Kimley»Horn

SUNFISH SOLAR
DECOMMISSIONING PLAN
NOVEMBER 2023

Revised February 2024

Purpose

This decommissioning plan is provided by Sunfish Solar LLC (the "Project Company") and will detail the projected decommissioning demands associated with the proposed project.

The purpose of this decommissioning plan is to provide procedures and an opinion of probable construction cost for partial or full closure of the solar facility. A decommissioning plan and estimate is being provided as additional information to the Orange County zoning department. This decommissioning plan details general provisions for facility deconstruction and site restoration, to satisfy the specific guidelines set forth in the Project's Conditional Use Permit. This decommissioning plan shall take effect upon facility abandonment, discontinuation of operation, or expiration of the use permit as defined by Orange County Code.

Site Location

Sunfish Solar proposes to build a photovoltaic (PV) solar facility ("Solar Facility") with a maximum capacity as many as 80 MW_{AC} ("Project"), in Orange County, VA. The Facility is located on Zachary Taylor Hwy and within tax parcel identification numbers 0080000000014D, 00800000000140, 00800000000150, and 01900000000010 ("Property").

Anticipated Service Life of the Project

At the end of its project life, the Solar Facility shall be decommissioned in accordance with this Decommissioning Plan ("Plan"), restoring the site to as close to its agreed-upon post-decommissioned state as practicably possible upon expiration or termination of the Power Purchase Agreement, a long-term agreement between the customer and the electricity generator. The Solar Facility carries an expected useful lifetime of 35 years, including potential replacement or upgrades to equipment during that time.

Decommissioning responsibilities include the removal of perimeter fences, any concrete or steel foundations, all metal structures (mounting racks and trackers), all photovoltaic (PV) modules, aboveground and underground cables to two-foot depth, transformers, inverters, fans, switch boxes and otherwise restoring the premises to its original condition or mutually-agreed upon state. Other Plan activities include the management of materials and waste, associated erosion & sedimentation control, and a decommissioning fund agreement overview.

Decommissioning Risk Over the Lifecycle of a Project

The probability of an event that would lead to abandonment or long-term interruption is extremely low during the first 25 to 30 years of the Project life. Accordingly, the risk of decommissioning the Project is extremely low during this time frame because:

- Project owners have sophisticated financing structures that allow the lender or tax equity partner to step in and rectify the event that may lead to abandonment.
- Most critical solar components have original equipment manufacturer (OEM) warranties with long terms that include labor and parts. A warranty is an agreement or guarantee outlined by a manufacturer to a customer that defines performance requirements for a product or service. Warranties give customers a form of insurance if the purchased product or service does not adhere to quality standards. These warranties assure the Project owner, financing parties, and other stakeholders, that equipment will perform as expected which minimizes the risk of a decommissioning event. Average warranty lengths for critical solar components range from 5 to 10 years, with production warranties on solar panels extending to 25 years.
- Solar projects consist of many networked components designed to absorb solar energy and convert to electrical energy. The failure of any single component will not result in a substantial reduction of energy generation that could lead to a decommissioning event.
- Solar projects are required to maintain replacement value property damage insurance coverage and business interruption insurance coverage. Business interruption insurance covers the loss of income that a business suffers after a disaster or equipment failure. Typical solar business interruption insurance covers income loss for twelve months from the date of the event triggering the loss.
- The replacement costs of solar components will typically decline over time, and accordingly, costs to replace failed or damaged equipment after lapsed OEM warranties will not create large financial hurdles for the Project.
- In the early stages of the Project, the resale value of the equipment is significantly higher than the decommissioning costs, resulting in a net positive (revenue).

Solar power is an increasingly popular form of renewable energy around the world and as an alternative to the burning of fossil fuels, solar ranks alongside wind and hydropower as essential energy options for the future of the planet. Solar also offers the additional benefit of being easier to build, operate, and decommission with minimal environmental risks. Recent rises in popularity and use can be linked to lower installation and operation costs and it is expected that this pattern will continue, further reducing the risk of a decommissioning event.

Decommissioning Risks Over Time

As previously noted, the probability of a decommissioning event that would lead to abandonment or long-term financial interruption is extremely low during the first 15 to 20 years of the Project life and accordingly, the financial risk to decommission the Project is also extremely low. A risk analysis approach is presented here for informational purposes only and has not been considered in the decommissioning cost estimates present in this Plan.

