Project:	*Sapling Solar*	Engineer:	*D. Bonello*
Client:	*Sapling Solar, LLC*	Issue Date:	*7/31/24*
Location:	*Gustin Township, MI*	Revision:	*1*

OPINION OF PROBABLE COST - PV PLANT DECOMISSIONING - SAT

The Sapling Solar project is a proposed 215 Megawatt (MW) solar electric generating facility using ground mounted photovoltaic panels. The majority of the site is currently in agricultural use, most of it farmed in row crops. At the end of the project's life, or if the project is not operated for a period of one (1) year, the land will be reclaimed to reengage farming activities to the extent practicable and acceptable to the landowner within one (1) year. The project is located entirely within Gustin Township and contains a fenced-in project area of approximately 820 acres. The expected life of the project is up to forty (40) years.

This opinion of probable costs is based on the engineer's experience in the design and construction of energy facilities and is subject to final engineering. This opinion is also based on our experience supervising the construction of PV plants and supervising the demolition of other non-PV facilities. Costs are estimated with best practices at today's values. See Table 3: Opinion of Probable Cost - PV Plant Decommissioning for a detailed breakdown of the project.

This opinion assumes a third-party contractor, experienced in the construction and decommissioning of PV facilities will lead the effort. The reported costs include union labor, permitting, materials, taxes, insurance, transport costs, equipment rental, contractor's overhead, and contractor's profit. Labor costs have been estimated using regional labor rates and labor efficiencies from the Bureau of Labor Statistics.

This opinion of cost has been split between plant disassembly and site restoration, which reflects the overall decommissioning process. The PV plant will first be disassembled, with all above and below grade components removed. This includes all buried cables, conduits, and foundations. Costs for disassembly are overall less than those for original assembly of the facility. While PV modules will need to be removed by hand to retain their salvage value, the racks, buried cables, and concrete can be removed by machine to increase efficiency. It is assumed that concrete, gravel, and fiber optic cable do not have salvage value and will be disposed of off-site. Other materials are assumed to have salvage value and can be sold at market prices. The total disassembly and disposal costs for the project is approximately $5,284,363. See Table 3: Opinion of Probable Cost - PV Plant Decommissioning for a detailed breakdown of the project. Methodology for disassembly of the PV systems can be found in Table 1, and disassembly of the project substation in Table 2.

It is expected that the entire site will be re-seeded with native grasses and vegetation. Planting of trees, shrubs, and other woody vegetation (re-forestation) or other beautification is not included in the costs. It is assumed that mulching and stabilization of seeded areas will only be required where gravel roads or concrete foundations were removed. The remainder of site will already be vegetated and disassembly activities will not significantly disturb the vegetation. Seeding in those areas is included as a precautionary measure. The total costs for site restoration the project is approximately $461,529. See Table 3: Opinion of Probable Cost - PV Plant Decommissioning for a breakdown of Site Restoration Costs.

Any permits required will be included as part of the decommissioning effort. Erosion and sediment control best management practices will be installed during decommissioning.

To ensure that funds will be available for site decommissioning and stabilization, Sapling Solar will deposit a performance guarantee, in the form of surety bond or letter of credit, equal to 100% of the total disassembly, disposal, and site restoration costs of decommissioning. Inflation was not included in this original estimate, although this estimate may be re-evaluated every ten (10) years to account for it, if requested. In addition, the Sapling Solar will use their best effort to salvage or recycle materials after use. A return on salvage value is expected, although the client understands salvage estimates cannot be used to determine security and is therefore omitted from the net costs for the project. The total disassembly, disposal, and site restoration costs of decommissioning is approximately $5,745,892. See Table 3:Opinion of Probable Cost - PV Plant Decommissioning.

This opinion of probable costs is based on the engineer's experience in the design and construction of energy facilities and are subject to final engineering. The engineer accepts no liability for errors, omissions, or the accuracy and adequacy of this opinion. It is a violation of state law for any person, unless they are acting under direction of a licensed professional engineer to alter this document in any way.

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TABLE 1: PV PLANT ANTICIPATED DISASSEMBLY METHODS

ITEM	DISASSEMBLY METHOD
PV Modules	Hand Removal. Place modules face down on pallets, tape wire ends, tied down and transport via skid-steer to staging location. Assumed 5% breakage, salvage value for crystalline, no salvage for thin-film.
Inverters	Removal by crane and transport via flat-bed to staging location. Assume no disassembly. Assumed salvage value.
Transformers	Removal by crane and transport via flat-bed to staging location. Assume no disassembly. Oil removal performed by scrap facility. Assumed salvage value.
Racking Frame	Stabilize w/ machine. Cut legs and lower to ground level. Cut cross beams to appropriate size and transport via dump truck to staging location. Assumed salvage value.
Racking Posts	Remove via post-puller and transport via dump truck to staging location. Assumed salvage value.
Racking Wiring	Disconnect PV connectors, cut cable ties, and remove wires from cable tray. Transport via dump truck to staging area. Assumed salvage value.
Underground Cable	Excavate to cable depth at one end of trench. Use tractor or backhoe pull out all cables in common trench. Cables are direct buried so complete excavation of trenches is not required. Transport via dump truck to staging area. Assumed salvage value.
Fence	Machine roll fence fabric. Remove posts via post-puller and transport via dump truck to staging location. Assumed salvage value.
Concrete	Remove with excavator and jack hammer. Backfill and compact as needed. Transport via dump truck to staging area. Assumed offsite disposal.
Gravel	Remove with skid steer with sweeper. Transport via dump truck to staging area. Assumed offsite disposal.
Offsite Disposal	Assumed disposal at $95/ton or $45/CY including tipping fee.
Re-Seeding	Re-seed using an ATV-pulled drill seeder, at 5lbs bulk seed per acre of native grasses. Stabilize and mulch on areas where concrete or gravel was removed only.
Re-Grading	Minor re-grading will be done to restore the site to pre-construction condition.
Erosion & Sediment Control	Install silt fence around project perimeter. Install tracking control at site entrance and replace once during disassembly. Remove at end of disassembly.

