

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

## **Project Construction Cost Estimate**



555 Seventeenth Street  
Suite 2400  
Denver, CO 80202

April 2014

PCW has developed a preliminary estimate of the costs associated with the construction of the CCSM Project. This estimate includes all the work and purchases necessary to construct the CCSM Project as presented in Section 6 of this Application. This includes the purchase of all required materials, supplies, and equipment to be installed at the CCSM Project, as well as payment for services and rental or use of equipment to perform necessary site preparation and CCSM Project equipment installation.

PCW developed the cost estimate based on input from various firms on the CCSM Project Design Team. This includes 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 include Westwood Professional Services (civil construction) and Professional Logistics Group (rail facility). 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 schedule. It is also based on current cost parameters for labor and materials, which will vary over the construction time period.

The largest single component of the cost estimate is the purchase of the wind turbines. PCW developed the cost based upon current market conditions and cost projections from various wind turbine vendors. While PCW believes this cost reflects the state of the market that is expected over the construction period of the CCSM Project, market conditions may change over time.

As part of the CCSM Project construction cost estimate, PCW estimated the amount of sales and use tax expected to accrue. The amount of sales and use tax is based on 6% of all taxable sales for all equipment and materials purchased. PCW anticipates taking delivery of all taxable items at the CCSM Project Site in Carbon County.

A summary of the total construction cost of the CCSM Project is provided in Table 1. The per-year amounts are provided in Table 2 through Table 9 and summarized in Figure 1.

Presented by Ryan J. Jacobson, PE.  
Director of Engineering and Construction  
Power Company of Wyoming  
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Figure 1: CCSM Construction Cost Estimate Amounts by Year