It is important to note that there are two aspects to consider when evaluating the risk for decommissioning the Project:

1. The risk of the need to decommission the Project as a whole (Project termination risk), and
2. The risk of failing to recuperate the cost of the decommissioning activities (decommissioning funding).

The most important concern for Orange County is the ability to recuperate the cost of decommissioning and restoration of the land to pre-Project conditions. The presence of a PPA for the first 20 years of the Project makes the likelihood of decommissioning very low during that time due to the ongoing revenue stream and low cost operations and maintenance.

Risks over the expected life of the project include, but were not limited to:

- Years 1-5 – Minimal Project termination or financial risk due to presence of PPA with guarantee to purchase power, resale of value components, component warranties, value of facility.
- Years 5-15 – Similar consideration of previous period, except minimal increased financial risk due to the decrease in resale value of used components and rise in technological improvements of new equipment in market.
- Years 15-25 – Similar consideration of previous period, with slightly increased risk as warranties start to expire. Value of equipment is still substantial but decreasing.
- Years 25-30 – Similar consideration of previous period, warranties continue to expire; value of equipment diminishes with age and technological improvements in market.
- Years 30-35 – PPA expires, Project termination and funding risks increase, value of equipment diminishes, and technological improvements in market. A rise in salvage value of removed equipment due to diminishing natural resources and improvements in the efficiency of recycling/extraction technologies will offset the cost of decommissioning.

Commencement of Decommissioning

This Plan assumes that the Facility will be decommissioned under any of the following conditions:

1. The land lease (including the exercise of any extension options) ends and will either not be renewed or a new lease will not be entered into for the Project. The tenure of current leases is for 35 years, with optionality to extend the lease by 20 years. The Project Company reserves the right to terminate the lease at will during this time. The land lease cannot be terminated by the landowner.
2. The system does not produce power for sale for a consecutive 12-month period, except in the instance of a force majeure event in which the Project is being repaired and/or restored.
3. The system is damaged and will not be repaired or replaced and the Project Company opts to discontinue operations.

Removal of Nonutility Owned Equipment

To decommission the Solar Facility, the Project will include at a minimum:

- Disconnection from the utility power grid
- Removal of all Facility components: panels, inverters, wire, cable, combiner boxes, transformers, racks, trackers, tracker motors, weather monitoring, control system apparatus, etc. as shown in Table 1.
- Removal of all non-utility owned equipment (at point of interconnection), conduits, structures, fencing, and foundations to a depth of at least two feet below grade.
- To minimize impacts to vegetated areas and prevent erosion at the time of decommissioning, it is not anticipated that the site will be re-graded.
- Plant vegetation suitable for the location, native to the region, and which matches surrounding vegetation.

Table 1 – Major Equipment

Major Equipment	*Quantity*	*Salvageable*	*Notes*
Modules	180,830	✓	Remove by hand; assumed 5% breakage.
Inverters	20	✓	Remove by crane; transport to scrap facility.
Transformers	20	✓	Remove by crane; transport to scrap facility; oil removal by scrap facility.
Racking	1.8M lbs	✓	Cut legs and beams to appropriate size; transport to scrap facility.
Posts	38,431	✓	Remove by post-puller; transport to scrap facility.
Fence	102,062 LF	✓	Roll fence fabric; remove posts by post-puller; transport to scrap facility.
Wire	6,582,884 LF	✓	Remove above ground by hand; transport to scrap facility. Remove below ground by pulling cables with tractor; transport to scrap facility.
Roads	37,690 LF	✗	Use heavy machinery such as a bulldozer, backhoe, or front-end loader to scoop and remove the gravel from the road; transport for disposal or reuse.

The owner of the leased property may request in writing for certain items to remain, e.g., access roads.

This decommissioning plan is based on current best management practices and procedures. This Plan may be subject to revision based on new standards and emergent best management practices at the time of decommissioning. Permits will be obtained as required and notification will be given to necessary stakeholders prior to decommissioning.

