fences, bio-rolls, and ditch checks in all disturbance areas where potential for erosion and sediment transport exists, consistent with storm water management objectives and requirements.
6. Remediate any petroleum product leaks and chemical releases from equipment operation and electrical transformers prior to completion of decommissioning.

5.0 Permitting

All decommissioning and restoration activities will comply with applicable federal, state, and local permit requirements. Decommissioning activities will likely disturb more than one acre of soil and trigger the need for a National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) Construction Stormwater General Permit. A SWPPP will be developed prior to filing a Notice of Intent.

If necessary for decommissioning activities, wetlands and waters permits will be obtained as needed from the US Army Corps of Engineers (USACE), Minnesota Department of Natural Resources (MNDNR), and the local government unit (LGU) that implements the Minnesota Wetland Conservation Act (WCA) program. A Spill Prevention, Control and Countermeasures (SPCC) Plan for decommissioning will likely

be required. A Minnesota Pollution Control Agency (MPCA) form to report Subsurface Sewage Treatment Systems (SSTS) abandonment may need to be submitted to Martin County within 90 days of removal of the septic system at the O&M building. In addition, a new Minnesota Department of Health (MDH) Well Disclosure Certificate may be required if the number and status of wells within the Project O&M building facility has changed since the last certificate was filed.

6.0 Decommissioning Schedule

It is anticipated that the decommissioning activities for the project can be completed in a 60- to 70-week period. Because relatively fewer utility-scale solar farms have been fully decommissioned to date, there is limited historical data for durations available for some of the decommissioning activities that can be applied directly.

7.0 Decommissioning Costs

The estimated costs for decommissioning are tied to assumptions about the amount of equipment mobilized, the crew sizes, weather and climate conditions, and the productivity of the equipment and crews. The decommissioning costs are calculated using current pricing. In keeping with the DOC EERA recommendations, the estimate of net costs should be updated every five (5) years to recognize price trends for both decommissioning costs and the salvage and resale values of the components.

There are currently active markets for scrap steel, aluminum, and copper, used transformers and electrical equipment, and used solar panels. Scrap metal prices have been discounted from posted spot prices found on www.scrapmonster.com. Pricing for used panels has been discounted from the average price of used panels, as published in EnergyBin's 2024 "Module Price Index."

The total estimated cost of decommissioning the Lake Charlotte Solar Project is approximately $19,241,732 ($100,217 per MW). Estimated salvage/scrap value of the modules, racking, transformers, and other materials is approximately $17,081,226. The net decommissioning costs after accounting for resale and salvage values is approximately $2,160,600, or $11,253 per MW.

8.0 Financial Surety

The Project anticipates operating the Project for 30 years or until the Site Permit expires. The Applicant reserves the right to continue to operate the Project, instead of decommissioning, by applying for an extension of required permits. Should the Project Owner decide to continue operations, a decision may be made on whether to continue operation.

The Project Owner will be responsible for all costs to decommission the Project and associated facilities. A Financial Assurance in the form of an escrow account or surety bond equal to 125% of the costs to ensure proper decommissioning will be provided, with Martin County listed as the beneficiary. Under DOC EERA recommendations, a Financial Assurance is not required during the first ten (10) years of operation; however a bond will be posted no earlier than the 10th anniversary from the Commercial Operation Date (COD) of the Project.

According to the EERA recommendations, a revised decommissioning estimate shall be submitted every 5 years or any time there is a change in ownership. Each revised plan will reflect advancements in construction techniques, reclamation equipment, and decommissioning standards. The decommissioning cost estimate will also be reassessed and revised to reflect any identified changes in the costs, including current salvage values of materials and equipment. The amount of the Financial Assurance will be adjusted accordingly to offset any increases or decreases in decommissioning costs and salvage values determined during each plan reassessment.

