BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION BY WILD SPRINGS SOLAR, LLC FOR A PERMIT OF A SOLAR ENERGY FACILITY IN PENNINGTON COUNTY, SOUTH DAKOTA	* * * * * * * *	**APPLICANT'S RESPONSES TO STAFF'S FIRST SET OF DATA REQUESTS TO APPLICANT** **EL 20-018**

Below, please find Wild Springs Solar, LLC's ("Applicant") responses to Staff's First Set of Data Requests to Applicant.

1-5) Please provide a copy of Section 317-A-15 of the Pennington County Zoning Ordinance (July 10, 2019).

Melissa Schmit: Please see Attachment 1-5.

1-21) Refer to Page 37 of the Application. What type of decommissioning financial assurance is the Applicant proposing to satisfy the Pennington County Zoning Ordinance? Please provide the proposal for Commission consideration.

Melissa Schmit: Wild Springs will provide a performance or surety bond as required in Section 317-A-15-f of the Pennington County Zoning Ordinance.

Dated this 18th day of June, 2020.

By */s/ Mollie M. Smith*
Mollie M. Smith
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ATTACHMENT 1-5

14. Post-Construction

Upon completion of construction of the project, the applicant shall supply an "as-built" ALTA survey indicating that the proposed facility comply with the setbacks in the permit within ninety (90) days.

15. Decommissioning:

To be provided at the time of Conditional Use Permit submittal.

a. Cost Responsibility: The owner or operator of a project is responsible for decommissioning that facility and for all costs associated with decommissioning that facility and associated facilities. The decommissioning plan must clearly identify the responsible party.

b. Useful Life: A project is presumed to be at the end of its useful life if the facility generates no electricity for a continuous period of twelve (12) months. The presumption may be rebutted by submitting to the Planning Commission for approval of a plan outlining the steps and schedule for returning the project to service within twelve (12) months of the submission.

c. Decommissioning Period: The facility owner or operator must begin decommissioning a project facility within eight (8) months after the time the SES and SES facilities reaches the end of its useful life, as determined in 12(b). Decommissioning must be completed within eighteen (18) months after the facility or solar energy system reaches the end of its useful life.

d. Decommissioning Plan: Prior to approval of a Conditional Use Permit for an USES facility, the facility owner or operator must file the following documents with the Planning Director: the estimated decommissioning cost; USES and for restoring each haul road, in current dollars at the time of the application, for the proposed facility; a decommissioning plan that describes how the facility owner will ensure that resources are available to pay for decommissioning the facility at the appropriate time. The Planning Commission will review a plan filed under this section and shall approve or disapprove the plan in conjunction with the Conditional Use Permit application. The Planning Commission or Planning Director may at any time require the owner or operator of a project to file a report describing how the project owner or operator is fulfilling this obligation.

e. Decommissioning Requirements: To the extent possible, the site must be restored and reclaimed to the topography and topsoil quality that existed just prior to the beginning of the construction of the project. The landowner may request in writing that the access roads be retained. Decommissioning and site restoration, includes signing appropriate haul road agreements for the decommissioning process. Dismantling and removal of all USES-related equipment, foundations, buildings and ancillary equipment to a depth of forty-two (42) inches. Removal of

surface road material and restoration of the roads and USES sites to substantially the same physical condition that existed immediately before construction of the project.

f. Financial Assurance: Before construction begins on the project, the facility owner shall provide to the Planning Department a certificate of insurance, including either a performance or surety bond, which covers the total cost to decommission the facility. The certificate of insurance shall be renewed and a copy submitted to the Planning Department each year the facility is in operation.

g. Failure to Decommission: If the project facility owner or operator does not complete decommissioning, the Planning Commission may take such action, as may be necessary, to complete decommissioning, including requiring forfeiture of the bond. The entry into a participating landowner agreement constitutes agreement and consent of the parties to the agreement, their respective heirs, successors, and assigns, that the Planning Commission may take such action as may be necessary to decommission a project facility and seek additional expenditures necessary to do so from the facility owner.

16. Violation

It is unlawful for any person to construct, install, or operate a Solar Energy System that is not in compliance with this section or with any condition contained in a Building Permit issued pursuant to this section. Solar Energy System facilities installed prior to the adoption of this section are exempt.

B. WIND ENERGY SYSTEMS

1. Purpose

a. The purpose of this section is to ensure that the placement, construction and modification of a Wind Energy System (WES) facility is consistent with the County's land use policies, to minimize the impact of WES facilities, to establish a fair and efficient process for review and approval of applications, to assure a comprehensive review of such facilities, and to protect the health, safety, and welfare of Pennington County's citizens.

2 Federal, State, and Local Requirements

a. All Wind Energy System (WES) facilities must meet or exceed standards and regulations of the Federal Aviation Administration (FAA) and South Dakota Statutes and any other agency of federal or state government with the authority to regulate WES facilities.

