Fleet Decommissioning Cost Study

Public Service Company of Colorado

Fleet Decommissioning Cost Study
Project No. 121142

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LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
Assets	PSCO's fleet of power generation assets
BOP	Balance of Plant
C&D	Construction and Demolition
CT	Combustion Turbine
Facilities	PSCO's fleet of power generation assets
GSU	Generator Step Up
HRSG	Heat Recovery Steam Generator
ID	Induced Draft
MW	Megawatt
NorthStar	NorthStar Demolition and Remediation, LP
PCB	Polychlorinated Biphenyl
Plants	PSCO's fleet of power generation assets
PSCO	Public Service Company of Colorado
Study	Decommissioning Cost Study
TENORM	Technologically Enhanced Naturally Occurring Radioactive Materials
TSCA	Toxic Substances and Control Act

1.0 EXECUTIVE SUMMARY

1.1 Introduction

Public Service Company of Colorado ("PSCO"), doing business as Xcel Energy, Inc. retained 1898 & Co. part of Burns & McDonnell Engineering Company, Inc. to conduct a Decommissioning Cost Study ("Study") for PSCO's fleet of power generation assets ("Assets," "Plants," "Facilities") located in Colorado. The purpose of the Study was to review the facilities and to make a recommendation to PSCO regarding the total cost to decommission the facilities at the end of their useful lives.

For the purposes of the Study, 1898 & Co. prepared site-specific decommissioning cost estimates for a subset of the Plants under consideration and generic decommissioning cost estimates for the remaining Plants, as indicated in the following tables. Generic cost estimates were developed based on units of the same technology from the site-specific evaluations that were scaled by unit output. The generic estimates take into account facility-specific attributes such as pond areas, coal storage yard sizes, number of stacks, and asbestos quantities, as could be determined from aerial images, drawings reviews, or information provided to 1898 & Co. by PSCO. The Assets evaluated include coal-fired steam units, a synchronous condenser, natural gas-fired Combustion Turbine ("CT") units, natural gas fired combined cycle facilities, hydroelectric facilities, wind farms, and solar farms. The units included in the Study are listed in the following tables.

Table 1-1: Coal Fired Facility Cost Estimate Method

Plant/Unit	Install Year	MW Rating	Fuel Type	Site Specific Estimate	Generic Cost Estimate
Cherokee Unit 1 (retired)	1957	107	Coal	♦	
Cherokee Unit 2 (retired)	1959	107	Coal	♦	
Cherokee Unit 2 Condenser	2012	N/A	N/A	♦	
Cherokee Unit 3 (retired)	1962	165	Coal	♦	
Valmont Units 1-5	1964	196	Coal	♦	
Pawnee Unit 1	1981	536	Coal	♦	
Comanche Unit 1	1973	360	Coal		♦
Comanche Unit 2	1975	365	Coal		♦
Comanche Unit 3	2010	821	Coal		♦
Craig Unit 1	1980	447	Coal		♦
Craig Unit 2	1979	447	Coal		♦
Hayden Unit 1	1965	202	Coal		♦
Hayden Unit 2	1976	285	Coal		♦

Table 1-2: Gas-Fired Facility Cost Estimate Method

Plant/Unit	Install Year	MW Rating	Fuel Type	Site Specific Estimate	Generic Cost Estimate
Cherokee Unit 4	1968	383	Gas	♦	
Cherokee 5,6,7 CC 2 x 1	2015	718	Gas	♦	
Ft. Lupton CT 1	1975	62	Gas	♦	
Ft. Lupton CT 2	1975	62	Gas	♦	
Fort St. Vrain 1,2,3,4 CC 3 x 1	Var.	815	Gas	♦	
Fort St. Vrain CT 5	2009	196	Gas	♦	
Fort St. Vrain CT 6	2009	195	Gas	♦	
Manchief Unit 1	2004	150	Gas	♦	
Manchief Unit 2	2004	150	Gas	♦	
Valmont CT 6	1973	61	Gas	♦	
Valmont CT 7	2020	71	Gas		♦
Valmont CT 8	2020	71	Gas		♦
Alamosa CT 1	1973	24	Gas		♦
Alamosa CT 2	1973	26	Gas		♦
Blue Spruce CT 1	2003	194	Gas		♦
Blue Spruce CT 2	2003	194	Gas		♦
Fruita CT	1973	26	Gas		♦
Rocky Mountain 1,2,3 CC 2 x 1	2004	701	Gas		♦

Table 1-3: Renewable Facility Cost Estimate Method

Plant/Unit	Install Year	MW Rating	Fuel Type	Site Specific Estimate	Generic Cost Estimate
Ames	1906	3.8	Hydro		♦
Cabin Creek	1967	324	Hydro		♦
Georgetown	1939	1.6	Hydro		♦
Salida	1929	1.4	Hydro		♦
Shoshone	1908	15	Hydro		♦
Tacoma	1949	4.5	Hydro		♦
Cheyenne Ridge Wind Farm	2020	500	Wind	♦	
Rush Creek Wind Farm	2018	600	Wind	♦	
Arapahoe Solar	2020	5 (DC)	Solar	♦	
Valmont Solar	2020	10 (DC)	Solar	♦	

1.2 Results

1898 & Co. has prepared a planning level cost estimate in 2020 dollars for the decommissioning of the Plants. These costs are summarized in Table 1-4 and Table 1-5 for the

site specific and generic decommissioning cost estimates, respectively. When PSCO determines that the Plants should be removed, the above grade equipment and steel structures are assumed to have sufficient scrap value to a salvage contractor to offset a portion of the decommissioning costs. PSCO will incur costs in the demolition and restoration of the sites less the salvage value of equipment and bulk steel.

Table 1-4: Site-Specific Decommissioning Cost Summary

Asset	Fuel Type	Decommissioning Costs	Salvage Credits	Net Project Cost
Cherokee Coal	Coal	$ 50,838,000	$ (2,439,000)	$ 48,399,000
Cherokee CC	Natural Gas	$ 11,880,000	$ (2,817,000)	$ 9,063,000
Fort Lupton	Natural Gas	$ 1,406,000	$ (223,000)	$ 1,183,000
Fort St. Vrain	Natural Gas	$ 29,795,000	$ (4,917,000)	$ 24,878,000
Manchief	Natural Gas	$ 4,193,000	$ (1,294,000)	$ 2,899,000
Pawnee	Natural gas	$ 81,327,000	$ (4,262,000)	$ 77,065,000
Valmont 1-5	Coal	$ 29,849,000	$ (1,875,000)	$ 27,974,000
Valmont 6	Natural Gas	$ 300,000	$ (145,000)	$ 155,000
Cheyenne Ridge	Wind	$ 26,915,200	$ (11,195,000)	$ 15,720,200
Rush Creek	Wind	$ 33,744,450	$ (15,931,000)	$ 17,813,450
Arapahoe Solar	Solar	$ 265,100	$ (27,800)	$ 237,300
Valmont Solar	Solar	$ 508,400	$ (55,800)	$ 452,600
SUBTOTAL DECOMMISSIONING COST (Site Specific Only)				$ 225,839,550

Table 1-5: Generic Site Decommissioning Cost Summary

Asset	Fuel Type	Decommissioning Costs	Salvage Credits	Net Project Cost
Comanche	Coal	$ 89,564,000	$ (8,273,000)	$ 81,291,000
Craig	Coal	$ 102,926,000	$ (4,784,000)	$ 98,142,000
Hayden	Coal	$ 51,523,000	$ (2,607,000)	$ 48,916,000
Alamosa	Natural Gas	$ 766,000	$ (56,000)	$ 710,000
Blue Spruce	Natural Gas	$ 4,487,000	$ (455,000)	$ 4,032,000
Fruita	Natural Gas	$ 410,000	$ (61,000)	$ 349,000
Rocky Mountain	Natural Gas	$ 24,987,000	$ (2,886,000)	$ 22,101,000
Valmont 7-8	Natural Gas	$ 1,603,000	$ (166,000)	$ 1,437,000
Ames	Hydro	$ 7,363,000	$ (176,000)	$ 7,187,000
Cabin Creek	Hydro	$ 46,549,000	$ (2,556,000)	$ 43,993,000
Georgetown	Hydro	$ 6,543,000	$ (59,000)	$ 6,484,000
Salida	Hydro	$ 9,169,000	$ (69,000)	$ 9,100,000
Shoshone	Hydro	$ 2,011,000	$ (477,000)	$ 1,534,000
Tacoma	Hydro	$ 9,377,000	$ (357,000)	$ 9,020,000
SUBTOTAL DECOMMISSIONING COST (Generic Only)				$ 334,296,000
TOTAL DECOMMISSIONING COST (All Sites)				$ 560,135,550

The total project costs presented above include the costs to return the sites to an industrial condition suitable for reuse for development as an industrial facility. Included are the costs to dismantle all power generating equipment and balance of plant facilities and, where applicable, to perform environmental site restoration activities. Further details including estimates for the major cost categories of each plant estimate are provided in the Appendices.

