Appendix K

Draft Decommissioning Plan

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Decommissioning Plan

Solway Solar Project

Solway, Minnesota

DRAFT

September 6, 2024

Prepared for:
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Contents

1 Introduction

Otter Tail Power engaged HDR Engineering, Inc. (HDR) to provide a physical plan to complete decommissioning of the planned Solway Solar Project (Project) and an estimation of the subsequent decommissioning cost. The Project is a 66 MWac, 74 MWdc single-axis tracker Solar PV generation facility with 15 central inverters spread out over 487 acres. Otter Tail is limited to 50 MWac at the point of interconnection. The project is in Solway, Minnesota in Beltrami County. This decommissioning plan (Plan) describes the general measures and procedures that should be developed and implemented to decommission the Project, restore the site, and safely dispose of or recycle recovered project materials.

1.1 Decommissioning Requirements

This Plan outlines a typical program for decommissioning the Project at the end of the project life cycle that satisfies state and local requirements. Before commencing decommissioning activities, the Project's owner (Owner) at the time of decommissioning will verify with the local, state, or federal agencies any additional requirements and submit a revised plan for approval as required. The following items are recommended by the EERA[1] for decommissioning and noted within this plan.

- Describe how landowners, local governments, and the Commission [Minnesota Public Utilities Commission] will be notified when decommissioning activities are to begin and when restoration is complete.
- Provide objective(s) for decommissioning each portion of the project.
- For each major project component, specify if it will be reused, recycled, scrapped or salvaged, or identify existing recycling centers or landfills anticipated to be used. Please note that solar panels can only utilize landfills where their components are included as an approved waste in the receiving facilities' industrial waste permit.
- A description of land restoration techniques and activities, include the anticipated acres.
- A schedule for plan updates.
- A table of financial assurances including:
    - Initial payments should start at approximately year 10, and increase over time to ensure full funding no later than the end of the power purchase agreement.
    - Identify the beneficiary of the financial surety, the surety instrument, and the amount of the surety.

1.2 Project Description

The Project is in Beltrami County, Minnesota, on approximately 500 acres of land and is currently in the planning and design process. The Project is planned to consist of 66 MWac (74 MWdc) of single-axis tracker solar PV facility, and a collector substation.

[1]Minnesota Department of Commerce. January 2024. Energy Environmental Review and Analysis: Application Guidance for Site Permitting of Solar Farms.

Major features of the Project are outlined below:

- Solar PV array consisting of 66 MWac (74 MWdc) of solar power.
- Nextracker Single axis steel trackers and racking
- Steel piles to support panels/racks and miscellaneous equipment.
- DC Collection System
- AC Collection System
- Fifteen (15) central inverters, corresponding medium voltage transformers, and associated data collection equipment for metering and monitoring
- Interior gravel access roads
- On-site collector substation

The Project is planned to be designed with a project life of 35 years.

1.3 Decommissioning Plan Description

This Plan has been developed to outline typical procedures and considerations for decommissioning the Project. Decommissioning may occur because the project has fulfilled its intended purpose and term, or because it has been abandoned. The costs for eventual removal of project infrastructure and site restoration, are included in this plan.

2 Decommissioning Procedures

2.1 Overview

The decommissioning process will restore the site to substantially the same physical condition that existed prior to the development of the Project. Decommissioning includes removal of project equipment and all site restoration activities noted in this section. All site activities described below will commence after the site has been de-energized and secured. Because decommissioning activities are not anticipated to occur until project end of life, and regulatory requirements may change, any applicable permitting or regulatory requirements would be reviewed with appropriate local and state agencies prior to decommissioning activities to ensure compliance.

2.2 General Environmental Protections

During decommissioning activities, general environmental protection measures and all applicable site safety procedures would be implemented as required. Many activities during decommissioning would be comparable to the construction phase, including the use of heavy equipment on site, preparing staging areas, and restoring disturbed areas around all project infrastructure. The project decommissioning activities shall meet all environmental, stormwater, erosion control and permitting requirements per local, state, and federal regulations.

2.3 Pre-decommissioning Activities

Otter Tail will provide written notification of intent to decommission to adjacent landowners, the Commission, and local governments prior to commencing decommissioning activities. Also, prior to engaging in decommissioning activities, the Owner will update this decommissioning plan in

accordance with appropriate requirements at the time of decommissioning. Decommissioning and restoration activities will be performed in accordance with the latest ordinance in place at the time of decommissioning and in accordance with the Project's other environmental permits. At the end of the Project's useful life, it will first be de-energized and isolated from all external electrical lines prior to initiating dismantling or ground-disturbing decommissioning work. This includes coordination and advanced communication with the interconnection utility.