BEFORE THE PUBLIC UTILITIES COMMISSION

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IN THE MATTER OF THE APPLICATION BY WILD SPRINGS SOLAR, LLC FOR A PERMIT OF A SOLAR ENERGY FACILITY IN PENNINGTON COUNTY, SOUTH DAKOTA	* * * * * * * *	**APPLICANT'S UPDATED RESPONSE TO STAFF'S DATA REQUEST 2-2 TO APPLICANT** **EL 20-018**

Below, please find Wild Springs Solar, LLC's ("Applicant") updated response to Staff's Data Request 2-2 to Applicant.

2-2) Referring to Appendix D, the Decommissioning Plan, please provide documentation supporting the salvage value unit cost assigned to each component type. In addition, please explain what the per unit cost of $23.87 for PV modules represents and why it is a reasonable assumption to use.

Melissa Schmit: In responding to this request, Westwood Engineering ("Westwood") determined that its decommissioning cost estimate provided with the Decommissioning Plan (Appendix D to the Facility Permit Application) was based on a prior design, and not the current design included in the Facility Permit Application. Therefore, Westwood provided an updated decommissioning cost estimate for the current design, which is included with an updated Decommissioning Plan (see Attachment 2-2a). Wild Springs will provide the updated Decommissioning Plan to Pennington County, as well.

Westwood also provided a memorandum that explains the updates made to the decommissioning cost estimate and the assumptions used to support its calculations, including salvage value and the PV module costs (see Attachment 2-2b).

Dated this 28th day of September, 2020.

By */s/ Mollie M. Smith*

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ATTACHMENT 2-2a

Wild Springs Decommissioning Plan

Wild Springs Solar, LLC (Wild Springs), is committed to ensuring the Wild Springs Solar Project (Project) is properly decommissioned at the end of its useful life in compliance with the decommissioning requirements set forth in Section 317-A-15 of the Pennington County Zoning Ordinance (July 10, 2019). Therefore, Wild Springs commits to the following with respect to decommissioning restoration and financial assurance for the Project.

Project Decommissioning and Site Restoration:

Decommissioning of the Project would begin within eight (8) months after the Project reaches the end of its useful life and would be completed within eighteen (18) months after the Project reaches the end of its useful life, unless the Planning Commission approves a different schedule. Project decommissioning will include:

- Dismantling and removing all Project-related equipment, foundations, and ancillary equipment to a depth of forty-two (42) inches below grade. Any soil disturbance associated with decommissioning would include topsoil segregation.
- Removing the operation and maintenance facility and access roads, unless the landowners request in writing that all or any portion of the facility and/or access roads remain in place. Access road restoration will include removal of surface road material and restoration of the roads to substantially the same physical condition that existed immediately before construction of the Project.
- Restoration of the Project site, including: decompaction; revegetation; and to the extent possible, reclamation to the approximate original topography and original or better topsoil quality that existed immediately prior to construction of the Project.
- Executing haul road agreements, as appropriate, for the decommissioning process. Haul road agreements will address the Project's use, improvement, and post-decommissioning restoration and repair of existing, maintained roads, including any associated road restoration and repair costs.

Following decommissioning, the site will be restored so as to be able to return to the agricultural production that existed prior to construction of the solar facilities.

Decommissioning Financial Assurance:

A decommissioning cost estimate for the Project's current design has been prepared by Westwood Engineering (a South Dakota-licensed engineering firm) is attached as **Exhibit A**. Based on current recycling costs and salvage values, the cost of decommissioning the Project using the current design is estimated to be approximately $4,480,000.00.

Once the Project's design is finalized, Wild Springs will have an updated decommissioning cost estimate prepared and will submit the updated estimate to Pennington County and the South Dakota Public Service Commission ("Commission"). Based on the updated cost estimate, and in accordance with the decommissioning condition imposed by Pennington County when issuing a Conditional Use Permit for the Project, Wild Springs would provide a letter of credit or surety

bond in the amount of the updated cost estimate. Wild Springs proposes to name both Pennington County and the Commission as beneficiaries in the decommissioning financial assurance instrument.

Wild Springs also proposes that an updated decommissioning cost estimate be provided to Pennington County and the Commission at year 10 of operation, which would be used to update, as needed, the decommissioning cost financial security.