2.0 INTRODUCTION

2.1 Background

PSCO, doing business as Xcel Energy retained 1898 & Co. part of Burns & McDonnell Engineering Company, Inc. to conduct a Decommissioning Cost Study for PSCO's fleet of power generation assets located in Colorado. The purpose of the Study was to review the facilities and to make a recommendation to PSCO regarding the total cost to decommission the facilities at the end of their useful lives.

2.2 Study Methodology

For the purposes of the Study, 1898 & Co. prepared site-specific decommissioning cost estimates for a subset of the Plants under consideration and generic decommissioning cost estimates for the remaining Plants. The type of estimate prepared, site-specific or generic, as well as technology type of each Plant, is indicated in the tables below. Generic cost estimates were developed based on units of the same technology from the site-specific evaluations, scaled by power output. The generic estimates take into account facility-specific attributes such as pond areas, coal storage yard sizes, number of stacks, and asbestos quantities, as could be determined from aerial images, drawings reviews, or information provided to 1898 & Co. by PSCO. The Assets evaluated include coal-fired steam units, a synchronous condenser, natural gas-fired CT units, natural gas fired combined cycle facilities, hydroelectric facilities, wind farms, and solar farms. The units included in the Study are listed in the following tables.

Table 2-1: Coal Fired Facility Cost Estimate Method

Plant/Unit	Install Year	MW Rating	Fuel Type	Site Specific Estimate	Generic Cost Estimate
Cherokee Unit 1 (retired)	1957	107	Coal	♦	
Cherokee Unit 2 (retired)	1959	107	Coal	♦	
Cherokee Unit 2 Condenser	2012	N/A	N/A	♦	
Cherokee Unit 3 (retired)	1962	165	Coal	♦	
Valmont Units 1-5	1964	196	Coal	♦	
Pawnee Unit 1	1981	536	Coal	♦	
Comanche Unit 1	1973	360	Coal		♦
Comanche Unit 2	1975	365	Coal		♦
Comanche Unit 3	2010	821	Coal		♦
Craig Unit 1	1980	447	Coal		♦
Craig Unit 2	1979	447	Coal		♦
Hayden Unit 1	1965	202	Coal		♦
Hayden Unit 2	1976	285	Coal		♦

Table 2-2: Gas-Fired Facility Cost Estimate Method

Plant/Unit	Install Year	MW Rating	Fuel Type	Site Specific Estimate	Generic Cost Estimate
Cherokee Unit 4	1968	383	Gas	♦	
Cherokee 5,6,7 CC 2 x 1	2015	718	Gas	♦	
Ft. Lupton CT 1	1975	62	Gas	♦	
Ft. Lupton CT 2	1975	62	Gas	♦	
Fort St. Vrain 1,2,3,4 CC 3 x 1	Var.	815	Gas	♦	
Fort St. Vrain CT 5	2009	196	Gas	♦	
Fort St. Vrain CT 6	2009	195	Gas	♦	
Manchief Unit 1	2004	150	Gas	♦	
Manchief Unit 2	2004	150	Gas	♦	
Valmont CT 6	1973	61	Gas	♦	
Valmont CT 7	2020	71	Gas		♦
Valmont CT 8	2020	71	Gas		♦
Alamosa CT 1	1973	24	Gas		♦
Alamosa CT 2	1973	26	Gas		♦
Blue Spruce CT 1	2003	194	Gas		♦
Blue Spruce CT 2	2003	194	Gas		♦
Fruita CT	1973	26	Gas		♦
Rocky Mountain 1,2,3 CC 2 x 1	2004	701	Gas		♦

Table 2-3: Renewable Facility Cost Estimate Method

Plant/Unit	Install Year	MW Rating	Fuel Type	Site Specific Estimate	Generic Cost Estimate
Ames	1906	3.8	Hydro		♦
Cabin Creek	1967	324	Hydro		♦
Georgetown	1939	1.6	Hydro		♦
Salida	1929	1.4	Hydro		♦
Shoshone	1908	15	Hydro		♦
Tacoma	1949	4.5	Hydro		♦
Cheyenne Ridge Wind Farm	2020	500	Wind	♦	
Rush Creek Wind Farm	2018	600	Wind	♦	
Arapahoe Solar	2020	5 (DC)	Solar	♦	
Valmont Solar	2020	10 (DC)	Solar	♦	

The site decommissioning costs were developed using information provided by PSCO and in-house data collected by 1898 & Co. from previous project experience. 1898 & Co. estimated quantities for equipment based on a visual inspection of the facilities, review of engineering

drawings, 1898 & Co.'s in-house database of plant equipment quantities, and professional judgment. This resulted in an estimate of quantities for each task required to be performed for the decommissioning effort. Current market pricing for labor rates, equipment, and unit pricing were then developed for each task. The unit pricing was developed for each site based on the labor rates, equipment costs, and disposal costs specific to the area in which the work is to be performed. These rates were applied to the quantities to determine the total cost of decommissioning for each site.

Generic cost estimates were developed based on units of the same technology from the site-specific evaluations, scaled based on unit output. The generic estimates take into account facility-specific attributes such as pond areas, coal storage yard sizes, and number of stacks, and asbestos quantities, as could be determined from aerial images, drawings reviews, or information provided to 1898 & Co. by PSCO.

The decommissioning costs include the cost to return each site to an industrial condition, suitable for reuse for development of an industrial facility. Included are the costs to decommission all of the assets at the site, including power generating equipment and balance of plant ("BOP") equipment.

2.3 Site Visits

Representatives from 1898 & Co. visited the sites listed in Table 2-4 in February of 2020. The site visits consisted of a tour of each facility listed, with Plant personnel to review the equipment installed at each site.

Table 2-4: 2020 Site Visit Dates

Site	Date Visited
Manchief	February 6, 2020
Pawnee	February 6, 2020
Rocky Mountain	February 6, 2020
Cherokee	February 7, 2020

Randy Larson and John Hatcher served as the PSCO representatives throughout the site visits. The following 1898 & Co. representatives comprised the site visit team:

- Mr. Kyle Haas, Project Manager
- Ms. Brittany Hixon, Project Consultant

As part of a prior Study, individuals from 1898 & Co. visited the sites listed in Table 2-5, accompanied by representatives from PSCO and NorthStar Demolition and Remediation, LP ("NorthStar," formerly LVI Environmental Services or LVI Services, Inc.). NorthStar is a demolition contractor that served as a sub-consultant to 1898 & Co. during the initial 2014 Study. The site visits consisted of a tour of each facility listed, with Plant personnel to review the equipment installed at each site.

Table 2-5: 2014 Site Visit Dates

Site	Date Visited
Cherokee	November 12, 2013
Valmont	November 13, 2013
Fort Lupton	November 14, 2013
Fort St. Vrain	November 14, 2013

The following 1898 & Co. and LVI representatives comprised the site visit team:

- Mr. Jeff Pope, Project Manager, Environmental Lead
- Mr. Jeff Kopp, Decommissioning Estimate Lead
- Mr. Vic Ranalletta, Engineering Manager
- Mr. Michael Marcheschi, NorthStar

PSCO personnel reported that since the time of the initial site visits Valmont, Ft. Lupton, and Fort St. Vrain there have been no material changes other than those addressed during discussions. As such, additional site visits were not conducted to these Plants as part of the 2020 Study.

3.0 PLANT DESCRIPTIONS

Below are plant descriptions for all of the Plants considered for the purposes of this Study.

3.1 Cherokee

The Cherokee plant is a natural gas generating facility located just north of downtown Denver, CO. The facility is comprised of seven units, four of which are currently operational. Units 1 and 2 each have a rated output of 107 MW. Unit 1 was retired in 2012, and Unit 2 was retired in 2011. Both have been partially dismantled since their retirement. The Unit 2 generator was also converted to operate as a synchronous condenser. Unit 3 had a rated output of 165 MW and was retired in August 2015. Unit 4 has a rated output of 383 MW and was fuel-switched to natural gas only at the end of 2017 at which time all Cherokee associated coal handling equipment was retired. Unit 4 has sulfur dioxide scrubbing, and a baghouse for particulate control. It is anticipated that this unit will be retired in its entirety by the end of 2027. Units 5, 6, and 7 are a two-on-one combined cycle with a total rated output of 718 MW. Units 5 and 6 have nitrogen oxide controls and carbon monoxide controls. A site-specific decommissioning cost estimate was developed for the above units at this facility.