The decommissioning process will maximize recycling, reuse, and salvage of applicable facility components, which are outlined in the opinion of probable construction costs. Based on the extent of decommissioning, prior to beginning construction activities, the developer will submit applicable demolition and construction plans and permit applications which will outline the schedule and extents

of demolition. Decommissioning activities will not begin prior to issuance of necessary local, state, and federal permits required for the decommissioning of the facility.

Restoration of Property

At the time of decommissioning, the Project Company will coordinate with the landowners to restore the site to their requested use at time of decommissioning. Current landowners propose that the property be restored to support future farming practices. All waste and excess materials will be disposed of in accordance with municipal, provincial, and federal regulations. Waste that can be recycled under municipal programs will be recycled accordingly.

After disposal of materials, the property will be evaluated for compacted soils. In areas of compaction, the soils will be restored following Virginia DEQ standards. The restoration will consist of de-compaction of the topsoil by disking or tilling and re-vegetation of the property. At the end of the project the area will be seeded and fertilized with native vegetation as needed to return the site to as close as practicable to original or initially agreed-upon condition. Landscaping and entrance will remain following site restoration. The future use of the land will be determined at the time of decommissioning. Deciding factors will be influenced by County land use and comprehensive plans and regulations at such time in the future.

The developer will coordinate with the County to monitor vegetation and drainage following restoration until permanent vegetation is established. Erosion and sediment control, re-seeding, soil stabilization, weed control and fertilization will be provided by the developer as needed until the site is stabilized and approved to be completed by the County.

Upon completion of the site restoration, a final report of activities will be submitted to the County documenting the process and results.

Time Period to Complete Decommissioning

The Project Company will have twelve (12) months from the date decommissioning commences to complete decommissioning. Provided, however, the Project Company shall be able to request an extension of an additional six (6) month intervals if it is in good faith diligently decommissioning and is delayed due to weather conditions or other items outside its control.

Party Responsible for Decommissioning

The Project Company is responsible for this decommissioning, provided however that the Project Company may contract with a third-party to perform the decommissioning on its behalf. Nothing in this plan relieves any obligation that the real estate property owner may have to remove the Facility as outlined in the Conditional Use Permit in the event the operator of the Facility does not fulfill this obligation.

Decommissioning Cost Estimate and Bonding

An engineer's opinion of probable construction cost and analysis of material salvage value were prepared as part of this decommissioning plan. Exhibit A summarizes the probable costs and salvage

values associated with decommissioning. Exhibit B summarizes probable costs associated with decommissioning exclusive of salvage values. Exhibit C summarizes probable costs associated with trucking panels to approved recycling facilities.

BayWa r.e. will be required to submit detailed engineering plans at the time of decommissioning, and obtain construction permits as required by appropriate authorities.

Expenses associated with decommissioning the Project will be dependent on labor costs at the time of decommissioning. For the purposes of this report, current RSMeans data was used to estimate labor, material, and equipment expenses. Fluctuation and inflation of the labor costs were not factored into the estimates.

The total probable cost of decommissioning excluding a salvage but including a 1.5% inflation factor is **$3,200,000**. Inflation accounts for approximately $824,000 over a 20-year period.

Resale/Salvage Value Estimate

There is a robust secondary market for resale of solar PV panels worldwide and a network of facilities available for recycling panels. Solar PV panels are estimated to degrade less than 0.5% per year, meaning they are expected to operate at 90% of capacity after 20 years. Panel manufacturers will guarantee the performance for each individual module and replace defective modules per the terms of warranty. Panels can therefore be sold for a price higher than their scrap value.

In general, the highest component value would be expected at the time of construction with declining value over the life of the Project. Over most of the Project's life, components such as the solar panels could be sold in the wholesale market for reuse or refurbishment. As panel efficiency and power production decrease due to aging and/or weathering, the resale value will decline accordingly. Secondary markets for used solar components include other utility scale solar facilities with similar designs that may require replacement equipment due to damage or normal wear over time; other buyers (e.g., developers, consumers) that are willing to accept a slightly lower power output in return for a significantly lower price point when compared to new equipment. The solar facility's additional supporting components, such as inverters, transformers, racking and piles, can be dismantled and resold for scrap value. Inverters and transformers are comprised of salvageable materials such as copper, aluminum, and silver. Piles and other steel components can likewise be recovered and salvaged. Resale values at the end of Year 20 for equipment of significant value were calculated with straight-line depreciation after an instant depreciation of the original material cost.