2.4 Decommissioning and Restoration Activities

The major components of the Project are PV modules, steel tracker system and support piles, electrical cabling, inverters, and transformers. Electrical equipment (except when left in place at a depth of at least 36 inches below grade as noted herein), will be removed from the project property upon decommissioning.

Electrical Equipment Removal

All decommissioning of electrical devices, equipment, and wiring/cabling will be in accordance with local, State and Federal laws. Any electrical decommissioning will include obtaining required permits, and following applicable safety procedures before de-energizing, isolating, and disconnecting electrical devices, equipment, and cabling. The decommissioning contractor (Contractor) is responsible for complying with all applicable site safety and procedures. All electrical equipment will be removed from the project property upon decommissioning. The equipment will be disconnected and transported off site.

The following is the anticipated sequence for removal:

- De-energize inverters, transformers, and other energized equipment and disconnect from the project substation by means of irreversible isolation.
- De-energize each DC collection circuit by means of irreversible isolation.
- Disconnect DC and AC collection circuits
- Dismantle and removal of inverters, transformers, and combiner boxes.
- Remove and recover aboveground cables. Underground cables will be removed and recovered to at least 36 inches below grade.

The concrete foundations and support pads will be broken up by mechanical equipment (e.g., backhoe-hydraulic hammer/shovel, jackhammer), loaded in to dump trucks and removed from the site. Smaller pre-cast concrete support pads will be removed intact by cranes and loaded onto trucks for reuse or will be broken up and hauled away by dump trucks. Prior to removal of any transformers, any oil will be pumped out into a separate industry approved disposal container and sealed to prevent any spillage during storage and/or transportation. Salvaged oil from transformers will be transported to the nearest oil recycling or disposal center. Equipment and material may be salvaged for resale or scrap value depending on the market conditions.

PV Module and Tracking System Removal

All modules will be disconnected, removed from the trackers, packaged, and transported to a designated location for disposal, recycling, or resale. Module recycling and/or disposal will be performed in accordance with applicable laws and requirements. The connecting cables and combiner boxes will be de-energized, disconnected, and removed. The steel tracking system supporting the PV modules will be unbolted and disassembled by laborers using standard hand tools, and possibly

assisted by small portable crane. All steel support structures will be completely removed by construction equipment and transported off site for salvage or reuse. Any demolition debris that is not salvageable will be transported to an approved disposal area. Other salvageable equipment and/or material will be removed from the site for resale, scrap value or disposal.

The modules and tracking systems are supported via driven steel piles. Any cabling management systems and related equipment (e.g., combiner boxes) are also supported via steel piles. Piles will be removed and salvaged.

Interconnect

All project collector substation equipment (transformer, circuit breakers, bus, structural posts, switchgear) and any control buildings shall be removed. After that, the underground cabling, grounding grid, and foundations will be removed, and the area resurfaced and seeded with an appropriate perennial vegetation mixture as required. The Project does not anticipate a gen-tie line to connect to the utility transmission line outside of the single connecting overhead span. Decommissioning activities would require coordination with the utility on the interconnecting transmission line. Owner shall not be responsible for decommissioning anything on the high-voltage side of the interconnection point, unless otherwise agreed upon.

The following steps are required for Project substation removal:

- De-energize transformers and other energized equipment and disconnect from the project substation.
- Dismantle and remove sectionalizing equipment and transformers.
- Disconnect and remove electrical and communications equipment in the control building.
- Demolish control building and remove foundation.
- Remove equipment foundation pads and pile supports for remaining equipment.
- Remove grounding grid, perimeter fence and cables.
- Remove and recycle aggregate surfaces.
- Re-grade surfaces, add topsoil and seed according to “Site Restoration” below.

Road Rehabilitation and Removal

At the time of decommissioning, the Owner will coordinate with the landowners and easement holders (if applicable) to determine if any internal access roads should remain. If any of these roads do not serve a future purpose they will be decommissioned and restored to preconstruction conditions. Decommissioning will involve the removal of the gravel or aggregate and filling the remaining voids with on-site surface materials by grading. Where on-site surface materials are not sufficiently available for filling the remaining voids, suitable earthen fill will be provided from an off-site source. Removed materials will be taken to an appropriate recycling area (possibly on site) where the gravel or aggregate materials can be processed for salvage value or future use. Remaining ground surfaces will be rough graded to merge with the surrounding elevations and returned to preconstruction conditions by means of grading and discing, using a tractor and disc attachment to restore the soil structure and to aerate the soil.

