

# **Chokecherry and Sierra Madre Wind Energy Project**

## **Decommissioning and Reclamation Cost Estimate**



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Pursuant to rules and regulations of the Wyoming Industrial Siting Council, PCW has developed this cost estimate to decommission the CCSM Project and reclaim the CCSM Project Site.

### **Scope**

A description of decommissioning activities, methods, and equipment are included in the CCSM Project Construction, Operations and Maintenance, and Decommissioning Plan. A description of reclamation activities is provided in the CCSM Project Master Reclamation Plan.

The decommissioning plan and associated cost estimate are based on current industry approaches, adopted from wind energy construction practices. Given the relatively recent advancements in wind energy development, few wind energy projects have undergone decommissioning. PCW expects that, by the time the CCSM Project undergoes decommissioning, a great deal more decommissioning experience will have been obtained in the wind energy industry, and that more efficient techniques will be available. Therefore, the cost estimate presented below is expected to be a conservative estimate.

PCW organized the decommissioning cost estimate by the expected scope of each right of way grant from the Bureau of Land Management.

### **Cost Estimate**

PCW developed the estimate based on input from various firms on the CCSP Project Design Team. For decommissioning, these include significant input from MA Mortenson, a large construction firm that is a leader in the wind energy industry with more than 100 wind energy projects completed. Other team members supplying cost information has included Westwood Professional Services (civil construction) and Professional Logistics Group (rail facility). For reclamation, the costs are based on input from SWCA Environmental Consultants, who developed the Master Reclamation Plan and have been managed many elements of the CCSM Project's soils, vegetation, and wildlife programs. The cost estimate is developed from each team member's vast experience with similar projects, and is based upon the CCSM Project's design, site conditions, and decommissioning schedule.

The decommissioning and reclamation costs were developed from site conditions assumed to be in existence at the end of the CCSM Project's operations stage, which is at least 20 years after the completion of construction. The cost to establish interim reclamation during and immediately after construction is not included in this estimate, as it is already covered in the CCSM Project's construction cost estimate. Also, PCW is assuming the Road Rock Quarry will undergo reclamation after the quarry site is closed post-construction, and therefore the only portions of the quarry right of way grant included in this estimate is the access road which is also integrated into the wind development area.

### **Estimate Case Assumptions**

PCW has developed three decommissioning cost estimate cases, based on variance and scrap value assumptions. These cases are described below and summarized in the tables below.

**Case 1: Without Variances or Scrap.** This estimate completely meets the requirements specified in Section 10 of the ISC rules and regulations for all non-BLM lands. On BLM lands, only the pedestal portions of underground foundations are removed and all underground cable is left in place per the decommissioning requirements of the BLM. For all CCSM Project equipment and materials described in the COMP (Appendix N), the estimate includes transport of the materials to the primary laydown yard at the West Sinclair Rail Facility. For those items without any salvage value, the estimate also includes costs to dispose of them in a landfill (including off-site transport). For those items and material with salvage value, PCW assumed interested parties would arrange to collect the items from the laydown yard using either road or rail based transport (but that no salvage value was collected).

**Case 2: With Variances, Without Scrap.** This estimate is the same as Case 1, except that PCW is successful in obtaining the variances requested in Section 8.2 of the application, and that underground foundations and cables are treated on non-BLM land in the same manner as BLM land.

**Case 3. With Variances and Scrap.** This estimate is the same as Case 2, except that PCW is able to collect funds for all materials with scrap value.

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**Table 1: CCSM Decommissioning and Reclamation Cost Estimate – Total Project**