Westwood

Estimated Decommissioning Costs
Including Dismantling/Removal Costs
and Salvage Value

Project Name: Wild Springs Solar Project
Date:09/17/2020
WPS Project Number: 0007627.00
By: JLB

Project Size	166.00 Quantity	MW-DC Unit	128.00 Unit Cost	MW-AC Total Cost
Mobilization/Demobilization	1	Lump Sum	$1,022,000.00	$1,022,000
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	41,899	Cubic Yards (BV)	$4.48	$187,845
Haul Gravel Removed from Road	52,374	Cubic Yards (LV)	$14.71	$770,430
Disposal of Gravel Removal from Road	67,876	Tons	$0.00	$0
Grade Road Corridor (Re-spread Topsoil)	106,057	Linear Feet	$1.14	$120,905
Erosion and Sediment Control for Road Restoration	79,543	Linear Feet	$1.91	$151,927
Turf Establishment on Removed Road Area	58.43	Acres	$3,850.00	$224,956
Removal of Security Fence	91,680	Linear Feet	$6.58	$603,254
Subtotal Civil Infrastructure				$2,059,316
Civil removal costs are a combination of SDDOT unit costs where applicable, RS Means cost for project zip area and industry standards provided to Westwood. Based on the Landfill, many landfills do not charge for "inert" materials, the gravel can be used for daily cover and other uses at a landfill.				
Structural Infrastructure				
Removal Tracker Steel Foundation Posts	107,448	Each	$13.18	$1,416,268
Haul Tracker Steel Post	8,596	Tons	$7.54	$64,813
Removal Drive Motor Posts	9,688	Each	$115.03	$1,114,411
Haul Drive Motor Posts	18,419	Ton	$7.54	$138,882
Remove and Load Metstation Foundation	5	EA	$743.60	$3,718
Haul Concrete	73	Tons	$14.22	$1,031
Disposal of Concrete from Foundation	73	Tons	$40.25	$2,918
Subtotal Structural Infrastructure				$2,742,040
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 in Rapid City, 26 miles away. Assuming a $0.29/ton mile rate and $40.25/ton for tipping fees.				
Electrical Collection/Transmission System				
Removal of PV Panels	391,529	Each	$12.07	$4,726,494
Removal of Combiner Boxes	1,211	Each	$60.00	$72,660
Removal of PCU Station (Inverters/Panelboard/Transformer)	88	Each	$2,029.56	$178,601
Haul Inverters and Transformers to Recycler	88	Each	$150.80	$13,270
Removal of Scada Equipment	1	Each	$5,000.00	$5,000
Removal of DC Collector System Cables (copper)	9,600.0	LF	$0.43	$4,155
Removal of Underground (AC) Medium Voltage System Cables	258,167	Linear Foot	$0.48	$124,643
Load and Haul Cables for Recycling	343.3	Ton	$7.54	$2,589
Removal of Fiber Optic Cable	86,055.7	LF	$0.13	$11,359
Removal of Grounding Wire	95,655.7	LF	$0.16	$14,970
Subtotal Electrical Collection/Transmission System				$5,153,742

Electrical removal costs of PV Panels and Combiner Boxes were based industry standards on installation rates of a three man work crew. PCU

Westwood

Estimated Decommissioning Costs
Including Dismantling/Removal Costs
and Salvage Value

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 to be left in the ground, stub up removal at combiner boxes and inverters assumed, standard industry production rates from RS Means. Metal and cable salvage value is based on 75 percent of current scrap metal prices for steel copper, and aluminum. Hauling calculations are based on the locations of metals recyclers in Rapid City, 26 miles away. Resale of PV Panels is based on 85 percent of the price quoted by We Recycle Solar on a recent similar project.