Attachment A
Decommissioning Cost Estimate

Lake Charlotte Solar Project

	Quantity	Unit	Unit Cost	Total Cost
Mobilization/Demobilization	1	Lump Sum	$1,224,900.00	$1,224,900
Mobilization was estimated to be approximately 7% of total cost of other items.				
Permitting				
County Permits	1	Lump Sum	$10,000.00	$10,000
State Permits	1	Lump Sum	$20,000.00	$20,000
Subtotal Permitting				**$30,000**
Decommissioning will require SWPPP and SPCC Plans. Cost is an estimate of the permit preparation cost.				
Civil Infrastructure				
Remove Gravel Surfacing from Road	12,852	Cubic Yards (BV)	$2.91	$37,399
Haul Gravel Removed from Road to Landfill (Mankato, MN)	16,065	Cubic Yards (LV)	$27.85	$447,410
Dispose of Gravel Removed from Road (Landfill uses as Daily Cover)	20,820	Tons	$0.00	$0
Remove Geotextile Fabric from Beneath Access Roads	96,389	Square Yards	$1.40	$134,945
Haul Geotech Fabric to Landfill (Mankato, MN)	27	Tons	$17.37	$469
Dispose of Geotech Fabric	27	Tons	$52.00	$1,404
Remove and Load Culvert from Beneath Access Roads	9	Each	$420.00	$3,780
Haul Culvert Removed from Access Roads to Landfill (Mankato, MN)	9	Each	$106.69	$960
Dispose of Culvert	3	Tons	$52.00	$140
Remove Low Water Crossing from Access Road	30	Each	$3,400.00	$102,000
Haul Low Water Crossing Materials to Landfill (Mankato, MN)	1,200	Ton	$17.37	$20,844
Dispose of Low Water Crossing Materials	1,200	Ton	$30.00	$36,000
Grade Road Corridor (Re-spread Topsoil)	43,375	Linear Feet	$1.66	$72,003
Decompact Road Area	19.9	Acres	$249.40	$4,963
Remove Chainlink Fence	93,900	Linear Feet	$7.26	$681,714
Haul Chainlink Fence to Metal Recycling (Fairmont, MN)	500	Tons	$8.84	$4,420
Grade Basin Areas	1,744,839	SF	$0.07	$122,139
Clear and Grub Vegetative Buffer	2	Acres	$5,601.53	$8,402
Haul Cleared Vegetation to Landfill (Mankato, MN)	38	Tons	$17.37	$651
Dispose of Cleared Vegetation	38	Tons	$52.00	$1,950
Subtotal Civil Infrastructure				**$1,681,594**
Civil removal costs are a combination of MNDOT unit costs where applicable, RSMeans cost for Mankato, MN, and industry standards provided to Westwood.				
Structural Infrastructure				
Remove Steel Foundation Posts (Arrays)	67,448	Each	$16.90	$1,139,871
Haul Steel Post to Metal Recycling (Fairmont, MN)	6,070	Tons	$8.84	$53,659
Remove Tracker Racking per String	60,376	Each	$53.18	$3,210,796
Haul Tracker Racking to Metal Recycling (Fairmont, MN)	11,605	Tons	$8.84	$102,588
Subtotal Structural Infrastructure				**$4,506,914**
Steel removal costs were calculated by using RSMeans information for demolition of steel members.				
Hauling calculations are based on the locations of metals recyclers.				
Electrical Collection System				
Remove PV Panels	362,256	Each	$11.11	$4,024,664
Haul PV 95% of Panels to Reseller (Louisville, KY)	15,060	Tons	$213.40	$3,213,804
Haul 5% of PV Panels to Landfill (Mankato, MN)	793	Tons	$21.21	$16,820
Dispose of PV Panels	793	Tons	$52.00	$41,236
Remove Equipment Skids	35	Each	$1,210.20	$42,357
Remove Equipment Pad Concrete Foundations	35	Each	$5,929.40	$207,529
Haul Concrete Foundations	68	Tons	$19.06	$1,296
Dispose Concrete Foundations	68	Tons	$52.00	$3,536
Haul Equipment to Transformer Disposal (Eagan, MN)	35	Each	$891.77	$31,212
Remove SCADA Equipment	1	Each	$2,000.00	$2,000
Remove DC Collector System Cables (copper)	192	Per MW	$2,000.00	$384,000
Remove Underground (AC) Collector System Cables & Fiber Optic	56,126	Linear Feet	$2.58	$144,805
Load and Haul Cables for Recycling	910	Tons	$10.17	$9,255
Dispose of Fiber Optic Cables	14	Tons	$52.00	$730
Subtotal Electrical Collection				**$8,123,243**
Electrical removal costs of PV Panels and Combiner Boxes were based industry standard installation rates. Equipment pads, MV Equipment, and SCADA Equipment removal cost are based on removal of equipment, concrete pads, and conduits using a truck mounted crane and RSMeans information on crew production rates.				

