

Project Name: Wild Springs Solar Project  
Date: 03/07/2024  
WPS Project Number: 0007627.00  
By: KDM/CAB

Project Size	163	MW-DC	128.00	MW-AC	9/25/2020
	Quantity	Unit	Unit Cost	Total Cost	Estimated Costs
<b>Mobilization/Demobilization</b>	1	Lump Sum	\$891,000.00	<b>\$891,000</b>	<b>\$1,022,000</b>
<i>*the Unit/Total Cost has been revised as it is based on 7% of the current total decommissioning cost</i>					
<b>Permitting</b>					
State Permits	1	Lump Sum	\$10,000.00	\$10,000	\$10,000
<b>Subtotal Permitting</b>				<b>\$10,000</b>	<b>\$10,000</b>
<i>*Decommissioning will require a SWPPP and SPCC plan, cost is an estimate of the permit preparation cost.</i>					
<b>Civil Infrastructure</b>					
Removal Gravel Surfacing from Road	32,744.3	Cubic Yards (BV)	\$4.84	\$158,482	\$187,845
<i>*the Quantity and Total Cost have been lowered due to a decrease in total inverters which led to a decrease in total road lengths built.</i>					
Haul Gravel Removed from Road	40,930.4	Cubic Yards (LV)	\$12.19	\$498,942	\$770,430
<i>*the Quantity and Total Cost has been lowered due to a decrease in total road lengths and changes in RSMeans values.</i>					
Disposal of Gravel Removal from Road	53,045.8	Tons	\$0.00	\$0	\$0
<i>*the Quantity and Total Cost have been lowered due to a decrease in total inverters which led to a decrease in total road lengths.</i>					
Grade Road Corridor (Re-spread Topsoil)	51,567.4	Linear Feet	\$3.69	\$190,284	\$120,905
<i>*the Quantity and Total Cost have been lowered due to changes in RSMeans values and a decrease in total road length built.</i>					
Erosion and Sediment Control for Road Restoration	38,675.5	Linear Feet	\$3.48	\$134,591	\$151,927
<i>*the Quantity and Total Cost have been lowered due to changes in RSMeans values and a decrease in total road length built.</i>					
Turf Establishment on Removed Road Area	26.5	Acres	\$4,250.00	\$112,625	\$224,956
<i>*the Quantity and Total Cost have been lowered due to changes in RSMeans values and a decrease in total road length built.</i>					
Removal of Security Fence	91,787.5	Linear Feet	\$6.54	\$600,290	\$603,254
<i>*the Quantity and Total Cost have been lowered due to changes in RSMeans values.</i>					
<b>Subtotal Civil Infrastructure</b>				<b>\$1,695,214</b>	<b>\$2,059,316</b>
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.					
<b>Structural Infrastructure</b>					
Removal Tracker Steel Foundation Posts	54,230	Each	\$17.50	\$949,025	\$1,416,268
<i>*the Quantity and Total Cost have been lowered due to changes in RSMeans values and a decrease in the total number of tracker blocks built.</i>					
Haul Tracker Steel Post	4,338.4	Tons	\$7.54	\$32,712	\$64,813
<i>*the Quantity and Total Cost have been lowered due to the total number of tracker blocks being reduced in the constructed design.</i>					
Removal of Tracker Row Racking	4,563.0	Each	\$113.01	\$515,665	\$1,114,411
<i>* the Quantity and Total Cost have been lowered due to changes in RSMeans values and a decrease in the total number of tracker blocks built, which reduced the total number of motor posts.</i>					
Haul Tracker Row Racking to Recycler	8,675.4	Ton	\$7.54	\$65,413	\$138,882
<i>*the Quantity and Total Cost have been lowered due to a decrease in the total number of tracker blocks in the constructed design.</i>					
Remove and Load Metstation Foundation	4	EA	\$917.40	\$3,670	\$3,718
<i>*the Quantity and Total Cost have been lowered due to a decrease in the total number of Metstations built.</i>					
Haul Concrete	58	Tons	\$16.51	\$958	\$1,031
<i>*the Quantity and Total Cost have been lowered due a decrease in the total number of Metstations built.</i>					
Disposal of Concrete from Foundation	58	Tons	\$40.25	\$2,335	\$2,918
<i>*the Quantity and Total Cost have been lowered due a decrease in the total number of Metstations built.</i>					
<b>Subtotal Structural Infrastructure</b>				<b>\$1,569,775</b>	<b>\$2,742,040</b>
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	347,580	Each	\$13.94	\$4,845,265	\$4,726,494
<i>*the Unit Price and Total Cost have been increased due to changes in RSMeans values.</i>					
Removal of Combiner Boxes	570	Each	\$60.00	\$34,200	\$72,660
<i>*the Quantity and Total Cost have been lowered due to a decrease in the total number of PV Panels built, reducing the number of combiner boxes needed.</i>					
Removal of PCU Station (Inverters/Panelboard/Transformer)	40	Each	\$2,334.96	\$93,398	\$178,601
<i>*the Quantity and Total Cost have been decreased due to a decrease in the total number of PV Panels and inverters in the constructed design.</i>					
Haul Inverters and Transformers to Recycler	40	Each	\$150.80	\$6,032	\$13,270
<i>*the Quantity and Total Cost have been lowered due to a decrease in the total number of PV Panels and inverters in the constructed design.</i>					
Removal of Scada Equipment	1	Each	\$5,000.00	\$5,000	\$5,000
Removal of DC Collector System Cables (copper)	19,963	LF	\$0.52	\$10,381	\$4,155
<i>*the Quantity, Unit Price, and Total Cost have been increased due to an increase in panels and inverters for the constructed design as well as changes in RSMeans values</i>					
Removal of Underground (AC) Medium Voltage System Cables	4,800	LF	\$0.57	\$2,736	\$124,643
<i>*the Quantity and Total Cost have been decreased due to the AC/MV collection built being buried at least 48" and the assumption that it will be abandoned in place. Service whips and stub up transitions at inverters to be removed.</i>					
Load and Haul Cables for Recycling	28.4	Ton	\$7.54	\$214	\$2,589
<i>*the Quantity and Total Cost have been lowered due to the total length of cable removed being reduced.</i>					
Removal of Fiber Optic Cable	1,600	LF	\$0.16	\$256	\$11,359
<i>*the Quantity and Total Cost have been lowered due to the AC/MV collection built being buried at least 48" and the assumption it will be abandoned in place. Service whips and stub up transitions at inverters to be removed.</i>					
Removal of Grounding Wire	21,563	LF	\$0.19	\$4,097	\$14,970
<i>*the Quantity and Total Cost have been lowered due to the AC/MV collection built being buried at least 48" and assumed to be abandoned in place. Service whips and stub up transitions at inverters to be removed.</i>					
<b>Subtotal Electrical Collection/Transmission System</b>				<b>\$5,001,579</b>	<b>\$5,153,742</b>