Additionally, if any of the existing on-site roads (before project development) are damaged during decommissioning, they shall be repaired back to the same condition they were before decommissioning.

Site Restoration
Following decommissioning, the Project shall be stabilized to prevent adverse environmental effects. The site shall be restored to a clean, safe, and environmentally stable condition to substantially the same physical condition as existed prior to the development of the Project. Site restoration will commence once all above ground and below ground structures (to at least 36 inches below grade) and materials have been removed and disposed of appropriately. Also, site restoration will consist of re-seeding of disturbed areas with an appropriate vegetation mixture as required by the MN Construction General Permit. The estimate excludes the cost of seeding agricultural crop. The site is to be restored to conditions immediately prior to construction or as directed by applicable local, state, federal regulations, or landowner agreement at the time of decommissioning as appropriate.

Fences and Gates
The site security fence will be dismantled, removed, and recycled offsite only after all other ground-disturbing decommissioning and site restoration work has been completed. Most line posts will be direct embedded. Line posts encased in concrete will be removed including concrete. The Project will be accessed through manually operated swing gates located at multiple permanent access points. It is anticipated that the fence, gates, wire, and hardware would be removed and recycled at decommissioning.

2.5 Waste Management Procedures

During decommissioning, debris and waste generated will be recycled to the extent feasible and as required by local, state, and federal regulations. The Contractor will facilitate recycling of all construction waste through coordination with licensed contractors, local waste haulers, and/or other facilities that recycle construction/demolition wastes. The Contractor will also be responsible for ensuring that wastes requiring special disposal (e.g., electrical equipment) are handled according to regulations that are in effect at the time of disposal. Although hazardous waste is not anticipated on the site, any hazardous waste would be removed and disposed of in accordance with applicable laws and regulations.

2.6 Emergency Response and Communications Plans

During decommissioning, the Owner and decommissioning Contractor will coordinate with local authorities, the public, and others as required to provide information about the ongoing activities. Besides regular direct/indirect communication, signs will be posted at the Project facility to inform the local public and visitors. The Owner and Contractor’s project representatives contact information (such as telephone number) will be made public for those seeking more information about the decommissioning activities and/or for reporting emergencies and complaints. All inquiries will be directed to the project representative.

In the event of an emergency, the Owner will mobilize its resources to the site to respond to the event. Personnel involved in decommissioning will be trained in the emergency response and communications procedures. Emergency response procedures will be prepared prior to decommissioning.

3 Material and Salvage Plan

This section identifies major material and equipment quantities on the Project. Any bids from decommissioning contractors will be responsible for verification of quantities (per record drawings), construction costs and salvage rates.

The salvageable material quantities were estimated for inclusion in the estimate as a credit to the project. A gross decommissioning cost is presented with the salvageable material credit shown resulting in the net project decommissioning cost. Salvageable material quantities are derived from the estimated makeup of the materials of the tracking system, piles, inverters, transformers, and power cabling material to be removed and the corresponding steel, aluminum, copper, etc. Copper/Aluminum salvage quantity estimates were derived from cable quantities, lengths, and approximate weights.

The following notes and assumptions are applicable regarding salvage recovery rates:

- Depending on the component, equipment, and anticipated decommissioning activity, various material recovery percentages ranging from 75% to 100% were assumed. Salvage rate accounts for imperfect removal or intentional partial removal of salvageable material.
- The current and future market is unclear on the usability or value of recently deployed solar panels after the approximate component lifecycle of 30 to 35 years. There are multiple options for PV panel end of life:
  - Solar panels may be recycled by a panel recycler at a cost of $25 per panel (about $0.50/lb.) as reported by PV Magazine[2] . This can be further impacted by transportation costs for the recycler or the Owner. Panel recycling is not currently a widespread service in the U.S. and is generally considered to be in early commercial development, and as related to this Project, there are currently no local regulations that require this option.
  - Solar panels may also be disposed of at certain landfills at a cost of approximately $5 per panel (about $0.07/lb.) assuming that the panels would be categorized as hazardous waste as reported by the National Renewable Energy Laboratory[3].
  - Solar panel salvage, recycling and reuse is likely to remain dynamic; alternatives should be evaluated for and reassessed periodically. Due to lower overall cost, this Plan assumes that the panels will be disposed of at the landfill cost described above.
- All excess material that is not salvageable is anticipated to be removed off-site and transported to approved landfill locations.