Transmission System				
Remove Overhead Cables	366	Feet	$4.23	$1,548
Loadout Overhead Cables	7.3	Tons	$6.27	$46
Haul Overhead Cables to Metals Recycling (Fairmont, MN)	7.3	Tons	$8.84	$65
Remove Insulators and Gangs	6	Each	$577.48	$3,465
Remove and Load Timber Transmission Poles	2	Each	$946.11	$1,892
Haul Timber Poles to Landfill (Mankato, MN)	2	Each	$426.78	$854
Remove and Load Concrete Piles	14.9	Cubic Yards	$177.88	$2,650
Haul Concrete Piles to Landfill (Louisville, KY)	30	Tons	$19.06	$572
Dispose of Concrete Piles	30	Tons	$52.00	$1,560
Backfill Pile Locations	14.9	Cubic Yards	$42.96	$640
Erosion and Sediment Controls	91	LF	$3.64	$331
Subtotal Transmission System				**$13,623**
Substation				
Disassemble and Remove Main Power Transformer(s)	2	Each	$1,000.00	$2,000
Haul Transformer(s) Offsite	2	Each	$1,783.54	$3,567
Haul Transformer Oil Offsite	25,660	Gallons	$0.36	$9,153
Dispose of Transformer (Including Oil) (Salvage Value)	2	Each	$0.00	$0
Excavate Around Transformer Foundation(s)	2	Each	$1,844.17	$3,688
Remove Complete Transformer Foundation(s)	167	Cubic Yards	$154.68	$25,832
Backfill Excavation Area from Transformer Foundation Removal	169	Cubic Yards	$42.96	$7,260
Haul Concrete (Foundations Transformer, Switch Gear, etc.)	339	Tons	$19.06	$6,461
Dispose of Concrete from Transformer Foundation	339	Tons	$52.00	$17,628
Demolish Substation Site Improvements (fences, etc)	1	LS	$3,500.00	$3,500
Demolish Control Building and Foundation	1	LS	$12,000.00	$12,000
Remove Medium/High Voltage Equipment	1	LS	$3,500.00	$3,500
Remove Structural Steel Substation Frame	1	LS	$3,500.00	$3,500
Remove Copper Ground Grid	1	LS	$14,483.70	$14,484
Load Copper Wire	20,000	Feet	$0.81	$16,200
Haul Copper Wire to Recycling	6.5	Tons	$8.84	$57
Haul - Demolition Materials, Removed Equipment & Structural Steel	20	Tons	$8.84	$177
Dispose of Demolition Materials & Removed Equipment	20	Tons	$52.00	$1,040
Remove and Load Gravel Surfacing from Substation Site	5,109	Cubic Yards (BV)	$2.91	$14,867
Haul Gravel Removed from Substation Site	6,386	Cubic Yards (LV)	$27.85	$177,850
Grade Substation Site	206,910	SF	$0.07	$14,484
Erosion and Sediment Control at Substation Site	934	LF	$3.64	$3,400
Decompact Substation Site (Subsoiling)	4.8	Acres	$249.40	$1,197
Till Substation to Agricultural Condition	4.8	Acres	$216.22	$1,038
Subtotal Substation				**$342,883**
Battery Energy Storage System (BESS)				
Train Crew in Safety and Hazmat	1	LS	$5,000.00	$5,000
Disconnect Battery Storage Containers	192	Each	$1,571.20	$301,670
Remove and Load Tesla MegaPacks	192	Each	$1,489.67	$286,016
Haul Battery Containers for Recycling (Sparks, NV)	192	Each	$4,586.25	$880,560
Remove Equipment Skids	48	Each	$1,210.20	$58,090
Haul Inverters/Transformers to Transformer Disposal	48	Each	$891.77	$42,805
Remove Steel Foundation Posts (Storage Containers and Skids)	384	Each	$16.90	$6,490
Haul Steel Posts to Metal Recycler (Fairmont, MN)	28	Tons	$8.84	$248
Removal of Underground AC Collector Cables (aluminum)	3,200	LF	$2.36	$7,552
Load and Haul Cables for Recycling	4	Tons	$10.17	$41
Remove and Load Gravel Surfacing from BESS Site (Including Roads)	17,138	Cubic Yard (BV)	$2.91	$49,872
Haul Gravel Removed from BESS Site	21,423	Cubic Yard (LV)	$27.85	$596,631
Dispose of Gravel from BESS Site (Use as Daily Cover)	27,764	Tons	$0.00	$0
Remove Fencing	3,869	LF	$7.26	$28,089
Haul Fencing to Recycling	21	Tons	$8.84	$182
Erosion and Sediment Controls at BESS Site	1	LF	$3.64	$0
Decompact BESS Site	16	Acres	$249.40	$3,990
Grade BESS Site	694,090	SF	$0.07	$48,586
Till BESS Site to Agricultural Condition	16	Acres	$216.22	$3,460
Subtotal BESS				**$2,319,280**