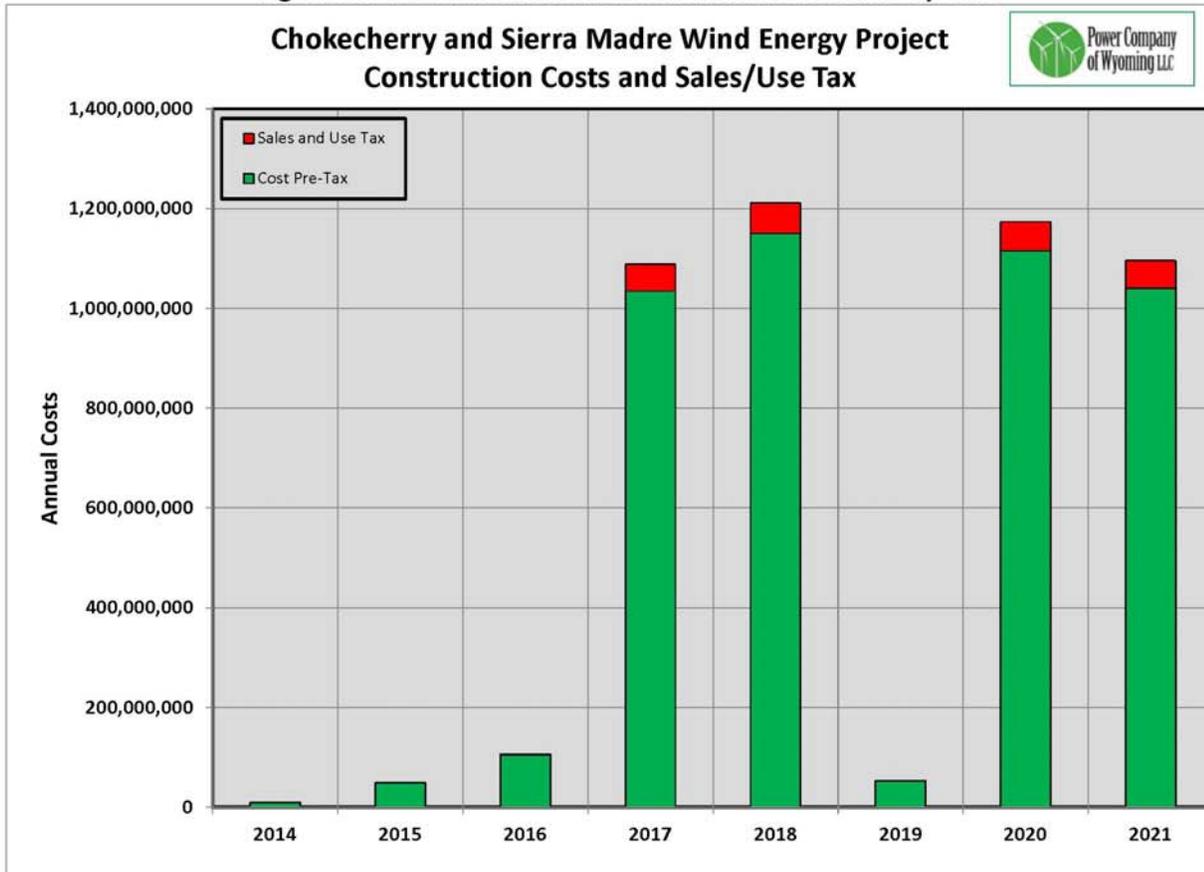


Table 1: CCSM Construction Cost Estimate - Total

Cost Item	TOTAL PROJECT				TOTAL
	Labor	Expenses	Materials	Sales Tax	
Engineering	\$5,620,000	\$0	\$0	\$0	\$5,620,000
Construction Management	\$62,440,000	\$12,420,000	\$5,730,000	\$340,000	\$80,930,000
Project Roads	\$36,950,000	\$101,910,000	\$33,970,000	\$2,040,000	\$174,870,000
Wind Turbine Foundations	\$38,890,000	\$38,270,000	\$52,050,000	\$3,120,000	\$132,330,000
Wind Turbine Installation & Commission	\$57,550,000	\$77,070,000	\$33,510,000	\$2,010,000	\$170,140,000
Collection System	\$21,960,000	\$31,660,000	\$54,460,000	\$3,270,000	\$111,350,000
Substations	\$26,630,000	\$16,410,000	\$45,570,000	\$2,730,000	\$91,340,000
Internal Transmission	\$9,230,000	\$9,310,000	\$18,210,000	\$1,090,000	\$37,840,000
Rail Facility Construction	\$8,090,000	\$20,430,000	\$20,870,000	\$1,250,000	\$50,640,000
Quarry Ops	\$9,740,000	\$5,970,000	\$360,000	\$20,000	\$16,090,000
Rail Ops and On-Site Transport	\$44,220,000	\$2,010,000	\$2,730,000	\$160,000	\$49,120,000
Long-Term Buildings and Met Towers	\$5,870,000	\$2,010,000	\$5,020,000	\$300,000	\$13,200,000
Temporary Facilities	\$3,940,000	\$610,000	\$540,000	\$30,000	\$5,120,000
Env. Monitoring	\$11,160,000	\$3,590,000	\$180,000	\$10,000	\$14,940,000
Man-Camp Operations	\$4,950,000	\$12,300,000	\$430,000	\$30,000	\$17,710,000
<b>TOTAL EPC CONTRACTS</b>	<b>\$347,240,000</b>	<b>\$333,970,000</b>	<b>\$273,630,000</b>	<b>\$16,400,000</b>	<b>\$971,240,000</b>
Wind Turbine Procurement	\$0	\$0	\$3,600,000,000	\$216,000,000	\$3,816,000,000
<b>ANNUAL TOTALS</b>	<b>\$347,240,000</b>	<b>\$333,970,000</b>	<b>\$3,873,630,000</b>	<b>\$232,400,000</b>	<b>\$4,787,240,000</b>