A current sampling of reused solar panels indicates a wide range of pricing depending on age and condition ($0.10 to $0.50 per watt). Future pricing of solar panels is difficult to predict currently, due to the relatively young age of the market, changes to solar panel technology, and the ever-increasing product demand. Using straight line depreciation, a conservative estimation of the value of solar panels in Year 20 at $0.005 per watt would yield approximately $560,907. Increased costs of removal, for resale versus salvage, would be expected to preserve the integrity of the panels; however, the net revenue would still be substantially higher than the estimated salvage value.

The price used to value the steel in this report is $177.99 per ton. The price used to value copper in this report is $0.81 per lb. The steel and copper values are collected from iscrapapp.com.

The cost estimate for Year 20 shows that the net cost to decommission the site is (Salvage Value ($3,131,000) – Decommissioning Cost ($2,376,000) = Net Surplus ($754,000)). Additionally, was assumed inflation of 1.5% per year over the next 20 years, the net surplus would increase (Net Surplus with Inflation valued at $1,016,000).

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EXHIBIT A

DECOMMISSIONING COST ESTIMATE

Sunfish Solar
Orange County, VA
Decommissioning Estimate Pro Forma

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

LS = Lump Sum, HR = Hours, EA = Each, LF = Linear Feet.

Item	Quantity	Unit	Unit Price	Estimated Salvage Value	Total Cost (incl. markups)	Total Net Price
Mobilization	1	LS			$108,090	($108,090)
Administration	500	HR	$108		$53,789	($53,789)
Temporary Facilities	1	LS			$13,360	($13,360)
Safety	1	LS			$9,050	($9,050)
Legal Expenses	1	LS			$2,380	($2,380)
General Liability Insurance	1	LS			$9,700	($9,700)
Contractor's G&A	1	LS			$18,320	($18,320)
SWPPP, Erosion Control Measures (Disturbed Area)	431	Ac	$670		$288,664	($288,664)
Seeding	22	Ac	$1,508		$32,482	($32,482)
Tilling 6" topsoil/scarifying access road and rough grading existing soil	22	Ac	$664		$14,296	($14,296)
Remove and Recycle Chain link Fence, 6' High	102,062	LF	$3.46	$17,146	$352,919	($335,773)
Disconnection and Demolition of Switchyard/Substation Equipment	1	EA	$74,797	$14,959	$74,797	($59,838)
Removal and Recycle AC Cables	90,000	LF	$0.19	$2,406	$17,309	($14,903)
Removal and Recycle Above Ground DC Cables	6,292,884	LF	$0.09	$168,209	$592,714	($424,505)
Removal and Recycle Under Ground DC Cables	200,000	LF	$0.11	$5,346	$21,047	($15,701)
Backfill AC and DC trenches	290,000	LF	$0.19		$53,942	($53,942)
Removal and Recycle of Combiner boxes	260	EA	$238.44		$61,994	($61,994)
Remove and Recycle Inverters	20	EA	$6,935	$108,000	$138,692	($30,692)
Removed and Recycle Photovoltaic Modules	180,830	EA	$1.87	$2,486,470	$337,959	$2,148,511
Remove and Recycle Piles (10' W6x7 piles @ 25' OC assumed)	38,431	EA	$3.49	$239,412	$134,258	$105,154
Remove and Recycle Support Assemblies	1,774,024	LB	$0.02	$88,701	$33,634	$55,067
Contaminated Soils Testing	1	LS			$2,000	($2,000)
Reclamation Monitoring and Maintenance	1	LS			$5,000	($5,000)
Year 20 cost in 2023 Dollars				**$3,131,000**	**$2,376,000**	**$754,000**
Projected inflation (1.5%)				**$1,086,000**	**$824,000**	**$262,000**
Year 20 cost in 2043 Dollars				**$4,217,000**	**$3,200,000**	**$1,016,000**

General Notes:

1. Similarly sized sites were used to derive potential quantities for erosion and sediment control. Quantities were determined by comparing "unit/MW" quantities directly.
2. Labor productivity and unit rates were derived from BLS 2023.
3. Labor, material, and equipment rates are based on the nearest available RS Means City Cost Index (CCI).
4. Equipment rental rates were determined from local rental facilities.
5. Assumption of module quantity from preliminary layout using 180830 modules.