Site Restoration				
Stabilized Construction Entrance	11	Each	$2,000.00	$22,000
Permanent Seeding on area within Removed Array	1,080	Acres	$3,484.80	$3,763,584
Subtotal Site Restoration				$3,785,584
Site restoration costs are based on past solar project experience.				
Substation				
Drain and Dispose of Transformer Oil	1	LS	$11,000.00	$11,000.00
Disassembly and Removal of Transformer(s)	1	LS	$4,500.00	$4,500.00
Freight Transformer(s) Offsite	1	LS	$2,500.00	$2,500.00
Excavate Around Transformer Foundation(s)	1	LS	$40,000.00	$40,000.00
Remove Complete Transformer Foundation(s)	1	LS	$4,900.00	$4,900.00
Backfill Excavation Area from Transformer Foundation Removal	1	LS	$55,000.00	$55,000.00
Haul scrap reinforcing steel (Transformer Foundation)	6	Tons	$10.00	$60.00
Haul Concrete (Transformer Foundation)	140	CY	$18.00	$2,520.00
subtotal - substation transformer removal				$120,480.00
Demolish Substation Site Improvements (fences, etc)	1	LS	$3,500.00	$3,500.00
Demolish Control Building and Foundation	1	LS	$12,000.00	$12,000.00
Remove Medium/High Voltage Equipment	1	LS	$3,500.00	$3,500.00
Remove Structural Steel Substation Frame	1	LS	$3,500.00	$3,500.00
Freight - Demolition Materials, Removed Equipment & Structural Steel Offsite	1	LS	$1,250.00	$1,250.00
Disposal of Demolition Materials, Removed Equipment and Structural Steel	1	LS	$0.00	
subtotal - demolition/disposal of imp materials				$23,750.00
Remove Gravel Surfacing from Substation Site	6,200	CY	$8.00	$49,600.00
Disposal of Gravel from Substation Site	6,200	CY	$6.00	$37,200.00
Grade Substation Site	1	LS	$25,000.00	$25,000.00
Erosion and Sediment Control at Substation Site	1	LS	$12,000.00	$12,000.00
Topsoil and Revegetation at Substation Site	1	LS	$16,000.00	$16,000.00
subtotal - substation site gravel removal & restoration				$139,800.00
Project Management	Quantity	Unit	Unit Cost	Total Cost
Project Manager	25	weeks	$3,800.00	$95,000.00
Superintendent	50	weeks	$3,525.00	$176,250.00
Field Engineer	100	weeks	$2,325.00	$232,500.00
Clerk	50	weeks	$750.00	$37,500.00
subtotal -Project Management				$541,250.00
Salvage				
Fencing	440	Tons	$165.00	$72,600
Steel Posts	8,596	Tons	$165.00	$1,418,340
Module Racking	18,419	Tons	$165.00	$3,039,135
PV Modules	371,953	EA (5% loss)	$23.87	$8,878,539
Inverters and Transformers	264,000	Pounds	$0.37	$97,680
Scada Equipment	1	Each	$1,000.00	$1,000
DC Collection Lines	18,240	LBS (5% loss)	$0.48	$8,755
AC Collection Lines	613,147	LBS (5% loss)	$0.20	$122,629
Grounding Wire	20,901	Pounds	$1.79	$37,308

Westwood

Estimated Decommissioning Costs
Including Dismantling/Removal Costs
and Salvage Value

Substation Tranformer Oil	1	LS	$3,500.00	$3,500
Substation Transformers	1	LS	$33,300.00	$33,300
Scrap reinforcing steel from Substation Transformer Foundation	6	Tons	$80.00	$480.00
Substation Demolition Materials, Removed Equipment and Structural Steel	1	LS	$1,750.00	$1,750.00

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.

Construction Subtotal		$15,597,961
Contingency		$2,158,425
15% of construction total (minus Mobilization/Demobilization/Permitting) based on previous project estimations.		
County Administration Costs (2.5%)		$439,123.15
	Construction Total	$18,195,509.52
Subtotal Salvage		$13,715,017
Total Demolition Minus Salvage		$4,480,492

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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ATTACHMENT 2-2b

MEMORANDUM

Date: September 25, 2020

Re: Wild Springs Decommissioning Cost Estimate
File 0007627.00

To: Melissa Schmit, Geronimo Energy

From: August Christensen

Please find below an explanation of the decommissioning cost estimate update and the assumptions used for calculating the decommissioning values and salvage vales for the Wild Springs Solar Project.

Decommissioning Cost Estimate Update

It was identified during our latest review that the decommissioning estimate provided on March 19, 2020 was based off of a prior Project design and the estimate needed to be updated with quantities from the current design. The subtotals for both Construction and Salvage values have been revised after the updates, resulting in a higher end cost for Total Demolition Minus Salvage. Below is a summary of the changes made to the estimate.

1. *Mobilization/Demobilization* – the Unit/Total Cost has been revised as it is based on a percentage of the total decommissioning cost.
2. *Civil Infrastructure* – the total civil infrastructure cost has been reduced due to the following items being revised:
    a. *Removal Gravel Surfacing from Road* – the Quantity and Total Cost have been lowered because the linear footage of roads was reduced in the current design, reducing the volume of surface material to be removed.
    b. *Haul Gravel Removed from Road* – the Quantity and Total Cost have been lowered because of the reduction of volume of surface material being removed for the roads.
    c. *Disposal of Gravel Removal from Road* – the Quantity has been lowered due to less volume being hauled from the site. No adjustment to the Total Cost.
    d. *Grade Road Corridor (Re-spread Topsoil)* – the Quantity and Total Cost have been lowered because the linear footage of roads was reduced in the current design.
    e. *Erosion and Sediment Control for Road Restoration* – the Quantity and Total Cost have been lowered because the linear footage of roads was reduced in the current design.
    f. *Turf Establishment on Removed Road Area* – the Quantity and Total Cost have been lowered because the linear footage of roads was reduced in the current design.
    g. *Removal of Security Fence* – the Quantity and Total Cost have been increased because of an increase of security fencing for the project area in the current Project design.
3. *Electrical Collection/Transmission System* – the total electrical collection/transmission system cost has been reduced due to the following items being revised:

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a. *Removal of PV Panels* – the Quantity and Total Cost have been lowered due to the total number of PV Panels being reduced in the current Project design.