Electrical removal costs of PV Panels and Combiner Boxes were based industry standards on installation rates of a three man work crew. PCU Station, MV Equipment and Scada Equipment removal cost are based on removal of equipment, concrete pads, and conduits using a truck mounted crane and contractor provided information on installation rates. Cable to be fully removed, 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	8	Each	\$2,000.00	\$16,000	\$22,000
<i>*the Quantity and Total Cost have been lowered due to the total number of entrances being reduced in the constructed Project design</i>					
Permanent Seeding on area within Removed Array	906.4	Acres	\$3,872.00	\$3,509,581	\$3,763,584
<i>*the Quantity and Total Cost have been decreased due to a decrease in the total disturbed area built.</i>					
<b>Subtotal Site Restoration</b>				<b>\$3,525,581</b>	<b>\$3,785,584</b>

Site restoration costs are based on past solar project experience.

## Substation

*\*Unit price for all Lump Sum line items for the substation have been increased by a factor of 20% to account for CPI Inflation since the initial estimate was prepared in 2020.*

Drain and Dispose of Transformer Oil	1	LS	\$13,200.00	\$13,200.00	\$11,000.00
Disassembly and Removal of Transformer(s)	1	LS	\$5,400.00	\$5,400.00	\$4,500.00
Freight Transformer(s) Offsite	1	LS	\$3,000.00	\$3,000.00	\$2,500.00
Excavate Around Transformer Foundation(s)	1	LS	\$48,000.00	\$48,000.00	\$40,000.00
Remove Complete Transformer Foundation(s)	1	LS	\$5,880.00	\$5,880.00	\$4,900.00
Backfill Excavation Area from Transformer Foundation Removal	1	LS	\$66,000.00	\$66,000.00	\$55,000.00
Haul scrap reinforcing steel (Transformer Foundation)	10	Tons	\$100.00	\$1,000.00	\$60.00
<i>*the Quantity, Unit Price, and Total Cost have been increased due to changes concrete recycling costs at the selected recycler and transformers used in constructed design.</i>					
Haul Concrete (Transformer Foundation)	140	CY	\$18.00	\$2,520.00	\$2,520.00
<b>subtotal - substation transformer removal</b>				<b>\$145,000.00</b>	<b>\$120,480.00</b>
Demolish Substation Site Improvements (fences, etc)	1	LS	\$4,200.00	\$4,200.00	\$3,500.00
Demolish Control Building and Foundation	1	LS	\$14,400.00	\$14,400.00	\$12,000.00
Remove Medium/High Voltage Equipment	1	LS	\$4,200.00	\$4,200.00	\$3,500.00
Remove Structural Steel Substation Frame	1	LS	\$4,200.00	\$4,200.00	\$3,500.00
Freight - Demolition Materials, Removed Equipment & Structural Steel Offsite	1	LS	\$1,500.00	\$1,500.00	\$1,250.00
<b>subtotal - demolition/disposal of imp materials</b>				<b>\$28,500.00</b>	<b>\$23,750.00</b>
Remove Gravel Surfacing from Substation Site	6,200	CY	\$4.84	\$30,008.00	\$49,600.00
<i>*the Unit Price and Total Cost have been decreased due to changes in RSMeans values.</i>					
Disposal of Gravel from Substation Site	6,200	CY	\$6.00	\$37,200.00	\$37,200.00
Grade Substation Site	1	LS	\$30,000.00	\$30,000.00	\$25,000.00