[2] “PV Magazine: Aware but unprepared”. https://www.pv-magazine.com/magazine-archive/aware-but-unprepared/; accessed April 20, 2021.
[3] Curtis, Taylor L., Heather Buchanan, Garvin Heath, Ligia Smith, and Stephanie Shaw. March 2021. Solar Photovoltaic Module Recycling: A Survey of U.S. Policies and Initiatives. Golden, CO: National Renewable Energy Laboratory. NREL/TP-6A20-74124.

3.1 Material Quantities

Major materials on the Project are listed in the table below based on conceptual design documents and other design information provided by Otter Tail Power. Quantities listed below may not reflect final installed quantities and should be updated to reflect final constructed quantities. Detailed material breakdowns are listed in Appendix A and the preliminary Project layout is included in Appendix B.

Solar Material Quantity Summary*			
Item	**Description/Details**	**Unit**	**Estimated Quantity**
PV Modules/Panels	Canadian Solar	Each	104,463
Inverters	Sungrow SG4400UD-MV	Each	15
Tracker Assembly	Nextracker Single Axis Tracker	Each	1,473
Tracker Motors	Nextracker	Each	1,473
Tracker Steel Piles	Various 'W' Pile Sizes and Lengths	Each	17,676
LV Cable/Wiring	Various Copper and Aluminum Wire	LF	835,704
Access Roads	Varying Width, 6” depth	LF	16,282
Fencing	Agricultural Woven Wire Security Fence	LF	44,901

*Based on August 2024 Conceptual Layout

4 Decommissioning Cost Estimates

One requirement of the plan is to provide an estimate of the costs associated with the decommissioning of the Project. The current estimate of costs for the Project presented in this plan is based on design quantities and is to be updated periodically throughout the life of the project. Table 1 shows the summary of the estimated decommissioning costs for the Project including the salvage value.

Decommissioning Cost

The estimated decommissioning cost is associated with demolition and restoration costs of a qualified demolition contractor to decommission the site. This includes but is not limited to the activities listed in Section 2. Decommissioning costs consisting of labor, equipment, and materials are based on labor activities from RSMeans[4], a construction cost estimating database. The labor activities most associated with each step in the decommissioning process were selected to build up the decommissioning cost estimate. Because the PV modules are planned to be disposed of at end of life, a disposal cost is included the cost estimate. Further breakdown of these costs can be found in Appendix A.

[4] RSMeans Data Online from Gordian®. www.rsmeans.com/online. Accessed August 2024

Table 1. Summary of Estimated Decommissioning Costs

Total Project		Solar Basis
Decommissioning Activity	**Amount (USD)**	**$/kWac**
Decommissioning Costs	**$6,266,000**	**$125.3**
Solar Array	$6,017,000	$120.3
Substation	$249,000	$5.0
Net Salvage Cost / (Value)	**($646,000)**	**($12.9)**
Solar Array (less PV modules)	($1,042,000)	($20.8)
PV Module Recycle/Disposal Fee	$522,000	$10.4
Substation	($126,000)	($2.5)
Estimated Net Decommissioning Cost	**$5,620,000**	**$112.4**
$/kWac	$112.4	

The following assumptions apply to the tabulation of quantities and costs associated with this decommissioning.

- All decommissioning costs are in 2024 dollars.
- The labor costs are based on average labor cost for the Bemidji, Minnesota area for Quarter 2, 2024.
- All material quantities are tabulated via available preliminary design information and may not reflect final installed quantities.
- Cost estimates are for budgetary purposes only and do not represent guaranteed costs.
- The net decommissioning cost is based on gross project demolition (contractor's cost) plus module disposal costs plus the credit received from recoverable salvage material.
- PV panels and other major equipment may have resale value on a secondary market depending on the market and the condition of the equipment. This value depends on such market at the time of decommissioning. The estimate is currently based on disposal.
- No biological, environmental monitoring or testing is included or anticipated per current requirements.
- This cost estimate does not include contingency.