**Table 2: CCSM Construction Cost Estimate - 2014**

Cost Item	2014				TOTAL
	Labor	Expenses	Materials	Sales Tax	
Engineering	\$140,000	\$0	\$0	\$0	\$140,000
Construction Management	\$2,100,000	\$320,000	\$150,000	\$10,000	\$2,580,000
Project Roads	\$880,000	\$4,120,000	\$1,370,000	\$80,000	\$6,450,000
Wind Turbine Foundations	\$0	\$0	\$0	\$0	\$0
Wind Turbine Installation & Commission	\$0	\$0	\$0	\$0	\$0
Collection System	\$0	\$0	\$0	\$0	\$0
Substations	\$0	\$0	\$0	\$0	\$0
Internal Transmission	\$0	\$0	\$0	\$0	\$0
Rail Facility Construction	\$0	\$0	\$0	\$0	\$0
Quarry Ops	\$0	\$0	\$0	\$0	\$0
Rail Ops and On-Site Transport	\$0	\$0	\$0	\$0	\$0
Long-Term Buildings and Met Towers	\$0	\$0	\$0	\$0	\$0
Temporary Facilities	\$180,000	\$40,000	\$40,000	\$0	\$260,000
Env. Monitoring	\$0	\$0	\$0	\$0	\$0
Man-Camp Operations	\$0	\$0	\$0	\$0	\$0
<b>TOTAL EPC CONTRACTS</b>	<b>\$3,300,000</b>	<b>\$4,480,000</b>	<b>\$1,560,000</b>	<b>\$90,000</b>	<b>\$9,430,000</b>
Wind Turbine Procurement	\$0	\$0	\$0	\$0	\$0
<b>ANNUAL TOTALS</b>	<b>\$3,300,000</b>	<b>\$4,480,000</b>	<b>\$1,560,000</b>	<b>\$90,000</b>	<b>\$9,430,000</b>

**Table 3: CCSM Construction Cost Estimate - 2015**

Cost Item	2015				TOTAL
	Labor	Expenses	Materials	Sales Tax	
Engineering	\$640,000	\$0	\$0	\$0	\$640,000
Construction Management	\$7,030,000	\$800,000	\$370,000	\$20,000	\$8,220,000
Project Roads	\$5,630,000	\$12,390,000	\$4,130,000	\$250,000	\$22,400,000
Wind Turbine Foundations	\$0	\$0	\$0	\$0	\$0
Wind Turbine Installation & Commission	\$0	\$0	\$0	\$0	\$0
Collection System	\$0	\$0	\$0	\$0	\$0
Substations	\$0	\$0	\$0	\$0	\$0
Internal Transmission	\$0	\$0	\$0	\$0	\$0
Rail Facility Construction	\$2,840,000	\$9,660,000	\$800,000	\$50,000	\$13,350,000
Quarry Ops	\$1,390,000	\$1,260,000	\$80,000	\$0	\$2,730,000
Rail Ops and On-Site Transport	\$0	\$0	\$0	\$0	\$0
Long-Term Buildings and Met Towers	\$0	\$0	\$0	\$0	\$0
Temporary Facilities	\$840,000	\$330,000	\$290,000	\$20,000	\$1,480,000
Env. Monitoring	\$260,000	\$170,000	\$10,000	\$0	\$440,000
Man-Camp Operations	\$0	\$0	\$0	\$0	\$0
<b>TOTAL EPC CONTRACTS</b>	<b>\$18,630,000</b>	<b>\$24,610,000</b>	<b>\$5,680,000</b>	<b>\$340,000</b>	<b>\$49,260,000</b>
Wind Turbine Procurement	\$0	\$0	\$0	\$0	\$0
<b>ANNUAL TOTALS</b>	<b>\$18,630,000</b>	<b>\$24,610,000</b>	<b>\$5,680,000</b>	<b>\$340,000</b>	<b>\$49,260,000</b>