TABLE 2: GENERATION SUBSTATION ANTICIPATED DISASSEMBLY METHODS

ITEM	DISASSEMBLY METHOD
Steel Structures	Disassembled, lowered by crane, and transported via flat-bed to staging location. Assumed salvage value.
Circuit Breakers	Removed from pads and transported via flat-bed to staging location. Assumed no salvage value, and no difference in recycling vs. disposal cost.
Power & Instrument Transformers	Removal by crane and transport via flat-bed to staging location. Assume no disassembly or oil removal of small units, oil drained from main power transformer prior to transport. Assumed salvage value.
Disconnect Switches	Removal by crane, disassemble, and transport via flat-bed to staging location. Assumed salvage value for metal components. Insulators assumed no value.
Insulators and Arresters	Removal from supports. Assumed no salvage value.
Primary Conductor	Cut cable and bus pipe at ends and transport to staging location. Assumed salvage value.
Underground Cable	Excavate to cable depth at one end of trench. Use tractor or backhoe remove all cables and conduits in common trench. Transport via dump truck to staging area. Assumed salvage value.
Pre-Fab Steel Buildings	Rough disassembly on site. Assumed salvage value.
Control Panels	Removal of electronic components. Rough disassembly. Assumed salvage value for electronic and metal components.
Fence	Machine roll fence fabric. Remove posts via post-puller and transport via dump truck to staging location. Assumed salvage value.
Concrete	Remove with excavator and jack hammer. Transport via dump truck to staging area. Assumed offsite disposal.
Gravel	Remove with skid steer with sweeper. Transport via dump truck to staging area. Assumed offsite disposal.
Offsite Disposal	Assumed disposal at $95/ton or $45/CY including tipping fee.
Re-Seeding & Re-Grading	Re-seed using an ATV-pulled drill seeder, at 3.2lbs per acre of native grasses. Use rough grading machine to lower substation pad to native elevation.

Project:	*Sapling Solar*	Engineer:	*D. Bonello*
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TABLE 3: OPINION OF PROBABLE COST - PV PLANT DECOMISSIONING - ANNUAL INFLATION=0% - END OF LIFE: YEAR 40

DISASSEMBLY & DISPOSAL

ITEM	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL
1.0	PV Modules (560W)	319,842	$ 2.46	$ 786,811.32
1.1	PV Modules Recycling (560W)	22,585	$ 52.00	$ 1,174,420.00
2.0	PV Inverter(s) (4.4 MVA)	38	$ 793	$ 30,134.00
3.0	PV Transformer(s) (4.4 MVA)	38	$ 396	$ 15,048.00
4.0	Racking Frame (Single Axis)	2,962	$ 112	$ 331,744.00
5.0	Racking Posts	44,430	$ 11	$ 488,730.00
6.0	Tracker Motors	2,962	$ 14	$ 41,468.00
7.0	Racking Wiring	5,307,498 LF	$ 0.05	$ 265,374.90
8.0	Underground Cable (LV, MV, Comm)	830,322 LF	$ 0.44	$ 365,341.68
9.0	PV Plant Fence	117,362 LF	$ 1.70	$ 199,515.40
10.0	Interconnection Facilities	1 LS	$ 241,753.50	$ 241,753.50
11.0	Concrete	120 CY	$ 111	$ 13,320.00
12.0	Gravel	11,492 CY	$ 21	$ 241,332.00
13.0	Offsite Disposal by Volume	11,614 CY	$ 45	$ 522,630.00
14.0	General Conditions Buffer (Per MW Est)	215 MW	$ 2,636	$ 566,740.00
			SUBTOTAL	$ 5,284,362.80

SITE RESTORATION

ITEM	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL
15.0	Seeding	820 ACRES	$ 86	$ 70,520.00
16.0	Grading	1 LS	$ 177,082	$ 177,082.00
17.0	Erosion and Sediment Control	1 LS	$ 213,927	$ 213,927.00
			SUBTOTAL	$ 461,529.00

TOTAL DISASSEMBLY, DISPOSAL, & SITE RESTORATION COST *$ 5,745,891.80*

Atwell, LLC

7/31/2024

Jared Hicks, PE
Date
Director - Power & Energy
(248) 310-8107