4. *Salvage* – the Total Value has been reduced due to the following items being revised:
   a. *PV Modules* - the Quantity and Total Cost have been lowered due to the total number of PV Panels being reduced in the current Project design.
   b. *Inverters and Transformers* – the Quantity and Unit value originally provided was incorrect, providing the total number of units. The salvage cost is based off of the total weight in pounds multiplied by the unit cost ($/lb). The Quantity and Unit have been adjusted accordingly.

Decommissioning Assumptions

To develop a cost estimate for the decommissioning of the Wild Springs 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. We developed time and material based estimates considering composition of work crews and equipment and material required using RSMeans data. When materials have a salvage value at the end of the project life, the construction activity costs and the hauling/freight cost are separated from the disposal costs or salvage value to make revisions to salvage values more transparent.

1. Decommissioning year is based on a 35 year projected life of the project.
2. This Cost Estimate is based on the Westwood Submittal Set Preliminary Permit Plan dated 05/06/2020.
3. A project of this size and complexity requires a full time project manager or support staff.
4. Common labor will be used for the majority of the tasks except for heavy equipment operation. Since SDDOT unit prices are used, where possible, the labor rates will reflect union labor rates.
5. Mobilization was estimated at approximately 7% of total cost of other items.
6. Permit applications required include the preparation of a Storm Water Pollution Prevention Plan (SWPPP) and a Spill Prevention Control and Countermeasure (SPCC) Plan.
7. Road aggregate removal was estimated on a time and material basis using a 16 foot width and an 8 inch thickness for the access roads. Substation aggregate is included in the substation quantities. Since the material will not remain on site, a hauling cost is added to the removal cost. Road aggregate can often be disposed of by giving to landowners for use on driveways and parking areas. Many landfills will accept clean aggregate for use as “daily cover” and do not charge for the disposal.
8. Grade Road Corridor reflects the cost of mobilizing and operating light equipment to spread and smooth the topsoil stockpiled on site to replace the aggregate removed from the road.
9. Erosion and sediment control along road reflects the cost of silt fence on the downhill side of the road and surrounding all on-site wetlands.

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10. Topsoil is required to be stockpiled on site during construction, therefore this top soil is available on site to replace the road aggregate, once removed. Subsoiling cost to de-compact roadway areas is estimated as $350 per acre (based on state DOT bid prices), and revegetation on removed road area, which includes seed, fertilizer, lime, and care until vegetation is established is $4,937 per acre. The majority of the project area is "over-seeded" since the decommissioning activities are not expected to eliminate the existing grasses and vegetation under the arrays or heavily compact the soils. Over-seeding does not include fertilizer and lime, and is estimated at $3,484.8 per acre.
11. Fence removal includes loading, hauling, and recycling or disposal. Fence and posts weigh approximately 10 pounds per foot.
12. Array support posts are generally lightweight "I" beam sections installed with a piece of specialized tracked equipment. Crew productivity is approximately 240 posts per day, and the same crew and equipment should have a similar productivity removing the posts, resulting in a per post cost of approximately $13.00.
13. A metal recycling facility is located in Rapid City, SD is 26 miles from the project site. Pricing was acquired from www.scrapmonster.com. The posts weigh approximately 150 pounds each, and we estimate the hauling costs at approximately $0.28 per ton mile. The pricing from Scrapmonster is adjusted to 75 percent of the published price to reflect the processing required for the posts to fit recycling requirements and the facility's margin.
14. Based on the review of a manufacturer's details of the array support structures the structures weigh approximately one pound per square foot. The arrays are made of light weight steel and aluminum angles, mounted on the foundation piles, which the panels are bolted to. So a crew with hand tools can disassemble and cut the pieces to sizes for recycling at a rate of about 30 arrays per person four man crew per day based on RS Means cost data.
15. Hauling the steel to Rapid City, SD at $0.28 per ton.
16. The solar panels rated at 425 watts are estimated to be 4 feet by 6 feet and weigh 50 pounds so they can easily be disconnected, removed, and packed by a three person crew at a rate we estimate at 12 panels per hour.
17. Inverters used on this project have been estimated based off of projects of similar size. Pad mounted Inverters are modular medium sized enclosures (18'-4" long, 7'-3" tall, and 5'-3" deep) that are mounted on a concrete slab. They weigh 13,220 pounds, and can be disconnected by a crew of electricians. They must be lifted by a truck mounted crane for transport to the recycler. They contain copper or aluminum windings.
18. Transformers for this project will likely be mounted on the same concrete pads as the inverters. The transformers and associated cabinets weigh approximately 15,000 pounds and contain either copper, or more commonly, aluminum windings that have significant salvage value. They are typically oil filled, and most transformer recyclers will accept the

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transformers with oil. The estimated costs include removal of the concrete pads and conduits feeding the equipment.