3.2 Fort Lupton Combustion Turbines

The Fort Lupton natural gas combustion turbine facility, comprised of two units, which have a rated output of 62 MW each (124 MW total) and is located near the city of Fort Lupton, CO. A site-specific decommissioning cost estimate was developed for this facility. A site visit was conducted for Fort Lupton in 2013 and PSCO reported there have been no material changes to the site since then.

3.3 Fort St. Vrain

Fort St. Vrain generating facility is natural gas fired plant located northwest of Platteville, CO and is comprised of six operational units with a total rated output of 1,206 MW. Units 1, 2, 3, and 4 function as a three-on-one combined cycle unit with Unit 1 steam turbine rated at 312 MW and Units 2, 3, and 4 combustion turbines each carrying a rated output of 159, 172 and 172 MW, respectively. Units 5 and 6 are stand-alone combustion turbines with a rated output of 196 and 195 MW, respectively. A site-specific decommissioning cost estimate was developed for this facility. A site visit was conducted for Fort St. Vrain in 2013 and PSCO reported there have been no material changes to the site since then.

3.4 Manchief

The Manchief plant is a two-unit natural gas combustion turbine facility with a total rated output of 300 MW and is located within the site boundary of the Pawnee plant in the city of Brush, CO. Manchief will be acquired by PSCO in May 2022 as part of the Colorado Energy Plan approved by the Colorado Public Utility Commission. A site-specific decommissioning cost estimate was developed for this facility.

3.5 Pawnee

The Pawnee plant is a coal-fired generation facility located in the city of Brush, CO. The facility is comprised of a single unit which is currently in operation and has a rated output of 536 MW. Pawnee includes sulfur dioxide scrubbing, a baghouse for particulate control, and nitrogen oxide control. A site-specific decommissioning cost estimate was developed for this facility.

3.6 Valmont

The Valmont plant is located outside the city of Boulder, CO and is comprised of five coal-fired retired units (Units 1-5), one operational unit (Unit 6), and two new units (Units 7-8). Units 7 and 8 will be acquired in June 2020 as part of the Colorado Energy Plan that was approved by the Colorado Public Utility Commission. Unit 5 had a rated output of 196 MW and was coal-fired but equipped to run on natural gas. Unit 5 was equipped with sulfur dioxide scrubbing, and a baghouse for particulate control. Valmont Unit 6 is a combustion turbine that runs on natural gas and has a rated output of 61 MW. In addition, two five MW (DC) solar farms are also under construction with a proposed in-service date of December 2020. For purposes of this Study, all five of the coal units and combustion turbine units will be decommissioned at the same time. A site-specific decommissioning cost estimate was developed for Units 1-6 of this facility. Units 7 and 8 began commercial operation in 2000 and 2001, respectively, and each has a rating of 71 MW. A generic decommissioning estimate was provided for these units. A site visit was conducted for Valmont in 2013 and PSCO reported there have been no material changes to Units 1-6 since then. Units 7 and 8 are combustion turbines that have a combined rated output of 82 MW.

3.7 Comanche

The Comanche plant is a coal-fired generation facility located southeast of the city of Pueblo, CO. The facility includes Units 1, 2, and 3, rated at 360 MW, 365 MW, and 821 MW, respectively. Each unit includes sulfur dioxide scrubbing, a baghouse for particulate control, and Unit 3 includes an SCR for nitrogen oxide control. All units were assumed to be decommissioned for purposes of this study. A generic cost estimate was developed for this facility.

3.8 Craig

The Craig plant is a coal-fired generation facility located near the city of Craig, CO. The facility is comprised of three units; however, PSCO only has an ownership stake in Unit 1 and Unit 2, both of which are currently operational. Each unit has a rated output of 447 MW. Both units were assumed to have sulfur dioxide scrubbing, a baghouse for particulate control, and nitrogen oxide control. Craig's retirement is expected for 2025. The cost to decommission and demolish all units at one time were included in this study as a generic cost estimate.

3.9 Hayden

The Hayden plant is a coal-fired generation facility located in the city of Hayden, CO. The facility is comprised of two units, both of which are currently in operation. Unit 1 has a rated output of 202 MW and Unit 2 has a rated output of 285 MW. Both units include sulfur dioxide scrubbing, a baghouse for particulate control, and nitrogen oxide control. The cost to decommission and demolish all units at one time were included in this study as a generic cost estimate.

3.10 Alamosa Combustion Turbine Facility

The Alamosa natural gas combustion turbine facility has a total rated output of 50 MW and is located on the outskirts of the city of Alamosa, CO. Unit 1 has a rated output of 24 MW and Unit 2 has a rated output of 26 MW. A generic cost estimate was developed for this facility.

3.11 Blue Spruce Combustion Turbines

The Blue Spruce natural gas-fired simple cycle generation plant is located in the city of Aurora, CO and has two operating units, each with a rated output of 194 MW. The cost to decommission and demolish all units at one time were included in this study as a generic cost estimate.

3.12 Fruita Combustion Turbine

The Fruita natural gas combustion turbine has a rated output of 26 MW and is located on the outskirts of the city of Fruita, CO. A generic cost estimate was developed for this facility.

3.13 Rocky Mountain Combined Cycle

The Rocky Mountain generating facility is a natural gas-fired combined cycle facility with three operational units and a total rated output capacity of 701 MW. The plant is located in the city of Keenesburg, CO. Unit 1 and 2 have nitrogen oxide controls and carbon monoxide controls. A generic cost estimate was developed for this facility.

3.14 Ames

The Ames hydroelectric generating station is located near Ophir, CO, in the Illium Valley. The facility is equipped with a single unit with a generating capacity of 3.8 MW and was issued a new license in 2010 permitting an additional 40 years of operation. A generic cost estimate was developed for this facility.

3.15 Cabin Creek

The Cabin Creek hydroelectric pumped storage power plant is located near the city of Georgetown, CO. The facility is comprised of two units, each with a rated generating capacity of 162 MW for a facility total of 324 MW. This facility was licensed with a new 40-year license issued on May 27, 2014. A generic cost estimate was developed for this facility.

3.16 Georgetown

The Georgetown hydroelectric generating station is located in historic Georgetown, CO. The facility has two units capable of producing a total of 1.6 MW and was issued a new 40-year license in 1996. A generic cost estimate was developed for this facility.

3.17 Salida

The Salida hydroelectric generating station is located on the South Arkansas River in Poncha Springs, CO. The facility is capable of producing a total of 1.4 MW and was issued a new 30-year license in 1997. A generic cost estimate was developed for this facility.

3.18 Shoshone

The Shoshone hydroelectric generating station is located in Glenwood Springs, CO and is equipped with two units with a total rated capacity of 15 MW. As this is not a FERC-regulated facility, no license is required. A major rebuild of the facility was completed in 2008 and included everything except the turbines. A generic cost estimate was developed for this facility.

3.19 Tacoma

The Tacoma hydroelectric generating station is located north of the city of Rockwood, CO in the Animas River Canyon. The facility is equipped with three units with a total rated output of 4.5 MW and was issued a new 40-year license in 2010. A generic cost estimate was developed for this facility.

3.20 Cheyenne Ridge Wind Farm

Cheyenne Ridge Wind Farm is expected to enter commercial operation in 2020. The wind farm will be located in Lincoln, Cheyenne, and Kit Carson counties, CO. The Project includes 202 Vestas V120-2.2MW and 27 Vestas V110-2.0MW wind turbine generators, with a total rating of approximately 500 MW. A site-specific cost estimate was developed for this facility.

3.21 Rush Creek Wind Farm

Rush Creek Wind Farm is located south of the town of Limon, CO and includes 300 Vestas V110-2.0MW wind turbines, with a total rating of approximately 600 MW. The Project entered commercial operation at the end of 2018. A site-specific cost estimate was developed for this facility.

3.22 Arapahoe Solar

The Arapahoe Solar project is planned to enter commercial operation in December 2020. The project will be located southeast of Denver, CO in Arapahoe County. The solar farm will consist of 62 solar panels that will have a total capacity of 2 MW (DC). The panels will be mounted using 3 single axis trackers manufactured by Duratrack. A site-specific cost estimate was developed for this facility.

3.23 Valmont Solar

The Valmont Solar project is planned to enter commercial operation in December 2020. The project will be located east of Boulder, CO and will consist of two 2 MW (DC) solar fields with a total capacity of 4 MW (DC). The solar farm will consist of 129 solar panels mounted using 3 single axis trackers manufactured by Duratrack. A site-specific cost estimate was developed for this facility.

