

Project Name: Wild Springs Solar Project
Date:08/09/2022
WPS Project Number: 0007627.00
By: HAC

Project Size	168.58	MW-DC	128.00	MW-AC	9/25/2020
	Quantity	Unit	Unit Cost	Total Cost	Estimated Costs
Mobilization/Demobilization	1	Lump Sum	\$876,000.00	\$876,000	\$1,022,000
<i>*the Unit/Total Cost has been revised as it is based on 7% of the current total decommissioning cost</i>					
Permitting					
State Permits	1	Lump Sum	\$10,000.00	\$10,000	\$10,000
Subtotal Permitting				\$10,000	\$10,000
<i>*Decommissioning will require a SWPPP and SPCC plan, cost is an estimate of the permit preparation cost.</i>					
Civil Infrastructure					
Removal Gravel Surfacing from Road	28,636	Cubic Yards (BV)	\$4.46	\$127,627	\$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.</i>					
Haul Gravel Removed from Road	35,796	Cubic Yards (LV)	\$14.68	\$525,510	\$770,430
<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>					
Disposal of Gravel Removal from Road	46,391	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)	48,370	Linear Feet	\$3.92	\$189,610	\$120,905
<i>*the Quantity and Total Cost have been lowered due to changes in RSMeans values and a decrease in total road length in current design.</i>					
Erosion and Sediment Control for Road Restoration	36,278	Linear Feet	\$3.19	\$115,725	\$151,927
<i>*the Quantity and Total Cost have been lowered due to changes in RSMeans values and a decrease in total road length in current design.</i>					
Turf Establishment on Removed Road Area	26.65	Acres	\$4,350.00	\$115,928	\$224,956
<i>*the Quantity and Total Cost have been lowered due to changes in RSMeans values and a decrease in total road length in current design.</i>					
Removal of Security Fence	78,700	Linear Feet	\$6.29	\$495,023	\$603,254
<i>*the Quantity and Total Cost have been lowered due to changes in RSMeans values and a decrease in total linear feet of fence in the current design.</i>					
Subtotal Civil Infrastructure				\$1,569,425	\$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	54,120	Each	\$13.18	\$713,353	\$1,416,268
<i>*the Quantity and Total Cost have been lowered due to the total number of tracker blocks being reduced in the current design.</i>					
Haul Tracker Steel Post	4,330	Tons	\$7.54	\$32,648	\$64,813
<i>*the Quantity and Total Cost have been lowered due to the total number of tracker blocks being reduced in the current design.</i>					
Removal Drive Motor Posts	4,548	Each	\$138.53	\$630,034	\$1,114,411
<i>* the Quantity and Total Cost have been lowered due to the total number of tracker blocks being reduced in the current design, which reduced the total number of motor posts and a change in RSMeans pricing.</i>					
Haul Drive Motor Posts	8,647	Ton	\$7.54	\$65,198	\$138,882
<i>*the Quantity and Total Cost have been lowered due to the total number of tracker blocks being reduced in the current design.</i>					
Remove and Load Metstation Foundation	5	EA	\$748.73	\$3,744	\$3,718
<i>*the Unit Price and Total Cost have been increased due to changes in RSMeans values.</i>					
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				\$1,448,926	\$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	347,579	Each	\$12.07	\$4,195,935	\$4,726,494
<i>*the Quantity and Total Cost have been lowered due to the total number of PV Panels being reduced and the wattage changed from 425W to 485W in the current Project design.</i>					
Removal of Combiner Boxes	569	Each	\$60.00	\$34,110	\$72,660
<i>*the Quantity and Total Cost have been lowered due to the total number of PV Panels being reduced in the current Project design, reducing the number of combiner boxes needed.</i>					
Removal of PCU Station (Inverters/Panelboard/Transformer)	34	Each	\$2,029.56	\$69,005	\$178,601
<i>*the Quantity and Total Cost have been lowered due to the total number of PV Panels being reduced and using updated equipment in the current Project design. The current layout assumes 34 inverters at 4200kVA/kW vs the previous design had 88 inverters at 1500kVA/kW previously.</i>					
Haul Inverters and Transformers to Recycler	34	Each	\$150.80	\$5,127	\$13,270
<i>*the Quantity and Total Cost have been lowered due to the total number of Inverters being reduced in the current Project design. The current layout assumes 34 inverters at 4200kVA/kW vs the previous design had 88 inverters at 1500kVA/kW previously.</i>					
Removal of Scada Equipment	1	Each	\$5,000.00	\$5,000	\$5,000
Removal of DC Collector System Cables (copper)	19,780.0	LF	\$0.43	\$8,507	\$4,155
<i>*the Quantity and Total Cost have been increased due to the assumption that the cables will be fully removed due to DC lines being above ground which increase salvage values</i>					
Removal of Underground (AC) Medium Voltage System Cables	4,080	LF	\$0.48	\$1,959	\$124,643