19. Medium voltage (MV) equipment and SCADA equipment are mounted on the same concrete pad as the transformer and enclosed in weather proof cabinets. Their size requires light equipment to remove them. The costs shown include the removal of the concrete pads.
20. The underground collector system cables are placed in trenches, inside of PVC conduits, with a minimum of 3 feet of cover.
21. To reduce tracking of sediment off-site by trucks removing materials, we have included a rock construction entrance priced based on state DOT bid prices.
22. Perimeter control pricing is based on a sediment fence placed on the downgrade side of the work area perimeters towards neighboring properties, and protecting wetlands and drainage swales within the project area. Pricing is based on RSMeans unit prices.
23. No topsoil is planned to be removed from the site during decommissioning and most of the site will not have been compacted by heavy truck or equipment traffic so the site turf establishment cost is based on RS Means unit prices for applying lime, fertilizer, seed, and mulch at the price of $4,937 per acre plus an allowance for some areas to be de-compacted. For areas within the array, that are receive over-seeding, the price is adjusted to $3,484.8 to reflect the low seeding rate, and the lack of fertilizer and lime applied.
24. Metal salvage prices (steel, aluminum, copper) are based on quotes from www.scrapmonster.com for the U.S. Midwest from January 2020. These prices are based on delivery to the recycling facility with the material prepared to meet size, thickness, cleanliness and other specifications. A reduction of 25% has been taken from this price to reflect the difficulty of realizing the full spot prices posted. The prices are three months old at the time they are displayed on the website.
25. The steel posts and array racking are priced based on 75 percent of the HMS (high melt steel) 80/20 the price listed on www.scrapmonster.com from April 2020. ($220 per ton)
26. There is currently a robust market for used solar panels and pricing can be found on, Solar Biz, eBay and other sites. We have assumed that as long as the modules are producing power they will have economic value. The panels will experience a degradation of output over the life of the facility. The manufacturer guarantees that panels will have an output of 98% of the rated capacity when new/installed. Solar module degradation rate is estimated at 0.50% per year, or 96% of capacity remaining after 5 years, and 82% capacity remaining after 35 years. By combining the guaranteed capacity at install and the degradation expected over 35 years, this estimate uses an output capacity of 80.5% for the modules at the time of decommissioning. Recycling/reuse programs have provided quotes to purchase used modules from solar facilities to be re-purposed for other types of projects. To avoid un-conservative pricing for this project, the price used to calculate the salvage value is roughly

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80 percent of the value that has been quoted for other projects, resulting in a value of $0.07 per watt. A 5% loss of modules has been assumed from removing panels from the support structure. The salvage value for modules is then calculated as the output capacity of modules (watts) at 80.5% multiplied by the total number of panels (less 5%) multiplied by $0.07 per watt. The price is based on the buyer transporting panels placed on pallets from the project site.

27. There is an active market for reselling and recycling electrical transformers and inverters with several national companies specializing in recycling. 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 aluminum windings that can be salvaged. Pricing was obtained from www.scrapmonster.com from January 2020. We have assumed a 25% recovery of the weight of the transformers and inverters for copper or aluminum windings.
28. The collection lines are priced assuming copper conductor wire for the DC circuits, which is typical. The prices used reflect a reduced yield of the copper resulting from the insulation and other materials that must be stripped from the wire so that the copper can be recycled. The estimate uses the Midwest price of #2 copper wire with a 50 percent recovery rate as found on www.scrapmonster.com from January 2020. For the salvage value we have assumed 50 percent of the published price.
29. The underground collection lines are assumed to be aluminum conductor. The majority of the length of the collection lines will be buried deep enough so that it does not have to be removed. Those sections coming up out of the ground at junction boxes, or otherwise, can be salvaged. The salvage value is based on the Midwest price of E.C. Aluminum Wire as found on www.scrapmonster.com from January 2020. We have reduced the price to 50 percent of the quoted price to reflect the complications of stripping insulation and separating the materials.
30. 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.
31. All salvage is based on the weights of bulk material or equipment.

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Estimated Decommissioning Costs
Including Dismantling/Removal Costs
and Salvage Value

Project Name: Wild Springs Solar Project
Date:09/25/2020
WPS Project Number: 0007627.00
By: JLB