5 Financial Assurance

According to EERA Guidelines, the Project is required to submit an updated decommissioning plan periodically throughout the life of the project. The plan and estimate will be updated every five years or any time there is a change in ownership. Each revised plan will reflect updates in decommissioning standards and pricing. The amount of financial assurance will be adjusted accordingly to account for increases or decreases to the decommissioning costs and salvage values during each update.

Otter Tail will utilize a net salvage rate methodology used for all its generation facilities. At the time of decommissioning, the costs of removal will be treated as a debit to Otter Tail's depreciation reserve and the reserve balance will be reduced. The preliminary decommissioning plan for the Project

(Appendix A) reflects this methodology and, in a separate docket, the Company will seek Commission approval of the net salvage rates used for the Project. The preliminary decommissioning plan identifies anticipated net decommissioning value (decommissioning costs less salvage value), which are currently anticipated to be a net cost of $5.62 million. This estimate is on par with current pricing for scrap metal, industry trends, and decommissioning practices, which may change over the life of the Project but will be accounted for as part of the regular review of the Decommissioning Plan." In accordance with the Application Guidance for Site Permitting of Solar Farms, Otter Tail intends to debit the depreciation reserve over the following amounts and frequencies:

- 25% of the net decommissioning estimate in year 10 of operation.
- 50% of the net decommissioning estimate in year 15 of operation.
- 75% of the net decommissioning estimate in year 20 of operation.
- 100% of the net decommissioning estimate in year 25 of operation.

This plan and cost estimate is an accurate representation of the estimated decommissioning costs based on the industry knowledge and published data at the time of estimate development and was prepared in accordance with industry standards of care for engineering evaluations of this type and contains no intentional false statements or misrepresentations. The costs presented in this report are estimated based on current knowledge and prices quoted or developed from construction estimating guides and pricing references. The estimates are anticipated to be subject to adjustment per updates as required by the local authorities, and at the time decommissioning is initiated. This plan was prepared by HDR's Joe Weber and Michael Baldwin and reviewed by HDR's Will Kirby.

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APPENDIX A:
DECOMISSIONING COST BREAKDOWN

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Decommissioning Cost

Solar Array

Decommissioning	Estimated Quantity	Unit	Estimated Unit Cost ($/Unit)	Total Cost ($)	Remarks / Assumptions
Mobilization / Demobilization / Management	1	project	$259,110.00	$259,000	Single mobilization and establishment of necessary services, labor & material. Percent of decommissioning total.
PV Module removal	104,463	module	$8.90	$929,000	Dismantle, palletize and load on flatbed truck for disposal or sale; assume 25% of reported module installation cost
Racking/Tracking Assembly Removal	1,510	ton	$640.67	$967,000	Dismantle, load on flatbed truck for disposal or sale; assume removed to average 30 lb sizes
Tracker Motor/Drive Removal	1,473	each	$80.77	$119,000	Disconnect, electrical demolition, remove, incl accessories
Steel Pile Removal	313,170	LF	$4.78	$1,495,000	Remove all and load on flatbed, assume 33% of the RSMeans unit cost due to smaller crew size and smaller pile size/length
Above ground Cable Removal	835,704	LF	$0.77	$640,000	Disconnect, remove all above ground DC cabling (total DC cable quantity less DC trenching length)
Central Inverter Removal	15	each	$6,319.35	$95,000	Disconnect, electrical demolition, remove, load on truck for disposal
Combiner Box Removal	324	each	$255.02	$83,000	Disconnect, electrical demolition, remove, load on truck for disposal (50% of installation cost)
Road and Aggregate Removal	11,759	CY	$12.29	$145,000	Excavation, 50' haul to dump truck, gravel removed to local storage at 4 mile haul
Road Entrance Repairs	1	LS	$24,000.00	$24,000	Road repair allowance as needed (basis: 1 crew of 5 for 4 days)
Fence Removal	44,901	LF	$4.87	$219,000	8' height; agricultural fence, 10' post spacing, includes gate and direct embedded posts
Corner Fence Post Removal	32	each	$27.13	$1,000	Selective demolition, agricultural fences & gates, fence, posts, steel in concrete
Rough Grade Site (as required by disturbance)	49	acre	$3,087.41	$150,000	Return to smooth contours where needed; not all acres will need to be graded. Converted unit cost from $ per 100,000 sq. ft to $ per acre
Site restoration / Seeding	122	acre	$942.01	$115,000	Assume seeding only disturbed areas as percentage of developed site; Native seed mix/species and no fertilizer.
Salvaged Material Hauling	5,722	CY	$135.60	$776,000	Assume 120 mile haul for all steel, recovered cable, fencing, and electrical equipment are hauled to material handling location for purchase
Total Decommissioning				**$6,017,000**	

