



Ross County Solar

Exhibit N

Decommissioning Plan

Case No. 20-1380-EL-BGN

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1. Introduction

Ross County Solar, LLC (Ross County Solar) is a proposed up to 120 MW solar photovoltaic electric generating facility in Ross County, Ohio (the Facility). The Facility will span approximately 1,400 acres and will connect to the electrical grid via the existing Buckskin substation. The operational life of the Facility is anticipated to be approximately 30 years. This Decommissioning Plan (Plan) describes the procedures, estimated costs, and financial assurances associated with decommissioning the Facility.

The goals for the Plan are to provide the procedures for restoring the site to agricultural use, or other economical land uses as desired by the relevant landowner, at the end of the Facility's operational life. The Plan describes procedures and estimated costs for removal of Facility components. The components of the Facility to be decommissioned are described in detail in Ross County Solar's Application for a Certificate of Environmental Compatibility and Public Need (Application) and the associated preliminary Facility layout.

2. Project Components

The Application and the preliminary Facility layout provide detailed information regarding the anticipated location and description of each of the Facility components. The Facility generally consists of the equipment and infrastructure outlined below:

- Steel Piers and Racking
- PV Panels
- Inverters
- Electrical Collection Lines
- Access Roads
- Fencing, Gating, and Safety Features
- Operations and Maintenance Building
- Weather Stations
- Project Substation

3. Permitting

Prior to the commencement of decommissioning, Ross County Solar will obtain the necessary local, state, and federal permits and permissions to complete decommissioning activities. Ross County Solar will assess the necessary permits and approvals in the future regulatory environment to ensure compliance. Currently, Ross County Solar would anticipate an evaluation of the following permits and permissions:

- Compliance with Section 404 of the Clean Water Act. Ross County Solar would anticipate temporary wetland impacts permitted by a nationwide permit issued by the United States Army Corps of Engineers.

- Development and implementation of a Stormwater Pollution Prevention Plan (SWPPP) in accordance with Ohio EPA General Construction Stormwater Permit No. OHC000005 or future permit iteration.
- Ross County building, road, or erosion control permits (as necessary).
- Ross County Soil and Water Conservation District permit for activity that involves the crossing, modifying, or discharge of stormwater into a county drain.
- Special state or local hauling permits (as necessary).

4. Decommissioning

Upon the end of the Facility's life, the decommissioning and site-restoration process would be initiated. At least 30 days prior to the commencement of decommissioning activities, Ross County Solar will notify Ohio Power Siting Board (OPSB) staff. The following general decommissioning activities will occur:

- Removal of panels
- Removal of weather stations, inverters, electrical equipment, racking, and scrap
- Removal of piles
- Removal of access roads
- Removal of electrical collection lines
- Removal of fencing
- Removal of substation

Some components may be left in place under certain circumstances. Electrical lines that will not impact future use of the Project Area (at least 48 inches in depth) may be left in place. Steel piles, where full removal is unattainable, may be cut and left in place at a depth of 48 inches greater below the ground surface. The Project substation may remain should another agreement necessitate its continued use. AEP-owned infrastructure at the substation is not subject to decommissioning. Additionally, landowners may desire that private access roads remain in place for their personal use. Should a landowner request a road or structure (such as the O&M building) remain in place, Ross County Solar will obtain a written request from said landowner.

5. Materials Salvage, Recycling, and Disposal

Many components of the Facility, such as racking, wiring, piles, and the panels themselves, retain value over time. Panels, while slightly less efficient, may be reused elsewhere, or components may be broken down and recycled. Recycling of solar panels and equipment is rapidly evolving and can be handled through a combination of sources such as certain manufacturers, PV Cycle (an international waste program founded by and for the PV industry), or waste management companies. More than 90 percent of the semiconductor material and glass can be reused in new modules and products. Other waste materials that hold no value will be recycled or disposed of via a licensed solid waste disposal facility.

6. Site Restoration

Following the completion of decommissioning activities, the site will primarily be converted back to pre-construction land uses. The land will be graded as necessary, though minimal grading is expected to be required, and decompacted to allow for productive agricultural use. For areas not to be returned to agricultural use, soils will be decompacted and reseeded to establish adequate vegetative cover. Topsoil conditions will be assessed to identify necessary topsoil additions or redistribution across the site to ensure productivity. Decommissioning of the Facility, including the removal of materials followed by site restoration, will be completed in approximately 12-18 months.