4.0 METHODOLOGY

1898 & Co. has prepared decommissioning cost estimates for each of the Plants. When PSCO determines that each site should be retired, the above-grade equipment and steel structures are assumed to have sufficient scrap value to a salvage contractor to offset a portion of the site decommissioning costs. However, PSCO will incur costs associated with decommissioning of the Assets and restoration of the sites to the extent that those costs exceed the salvage value of equipment and structural steel.

The site decommissioning and dismantling costs were developed using information provided by PSCO and in-house data 1898 & Co. has collected from previous project experience. 1898 & Co. estimated quantities for equipment based on a visual inspection of the facilities, reviews of engineering drawings, an in-house database of plant equipment quantities, and professional judgment. For each Plant, quantities were estimated for each required task. Current market pricing for labor rates and equipment was then developed for each task. The unit pricing was developed for each site based on the labor rates, equipment costs, and disposal costs specific to the area in which the work is to be performed. These rates were applied to the quantities for the Plants to determine the total cost of decommissioning and dismantling.

The decommissioning costs include the cost to return each site to an industrial condition, suitable for reuse for development as an industrial facility. Included are the costs to dismantle all of the assets identified by PSCO for decommissioning, including power generating equipment and balance of plant equipment, as well as costs to perform environmental site restoration activities.

4.1 Decommissioning Methodology

A summary of several of the means and methods that could be employed is summarized in the following sections; however, means and methods will not be dictated to the contractor by 1898 & Co. It will be the contractor's responsibility to determine means and methods that result in safely decommissioning the Assets at the lowest possible cost.

Asbestos abatement would take place prior to commencement of any other demolition activities. Abatement would need to be performed in compliance with all state and federal regulations including, but not limited to, requirements for sealing off work areas and maintaining negative pressure throughout the removal process. Final clearances and approvals would need to be achieved prior to performing further demolition activities.

High material grade assets would then be removed from the site, to the extent possible. This would include items such as transformers, transformer coils, circuit breakers, electrical wire, condenser plates and tubes, and heater tubes. High grade assets include precious alloys such as copper, aluminum-brass tubes, stainless steel tubes, and other high value metals occurring in plant systems. High grade asset removal would occur up-front in the schedule, to reduce the potential for vandalism, to increase cash flow, and for separation of recyclable materials, in order to increase scrap recovery. Methods of removal vary with the location and nature of the asset. Small transformers, small equipment, and wire would likely be removed and shipped as-is for processing at a scrap yard. Large transformers, steam turbines, and condensers would likely require some on-site disassembly prior to being shipped to a scrap yard.

Construction and Demolition ("C&D") waste includes items such as non-asbestos insulation, roofing, wood, drywall, plastics, and other non-metallic materials. C&D waste would typically be segregated from scrap and concrete to avoid cross-contaminating of waste streams or recycle streams. C&D demolition crews could remove these materials with equipment such as excavators equipped with material handling attachments, skid steers, etc. This material would be consolidated and loaded into bulk containers for disposal at a local landfill.

4.2 Coal and Natural Gas-Fired Facilities

In general, boilers could be felled and cut into manageable-sized pieces on the ground. First the structures around the boilers would need to be removed using excavators equipped with shears and grapples. Stairs, grating, elevators, and other high structures would be removed using an "ultra-high reach" excavator, equipped with shears. Following removal of these structures, the boilers would be felled, using explosive blasts. The boilers would then be dismantled using equipment such as excavators equipped with shears and grapples, and the scrap metal loaded onto trailers for recycling. After the surrounding structures and ductwork have been removed, the stacks would be imploded, using controlled blasts. Following implosion the stack liners and concrete would be reduced in size to allow for handling and removal.

BOP structures and foundations would likely be demolished using excavators equipped with hydraulic shears, hydraulic grapples, and impact breakers, along with workers utilizing open-flame cutting torches. Steel components would be separated, reduced in size, and loaded onto trailers for recycling. Concrete would be broken into manageable sized pieces and stockpiled for crushing on-site. Concrete pieces would ultimately be loaded in a hopper and fed through a crusher to meet required material specification for on-site reuse as fill where possible.

4.3 Hydroelectric Power Facilities

All power generation equipment will be removed and scrapped. Powerhouse buildings will be demolished unless designated as historic structures, as indicated in the Section 5.2. Above-grade penstock will be removed and below-grade penstock will be capped with concrete plugs or filled with concrete in areas where burial depth is relatively shallow. Dams and reservoirs will remain as-is to continue to serve as reservoirs or flood control for the local communities or be removed depending on the facility.

4.4 Wind Power Facilities

The turbine nacelles, towers, and associated equipment are assumed to have sufficient value as scrap to offset the removal costs of these items. However, PSCO will incur costs for removal and disposal of the blades and foundations and other project facilities and for the restoration of the site following the removal of equipment.

The wind turbine blades will be removed from the wind turbine nacelle rotors using a crane, cut into manageable sized sections, loaded onto a trailer, and hauled to a local landfill for disposal. The wind turbine blades are constructed from a composite material that is assumed to have no salvage value at the time of decommissioning. The turbine nacelles will be removed from the towers and processed to separate scrap from debris and will have a significant value for scrap due to a high content of steel and copper. The salvage value of the nacelles and towers will be utilized to offset the costs for removal. The underground cabling will be removed and scrapped.

All underground improvements, including concrete foundations, will be removed to a depth dictated in the site-specific assumptions. This will include the removal of the wind turbine foundations and low voltage switchgear foundations. The concrete will be demolished, loaded into a dump truck and hauled to a local landfill for disposal. The portions of the concrete foundations that are greater than the depth dictated in the site specific assumptions will be abandoned in place. Voids left from the removal of the concrete footings will be backfilled with surrounding subsoil and topsoil and fine graded to achieve suitable drainage.

Finally, to the extent required, crushed rock surfacing will be removed. For purposes of this Study, it is assumed that all of the turbine access roads will be removed as part of the decommissioning of the facility. Areas where crushed rock surfacing has been removed will be fine graded to achieve suitable drainage.

4.5 Solar Facilities

Removal of the panel framing and some wiring is assumed to have sufficient value as scrap to offset the removal costs of these items. However, PSCO will incur costs for removal and disposal of the panels, foundations, and other project facilities and for the restoration of the site following the removal of equipment. The underground cabling will be removed and scrapped or salvaged depending on its value.

The decommissioning costs include the cost to remove all required structures, foundations, solar panels, electrical equipment and any other equipment that was built in association with the Project or that is owned by PSCO. All underground equipment, including collector cables, will be removed to a depth dictated in the site-specific assumptions. This includes any site restoration activities necessary to return the site to a suitable condition consistent with surrounding land use.

Finally, to the extent required, crushed rock surfacing will be removed. For purposes of this Study, it is assumed that all of the site access roads will be removed as part of the decommissioning of the facility. Areas where crushed rock surfacing has been removed will be fine graded to achieve suitable drainage.

4.6 Decommissioning Estimate Types

1898 & Co. prepared site-specific decommissioning cost estimates for a subset of the Plants under consideration and generic decommissioning cost estimates for the remaining Plants as defined in the scope of work for the Study. The methodologies used to develop each of these types of cost estimates are explained in the following sections.

4.6.1 Site-Specific Estimates

Site-specific estimates were developed using a “bottom-up” cost estimating approach, where cost estimates are developed from scratch through the development of site-specific quantities and applying unit pricing to the quantities. These estimates included labor hours, equipment rental, disposal fees, and scrap quantities for each task based on site visits, drawing reviews, information provided by PSCO, and 1898 & Co.’s experience. Drawings were reviewed to develop estimated quantities of labor hours for dismantlement, equipment necessary for demolition activities, debris for disposal, concrete crushed to meet a material specification for on-site reuse, and scrap. Current market prices for labor, equipment, and disposal were then applied to these quantities to develop direct costs for decommissioning activities. Additionally, unit pricing for scrap values were applied to the scrap quantities to determine anticipated

salvage values, which were subtracted from the direct costs for demolition in order to arrive at a total net project cost.

4.6.2 Generic Estimates

Generic estimates were developed according to a "top-down" cost estimating approach, where a cost estimate for a facility of similar type and size is used as a starting point and adjusted to account for differences between the base estimate and the plant being evaluated. The first step in developing the generic estimates was to develop cost estimates for several types of site categories on a cost-per-megawatt basis from the site-specific estimates.