O&M Building				
Demolish O&M Building	36,000	Cubic Feet	$0.49	$17,640
Remove and Load O&M Building Foundation	267	Cubic Yards	$14.20	$3,792
Haul Concrete (O&M Building Foundation)	542	Tons	$19.06	$10,331
Dispose of Concrete from O&M Building Foundation	542	Tons	$52.00	$28,184
Demolish O&M Site Improvements (fences, etc)	445	Linear Feet	$7.26	$3,231
Cap and Abandon Well	1	Lump Sum	$1,000.00	$1,000
Remove & Restore Septic and Drainfield area	1	Lump Sum	$3,000.00	$3,000
Dispose of O&M Building Demolition and Removed Site Improvements	1	Lump Sum	$2,500.00	$2,500
Haul Gravel Removed from O&M Site	336	Cubic Yards (LV)	$27.85	$9,358
Dispose of Gravel from O&M Site	435	Tons	$0.00	$0
Decompact O&M Building Site	0.2	Acres	$350.00	$70
Grade O&M Building Site	1	LS	$1,381.32	$1,381
Erosion and Sediment Control at O&M Building Site	223	Linear Feet	$3.64	$812
Till O&M Site to Agricultural Condition	0.2	Acres	$216.22	$43
Subtotal O&M Building				**$82,124**
Site Restoration				
Stabilized Construction Entrance	9	Each	$2,000.00	$18,000
Perimeter Controls (Erosion and Sediment Control)	46,950	Linear Feet	$3.64	$170,898
Permanent Seeding on Roadway Areas	19.9	Acres	$1,339.07	$26,647
Till Array Areas to Agricultural Condition	984	Acres	$216.22	$212,760
Subtotal Site Restoration				**$428,306**
Project Management				
Project Manager	65	Weeks	$3,749.00	$243,685
Superintendent (half-time)	65	Weeks	$1,762.50	$114,563
Field Engineer (half-time)	65	Weeks	$1,634.50	$106,243
Clerk (half-time)	65	Weeks	$375.00	$24,375
Subtotal Project Management				**$488,865**
Standard industry weekly rates from RSMeans.				
Subtotal Demolition/Removals				**$19,241,732**
Salvage				
Fencing (Chain Link)	500	Tons	$214.32	$107,160
Steel Posts	4,856	Tons	$214.32	$1,040,738
Module Racking	11,605	Tons	$214.32	$2,487,184
PV Modules	344,143	Each	$32.69	$11,251,547
Transformers and Inverters	150,120	Pounds	$0.31	$46,537
Substation Transformers (Core and Coils)	225,629	Pounds	$0.31	$69,945
Substation Transformers (Tanks and Fittings)	76	Tons	$214.32	$16,288
Transformers (Oil)	52,260	Gallons	$0.70	$36,582
Substation Ground Grid (Copper)	13,000	Pounds	$2.81	$36,530
DC Collection Lines (Copper)	1,355,895	Pounds	$1.16	$1,572,838
AC Collection Lines (Aluminum)	420,948	Pounds	$0.85	$357,806
Ground Conductor Lines (Copper)	42,768	Pounds	$1.16	$49,611
Transmission Lines (Steel)	2.8	Tons	$251.74	$705
Transmission Lines (Aluminum)	9,123	Pounds	$0.85	$7,755
Subtotal Salvage				**$17,081,226**
Salvage values are a combination of the following factors; current market metal salvage prices, current secondary market for solar panel				
Total Demolition Minus Salvage				**$2,160,600**