**Table 4: CCSM Construction Cost Estimate - 2016**

Cost Item	2016				TOTAL
	Labor	Expenses	Materials	Sales Tax	
Engineering	\$610,000	\$0	\$0	\$0	\$610,000
Construction Management	\$6,500,000	\$1,880,000	\$870,000	\$50,000	\$9,300,000
Project Roads	\$6,050,000	\$19,220,000	\$6,410,000	\$380,000	\$32,060,000
Wind Turbine Foundations	\$5,910,000	\$6,010,000	\$8,170,000	\$490,000	\$20,580,000
Wind Turbine Installation & Commission	\$0	\$0	\$0	\$0	\$0
Collection System	\$0	\$0	\$0	\$0	\$0
Substations	\$0	\$0	\$0	\$0	\$0
Internal Transmission	\$0	\$0	\$0	\$0	\$0
Rail Facility Construction	\$5,250,000	\$10,000,000	\$20,000,000	\$1,200,000	\$36,450,000
Quarry Ops	\$1,390,000	\$810,000	\$50,000	\$0	\$2,250,000
Rail Ops and On-Site Transport	\$0	\$0	\$0	\$0	\$0
Long-Term Buildings and Met Towers	\$0	\$0	\$0	\$0	\$0
Temporary Facilities	\$440,000	\$40,000	\$40,000	\$0	\$520,000
Env. Monitoring	\$640,000	\$440,000	\$20,000	\$0	\$1,100,000
Man-Camp Operations	\$1,200,000	\$2,200,000	\$430,000	\$30,000	\$3,860,000
<b>TOTAL EPC CONTRACTS</b>	<b>\$27,990,000</b>	<b>\$40,600,000</b>	<b>\$35,990,000</b>	<b>\$2,150,000</b>	<b>\$106,730,000</b>
Wind Turbine Procurement	\$0	\$0	\$0	\$0	\$0
<b>ANNUAL TOTALS</b>	<b>\$27,990,000</b>	<b>\$40,600,000</b>	<b>\$35,990,000</b>	<b>\$2,150,000</b>	<b>\$106,730,000</b>

**Table 5: CCSM Construction Cost Estimate - 2017**

Cost Item	2017				TOTAL
	Labor	Expenses	Materials	Sales Tax	
Engineering	\$950,000	\$0	\$0	\$0	\$950,000
Construction Management	\$11,900,000	\$1,880,000	\$870,000	\$50,000	\$14,700,000
Project Roads	\$4,900,000	\$12,510,000	\$4,170,000	\$250,000	\$21,830,000
Wind Turbine Foundations	\$7,460,000	\$8,840,000	\$12,020,000	\$720,000	\$29,040,000
Wind Turbine Installation & Commission	\$14,820,000	\$17,650,000	\$7,670,000	\$460,000	\$40,600,000
Collection System	\$5,630,000	\$7,470,000	\$12,840,000	\$770,000	\$26,710,000
Substations	\$8,130,000	\$7,080,000	\$19,670,000	\$1,180,000	\$36,060,000
Internal Transmission	\$2,580,000	\$5,360,000	\$10,480,000	\$630,000	\$19,050,000
Rail Facility Construction	\$0	\$780,000	\$60,000	\$0	\$840,000
Quarry Ops	\$1,390,000	\$720,000	\$40,000	\$0	\$2,150,000
Rail Ops and On-Site Transport	\$9,650,000	\$1,020,000	\$680,000	\$40,000	\$11,390,000
Long-Term Buildings and Met Towers	\$1,470,000	\$1,020,000	\$2,560,000	\$150,000	\$5,200,000
Temporary Facilities	\$440,000	\$40,000	\$40,000	\$0	\$520,000
Env. Monitoring	\$1,260,000	\$540,000	\$30,000	\$0	\$1,830,000
Man-Camp Operations	\$770,000	\$2,640,000	\$0	\$0	\$3,410,000
<b>TOTAL EPC CONTRACTS</b>	<b>\$71,350,000</b>	<b>\$67,550,000</b>	<b>\$71,130,000</b>	<b>\$4,250,000</b>	<b>\$214,280,000</b>
Wind Turbine Procurement	\$0	\$0	\$824,400,000	\$49,460,000	\$873,860,000
<b>ANNUAL TOTALS</b>	<b>\$71,350,000</b>	<b>\$67,550,000</b>	<b>\$895,530,000</b>	<b>\$53,710,000</b>	<b>\$1,088,140,000</b>