Categories evaluated on a cost-per-megawatt basis included asbestos removal, equipment and building dismantlement, hazardous waste disposal, and scrap quantity estimation. For units which were not close in size to any site-specific estimates to be compared on a direct cost-per-MW basis, an adjustment was made to the costs in these categories to account for the difference in physical size of plant being estimated relative to the base estimate, rather than simply the difference in MW rating, since demolition costs will be determined by the physical size of the equipment and structures to be demolished. Adjustments were then applied to these costs to account for other known differences, such as the number of stacks, coal handling equipment, cooling towers, and balance of plant buildings, based on site-specific costs available for each of these categories from site-specific estimates. For example, cooling tower demolition costs were estimated on a per-megawatt of steam turbine size, since the physical size of the cooling tower will be directly proportional to the heat rejection load from the steam turbine. Lastly, pond closures, coal pile restoration, landfill closure, and seeding costs were evaluated according to individual acreages of each of these items at each plant, as determined from aerial photos or site drawings. An example of the methodology used to develop one of the generic estimates, based on the site-specific estimates, is included in Appendix F.

Generic estimates were developed for the hydro-electric units as well, even though site-specific estimates were not available to use as a basis for developing these costs. Additionally, the physical size of powerhouses, penstock lengths, dams, and other hydro-electric equipment is not easily relatable to MW rating of these facilities, making it difficult to develop generic costs in a similar manner to that used for the fossil-fuel based facilities. Therefore, a different approach was developed to determine generic hydro-electric decommissioning costs. Unit pricing was developed for a set of key categories including asbestos abatement, powerhouse demolition, equipment removal, penstock removal and/or filling and dam removal. The unit pricing for each of these categories was based on RS Means online database or 1898 & Co.'s

experience with similar projects. These costs were then applied to each hydro-electric plant based on assumed asbestos quantities, number of buildings to be demolished, generating equipment to be removed, above grade penstock to be removed, below grade penstock to be capped or filled, and dam removal, if applicable. Finally scrap quantities were estimated based on equipment sizes and scrap values applied to determine salvage values and net decommissioning costs.

4.7 Development of Scrap Quantities

Scrap quantities were developed for each of the site-specific estimates and then unit pricing for scrap value was applied to these quantities to determine the total value of scrap material that could be used to offset a portion of the decommissioning costs. 1898 & Co. used information provided by PSCO and in-house data 1898 & Co. has collected from previous project experience. Equipment sizes and ratings for items such as steam turbines, generators, large motors and pumps, GSUs, etc. were also evaluated as part of the development of scrap quantities.

4.8 Decommissioning Cost Categories

The site-specific decommissioning cost estimates were developed for several major categories. These categories were also used as the basis for development of the generic cost estimates. Following is a description of each of the major cost categories and what is included in each category. The applicability and specifics of each category as it relates to each cost estimate are as presented in Section 5.0.

4.8.1 Asbestos Removal

This category includes all costs associated with removal and disposal of asbestos on the structures equipment, by a licensed contractor, in accordance with applicable regulations. Included in these costs are any scaffolding requirements, maintaining negative pressure in applicable areas, and removal and disposal of the asbestos or asbestos containing material.

4.8.2 Boiler

This category includes all costs associated with removal and disposal of the boiler and associated equipment for each unit indicated, as well as the associated foundations.

4.8.3 Steam Turbine and Building

This category includes all costs associated with removal and disposal of the steam turbine, generator, condenser, and associated equipment, as well as the steam turbine building and foundations.

4.8.4 Turbines & Foundations

This category is applicable only to simple cycle combustion turbine units and includes all costs associated with removal and disposal of the combustion turbine, generator, and associated equipment, as well as the associated foundations.

4.8.5 Turbines, HRSG & Foundations

This category is applicable only to combined cycle combustion turbine units and includes all costs associated with removal and disposal of the combustion turbine, generator, Heat Recovery Steam Generators ("HRSG"), and associated equipment, as well as the associated foundations.

4.8.6 Turbines, Condenser & Foundations

This category is applicable only to combined cycle combustion turbine units and includes all costs associated with removal and disposal of steam turbine, generator, condenser, and associated equipment, as well as the steam turbine building and foundations.

4.8.7 Stack

This category includes all costs associated with removal and disposal of the stack for each unit indicated, as well as the associated foundations.

4.8.8 Fabric Filter Dust Collector or Baghouse

This category includes all costs associated with removal and disposal of the baghouse and associated structures and equipment for each unit indicated, as well as the associated foundations.

4.8.9 Selective Catalytic Reduction

This category includes all costs associated with the removal and disposal of the SCR system for air quality treatment, as well as the associated foundations.

4.8.10 Lime Spray Dryer

This category includes all costs associated with the removal and disposal of the LSD system used for air quality control, as well as the associated foundations.

4.8.11 Generator Step-up Transformer and Foundation

This category includes all costs associated with removal and disposal of the generator step-up transformer and associated equipment for each unit indicated, as well as the associated foundations.

4.8.12 Hazardous Material Disposal

This category includes all costs associated with removal and disposal of hazardous material, such as treated wood, that is required to be handled and disposed of separately from general construction and demolition debris for each unit indicated.

4.8.13 Mercury and Universal Waste Disposal

This category includes all costs associated with removal and disposal of mercury containing switches and devices that are required to be handled and disposed of separately from general construction and demolition debris for each unit indicated.

4.8.14 Polychlorinated Biphenyl Transformer Oil Disposal

This category includes costs associated with removal and disposal of any transformer oil that includes any levels of potential Polychlorinated Biphenyl ("PCB") contamination, which is required to be handled and disposed of separately from general construction and demolition debris for each unit indicated.

4.8.15 Transformer Oil Impacted Soil

This category includes removal of a portion of the soil in the immediate vicinity of the generator step-up transformers, to account for the potential that this soil contains low levels of contamination from transformer oil through normal operations over the lifetime of the plant.

4.8.16 Onsite Concrete Crushing and Reuse

This category includes the costs associated with processing concrete from the above-mentioned demolition activities, by placing concrete in a hopper and feeding it through a crusher to meet required material specification for on-site reuse as fill where possible. Also included are the costs associated with placing the processed concrete in the appropriate fill areas on the site.

4.8.17 Scrap

This category includes the value for all scrap material on a given unit or common facilities as appropriate. The values listed include all scrap metals from structures and equipment being sold as scrap at the net price listed in the assumptions, which accounts for transportation to the scrap facility.

4.8.18 Cooling Towers

This category includes all costs associated with removal and disposal of the cooling towers and associated equipment for each unit indicated, as well as the associated foundations.

4.8.19 Nuclear Meter

This category includes all costs associated with removal and disposal of any nuclear meters or devices that are required to be handled and disposed of separately from general construction and demolition debris for each unit indicated.

4.8.20 Closure of Ponds

This category includes all costs associated with dewatering, removal of sediment, closing, capping and restoring any pond areas at the site, consistent with the assumptions outlined in Section 5.0.

4.8.21 Abandonment of Water Wells

This category includes all costs associated with closing and capping any water wells associated with the site in accordance with all applicable local, state, and federal regulations.

4.8.22 All Balance of Plant Buildings

This category includes all costs associated with removal and disposal of balance of plant buildings, structures, and equipment not already accounted for in the unit specific costs, as well as the associated foundations.

4.8.23 Coal Handling Facilities Demolition

This category includes all costs associated with removal and disposal of coal handling facilities equipment and structures, including coal conveyors, bunkers, crushers, feeders, and coal unloading facilities, as well as the associated foundations.

4.8.24 Coal Storage Area Restoration

This category includes all costs associated with restoration activities in the coal storage areas at the site, consistent with the assumptions outlined in Section 5.0.

4.8.25 Fuel Oil Tank Areas

This category includes removal of a portion of the soil in the immediate vicinity of the fuel oil tanks, to account for the potential that this soil contains some level of contamination from fuel oil through normal operations over the lifetime of the plant, consistent with the assumptions outlined in Section 5.0.

4.8.26 Fuel Oil Piping Remediation

This category includes removal of a portion of the soil in the immediate vicinity of fuel oil lines, to account for the potential that this soil contains some level of contamination from fuel oil

through normal operations over the lifetime of the plant, consistent with the assumptions outlined in Section 5.0.

4.8.27 Landfill Closure

This category includes the closure of ash landfills using a federal CCR regulation compliant cap once all ash is consolidated into the landfill, consistent with the assumptions outlined in Section 5.0.

4.8.28 Site Pavements and Concrete

This category includes removal of any parking lots, sidewalks, and any other miscellaneous paving and concrete not already accounted for in the unit specific costs.

4.8.29 Wind Turbine Nacelle & Tower Removal

This category includes all costs associated with removal and disposal of the wind turbine nacelles and towers.