7. Cost Estimate

Ross County Solar contracted with Westwood Professional Services (an Ohio-licensed engineering firm) to obtain a cost estimate for the decommissioning activities summarized above, based on the preliminary Facility layout provided with Ross County Solar's Application. Based on current recycling costs and salvage values, the net cost of decommissioning the Facility is estimated to be approximately \$4,694,666. A decommissioning estimate is provided in Appendix A. These costs will not change significantly from the preliminary Facility layout to the final design.

8. Financial Assurance

Ross County Solar will post a performance bond with the OPSB as the obligee based on the net costs of decommissioning, calculated to be \$4,694,666, prior to the commencement of commercial operation of the Project. Following commencement of commercial operation, Ross County Solar will reevaluate decommissioning costs through an Ohio-licensed engineering firm or professional engineer every five years thereafter during the life of the Project. If this evaluation shows that the net decommissioning cost for the Project has increased, Ross County Solar will increase the amount of the performance bond accordingly.

Appendix A
Decommissioning Estimate

Project Name: Ross County Solar, OH
Date: October 06,2020
WPS Project Number: 0028444
By: CVA/JTW

Based on ratios, previous decommissioning estimates

Project Size	164.33 Quantity	MW-DC Unit	126.40 Unit Cost	MW-AC Total Cost
Mobilization/Demobilization	1	Lump Sum	\$1,032,800.00	\$1,032,800
Mobilization was estimated to be approximately 7% of total cost of other items. This number was developed from speaking with contractors.				
Permitting				
State Permits	1	Lump Sum	\$10,000.00	\$10,000
Subtotal Permitting				\$10,000
Decommissioning will require a SWPPP and SPCC plan, cost is an estimate of the permit preparation cost				
Civil Infrastructure				
Removal Gravel Surfacing from Road	25,490	Cubic Yards (BV)	\$2.27	\$57,747
Haul Gravel Removed from Road	31,862	Cubic Yards (LV)	\$8.94	\$284,848
Disposal of Gravel Removal from Road	43,014	Tons	\$0.00	\$0
Grade Road Corridor (Re-spread Topsoil)	64,521	Linear Feet	\$1.23	\$79,502
Erosion and Sediment Control for Road Restoration	0	Linear Feet	\$1.81	\$0
Revegetation on Removed Road Area	35.55	Acres	\$11,277.20	\$400,890
Removal of Security Fence	80,950	Linear Feet	\$6.00	\$485,700
Subtotal Civil Infrastructure				\$1,308,688
Civil removal costs are based on RS Means cost for El Paso, TX and industry standards provided to Westwood				
Structural Infrastructure				
Removal Tracker Row Foundation Posts	60,294	Each	\$13.00	\$783,822
Haul Tracker Row Steel Post	4,070	Tons	\$11.20	\$45,582
Removal Drive Motor Posts	4,638	Each	\$15.00	\$69,570
Haul Drive Motor Posts	445	Ton	\$11.20	\$4,987
Removal of Tracker Row Racking	4,638	Each	\$175.00	\$811,650
Haul Tracker Row Racking	8,949	Ton	\$11.20	\$100,230
Subtotal Structural Infrastructure				\$1,815,841
Steel removal costs were calculated by using information from array manufacturers for installation rates and using the same rates to calculate total days to remove equipment. Hauling calculations are based on the locations of metals recyclers.				
Electrical Collection/Transmission System				
Removal of PV Panels	365,178	Each	\$13.00	\$4,747,314
Freight PV Panels for Resale - 95% of Panels - West Chester, NY	9,407	Tons	\$179.48	\$1,688,415
Freight PV Panels for Disposal - 5% of Panels - Wilmington, OH	495	Tons	\$11.20	\$5,545
Disposal of PV Panels	495	Tons	\$75.00	\$37,134
Removal of Combiner Boxes/String Inverters	185	Each	\$60.00	\$11,100
Removal of Pad Mounted Inverter and Transformer	37	Lump Sum	\$4,000.00	\$148,000
Disassembly and Removal of Main Power Transformer(s)	1	Each	\$4,500.00	\$4,500
Freight Transformer(s) Offsite	1	Each	\$3,400.00	\$3,400
Disposal of Transformer (Including Oil)	1	Each	\$0.00	\$0
Excavate Around Transformer Foundation(s)	1	Each	\$1,600.00	\$1,600
Remove Complete Transformer Foundation(s)	1	Each	\$5,800.00	\$5,800
Backfill Excavation Area from Transformer Foundation Removal	1	Each	\$738.00	\$738
Freight Concrete (Transformer, Switch Gear, etc. Foundations)	280	Tons	\$11.20	\$3,140
Disposal of Concrete from Transformer Foundation	280	Tons	\$75.00	\$21,030
Remove, Haul, and Dispose of Timber Distribution Poles	1	Each	\$1,000.00	\$1,000
Remove and Haul Overhead Power Cables	800	Linear Feet	\$5.96	\$4,768
Removal of Scada Equipment	1	Each	\$500.00	\$500
Removal of DC Collector System Cables (copper)	88,335	Linear Feet	\$1.36	\$120,136
Removal of Underground (AC) Collector System Cables	48,776	Linear Feet	\$1.36	\$66,335
Haul Cables for Recycling	311.0	Tons	\$11.20	\$3,483
Removal of Fiber Optic Cable	48,776	Linear Feet	\$2.01	\$98,040
Subtotal Electrical Collection/Transmission System				\$6,971,979
Electrical removal costs of PV Panels and Combiner Boxes were based industry standards on installation rates of a two man work crew. PCU Station, MV Equipment and Scada Equipment removal cost are based on removal of equipment, concrete pads, and conduits using a truck mounted crane and contractor provided information on installation rates. Cable removal assumed are pulled out with a small bulldozer using industry standard production rates.				
Site Restoration				
Stabilized Construction Entrance	1	Each	\$2,000.00	\$2,000
Perimeter Controls	26,500	Linear Feet	\$1.81	\$47,965
Permanent Seeding on area within Removed Array	927.0	Acres	\$4,307.60	\$3,993,145
Subtotal Site Restoration				\$4,043,110
Site restoration costs are based on past solar project experience.				
Project Management				
Project Manager	30	weeks	\$3,800.00	\$114,000
Superintendent	55	weeks	\$3,525.00	\$193,875
Field Engineer	110	weeks	\$2,325.00	\$255,750
Clerk	55	weeks	\$750.00	\$41,250
Subtotal Project Management				\$604,875
Project Management costs are based on past solar project experience.				
A half-time PM with a half-time superintendent, a field engineer, and a clerk onsite				