Substation

Decommissioning	Estimated Quantity	Unit	Estimated Unit Cost ($/Unit)	Total Cost ($)	Remarks / Assumptions
Mobilization/Demobilization	1	project	$10,705.50	$10,700	Single mobilization and establishment of necessary services, labor & material. 4.5% of project total.
Large (Main Power) Transformer-Disconnect / Remove	1	each	$8,982.31	$9,000	Assume equal to the cost of labor and equipment to install.
Station Power Transformer - Disconnect/Remove	2	each	$2,202.88	$4,400	Assume equal to the cost of labor and equipment to install.
Grounding Cable Removal and Excavating	800	LF	$0.52	$400	Demolition and removal of ground wire, bare copper or aluminum
Circuit Breaker - Disconnect/Remove	3	each	$1,632.60	$4,900	Assume fabricated item, demolition by weight
Switchgear - Disconnect / Remove	6	each	$761.88	$4,600	Assume fabricated item, demolition by weight
Aluminum Bus - Disconnect / Remove	3	each	$435.36	$1,300	Assume fabricated item, demolition by weight
Steel Structures - Disconnect / Remove	4	each	$1,636.80	$6,500	Assume structural framing item, demolition by weight
Foundations - Demolish / Remove	133	CY	$420.73	$56,100	Demolished to 3 ft below grade; Loaded & hauled to repurpose off site
Site Surface Aggregate Removal	2,083	CY	$12.29	$25,600	Excavation, 50' haul to dump truck, gravel removed to local storage at 4 mile haul
Rough Grade Site (as required by disturbance)	0.9	acre	$3,087.41	$2,700	Return to smooth contours where needed; not all acres will need to be graded. Converted unit cost from $ per 100,000 sq. ft to $ per acre
Site restoration / Seeding	0.9	acre	$942.01	$800	Assume seeding only disturbed areas as percentage of developed site; Native seed mix/species and no fertilizer.
Fence Removal	800	LF	$4.87	$3,900	1' Barbed Parapet (3-Wire), 10' post spacing, includes gate and posts in concrete
Disconnect; Recover Line Wire	1,350	LF	$1.62	$2,200	Adjusted unit cost to per linear foot instead of per hundred linear feet
Deconstruct Steel Poles and subassemblies	2	each	$464.95	$900	Demolition of utility poles & cross arms, utility poles, wood, 35'-45' high
Disconnect; recover Static Wire	1,350	LF	$0.30	$400	Adjusted unit cost to per linear foot instead of per hundred linear feet
Control Building, demolish	100,000	CF	$0.50	$50,000	Dismantling and haul of small building, assume wood construction.
Control Building, foundation removal	10,000	SF	$1.16	$11,600	Assume 6" concrete foundation
Salvaged Material Hauling	388	CY	$135.60	$52,600	Assume 120 mile haul for all steel, recovered cable, fencing, and electical equipment are hauled to material handling location for purchase
Total Decommissioning				**$249,000**	

Salvage Value and Disposal Costs

Solar Array

Salvage Value	Potential Salvage Quantity	Unit	Estimated Unit Value/(Cost) ($/Unit)	Total Value ($)	Total Cost ($)	Remarks
PV Module Recycling / Disposal	8,701,768	lbs	($0.06)		$522,000	Cost based on panel disposal from National Renewable Energy Laboratory, not included in mobilization cost
Central Inverters	562,179	lbs	$0.26	$118,700		Assume scrap value in line with electronic scrap
Combiner Boxes	32,400	lbs	$0.26	$6,800		Assume scrap value in line with electronic scrap
Fencing	99	ton	$300.06	$23,800		Assume steel scrap value
Steel Tracker & Inverter support piles	1,438	ton	$300.06	$345,200		Assume steel scrap value; Pile weights and lengths vary - tonnage estimated on full removal
Tracker Motors	73,650	lbs	$0.23	$13,300		Assume electric motors scrap value
Tracker Assembly	1,473	ton	$300.06	$353,600		Assume steel scrap value
DC Grounding	28,416	lbs	$2.69	$53,600		Assume copper scrap value; Salvage rate reflects shallower depth.
LV Wire and Cabling, copper	41,785	lbs	$2.69	$78,800		Copper DC feeder Cable.
Aggregate Recovery	11,759	CY	$6.45	$45,500		Aggregate, crushed bank gravel, per C.Y., includes material only (assume partial value; 50% of new gravel)
Control/Communications Equipment	12,000	lbs	$0.26	$2,500		Assume scrap value in line with electronic scrap
MET Stations	1,200	lbs	$0.26	$300		Assume scrap value in line with electronic scrap
Total Salvage (less PV Module)				**$1,042,000**		
Total PV Module Fee					**$522,000**	
Net Salvage Value				**$520,000**		