4.8.30 Wind Turbine Blades & Foundation Removal

This category includes all costs associated with removal of the wind turbine blades and wind turbine foundations to a depth dictated in the site-specific assumptions, both of which have no associated scrap value, but do include significant debris for disposal.

4.8.31 Solar Facility Removal

This category includes all costs associated with removal of solar panels and associated facilities.

4.8.32 Low Voltage Switchgear Removal

This category includes all costs associated with removal and disposal of wind farm switchgear on the low voltage side of the substation, not including any high voltage substation equipment. Associated foundations are included for demolition.

4.8.33 Operation and Maintenance Facility Building Removal Cost

This category includes all costs associated with removal and disposal of the wind farm operation and maintenance building, structures, and equipment not already accounted for in the wind turbine specific costs, as well as the associated foundations.

4.8.34 Power Collection System Removal Cost

This category includes all costs associated with removal and disposal of wind farm low voltage power collection system wiring, junction boxes, and manholes.

4.8.35 Crushed Rock Road Surface Removal Cost

This category includes all costs associated with removal of crushed rock surfaced roads to prepare these areas for restoration to green space, consistent with surrounding land.

4.8.36 Penstock Filling and Removal

This category is specific to the hydroelectric facilities and includes all costs associated with decommissioning penstock runs by removing above grade sections, filling them in areas where the burial depth is shallow, and capping and abandoning in place penstock sections where burial depth is relatively deep.

4.8.37 Powerhouse Demolition & Equipment Removal

This category is specific to the hydroelectric facilities and includes all costs associated with removal of all electric generating equipment at every site, as well as removal and disposal of the powerhouse at applicable sites.

4.8.38 Dam Removal

This category is specific to the hydroelectric facilities and includes all costs associated with removal of all or a portion of the dams, as applicable and outlined in Section 5.0.

4.8.39 Seeding and Restoration

This category includes all costs associated with importing and spreading topsoil and seeding the site, consistent with the assumptions outlined in Section 5.0.

4.8.40 Project Indirects

This category includes costs expected to be incurred by PSCO in the execution of the decommissioning of the power generating facilities, in addition to the direct costs paid to a demolition contractor. This includes the internal administrative costs (e.g., permitting, fees, PSCO employee allocated expense) or costs associated with third-party project managers or engineers providing oversight during demolition activities, inspections, and testing to confirm that remediation has been completed.

4.8.41 Contingency

This category includes costs reasonably expected to be incurred by PSCO during the execution of decommissioning and demolition activities. For decommissioning projects, there is uncertainty associated with the scope of the work, work conditions and how the work will be performed. There is also uncertainty associated with quantities for dismantlement of facilities, due to the age and limits on drawings available, and the absence of testing results for

environmental contamination prior to preparation of these types of studies. This category accounts for these potential costs (and associated in-direct costs) that would be in addition to the direct costs associated with the base decommissioning bids from the demolition and remediation contractors.

5.0 DECOMMISSIONING ESTIMATE ASSUMPTIONS

Outlined in this section are the assumptions applied to all sites considered in this study.

5.1 Assumptions Applicable to All Sites

The following assumptions were made as the basis of all of the cost estimates.

1. The estimates are inclusive of all costs necessary to properly demolish all units and associated equipment and structures to three feet below grade unless otherwise specified. For purposes of this study and the included cost estimates, it is assumed the sites will be restored to a condition suitable for industrial use.
2. For purposes of this study and the included cost estimates, it is assumed that for each Project all components are dismantled as part of a single demolition project after all the units at a single site are taken out of service.
3. All units in question are decommissioned to zero generating output. Existing utilities will remain in place for use by the contractor for the duration of the demolition activities.
4. All work will take place in the safest and most cost-efficient method.
5. Labor costs are based on non-Union labor rates for a 50-hour workweek.
6. Decommissioning cost estimates will be based on the site cost index indicated in the site-specific assumptions below. The site cost indices are based on the RS Means online database.
7. Except as otherwise specified, the Study does not evaluate or take into consideration the decommissioning costs associated with any transmission facilities used to serve the generation facilities evaluated in the Study. Transmission switchyards and substations within the boundaries of the plant are not part of the demolition scope. For purposes of this study, the division between generation assets and transmission assets is at the high side of the generator step-up ("GSU") transformers.
8. The costs for relocation of transmission lines, or other transmission assets, are specifically excluded from the decommissioning cost estimates, unless otherwise specified. Any costs necessary to support on-going operations of any remaining facilities are allocated to the operating costs of those facilities.
9. GSUs, auxiliary transformers, and spare transformers for the units in question are included for demolition and scrap, unless otherwise specified.
10. In general, abatement of asbestos will precede any other demolition work. After final air quality clearances have been reached, demolition can proceed. However, some abatement, including the removal of non-friable gaskets and packings will commence

in conjunction with the demolition. If asbestos containing materials are found within the interior of boilers, ductwork or other equipment (including refractory cements), abatement will be coordinated closely with demolition.

11. All demolition and abatement activities, including removal of asbestos, will be done in accordance with any and all applicable Federal, State and Local laws, rules and regulations.
12. PSCO will remove or consume all fuel oil, coal, and chemicals to a reasonable extent possible prior to commencement of demolition activities.
13. If any PCB contaminated oil is encountered, it will be removed and disposed of properly. Estimated quantities of PCB contaminated oil were developed for each site based on data provided by PSCO.
14. Hazardous material abatement is included for all sites as necessary, including asbestos, mercury, and PCBs. Lead paint coated materials will be handled by trained personnel as necessary but will not be removed prior to demolition.
15. Soil and concrete around the GSUs and other large transformers will be excavated to a depth of three feet and transported offsite for disposal. It is assumed that the PCB concentrations are below 50 ppm and will not be required to be disposed in a Toxic Substances and Control Act ("TSCA") permitted landfill.
16. Soil testing and any other onsite testing has not been conducted for this study. Any environmental clean-up or removal costs are based on previous testing or assumed levels of contamination.
17. Coal pile storage areas will be excavated to a depth of 36 inches and excavated material transported offsite for disposal as a special waste, 6-inches of topsoil imported, graded to promote drainage and seeded to establish vegetation, unless otherwise noted in the individual site assumptions.
18. No environmental costs have been included to address cleanup of contaminated soils, hazardous materials, or other conditions present onsite having a negative environmental impact, other than those listed in the individual site assumptions. No allowances are included for unforeseen environmental remediation activities.
19. Site areas will be graded to achieve suitable site drainage to natural drainage patterns. Grading and the import of fill material will be minimized to the extent possible.
20. All above-grade structures will be demolished. All below-grade structures, including foundations, will be removed to three feet below existing grade, unless otherwise noted in the individual site assumptions.

21. All roads, paving, fences, gates, crushed rock surfacing, and rail lines not needed for continued operation of adjacent facilities will be removed, unless otherwise noted in the individual site assumptions.
22. Non-hazardous, inert debris, such as concrete and brick, will be crushed onsite to meet material specification for reuse as fill in basements and/or ponds onsite.
23. Surface impoundments, excluding ash ponds, will be closed under Colorado Department of Public Health and Environment Section 9. These ponds will be pumped dry, material will be removed to a depth specified in Table 5-2 and transported offsite for disposal as a special waste, graded to promote site drainage, six inches of topsoil placed over the area and seeded to establish vegetation unless otherwise noted in the individual site assumptions.
24. Existing ash ponds will be "clean" closed under the federal CCR regulations. As such, they will be pumped dry, residual materials excavated to a depth specified in Table 5-2 and transported offsite for disposal as a special waste, "clean" closed pond will be graded to promote site drainage, six inches of topsoil placed over the area and seeded to establish vegetation unless otherwise noted in the individual site assumptions.
25. Stormwater and raw water ponds will be pumped dry, graded to promote drainage, six inches of topsoil placed over the area and seeded to establish vegetation unless otherwise noted in the site-specific assumptions.
26. Major equipment, structural steel, turbines, generators, metal exhaust stacks, transformers, electrical equipment, cabling, wiring, pump skids, above ground piping, and equipment enclosures for the above-ground equipment will be sold for scrap and removed from the Plant site by the demolition contractor. Concrete and brick will be processed onsite to meet a material specification for reuse as fill for building basements or former ponds at the site. All other demolished materials that cannot be recycled are considered debris and will be disposed at an offsite landfill.
27. Except for the circulating water lines, underground piping more than 3 feet below grade will be capped and abandoned in place. Circulating water system pipes will be removed and disposed of properly due to the potential for Technologically Enhanced Naturally Occurring Radioactive Materials ("TENORM") scale buildup in the piping walls. Voids will be backfilled with imported granular material to surface grade.
28. Prior to abatement and demolition activities, coal will be removed from feeders, conveyors, bunkers, feeders and mills. Equipment will be water washed to remove remaining fine materials. Costs for these activities are included in the project indirect costs in the estimates.

