

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
	Quantity	Unit	Unit Cost	Total Cost
Mobilization/Demobilization	1	Lump Sum	\$876,000.00	\$876,000

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	28,636	Cubic Yards (BV)	\$4.46	\$127,628
Haul Gravel Removed from Road	35,796	Cubic Yards (LV)	\$14.68	\$525,510
Disposal of Gravel Removal from Road	46,391	Tons	\$0.00	\$0
Grade Road Corridor (Re-spread Topsoil)	48,370	Linear Feet	\$3.92	\$189,610
Erosion and Sediment Control for Road Restoration	36,278	Linear Feet	\$3.19	\$115,725
Turf Establishment on Removed Road Area	26.65	Acres	\$4,350.00	\$115,928
Removal of Security Fence	78,700	Linear Feet	\$6.29	\$495,023
Subtotal Civil Infrastructure				\$1,569,425

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
Haul Tracker Steel Post	4,330	Tons	\$7.54	\$32,648
Removal Drive Motor Posts	4,548	Each	\$138.53	\$630,034
Haul Drive Motor Posts	8,647	Ton	\$7.54	\$65,198
Remove and Load Metstation Foundation	5	EA	\$748.73	\$3,744
Haul Concrete	73	Tons	\$14.22	\$1,031
Disposal of Concrete from Foundation	73	Tons	\$40.25	\$2,918
Subtotal Structural Infrastructure				\$1,448,926

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
Removal of Combiner Boxes	569	Each	\$60.00	\$34,110
Removal of PCU Station (Inverters/Panelboard/Transformer)	34	Each	\$2,029.56	\$69,005
Haul Inverters and Transformers to Recycler	34	Each	\$150.80	\$5,127
Removal of Scada Equipment	1	Each	\$5,000.00	\$5,000
Removal of DC Collector System Cables (copper)	19,780.0	LF	\$0.43	\$8,507
Removal of Underground (AC) Medium Voltage System Cables	4,080	LF	\$0.48	\$1,959
Load and Haul Cables for Recycling	27.0	Ton	\$7.54	\$206
Removal of Fiber Optic Cable	1,360.0	LF	\$0.13	\$178
Removal of Grounding Wire	21,140.0	LF	\$0.16	\$3,306
Subtotal Electrical Collection/Transmission System				\$4,323,334

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, conduit stub ups from underground transitions, 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
Permanent Seeding on area within Removed Array	1,080	Acres	\$3,968.80	\$4,286,304
Subtotal Site Restoration				\$4,300,304

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
<i>subtotal - substation transformer removal</i>				\$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
<i>subtotal - demolition/disposal of imp materials</i>				\$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
<i>subtotal - substation site gravel removal & restoration</i>				\$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	\$2,775.00	\$277,500.00
Clerk	50	weeks	\$750.00	\$37,500.00
<i>subtotal -Project Management</i>				\$586,250.00

Salvage

Fencing	394	Tons	\$378.75	\$149,038
Steel Posts	4,330	Tons	\$378.75	\$1,639,836
Module Racking	8,647	Tons	\$378.75	\$3,275,008
PV Modules	330,200	EA (5% loss)	\$23.87	\$7,881,884
Inverters and Transformers	264,000	Pounds	\$0.42	\$110,880
Scada Equipment	1	Each	\$1,000.00	\$1,000
DC Collection Lines	37,582	LBS (5% loss)	\$0.74	\$27,811
AC Collection Lines	9,690	LBS (5% loss)	\$0.37	\$3,561
Grounding Wire	4,619	Pounds	\$3.13	\$14,446
Substation Tranformer Oil	1	LS	\$3,500.00	\$3,500
Substation Transformers	1	LS	\$37,800.00	\$37,800
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				\$13,398,269.01
Contingency				\$1,876,840.35
15% of construction total (minus Mobilization/Demobilization/Permitting) based on previous project estimations.				
County Administration Costs (2.5%)				\$381,877.73
		Construction Total		\$15,656,987.10
Subtotal Salvage				\$13,146,993.62
Total Demolition Minus Salvage				\$2,509,993.47

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.