Erosion and Sediment Control at Substation Site	1	LS	\$14,400.00	\$14,400.00	\$12,000.00
Topsoil and Revegetation at Substation Site	1	LS	\$19,200.00	\$19,200.00	\$16,000.00
<b>subtotal - substation site gravel removal &amp; restoration</b>				<b>\$130,808.00</b>	<b>\$139,800.00</b>
<b>Project Management</b>	Quantity	Unit	Unit Cost	Total Cost	
Project Manager	25	weeks	\$3,729.00	\$93,225.00	\$95,000.00
<i>*the Unit Price and Total Cost have been decreased due to changes in RSMMeans values.</i>					
Superintendent	50	weeks	\$3,525.00	\$176,250.00	\$176,250.00
Field Engineer	100	weeks	\$3,269.00	\$326,900.00	\$232,500.00
<i>*the Unit Price and Total Cost have been increased due to changes in RSMMeans values.</i>					
Clerk	50	weeks	\$750.00	\$37,500.00	\$37,500.00
<b>subtotal -Project Management</b>				<b>\$633,875.00</b>	<b>\$541,250.00</b>
<b>Salvage</b>					
Fencing	458.9	Tons	\$243.75	\$111,857	\$72,600
<i>*the Total Cost has changed due to changes in quantities in the constructed design and increased scrap prices on scrapmonster.com</i>					
Steel Posts	4,338.4	Tons	\$243.75	\$1,057,485	\$1,418,340
<i>*the Total Cost has changed due to changes in quantities in the constructed design and increased scrap prices on scrapmonster.com</i>					
Module Racking	8,675.4	Tons	\$243.75	\$2,114,629	\$3,039,135
<i>*the Total Cost has changed due to changes in quantities in the constructed design and increased scrap prices on scrapmonster.com</i>					
PV Modules	330,201	EA (5% loss)	\$23.87	\$7,881,898	\$8,878,539
<i>*the Quantity and Total Cost have been lowered due to the total number of PV Panels being reduced in the constructed Project design.</i>					
Inverters and Transformers	411,832	Pounds	\$0.36	\$148,260	\$97,680
<i>*the Total Cost has changed due to an increase in inverter model weight and therefore copper &amp; aluminum quantity. Increase in weight reflects only copper and aluminum.</i>					
Scada Equipment	1	Each	\$1,000.00	\$1,000	\$1,000
DC Collection Lines	37,929.7	LBS (5% loss)	\$0.63	\$23,896	\$8,755
<i>*the Total Cost has changed due to changes in quantities in the constructed DC being above ground and therefore will be fully removed and increased scrap prices on scrapmonster.com.</i>					
AC Collection Lines	11,400	LBS (5% loss)	\$0.24	\$2,736	\$122,629
<i>*the Total Cost has changed due to changes in quantities in the constructed design and increased scrap prices on scrapmonster.com. AC/MV collection was buried at least 48" and is assumed to be abandoned in place. Service whips and stub up transitions at inverters to be removed.</i>					
Grounding Wire	4,711.5	Pounds	\$2.69	\$12,674	\$37,308
<i>*the Total Cost has changed due to changes in quantities in the constructed design and increased scrap prices on scrapmonster.com. AC/MV collection was buried at least 48" and is assumed to be abandoned in place. Service whips and stub up transitions at inverters to be removed.</i>					
Substation Tranformer Oil	1	LS	\$3,500.00	\$3,500	\$3,500
Substation Transformers	1	LS	\$37,800.00	\$37,800	\$33,300
<i>*the Total Cost has increased due to changes in estimated scrap prices from scrapmonster.com</i>					
Scrap reinforcing steel from Substation Transformer Foundation	10	Tons	\$80.00	\$800.00	\$480.00
<i>*the Quantity and Total Cost have been increased due to changes in the transformers and foundations used in constructed design.</i>					
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 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.					
<b>Construction Subtotal</b>				<b>\$13,631,332</b>	<b>\$15,597,961</b>
<b>Contingency</b>				<b>\$1,909,553</b>	<b>\$2,158,425</b>
15% of construction total (minus Mobilization/Demobilization/Permitting) based on previous project estimations.					
<b>Construction Total</b>				<b>\$15,540,886</b>	<b>\$18,195,509.52</b>
<b>Subtotal Salvage</b>				<b>\$11,398,284</b>	<b>\$13,715,017</b>
<b>Total Demolition Minus Salvage</b>				<b>\$4,142,602</b>	<b>\$4,480,492</b>

Notes:

- Prices used in analysis are estimated based on research of current average costs and salvage values.
- Prices provided are estimates and may fluctuate over the life of the project.
- Contractor means and methods may vary and price will be affected by these.