29. Prior to abatement and demolition activities, ash hoppers, duct work, boiler, AQCS, air heater, etc. will be cleaned as necessary to remove residuals and ash vacuumed out. Costs for these activities are included in the project indirect costs in the estimates.
30. Sewers, catch basins, and ducts will be filled and sealed on the upstream side. Horizontal runs will be abandoned in place after being sealed.
31. Costs are included to clean out the fuel oil tank areas and lines. Costs have also been included to remove three feet of soil directly below each of the fuel oil tanks and five feet of soil beneath the fuel oil lines to account for the potential for this soil to be contaminated during normal operations.
32. Sites will be surfaced with imported granular material or crushed concrete meeting material specification for onsite reuse unless otherwise noted in the individual site assumptions.
33. Decommissioning activities for the wind and solar generating assets will be done according to the lease agreements as indicated in the site-specific assumptions.
34. The meteorological towers at the wind generating facilities are assumed to be permanent, self-supporting, lattice-type towers, unless information is provided otherwise. The towers are assumed to be fully removed as part of this Study, including their supporting foundations to the removal depth indicated in the site-specific assumptions.
35. Valuation and sale of land and all replacement generation costs are excluded from this scope.
36. Valuation and sale of water rights are excluded from this scope.
37. For purposes of this study, it is assumed that none of the equipment will have a salvage value in excess of the scrap value of the materials in the equipment at the time of the decommissioning study. All equipment, steel, copper, and other metals will be sold as scrap. Credits for salvage value are based on scrap value alone. Resale of equipment and materials is not included.
38. Scrap values are based upon the materials at the site at the time of the study, and do not take into account changes of materials (such as replacing tubes) over the plant life.
39. The scope of the costs included in this Study is limited to the decommissioning activities. Additional post-demolition on-going costs may be required, including, but not limited to groundwater monitoring and/or other environmental monitoring activities. These costs are excluded from the cost estimates provided in this Study.
40. Fractional ownership of facilities has not been taken into account in these estimates. All costs presented are the full costs for demolition of entire units and sites.

41. A 20 percent contingency is included on the direct costs in the estimates prepared as part of this study to cover unknowns. PSCO's project indirect costs were included as 10 percent of the direct costs.
42. Pricing for all estimates is in 2020 dollars.
43. Market conditions may result in cost variations at the time of contract execution.
44. Scrap values used in the decommissioning estimates for each site are provided in Table 5-1. The scrap values are based on a 12-month average of American Metal Market prices for the given material less the transportation costs required to haul the scrap via truck and/or rail to the major market.

Table 5-1: Site Specific Scrap Values

Site	Aluminum	Brass	Copper	Stainless Steel	Steel
Cherokee	$ (0.24)	$ (1.26)	$ (1.92)	$ (564.80)	$ (166.53)
Ft. Lupton	$ (0.17)	$ (1.16)	$ (1.86)	$ (590.03)	$ (73.55)
Fort St. Vrain	$ (0.23)	$ (1.25)	$ (1.90)	$ (550.87)	$ (152.60)
Manchief	$ (0.24)	$ (1.26)	$ (1.91)	$ (564.80)	$ (166.53)
Pawnee	$ (0.24)	$ (1.26)	$ (1.91)	$ (564.80)	$ (166.53)
Valmont	$ (0.24)	$ (1.26)	$ (1.91)	$ (567.95)	$ (169.68)
Cheyenne Ridge	$ (0.24)	-	$ (1.91)	-	$ (146.84)
Rush Creek	$ (0.27)	-	$ (1.94)	-	$ (204.52)
Arapahoe Solar	$ (0.24)	$ (1.26)	$ (1.91)	$ (564.80)	$ (166.53)
Valmont Solar	$ (0.24)	$ (1.26)	$ (1.91)	$ (567.95)	$ (169.68)

45. Ponds, coal areas, and landfills were included in the Study according to discussions with PSCO personnel. The following table includes the removal depths and liner types used.

Table 5-2: Environmental Summary

Description	Removal Depth (ft)	Liner and Type	Comments
Cherokee			
Evaporation Pond	3	Double HDPE liner	Pond area is assumed to be approximately 280,000 square feet. The Evaporation and Equalization Ponds will replace the existing Polishing Ponds, Emergency Spill Ponds, Unit 4 Cooling Tower Retention Basin, and Stormwater Pond B.
Equalization Pond	2	None	Pond volume is assumed to be 5 million gallons. The Evaporation and Equalization Ponds will replace the existing Polishing Ponds, Emergency Spill Ponds, Unit 4 Cooling Tower

			Retention Basin, and Stormwater Pond B. To be installed in 2021.
West Storm Water Pond	0	2-ft clay liner	
Northwest Reservoir	1	None	This pond has a cut-off wall composed of bentonite clay.
Coal Pile	-	-	Removed and certified clean closed. Assume 120,000 cubic yards of ash to be disposed offsite.
Copeland Reservoir	-	-	Not included (offsite).
Fort St. Vrain			
Raw water settling ponds	0		East and West ponds have cement embankments and clay liner bottoms. Ponds 1 and 2 are concrete lined.
Wastewater Ponds	3	36 mil liner	The liner is a watersaver membrane liner with reinforced hypalon.
NE Evaporation Pond	3	45 mil liner	
NW Evaporation Pond	3	Double 60 mil liner	
Cooling Water Detention Ponds	3	45 mil liner	
Storm Water Retention Pond	0	None	
Evaporation Pond (South)	3	36 mil liner	
Valmont			
Landfill Area 1	0	None	
Landfill Area 2	0	None	
Coal Pile	2	-	Coal has been removed, but the area has not been completely clean closed.
Pawnee			
Raw Water Reservoir	0	3-ft clay	
Coal Pile	3	-	
Coal Runoff Pond	3	None	
Treated Water Reservoir	3	100-mil liner & clay liner	
Evaporation Pond A	3	Double 60-mil liner	
Evaporation Pond B	3	Double 60-mil liner	

Evaporation Pond C	3	Double 60-mil liner	
Ash Water Recycle	3	80 mil liner & clay liner	
Evaporation Pond D	3	Double 60-mil HDPE liner	
Intermediate Pond	3	80 mil liner & clay liner	
High Quality Pond	3	80 mil liner & clay liner	
Comanche			
Stormwater Pond	0		Based on Cherokee, Fort St. Vrain, and Pawnee.
Raw Water Pond	0		Based on Cherokee, Fort St. Vrain, and Pawnee.
Wastewater Ponds (4)	3		Based on Cherokee, Fort St. Vrain, and Pawnee.
Coal Runoff Pond	3		Based on Pawnee.
Coal Pile Area	3		Based on Pawnee.
Ash Landfill	0		Based on Pawnee.
Craig			
Evaporation Pond	3		Based on Cherokee, Fort St. Vrain, and Pawnee.
Raw Water Pond	0		Based on Cherokee, Fort St. Vrain, and Pawnee.
Wastewater Ponds Area 1	3		Based on Cherokee, Fort St. Vrain, and Pawnee.
Wastewater Ponds Area 2	3		Based on Cherokee, Fort St. Vrain, and Pawnee.
Coal Runoff Pond	3		Based on Pawnee.
Coal Pile Area 1	3		Based on Pawnee.
Coal Pile Area 2	3		Based on Pawnee.
Hayden			
Water Intake Ponds	0		Based on Cherokee, Fort St. Vrain, and Pawnee.
Raw Water Ponds	0		Based on Cherokee, Fort St. Vrain, and Pawnee.
Coal Pile	3		Based on Pawnee.
Coal Runoff Pond	3		Based on Pawnee.
Ash Pit	3		Based on Pawnee.
Rocky Mountain			
Raw water pond	0	Clay liner	Based on Cherokee, Fort St. Vrain, and Pawnee.
East and West Evaporation ponds	2	Double liners	Based on Cherokee, Fort St. Vrain, and Pawnee.

New Evaporation Pond (North West)	2	Double liners	Based on Cherokee, Fort St. Vrain, and Pawnee.
Stormwater Detention Pond	0	None	Based on Cherokee, Fort St. Vrain, and Pawnee.
Cooling Tower Blowdown Pond	3	Double liners	Based on Cherokee, Fort St. Vrain, and Pawnee.
Ames			
Trout Lake	0		Not Included.
Lake Hope	0		Not Included.
Howard Fork Lake	10		
Cabin Creek			
Upper Reservoir	0		Assume 0 feet of sediment.
Lower Reservoir	0		Not removed.
Georgetown			
Reservoir	3		Remove 3 ft of sediment from reservoir.
Salida			
Fooses Lake	15		Remove 15 feet of sediment, restore to match surrounding.
Garfield Lake	10		Remove 10 feet of silt

5.2 Site Specific Cost Estimate Assumptions

The following assumptions served as the basis of evaluation for each of the generating facilities for which site-specific decommissioning cost estimates were developed.