**Table 6: CCSM Construction Cost Estimate - 2018**

Cost Item	2018				TOTAL
	Labor	Expenses	Materials	Sales Tax	
Engineering	\$950,000	\$0	\$0	\$0	\$950,000
Construction Management	\$12,780,000	\$1,880,000	\$870,000	\$50,000	\$15,580,000
Project Roads	\$5,190,000	\$8,830,000	\$2,940,000	\$180,000	\$17,140,000
Wind Turbine Foundations	\$7,460,000	\$4,290,000	\$5,830,000	\$350,000	\$17,930,000
Wind Turbine Installation & Commission	\$14,690,000	\$20,890,000	\$9,080,000	\$540,000	\$45,200,000
Collection System	\$5,360,000	\$8,360,000	\$14,390,000	\$860,000	\$28,970,000
Substations	\$5,180,000	\$4,660,000	\$12,950,000	\$780,000	\$23,570,000
Internal Transmission	\$1,500,000	\$1,210,000	\$2,370,000	\$140,000	\$5,220,000
Rail Facility Construction	\$0	\$0	\$0	\$0	\$0
Quarry Ops	\$1,390,000	\$530,000	\$30,000	\$0	\$1,950,000
Rail Ops and On-Site Transport	\$9,650,000	\$520,000	\$680,000	\$40,000	\$10,890,000
Long-Term Buildings and Met Towers	\$1,470,000	\$520,000	\$1,300,000	\$80,000	\$3,370,000
Temporary Facilities	\$200,000	\$40,000	\$30,000	\$0	\$270,000
Env. Monitoring	\$2,030,000	\$580,000	\$30,000	\$0	\$2,640,000
Man-Camp Operations	\$770,000	\$2,640,000	\$0	\$0	\$3,410,000
<b>TOTAL EPC CONTRACTS</b>	<b>\$68,620,000</b>	<b>\$54,950,000</b>	<b>\$50,500,000</b>	<b>\$3,020,000</b>	<b>\$177,090,000</b>
Wind Turbine Procurement	\$0	\$0	\$975,600,000	\$58,540,000	\$1,034,140,000
<b>ANNUAL TOTALS</b>	<b>\$68,620,000</b>	<b>\$54,950,000</b>	<b>\$1,026,100,000</b>	<b>\$61,560,000</b>	<b>\$1,211,230,000</b>

**Table 7: CCSM Construction Cost Estimate - 2019**

Cost Item	2019				TOTAL
	Labor	Expenses	Materials	Sales Tax	
Engineering	\$450,000	\$0	\$0	\$0	\$450,000
Construction Management	\$3,490,000	\$1,880,000	\$870,000	\$50,000	\$6,290,000
Project Roads	\$4,520,000	\$13,550,000	\$4,520,000	\$270,000	\$22,860,000
Wind Turbine Foundations	\$6,020,000	\$3,750,000	\$5,100,000	\$310,000	\$15,180,000
Wind Turbine Installation & Commission	\$0	\$0	\$0	\$0	\$0
Collection System	\$320,000	\$0	\$0	\$0	\$320,000
Substations	\$0	\$0	\$0	\$0	\$0
Internal Transmission	\$0	\$0	\$0	\$0	\$0
Rail Facility Construction	\$0	\$0	\$0	\$0	\$0
Quarry Ops	\$1,390,000	\$960,000	\$60,000	\$0	\$2,410,000
Rail Ops and On-Site Transport	\$1,950,000	\$0	\$0	\$0	\$1,950,000
Long-Term Buildings and Met Towers	\$0	\$0	\$0	\$0	\$0
Temporary Facilities	\$610,000	\$40,000	\$30,000	\$0	\$680,000
Env. Monitoring	\$2,320,000	\$620,000	\$30,000	\$0	\$2,970,000
Man-Camp Operations	\$0	\$0	\$0	\$0	\$0
<b>TOTAL EPC CONTRACTS</b>	<b>\$21,070,000</b>	<b>\$20,800,000</b>	<b>\$10,610,000</b>	<b>\$630,000</b>	<b>\$53,110,000</b>
Wind Turbine Procurement	\$0	\$0	\$0	\$0	\$0
<b>ANNUAL TOTALS</b>	<b>\$21,070,000</b>	<b>\$20,800,000</b>	<b>\$10,610,000</b>	<b>\$630,000</b>	<b>\$53,110,000</b>