Project Size	166.00	MW-DC	128.00	MW-AC	*3/19/2020*
	Quantity	Unit	Unit Cost	Total Cost	*Estimated Costs*
Mobilization/Demobilization	1	Lump Sum	$1,022,000.00	$1,022,000	*$1,354,000*
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	*$10,000*
Subtotal Permitting				$10,000	*$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	41,899	Cubic Yards (BV)	$4.48	$187,845	*$240,941*
**the Quantity and Total Cost have been lowered because the linear footage of roads was reduced in the current design, reducing the volume of surface material to be removed*					
Haul Gravel Removed from Road	52,374	Cubic Yards (LV)	$14.71	$770,430	*$988,200*
**the Quantity and Total Cost have been lowered because of the reduction of volume of surface material being removed for the roads.*					
Disposal of Gravel Removal from Road	67,876	Tons	$0.00	$0	*$0*
**the Quantity has been lowered due to less volume being hauled from the site. No adjustment to the Total Cost*					
Grade Road Corridor (Re-spread Topsoil)	106,057	Linear Feet	$1.14	$120,905	*$154,995*
**the Quantity and Total Cost have been lowered because the linear footage of roads was reduced in the current design.*					
Erosion and Sediment Control for Road Restoration	79,543	Linear Feet	$1.91	$151,927	*$194,870*
**the Quantity and Total Cost have been lowered because the linear footage of roads was reduced in the current design.*					
Turf Establishment on Removed Road Area	58.43	Acres	$3,850.00	$224,956	*$288,559*
**the Quantity and Total Cost have been lowered because the linear footage of roads was reduced in the current design.*					
Removal of Security Fence	91,680	Linear Feet	$6.58	$603,254	*$579,040*
**the Quantity and Total Cost have been increased because of an increase of security fencing for the project area in the current Project design.*					
Subtotal Civil Infrastructure				$2,059,316	*$2,446,606*
Civil removal costs are a combination of SDDOT unit costs where applicable, RS Means cost for project zip area and industry standards provided to Westwood. Based on the Landfill, many landfills do not charge for "inert" materials, the gravel can be used for daily cover and other uses at a landfill.					
Structural Infrastructure					
Removal Tracker Steel Foundation Posts	107,448	Each	$13.18	$1,416,268	*$1,416,268*
Haul Tracker Steel Post	8,596	Tons	$7.54	$64,813	*$64,813*
Removal Drive Motor Posts	9,688	Each	$115.03	$1,114,411	*$1,114,411*
Haul Drive Motor Posts	18,419	Ton	$7.54	$138,882	*$138,882*
Remove and Load Metstation Foundation	5	EA	$743.60	$3,718	*$3,718*
Haul Concrete	73	Tons	$14.22	$1,031	*$1,031*
Disposal of Concrete from Foundation	73	Tons	$40.25	$2,918	*$2,918*
Subtotal Structural Infrastructure				$2,742,040	*$2,742,040*
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 in Rapid City, 26 miles away. Assuming a $0.29/ton mile rate and $40.25/ton for tipping fees.					
Electrical Collection/Transmission System					
Removal of PV Panels	391,529	Each	$12.07	$4,726,494	*$9,122,281*
**the Quantity and Total Cost have been lowered due to the total number of PV Panels being reduced in the current Project design.*					
Removal of Combiner Boxes	1,211	Each	$60.00	$72,660	*$72,660*
Removal of PCU Station (Inverters/Panelboard/Transformer)	88	Each	$2,029.56	$178,601	*$178,601*
Haul Inverters and Transformers to Recycler	88	Each	$150.80	$13,270	*$13,270*
Removal of Scada Equipment	1	Each	$5,000.00	$5,000	*$5,000*
Removal of DC Collector System Cables (copper)	9,600.0	LF	$0.43	$4,155	*$4,155*
Removal of Underground (AC) Medium Voltage System Cables	258,167	Linear Foot	$0.48	$124,643	*$124,643*
Load and Haul Cables for Recycling	343.3	Ton	$7.54	$2,589	*$2,589*
Removal of Fiber Optic Cable	86,055.7	LF	$0.13	$11,359	*$11,359*
Removal of Grounding Wire	95,655.7	LF	$0.16	$14,970	*$14,970*
Subtotal Electrical Collection/Transmission System				$5,153,742	*$9,549,529*
Electrical removal costs of PV Panels and Combiner Boxes were based industry standards on installation rates of a three man work crew. PCU					

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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 to be left in the ground, stub up removal at combiner boxes and inverters assumed, standard industry production rates from RS Means. Metal and cable salvage value is based on 75 percent of current scrap metal prices for steel copper, and aluminum. Hauling calculations are based on the locations of metals recyclers in Rapid City, 26 miles away. Resale of PV Panels is based on 85 percent of the price quoted by We Recycle Solar on a recent similar project.