Notes:

1. Prices used in analysis are estimated based on research of current average costs and salvage values.
2. Prices provided are estimates and may fluctuate over the life of the project.
3. Contractor means and methods may vary and price will be affected by these.

Cost Estimate Assumptions

To develop a cost estimate for the decommissioning of the Lake Charlotte Solar Project, Westwood engineers made the following assumptions and used the following pricing references. Costs were estimated based on current pricing, technology, and regulatory requirements. The assumptions are listed in order from top to bottom of the estimate spreadsheet. When publicly available bid prices or State Department of Transportation bid summaries were not available for particular work items, we developed time- and material-based estimates considering composition of work crews and equipment and material required. While materials may have a salvage value at the end of the project life, the construction activity costs and the hauling/freight costs are separated from the disposal costs or salvage value to make revisions to salvage values more transparent.

1. Project quantities are based on sire plans prepared for Lake Charlotte Solar, LLC, dated March 12, 2025.
2. A project of this size and complexity requires a full-time project manager with part-time support staff.
3. Common labor will be used for the majority of tasks, supplemented by electricians, steel workers, and equipment operators where labor rules may require. The labor rates reflect union labor rates.
4. Mobilization was estimated at approximately 7% of total cost of other items.
5. Permit applications will require the preparation of a SWPPP and a SPCC Plan.
6. Road gravel removal was estimated on a time and material basis. Since the material will not remain on site, a hauling cost is added to the removal cost. Clean aggregate can typically be used as “daily cover” at landfills without incurring a disposal cost. The road gravel may also be used to fortify local driveways and roads, lowering hauling costs but incurring placing and compaction costs. The hauling costs to a landfill represents an upper limit to costs for disposal of the road gravel.
7. The selected disposal facility (Ponderosa Landfill) is located in Mankato, Minnesota, approximately 46.5 miles from the project site. Hauling costs to the landfill are estimated to be $17.37 per ton.
8. Erosion and sediment control along road reflects the cost of silt fence on the downgradient side of the proposed roads. As such, the length of controls has been estimated to be approximately 50% of the road length.
9. Topsoil is required to be stockpiled on site during construction, so no topsoil replacement is expected to replace the road aggregate. Subsoiling cost to decompact roadway areas is estimated as $249.40 per acre, and tilling to an agriculture-ready condition is estimated as $216.22 per acre.
10. The selected metal recycling facility (Pooley’s Scrap Iron & Metal) is located in Fairmont, Minnesota, approximately 5.6 miles from the project site. Hauling costs to the recycling facility are approximately $1.58 per ton mile, or $8.84 per ton.
11. Tracker foundation posts are lightweight “I” beam sections installed with a specialized piece of equipment and can be removed with a standard backhoe with an attachment for gripping the piles. We estimate crew productivity at 240 posts per day, resulting in a per post cost of approximately $16.60. The posts weigh approximately 150 pounds each.
12. It is assumed that the racking structures weigh approximately 15 pounds per linear foot of array. Each solar panel has a width of 47.87 inches. The Project will have approximately 362,256 modules and 1,547,314 feet of array. The arrays are made of steel pipes; a crew with hand tools can disassemble and cut the pieces to sizes for recycling at a rate of about 1800 pounds per person per hour, or about $276.67 per ton.