Standard industry weekly rates from RS Means. 55 week schedule used

Contingency	\$1,474,449.34
10% of construction total (minus Mobilization/Demobilization/Permitting)	

Subtotal Demolition/Removals	\$17,261,742.77
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Salvage				
Fencing	405	Tons	\$161.25	\$65,266
Steel Posts	4,515	Tons	\$161.25	\$728,059
Module Racking	8,949	Tons	\$161.25	\$1,443,049
PV Modules @ 80% We Recycle Estimate	346,919	Each	\$25.20	\$8,742,361
Inverters and Transformers	37	Each	\$32,773.35	\$1,212,614
Substation	1	Each	\$50,000.00	\$50,000
Scada Equipment	1	Each	\$0.00	\$0
DC Collection Lines	345,147	Pounds	\$0.73	\$251,957
AC Collection Lines	137,715	Pounds	\$0.53	\$72,300
AC Distribution Lines	2,800	Pounds	\$0.53	\$1,470

Salvage values are a combination of the following factors; current market metal salvage prices, current secondary market for solar panel/module recycling, discussions with national companies that specialize in recycling and reselling electrical transformers and inverters, and the assumption that care is taken to prevent any damage or breakage of equipment.

Subtotal Salvage	\$12,567,077
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Total Demolition Minus Salvage	\$4,694,666
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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.

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Summary: Application Application Exhibit N electronically filed by Mr. Michael J. Settineri on behalf of Ross County Solar, LLC