Site Restoration					
Stabilized Construction Entrance	11	Each	$2,000.00	$22,000	*$22,000*
Permanent Seeding on area within Removed Array	1,080	Acres	$3,484.80	$3,763,584	*$3,761,892*
Subtotal Site Restoration				$3,785,584	*$3,783,892*
Site restoration costs are based on past solar project experience.					
Substation					
Drain and Dispose of Transformer Oil	1	LS	$11,000.00	$11,000.00	*$11,000.00*
Disassembly and Removal of Transformer(s)	1	LS	$4,500.00	$4,500.00	*$4,500.00*
Freight Transformer(s) Offsite	1	LS	$2,500.00	$2,500.00	*$2,500.00*
Excavate Around Transformer Foundation(s)	1	LS	$40,000.00	$40,000.00	*$40,000.00*
Remove Complete Transformer Foundation(s)	1	LS	$4,900.00	$4,900.00	*$4,900.00*
Backfill Excavation Area from Transformer Foundation Removal	1	LS	$55,000.00	$55,000.00	*$55,000.00*
Haul scrap reinforcing steel (Transformer Foundation)	6	Tons	$10.00	$60.00	*$60.00*
Haul Concrete (Transformer Foundation)	140	CY	$18.00	$2,520.00	*$2,520.00*
subtotal - substation transformer removal				$120,480.00	*$120,480.00*
Demolish Substation Site Improvements (fences, etc)	1	LS	$3,500.00	$3,500.00	*$3,500.00*
Demolish Control Building and Foundation	1	LS	$12,000.00	$12,000.00	*$12,000.00*
Remove Medium/High Voltage Equipment	1	LS	$3,500.00	$3,500.00	*$3,500.00*
Remove Structural Steel Substation Frame	1	LS	$3,500.00	$3,500.00	*$3,500.00*
Freight - Demolition Materials, Removed Equipment & Structural Steel Offsite	1	LS	$1,250.00	$1,250.00	*$1,250.00*
Disposal of Demolition Materials, Removed Equipment and Structural Steel	1	LS	$0.00		
subtotal - demolition/disposal of imp materials				$23,750.00	*$23,750.00*
Remove Gravel Surfacing from Substation Site	6,200	CY	$8.00	$49,600.00	*$49,600.00*
Disposal of Gravel from Substation Site	6,200	CY	$6.00	$37,200.00	*$37,200.00*
Grade Substation Site	1	LS	$25,000.00	$25,000.00	*$25,000.00*
Erosion and Sediment Control at Substation Site	1	LS	$12,000.00	$12,000.00	*$12,000.00*
Topsoil and Revegetation at Substation Site	1	LS	$16,000.00	$16,000.00	*$16,000.00*
subtotal - substation site gravel removal & restoration				$139,800.00	*$139,800.00*
Project Management	Quantity	Unit	Unit Cost	Total Cost	
Project Manager	25	weeks	$3,800.00	$95,000.00	*$95,000.00*
Superintendent	50	weeks	$3,525.00	$176,250.00	*$176,250.00*
Field Engineer	100	weeks	$2,325.00	$232,500.00	*$232,500.00*
Clerk	50	weeks	$750.00	$37,500.00	*$37,500.00*
subtotal -Project Management				$541,250.00	*$541,250.00*
Salvage					
Fencing	440	Tons	$165.00	$72,600	*$72,600*
Steel Posts	8,596	Tons	$165.00	$1,418,340	*$1,418,340*
Module Racking	18,419	Tons	$165.00	$3,039,135	*$3,039,135*
PV Modules	371,953	EA (5% loss)	$23.87	$8,878,539	*$17,135,819*
**the Quantity and Total Cost have been lowered due to the total number of PV Panels being reduced in the current Project design*					
Inverters and Transformers	264,000	Pounds	$0.37	$97,680	*$98*
**the Quantity and Unit value originally provided was incorrect, providing the total number of units. The salvage cost is based off of the total weight in pounds multiplied by the unit cost ($/lb). The Quantity and Unit have been adjusted accordingly.*					
Scada Equipment	1	Each	$1,000.00	$1,000	*$1,000*
DC Collection Lines	18,240	LBS (5% loss)	$0.48	$8,755	*$8,755*
AC Collection Lines	613,147	LBS (5% loss)	$0.20	$122,629	*$122,629*
Grounding Wire	20,901	Pounds	$1.79	$37,308	*$37,308*
Substation Tranformer Oil	1	LS	$3,500.00	$3,500	*$3,500*
Substation Transformers	1	LS	$33,300.00	$33,300	*$33,300*
Scrap reinforcing steel from Substation Transformer Foundation	6	Tons	$80.00	$480.00	*$480.00*
Substation Demolition Materials, Removed Equipment and Structural Steel	1	LS	$1,750.00	$1,750.00	*$1,750.00*

Salvage values are a combination of the following factors; current market metal salvage prices, current secondary market

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Estimated Decommissioning Costs
Including Dismantling/Removal Costs
and Salvage Value

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.			
Construction Subtotal		$15,597,961	*$20,711,347*
Contingency		$2,158,425	*$2,902,102*
15% of construction total (minus Mobilization/Demobilization/Permitting) based on previous project estimations.			
County Administration Costs (2.5%)		$439,123.15	*$590,336.22*
	Construction Total	$18,195,509.52	*$24,203,784.88*
Subtotal Salvage		$13,715,017	*$21,874,715*
Total Demolition Minus Salvage		$4,480,492	*$2,329,070*

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.