<i>*the Quantity and Total Cost have been lowered due to the total length of cable being reduced in the current Project design. AC/MV collection assumed to be buried at least 48" and abandoned in place. Service whips and stub up transitions at inverters to be removed.</i>					
Load and Haul Cables for Recycling	27.0	Ton	\$7.54	\$206	\$2,589
<i>*the Quantity and Total Cost have been lowered due to the total length of cable being reduced in the current Project design.</i>					
Removal of Fiber Optic Cable	1,360.0	LF	\$0.13	\$178	\$11,359
<i>*the Quantity and Total Cost have been lowered due to the total length of cable being reduced in the current Project design. AC/MV collection assumed to be buried at least 48" and abandoned in place. Service whips and stub up transitions at inverters to be removed.</i>					
Removal of Grounding Wire	21,140.0	LF	\$0.16	\$3,306	\$14,970
<i>*the Quantity and Total Cost have been lowered due to the total length of cable being reduced in the current Project design. AC/MV collection assumed to be buried at least 48" and abandoned in place. Service whips and stub up transitions at inverters to be removed.</i>					
Subtotal Electrical Collection/Transmission System				\$4,323,334	\$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 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	7	Each	\$2,000.00	\$14,000	\$22,000
<i>*the Quantity and Total Cost have been lowered due to the total number of entrances being reduced in the current Project design.</i>					
Permanent Seeding on area within Removed Array	1,080	Acres	\$3,968.80	\$4,286,304	\$3,763,584
<i>* the Unit Price and Total Cost have been increased due to changes in RSMeans values.</i>					
Subtotal Site Restoration				\$4,300,304	\$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	\$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
<i>subtotal - substation transformer removal</i>				\$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
<i>subtotal - demolition/disposal of imp materials</i>				\$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
<i>subtotal - substation site gravel removal & restoration</i>				\$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	\$2,775.00	\$277,500.00	\$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
<i>subtotal -Project Management</i>				\$586,250.00	\$541,250.00
Salvage					
Fencing	394	Tons	\$378.75	\$149,038	\$72,600
<i>*the Total Cost has changed due to changes in quantities in the current design and increased scrap prices on scrapmonster.com</i>					
Steel Posts	4,330	Tons	\$378.75	\$1,639,836	\$1,418,340
<i>*the Total Cost has changed due to changes in quantities in the current design and increased scrap prices on scrapmonster.com</i>					
Module Racking	8,647	Tons	\$378.75	\$3,275,008	\$3,039,135
<i>*the Total Cost has changed due to changes in quantities in the current design and increased scrap prices on scrapmonster.com</i>					
PV Modules	330,200	EA (5% loss)	\$23.87	\$7,881,884	\$8,878,539
<i>*the Quantity and Total Cost have been lowered due to the total number of PV Panels being reduced in the current Project design.</i>					
Inverters and Transformers	264,000	Pounds	\$0.42	\$110,880	\$97,680
<i>*the Total Cost has changed due to a decrease in total inverters in the current design and increased scrap prices on scrapmonster.com</i>					
Scada Equipment	1	Each	\$1,000.00	\$1,000	\$1,000
DC Collection Lines	37,582	LBS (5% loss)	\$0.74	\$27,811	\$8,755
<i>*the Total Cost has changed due to changes in quantities in the current design, assuming DC is above ground and therefore will be fully removed and increased scrap prices on scrapmonster.com.</i>					
AC Collection Lines	9,690	LBS (5% loss)	\$0.37	\$3,561	\$122,629
<i>*the Total Cost has changed due to changes in quantities in the current design and increased scrap prices on scrapmonster.com. AC/MV collection assumed to be buried at least 48" and abandoned in place. Service whips and stub up transitions at inverters to be removed.</i>					
Grounding Wire	4,619	Pounds	\$3.13	\$14,446	\$37,308
<i>*the Total Cost has changed due to changes in quantities in the current design and increased scrap prices on scrapmonster.com. AC/MV collection assumed to be buried at least 48" and 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	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 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				\$13,398,269	\$15,597,961
Contingency				\$1,876,840	\$2,158,425
15% of construction total (minus Mobilization/Demobilization/Permitting) based on previous project estimations.					
County Administration Costs (2.5%)				\$381,877.73	\$439,123.15
			Construction Total	\$15,656,987.10	\$18,195,509.52
Subtotal Salvage				\$13,146,994	\$13,715,017
Total Demolition Minus Salvage				\$2,509,993	\$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.