Project Element	Without ISC Variances or Scrap Value			With ISC Variances, Without Scrap Value			With ICS Variances and Scrap Value		
	BLM Land	Non-Federal Land	Total	BLM Land	Non-Federal Land	Total	BLM Land	Non-Federal Land	Total
<b>LONG-TERM ELEMENT REMOVAL</b>	<b>\$103,880,000</b>	<b>\$199,262,000</b>	<b>\$303,142,000</b>	<b>\$103,880,000</b>	<b>\$119,921,000</b>	<b>\$223,801,000</b>	<b>\$92,759,000</b>	<b>\$107,007,000</b>	<b>\$199,766,000</b>
Wind Turbines and Sites	\$47,616,000	\$105,342,000	\$152,958,000	\$47,616,000	\$52,742,000	\$100,358,000	\$38,124,000	\$42,208,000	\$80,332,000
Roads	\$46,771,000	\$50,354,000	\$97,125,000	\$46,771,000	\$50,354,000	\$97,125,000	\$45,296,000	\$48,792,000	\$94,088,000
Collection System	\$4,016,000	\$21,062,000	\$25,078,000	\$4,016,000	\$5,946,000	\$9,962,000	\$4,016,000	\$5,946,000	\$9,962,000
Substations	\$278,000	\$1,990,000	\$2,268,000	\$278,000	\$1,990,000	\$2,268,000	\$161,000	\$1,285,000	\$1,446,000
Transmission System	\$4,263,000	\$17,637,000	\$21,900,000	\$4,263,000	\$6,012,000	\$10,275,000	\$4,263,000	\$6,012,000	\$10,275,000
Rail Facility	\$635,000	\$1,929,000	\$2,564,000	\$635,000	\$1,929,000	\$2,564,000	\$598,000	\$1,816,000	\$2,414,000
Met Towers	\$290,000	\$450,000	\$740,000	\$290,000	\$450,000	\$740,000	\$290,000	\$450,000	\$740,000
Site Buildings	\$11,000	\$498,000	\$509,000	\$11,000	\$498,000	\$509,000	\$11,000	\$498,000	\$509,000
<b>TEMPORARY FACILITIES INSTALLATION AND REMOVAL</b>	<b>\$12,243,000</b>	<b>\$19,927,000</b>	<b>\$32,170,000</b>	<b>\$12,243,000</b>	<b>\$19,927,000</b>	<b>\$32,170,000</b>	<b>\$11,459,000</b>	<b>\$18,593,000</b>	<b>\$30,052,000</b>
<b>OFF-SITE DISPOSAL AND OVERHEAD</b>	<b>\$2,370,000</b>	<b>\$7,070,000</b>	<b>\$9,440,000</b>	<b>\$2,370,000</b>	<b>\$7,070,000</b>	<b>\$9,440,000</b>	<b>\$2,370,000</b>	<b>\$7,070,000</b>	<b>\$9,440,000</b>
<b>PROJECT TOTAL</b>	<b>\$118,493,000</b>	<b>\$226,259,000</b>	<b>\$344,752,000</b>	<b>\$118,493,000</b>	<b>\$146,918,000</b>	<b>\$265,411,000</b>	<b>\$106,588,000</b>	<b>\$132,670,000</b>	<b>\$239,258,000</b>

**Table 2: CCSM Decommissioning and Reclamation Cost Estimate – Phase I Haul Road and Facilities**

Project Element	Without ISC Variances or Scrap Value			With ISC Variances, Without Scrap Value			With ICS Variances and Scrap Value		
	BLM Land	Non-Federal Land	Total	BLM Land	Non-Federal Land	Total	BLM Land	Non-Federal Land	Total
<b>LONG-TERM ELEMENT REMOVAL</b>	<b>\$9,318,000</b>	<b>\$9,843,000</b>	<b>\$19,161,000</b>	<b>\$9,318,000</b>	<b>\$9,843,000</b>	<b>\$19,161,000</b>	<b>\$8,868,000</b>	<b>\$9,362,000</b>	<b>\$18,230,000</b>
Wind Turbines and Sites	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Roads	\$9,318,000	\$9,843,000	\$19,161,000	\$9,318,000	\$9,843,000	\$19,161,000	\$8,868,000	\$9,362,000	\$18,230,000
Collection System	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Substations	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Transmission System	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Rail Facility	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Met Towers	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Site Buildings	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>TEMPORARY FACILITIES INSTALLATION AND REMOVAL</b>	<b>\$528,000</b>	<b>\$1,108,000</b>	<b>\$1,636,000</b>	<b>\$528,000</b>	<b>\$1,108,000</b>	<b>\$1,636,000</b>	<b>\$488,000</b>	<b>\$1,024,000</b>	<b>\$1,512,000</b>
<b>OFF-SITE DISPOSAL AND OVERHEAD</b>	<b>\$0</b>	<b>\$740,000</b>	<b>\$740,000</b>	<b>\$0</b>	<b>\$740,000</b>	<b>\$740,000</b>	<b>\$0</b>	<b>\$740,000</b>	<b>\$740,000</b>
<b>PROJECT TOTAL</b>	<b>\$9,846,000</b>	<b>\$11,691,000</b>	<b>\$21,537,000</b>	<b>\$9,846,000</b>	<b>\$11,691,000</b>	<b>\$21,537,000</b>	<b>\$9,356,000</b>	<b>\$11,126,000</b>	<b>\$20,482,000</b>