13. The solar panels for this project measure approximately 3.99 feet by 7.55 feet and weigh 87.52 pounds. They can easily be disconnected, removed, and packed by a three-person crew at a rate we estimate at 18 panels per hour.
14. The equipment skids will consist of inverter(s), a transformer, and a panel on a metal frame approximately 19 feet long by 8 feet wide by 8 feet 6 inches tall. The skids weigh approximately 22,700 pounds and can be disconnected by a crew of electricians. They must be lifted by a mobile crane for transport to the recycler. They contain copper or aluminum windings.
15. The transformers contain copper windings that have significant salvage value. They are typically oil filled, but most transformer recyclers will accept the transformers with oil. The estimated costs include removal of metal frame and conduits feeding the equipment.
16. Medium voltage (MV) equipment and SCADA equipment are mounted on the same equipment skids as the inverters and transformers, and they are enclosed in weatherproof cabinets. Their size requires light equipment to remove them. The costs for the removal of the pile foundations are included in the "Remove Steel Foundation Posts" estimate.
17. The underground collector system cables are placed in trenches with a minimum of 18 inches of cover. Several cables/circuits are placed side by side in each trench. The conduits and cables can be removed by trenching.
18. Perimeter control pricing is based on silt fence installation around downgradient sides of the project perimeter.
19. Metal salvage prices (steel, aluminum, copper) are based on March 2025 quotes from www.scrapmonster.com for the Midwest. Posted prices are three months old. These prices are based on delivery to the recycling facility with the material prepared to meet size, thickness, cleanliness, and other specifications.
20. A reduction of 25% has been taken from all pricing obtained from www.scrapmonster.com to reflect the processing by the contractor to meet the specifications.
21. The salvage value for steel uses pricing from the Midwest United States at $315 per metric ton, or $285.76 for U.S. ton.
22. Solar module salvage values are shown in current values, assuming near-new conditions for the first few years of operations. Pricing for used panels has been discounted from the average resale price of used panels, as published in EnergyBin's 2024 "Module Price Index." Module values will decline over time as a function of loss of output and age.
23. There is an active market for reselling and recycling electrical transformers and inverters with several national companies specializing in recycling. However, we have assumed that the electrical equipment will be obsolete at the time of decommissioning, so we have based the pricing on a percentage of the weight that reflects the copper windings that can be salvaged. Pricing was used for Copper Transformer Scrap for the Midwest United States, at $0.41 per pound.
24. The collection lines are priced assuming copper conductor wire for the direct current circuits and aluminum wire for the alternating current circuits. The prices reflect a reduced yield of copper or aluminum resulting from the stripping of insulation and other materials from the wire prior to recycling. The estimate uses the Midwest prices of #2 insulated copper wire with a 50% recovery rate ($1.54 /pound) and E.C. Aluminum Wire ($1.13/pound).
25. Care to prevent damage and breakage of equipment, PV modules, inverters, capacitors, and SCADA must be exercised, but removal assumes unskilled common labor under supervision.