**Table 8: CCSM Construction Cost Estimate - 2020**

Cost Item	2020				TOTAL
	Labor	Expenses	Materials	Sales Tax	
Engineering	\$950,000	\$0	\$0	\$0	\$950,000
Construction Management	\$9,230,000	\$1,880,000	\$870,000	\$50,000	\$12,030,000
Project Roads	\$4,890,000	\$19,790,000	\$6,600,000	\$400,000	\$31,680,000
Wind Turbine Foundations	\$6,020,000	\$9,610,000	\$13,070,000	\$780,000	\$29,480,000
Wind Turbine Installation & Commission	\$14,020,000	\$19,810,000	\$8,610,000	\$520,000	\$42,960,000
Collection System	\$5,330,000	\$7,470,000	\$12,840,000	\$770,000	\$26,410,000
Substations	\$8,130,000	\$2,330,000	\$6,470,000	\$390,000	\$17,320,000
Internal Transmission	\$2,580,000	\$1,560,000	\$3,060,000	\$180,000	\$7,380,000
Rail Facility Construction	\$0	\$0	\$0	\$0	\$0
Quarry Ops	\$1,390,000	\$1,060,000	\$60,000	\$0	\$2,510,000
Rail Ops and On-Site Transport	\$11,480,000	\$280,000	\$680,000	\$40,000	\$12,480,000
Long-Term Buildings and Met Towers	\$1,470,000	\$280,000	\$690,000	\$40,000	\$2,480,000
Temporary Facilities	\$610,000	\$40,000	\$30,000	\$0	\$680,000
Env. Monitoring	\$2,320,000	\$620,000	\$30,000	\$0	\$2,970,000
Man-Camp Operations	\$1,370,000	\$2,200,000	\$0	\$0	\$3,570,000
<b>TOTAL EPC CONTRACTS</b>	<b>\$69,790,000</b>	<b>\$66,930,000</b>	<b>\$53,010,000</b>	<b>\$3,170,000</b>	<b>\$192,900,000</b>
Wind Turbine Procurement	\$0	\$0	\$925,200,000	\$55,510,000	\$980,710,000
<b>ANNUAL TOTALS</b>	<b>\$69,790,000</b>	<b>\$66,930,000</b>	<b>\$978,210,000</b>	<b>\$58,680,000</b>	<b>\$1,173,610,000</b>

**Table 9: CCSM Construction Cost Estimate - 2021**

Cost Item	2021				TOTAL
	Labor	Expenses	Materials	Sales Tax	
Engineering	\$950,000	\$0	\$0	\$0	\$950,000
Construction Management	\$9,410,000	\$1,880,000	\$870,000	\$50,000	\$12,210,000
Project Roads	\$4,890,000	\$11,490,000	\$3,830,000	\$230,000	\$20,440,000
Wind Turbine Foundations	\$6,020,000	\$5,780,000	\$7,860,000	\$470,000	\$20,130,000
Wind Turbine Installation & Commission	\$14,020,000	\$18,730,000	\$8,140,000	\$490,000	\$41,380,000
Collection System	\$5,330,000	\$8,360,000	\$14,390,000	\$860,000	\$28,940,000
Substations	\$5,180,000	\$2,330,000	\$6,470,000	\$390,000	\$14,370,000
Internal Transmission	\$2,580,000	\$1,170,000	\$2,300,000	\$140,000	\$6,190,000
Rail Facility Construction	\$0	\$0	\$0	\$0	\$0
Quarry Ops	\$1,390,000	\$620,000	\$40,000	\$0	\$2,050,000
Rail Ops and On-Site Transport	\$11,480,000	\$190,000	\$680,000	\$40,000	\$12,390,000
Long-Term Buildings and Met Towers	\$1,470,000	\$190,000	\$460,000	\$30,000	\$2,150,000
Temporary Facilities	\$610,000	\$40,000	\$30,000	\$0	\$680,000
Env. Monitoring	\$2,320,000	\$620,000	\$30,000	\$0	\$2,970,000
Man-Camp Operations	\$830,000	\$2,640,000	\$0	\$0	\$3,470,000
<b>TOTAL EPC CONTRACTS</b>	<b>\$66,480,000</b>	<b>\$54,040,000</b>	<b>\$45,100,000</b>	<b>\$2,700,000</b>	<b>\$168,320,000</b>
Wind Turbine Procurement	\$0	\$0	\$874,800,000	\$52,490,000	\$927,290,000
<b>ANNUAL TOTALS</b>	<b>\$66,480,000</b>	<b>\$54,040,000</b>	<b>\$919,900,000</b>	<b>\$55,190,000</b>	<b>\$1,095,610,000</b>