**Table 3: CCSM Decommissioning and Reclamation Cost Estimate – West Sinclair Rail Facility**

Project Element	Without ISC Variances or Scrap Value			With ISC Variances, Without Scrap Value			With ICS Variances and Scrap Value		
	BLM Land	Non-Federal Land	Total	BLM Land	Non-Federal Land	Total	BLM Land	Non-Federal Land	Total
<b>LONG-TERM ELEMENT REMOVAL</b>	<b>\$831,000</b>	<b>\$1,987,000</b>	<b>\$2,818,000</b>	<b>\$831,000</b>	<b>\$1,987,000</b>	<b>\$2,818,000</b>	<b>\$782,000</b>	<b>\$1,871,000</b>	<b>\$2,653,000</b>
Wind Turbines and Sites	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Roads	\$196,000	\$58,000	\$254,000	\$196,000	\$58,000	\$254,000	\$184,000	\$55,000	\$239,000
Collection System	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Substations	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Transmission System	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Rail Facility	\$635,000	\$1,929,000	\$2,564,000	\$635,000	\$1,929,000	\$2,564,000	\$598,000	\$1,816,000	\$2,414,000
Met Towers	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Site Buildings	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>TEMPORARY FACILITIES INSTALLATION AND REMOVAL</b>	<b>\$2,344,000</b>	<b>\$5,262,000</b>	<b>\$7,606,000</b>	<b>\$2,344,000</b>	<b>\$5,262,000</b>	<b>\$7,606,000</b>	<b>\$2,165,000</b>	<b>\$4,861,000</b>	<b>\$7,026,000</b>
<b>OFF-SITE DISPOSAL AND OVERHEAD</b>	<b>\$0</b>	<b>\$555,000</b>	<b>\$555,000</b>	<b>\$0</b>	<b>\$555,000</b>	<b>\$555,000</b>	<b>\$0</b>	<b>\$555,000</b>	<b>\$555,000</b>
<b>PROJECT TOTAL</b>	<b>\$3,175,000</b>	<b>\$7,804,000</b>	<b>\$10,979,000</b>	<b>\$3,175,000</b>	<b>\$7,804,000</b>	<b>\$10,979,000</b>	<b>\$2,947,000</b>	<b>\$7,287,000</b>	<b>\$10,234,000</b>

**Table 4: CCSM Decommissioning and Reclamation Cost Estimate – Road Rock Quarry**

Project Element	Without ISC Variances or Scrap Value			With ISC Variances, Without Scrap Value			With ICS Variances and Scrap Value		
	BLM Land	Non-Federal Land	Total	BLM Land	Non-Federal Land	Total	BLM Land	Non-Federal Land	Total
<b>LONG-TERM ELEMENT REMOVAL</b>	<b>\$579,000</b>	<b>\$993,000</b>	<b>\$1,572,000</b>	<b>\$579,000</b>	<b>\$993,000</b>	<b>\$1,572,000</b>	<b>\$547,000</b>	<b>\$937,000</b>	<b>\$1,484,000</b>
Wind Turbines and Sites	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Roads	\$579,000	\$993,000	\$1,572,000	\$579,000	\$993,000	\$1,572,000	\$547,000	\$937,000	\$1,484,000
Collection System	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Substations	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Transmission System	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Rail Facility	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Met Towers	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Site Buildings	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>TEMPORARY FACILITIES INSTALLATION AND REMOVAL</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>OFF-SITE DISPOSAL AND OVERHEAD</b>	<b>\$0</b>	<b>\$185,000</b>	<b>\$185,000</b>	<b>\$0</b>	<b>\$185,000</b>	<b>\$185,000</b>	<b>\$0</b>	<b>\$185,000</b>	<b>\$185,000</b>
<b>PROJECT TOTAL</b>	<b>\$579,000</b>	<b>\$1,178,000</b>	<b>\$1,757,000</b>	<b>\$579,000</b>	<b>\$1,178,000</b>	<b>\$1,757,000</b>	<b>\$547,000</b>	<b>\$1,122,000</b>	<b>\$1,669,000</b>