Substation

Salvage Value	Potential Salvage Quantity	Unit	Estimated Unit Cost ($/Unit)	Total Value ($)	Remarks
Main Power Transformer	150,000.0	lbs	$0.48	$72,000	Assume copper material and evaluated on full weight of transformer
Station Power Transformer	30,000.0	lbs	$0.33	$9,900	Assume copper material and evaluated on full weight of transformer
Oil Recovery to recycle	7,000.0	gallon	$1.80	$7,600	Assumption; oil age and contamination will determine recyclability, 60% recovery assumed
Circuit Breaker	11.3	ton	$300.06	$3,000	Assume steel scrap value
Switchgear / Disconnect Switch	10.5	ton	$300.06	$2,800	Assume steel scrap value
Aluminum Bus	6,000.0	lbs	$0.55	$3,000	Assume aluminum scrap value
Structural Steel Shape and plates	20.0	ton	$300.06	$5,400	Assume steel scrap value
Fence; Posts & Gates	3.7	ton	$300.06	$1,000	Assume steel scrap value
Line Cable	1,265.0	lbs	$0.55	$600	Assume aluminum scrap value
Ground Cable	1,312.8	lbs	$2.69	$3,200	Assume copper scrap value
Aggregate	2,083.3	CY	$6.45	$9,400	Aggregate, crushed bank gravel, per C.Y., includes material only (assume partial value; 50% of new gravel)
Steel Transmission Pole	2.0	ton	$300.06	$500	Assume steel scrap value
Control/Communications Equipment	30,000.0	lbs	$0.26	$7,900	Assume scrap value in line with electronic scrap
Total Salvage				**$126,000**	

APPENDIX B:
PRELIMINARY PROJECT LAYOUT

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GENERAL NOTES

1. REFER TO CIVIL DRAWINGS FOR PERIMETER FENCE AND GATES.

LEGEND

- MV FEEDER LINES
- SITE FENCE
- SETBACKS
- POWER CONVERSION STATION (PCS)
- MV SECTIONALIZER CABINET
- WETLANDS
- TEMPORARY CONSTRUCTION LAYDOWN
- SOLAR ARRAY BUILDABLE AREA

SYSTEM SUMMARY

TOTAL DC CAPACITY (MW DC)	74.17
TOTAL AC CAPACITY (MW AC)	66.0 (AT INVERTER) 50.0 (AT POI)
LOADING RATIO DC/AC	1.124 (AT INVERTER) 1.483 (AT POI)
MODULE (Wp)	CANADIAN SOLAR CS7N-710TB-AG (710Wp)
MODULE QUANTITY	104,463
STRING QUANTITY	3,869
MODULES PER STRING	27
INVERTER (RATING)	SUNGROW SG4400UD-MV-US (4,400kVA)
INVERTER QUANTITY	15
TRANSFORMER	4,400kVA, 34.5kV:0.645kV
TRANSFORMER QUANTITY	15
TOTAL PCS QUANTITY	15
TRACKER (CONFIGURATION)	NEXTRACKER
AZIMUTH	180°
GROUND COVER RATIO	40.0%
PITCH (FT)	19.6 FT
CLEAR ROW SPACING (FT)	11.8 FT

N

300 0 300 600
SCALE IN FEET

ISSUE	DATE	DESCRIPTION
A	08/20/2024	FOR PERMIT APPLICATION

PROJECT MANAGER	RYAN SWANSON, PE
DRAWN BY:	ANDREW HOYT
CHECKED BY:	MATT BRAWLEY, PE
REVIEWED BY:	ANDREW KANER, PE
PROJECT NUMBER	10404140

PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION OR RECORDING.

OTTER TAIL POWER

SOLWAY SOLAR

CONCEPTUAL LAYOUT

FILENAME C100.dwg

SCALE 1" = 300'

SHEET C100