Salvage Notes:

1. Material salvage values were based off of current US salvage exchange rates.
2. Photovoltaic Module material salvage rate is based on straight-line depreciation of modules.
3. For PV Module Removal/Recycle labor and equipment costs are computed at present values, while salvage value is computed at 20 year depreciated values.
4. Material salvage values were determined using the most prevalent salvageable metal in each component.

EXHIBIT B

DECOMMISSIONING COST ESTIMATE EXCLUDING SALVAGE

Sunfish Solar
Orange County, VA
Decommissioning Estimate Pro Forma

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

LS = Lump Sum, HR = Hours, EA = Each, LF = Linear Feet.

Item	Quantity	Unit	Unit Price	Total Cost (incl. markups)
Mobilization	1	LS		$108,090
Administration	500	HR	$108	$53,789
Temporary Facilities	1	LS		$13,360
Safety	1	LS		$9,050
Legal Expenses	1	LS		$2,380
General Liability Insurance	1	LS		$9,700
Contractor's G&A	1	LS		$18,320
SWPPP, Erosion Control Measures (Disturbed Area)	431	Ac	$670	$288,664
Seeding	22	Ac	$1,508	$32,482
Tilling 6" topsoil/scarifying access road and rough grading existing soil	22	Ac	$664	$14,296
Remove and Recycle Chain link Fence, 6' High	102,062	LF	$3.46	$352,919
Disconnection and Demolition of Switchyard/Substation Equipment	1	EA	$74,797	$74,797
Removal and Recycle AC Cables	90,000	LF	$0.19	$17,309
Removal and Recycle Above Ground DC Cables	6,292,884	LF	$0.09	$592,714
Removal and Recycle Under Ground DC Cables	200,000	LF	$0.11	$21,047
Backfill AC and DC trenches	290,000	LF	$0.19	$53,942
Removal and Recycle of Combiner boxes	260	EA	$238.44	$61,994
Remove and Recycle Inverters	20	EA	$6,935	$138,692
Removed and Recycle Photovoltaic Modules	180,830	EA	$1.87	$337,959
Remove and Recycle Piles (10' W6x7 piles @ 25' OC assumed)	38,431	EA	$3.49	$134,258
Remove and Recycle Support Assemblies	1,774,024	LB	$0.02	$33,634
Contaminated Soils Testing	1	LS		$2,000
Reclamation Monitoring and Maintenance	1	LS		$5,000
			Year 20 cost in 2023 Dollars	**$2,376,000**
			Projected inflation (1.5%)	**$824,000**
			Year 20 cost in 2043 Dollars	**$3,200,000**

General Notes:

1. Similarly sized sites were used to derive potential quantities for erosion and sediment control. Quantities were determined by comparing "unit/MW" quantities directly.
2. Labor productivity and unit rates were derived from BLS 2023.
3. Labor, material, and equipment rates are based on the nearest available RS Means City Cost Index (CCI).
4. Equipment rental rates were determined from local rental facilities.
5. Assumption of module quantity from preliminary layout using 180830 modules.

EXHIBIT C

TRUCKING COST BREAKDOWN

Sunfish Solar
Orange County, VA
Panel Trucking Costs

$/mo/truck rental	$	4,000
$/mo/truck labor (FT+benefits)*	$	5,000
$/mo/truck maintenance	$	500
$/mo/truck insurance	$	1,000
Total $/mo/truck cost	$	10,500.00
$/gallon gas	$	3.80
miles /gallon		8
Mileage (Orange, VA to Raleigh, NC) roundtrip		450
Total fuel cost per trip	$	213.75
Capacity in tons per trip		20
total number of panels		180,830
panel weight (tons)		5,425
Misc. Waste (tons)		20
Total trips		273
Loading/unloading hours per trip		1
road hours per trip		11.3
hours per day		10
days/month		21
trips per month per truck		17.1
Total truck months		16
Subtotal of Truck and Labor Cost	$	168,000
Fuel Cost	$	58,354
Total Trucking Cost	**$**	**226,354**
*Assumes truck labor only works half of the month at standard heavy truck operator rates		