**Table 5: CCSM Decommissioning and Reclamation Cost Estimate – Phase I Wind Development**

Project Element	Without ISC Variances or Scrap Value			With ISC Variances, Without Scrap Value			With ICS Variances and Scrap Value		
	BLM Land	Non-Federal Land	Total	BLM Land	Non-Federal Land	Total	BLM Land	Non-Federal Land	Total
<b>LONG-TERM ELEMENT REMOVAL</b>	<b>\$46,348,000</b>	<b>\$97,906,000</b>	<b>\$144,254,000</b>	<b>\$46,348,000</b>	<b>\$54,410,000</b>	<b>\$100,758,000</b>	<b>\$41,058,000</b>	<b>\$48,225,000</b>	<b>\$89,283,000</b>
Wind Turbines and Sites	\$23,808,000	\$52,671,000	\$76,479,000	\$23,808,000	\$26,371,000	\$50,179,000	\$19,062,000	\$21,104,000	\$40,166,000
Roads	\$17,273,000	\$18,690,000	\$35,963,000	\$17,273,000	\$18,690,000	\$35,963,000	\$16,846,000	\$18,242,000	\$35,088,000
Collection System	\$2,008,000	\$10,419,000	\$12,427,000	\$2,008,000	\$2,973,000	\$4,981,000	\$2,008,000	\$2,973,000	\$4,981,000
Substations	\$278,000	\$1,434,000	\$1,712,000	\$278,000	\$1,434,000	\$1,712,000	\$161,000	\$964,000	\$1,125,000
Transmission System	\$2,825,000	\$13,969,000	\$16,794,000	\$2,825,000	\$4,219,000	\$7,044,000	\$2,825,000	\$4,219,000	\$7,044,000
Rail Facility	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Met Towers	\$145,000	\$225,000	\$370,000	\$145,000	\$225,000	\$370,000	\$145,000	\$225,000	\$370,000
Site Buildings	\$11,000	\$498,000	\$509,000	\$11,000	\$498,000	\$509,000	\$11,000	\$498,000	\$509,000
<b>TEMPORARY FACILITIES INSTALLATION AND REMOVAL</b>	<b>\$4,196,000</b>	<b>\$8,147,000</b>	<b>\$12,343,000</b>	<b>\$4,196,000</b>	<b>\$8,147,000</b>	<b>\$12,343,000</b>	<b>\$3,951,000</b>	<b>\$7,618,000</b>	<b>\$11,569,000</b>
<b>OFF-SITE DISPOSAL AND OVERHEAD</b>	<b>\$1,185,000</b>	<b>\$2,795,000</b>	<b>\$3,980,000</b>	<b>\$1,185,000</b>	<b>\$2,795,000</b>	<b>\$3,980,000</b>	<b>\$1,185,000</b>	<b>\$2,795,000</b>	<b>\$3,980,000</b>
<b>PROJECT TOTAL</b>	<b>\$51,729,000</b>	<b>\$108,848,000</b>	<b>\$160,577,000</b>	<b>\$51,729,000</b>	<b>\$65,352,000</b>	<b>\$117,081,000</b>	<b>\$46,194,000</b>	<b>\$58,638,000</b>	<b>\$104,832,000</b>

**Table 6: CCSM Decommissioning and Reclamation Cost Estimate – Phase II Wind Development**

Project Element	Without ISC Variances or Scrap Value			With ISC Variances, Without Scrap Value			With ICS Variances and Scrap Value		
	BLM Land	Non-Federal Land	Total	BLM Land	Non-Federal Land	Total	BLM Land	Non-Federal Land	Total
<b>LONG-TERM ELEMENT REMOVAL</b>	<b>\$46,804,000</b>	<b>\$88,533,000</b>	<b>\$135,337,000</b>	<b>\$46,804,000</b>	<b>\$52,688,000</b>	<b>\$99,492,000</b>	<b>\$41,504,000</b>	<b>\$46,612,000</b>	<b>\$88,116,000</b>
Wind Turbines and Sites	\$23,808,000	\$52,671,000	\$76,479,000	\$23,808,000	\$26,371,000	\$50,179,000	\$19,062,000	\$21,104,000	\$40,166,000
Roads	\$19,405,000	\$20,770,000	\$40,175,000	\$19,405,000	\$20,770,000	\$40,175,000	\$18,851,000	\$20,196,000	\$39,047,000
Collection System	\$2,008,000	\$10,643,000	\$12,651,000	\$2,008,000	\$2,973,000	\$4,981,000	\$2,008,000	\$2,973,000	\$4,981,000
Substations	\$0	\$556,000	\$556,000	\$0	\$556,000	\$556,000	\$0	\$321,000	\$321,000
Transmission System	\$1,438,000	\$3,668,000	\$5,106,000	\$1,438,000	\$1,793,000	\$3,231,000	\$1,438,000	\$1,793,000	\$3,231,000
Rail Facility	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Met Towers	\$145,000	\$225,000	\$370,000	\$145,000	\$225,000	\$370,000	\$145,000	\$225,000	\$370,000
Site Buildings	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>TEMPORARY FACILITIES INSTALLATION AND REMOVAL</b>	<b>\$5,175,000</b>	<b>\$5,410,000</b>	<b>\$10,585,000</b>	<b>\$5,175,000</b>	<b>\$5,410,000</b>	<b>\$10,585,000</b>	<b>\$4,855,000</b>	<b>\$5,090,000</b>	<b>\$9,945,000</b>
<b>OFF-SITE DISPOSAL AND OVERHEAD</b>	<b>\$1,185,000</b>	<b>\$2,795,000</b>	<b>\$3,980,000</b>	<b>\$1,185,000</b>	<b>\$2,795,000</b>	<b>\$3,980,000</b>	<b>\$1,185,000</b>	<b>\$2,795,000</b>	<b>\$3,980,000</b>
<b>PROJECT TOTAL</b>	<b>\$53,164,000</b>	<b>\$96,738,000</b>	<b>\$149,902,000</b>	<b>\$53,164,000</b>	<b>\$60,893,000</b>	<b>\$114,057,000</b>	<b>\$47,544,000</b>	<b>\$54,497,000</b>	<b>\$102,041,000</b>