5.2.1 Cherokee Coal-Fired Plant

A site-specific cost estimate has been prepared for the Cherokee plant, by developing labor and material quantities for the plant, based on a plant walk down, discussions with plant staff, and drawing reviews. The following assumptions will be made as part of the development of the cost estimate.

1. A site cost index of 103.3 percent for Denver, CO was used.
2. Unit 1 and Unit 2 boilers, precipitators, baghouses, fans, duct work, cooling towers, coal mills and common stack have been removed and are not included in this estimate.
3. An asbestos survey was not provided, but asbestos quantities were estimated based on discussions with plant staff, Xcel Energy's past experience and 1898 & Co.'s past experience.
4. Unit 1 and Unit 2 have had the asbestos abated from the remaining equipment except around the steam turbines.

5. Unit 3 has the majority of asbestos remaining, with some asbestos removed when work was performed on the burners, induced draft ("ID") fan outlet ducts, air heater inlet ducts, feedwater heaters, boiler blowdown tanks, and steam turbine. The building siding is all transite paneling.
6. The site will be surfaced with imported granular material and/or crushed concrete processed onsite to meet a material specification for reuse. The site will not be seeded.
7. The water discharge structure will be demolished and removed.
8. The coal pile has been removed and certified clean closed. PSCO personnel reported approximately 160,000 cubic yards of ash remains. Costs are included to remove and dispose the remaining ash offsite.
9. The prior ash ponds and the coal pile runoff pond have been remediated. The repurposed ponds will be closed as outlined in the general assumptions. The remediated ash pond on the north end of the site has not being repurposed and as such costs for removal are not included.
10. Circulating water piping for all four units will be removed due to potential presence of TENORM scale on the piping walls.
11. The Unit 3 cooling tower structure was demolished in late 2015, but the cooling tower basins, circulating water pumps, and circulating water lines remain.
12. Costs for removal of the outer loop of railroad tracks are included. The inner railroad track will be removed by a contractor and is not included in the scope of this Study.
13. Costs for removal of the water treatment plant are based on drawings of the proposed water treatment plan that is planned for replacement of the water treatment plant installed at the time of the Study.
14. The costs associated with decommissioning the GSUs for Unit 1, Unit 3, and Unit 4 have already been accounted for in the Transmission or Distribution scope, and are therefore excluded from the costs in this Study.

5.2.2 Fort Lupton Combustion Turbine Plant

A site-specific cost estimate has been prepared for the Fort Lupton plant, by developing labor and material quantities for the plant, based on a prior plant walk down, discussions with plant staff, and drawing reviews. The following assumptions will be made as part of the development of the cost estimate.

1. A site cost index of 93 percent for Greeley, CO was used.
2. Removal of the oil storage tank pump house is included. Soil will be removed within the storage tank berms to a depth of three feet and disposed of offsite as a non-hazardous

waste. Excavation will be backfilled with imported granular material to 6 inches below grade and covered with topsoil and seeded to establish vegetation.

3. Concrete will be disposed of offsite.
4. The site will be seeded with native vegetation after it is graded to provide a suitable ground cover to reduce soil erosion potential.
5. The costs associated with decommissioning the GSUs for Unit 1 and Unit 2 have already been accounted for in the Transmission or Distribution scope, and are therefore excluded from the costs in this Study.

5.2.3 Fort St. Vrain Combined Cycle Plant

A site-specific cost estimate has been prepared for the Fort St. Vrain plant, by developing labor and material quantities for the plant, based on a prior plant walk down, discussions with plant staff, and drawing reviews. The following assumptions will be made as part of the development of the cost estimate.

1. A site cost index of 93 percent for Greeley, CO was used.
2. A majority of the asbestos-containing material in the building siding of the steam turbine and steam turbine building has been removed. The cooling tower louvers have had asbestos abated.
3. Asbestos abatement will be conducted in the steam turbine building and abandoned structure prior to the plant demolition. Asbestos siding has been removed and replaced.
4. The abandoned facility structure adjacent to the steam turbine building will be removed to grade level. Equipment and structural steel below grade that can be safely stripped out will be removed prior to backfilling. Concrete will be crushed onsite to meet a material specification for reuse and used to backfill the below-ground portion of the abandoned facility, then filled with flowable fill and graded with granular material or crushed concrete processed onsite to meet a material specification for reuse to promote drainage.
5. All materials are assumed to be reused on-site (concrete processed to meet a material specification for onsite reuse) or in an offsite municipal solid waste landfill or construction and demolition debris landfill.
6. The site will be graded and seeded.

5.2.4 Manchief Combustion Turbine Plant

A site-specific cost estimate has been prepared for the Manchief plant, by developing labor and material quantities for the plant, based on a plant walk down, discussions with plant staff,

and drawing reviews. The following assumptions will be made as part of the development of the cost estimate.

1. A site cost index of 93.9 percent for Fort Morgan, CO was used.
2. Removal of the oil storage tank pump house is included. Soil will be removed within the storage tank berms to a depth of three feet and disposed of offsite as a non-hazardous waste. Excavation will be backfilled with imported granular material to 6 inches below grade and covered with topsoil and seeded to establish vegetation.
3. Concrete will be disposed of offsite.
4. Costs are included for removal of the Manchief switchyard and transmission lines up to the Pawnee substation.
5. The site will be seeded with native vegetation after it is graded to provide a suitable ground cover to reduce soil erosion potential.

5.2.5 Pawnee Coal-Fired Plant

A site-specific cost estimate has been prepared for the Pawnee plant, by developing labor and material quantities for the plant, based on a plant walk down, discussions with plant staff, and drawing reviews. The following assumptions will be made as part of the development of the cost estimate.

1. A site cost index of 93.9 percent for Fort Morgan, CO was used.
2. The plant is assumed to no longer contain asbestos materials.
3. The North Ash Landfill has been remediated and the Bottom Ash Pond has been closed. As such, associated costs for removal will not be included in the estimate.
4. A synthetic cap has been installed on Pond L, located at the south end of the site.
5. Removal of the Pawnee Raw Water Reservoir is included in the scope of the cost estimate according to the general site assumptions.
6. The coal pile storage area will be excavated to a depth of 36 inches and excavated material disposed onsite, 6-inches of topsoil imported, graded to promote drainage and seeded to establish vegetation.
7. Disposal costs for the coal storage area will be based on constructing a lined disposal site at the south end of the property, placing the excavated residuals in the disposal site, and constructing a soil cap over the area.
8. The costs associated with decommissioning the GSUs for Unit 1 have already been accounted for in the Transmission or Distribution scope, and are therefore excluded from the costs in this Study.

5.2.6 Valmont Coal-Fired Plant and Combustion Turbines

A site-specific cost estimate has been prepared for the Valmont plant, by developing labor and material quantities for the plant, based on a prior plant walk down, discussions with plant staff, and drawing reviews. The following assumptions were made as part of the development of the cost estimate.

1. A site cost index of 93.6 percent for Boulder, CO was used.
2. The Unit 5 boiler penthouse, hot reheat section, and lower airspace have had asbestos abated. All other asbestos remains including asbestos in the stack. It is assumed that 50 percent of the asbestos in the Unit has been abated.
3. The reservoir is a designated wildlife area and will remain.
4. Soil to a depth of one foot will be removed from the fuel oil storage tank areas (including pump house and piping runs) and disposed of offsite as a non-hazardous waste.
5. Soil to a depth of five (5) feet will be removed at a width of five (5) feet along the underground piping runs. Below-ground piping will be drained and capped.
6. The Ash ponds have been clean closed. As such costs for removal and disposal will not be included.
7. The boiler and steam turbine building has a below-grade basement, which will be demolished to grade, have the floor broken or perforated to allow drainage, and backfilled with imported granular material.
8. The site will be graded to promote drainage and seeded to establish vegetation.
9. Water intakes and discharge structures will be capped and backfilled on the plant side of the structures, to allow the cooling reservoir to remain as-is.
10. Combustion turbine Unit 6 is included for decommissioning in a separate estimate.
11. The costs associated with decommissioning the GSUs for Unit 5 and Unit 6 have already been accounted for in the Transmission or Distribution scope, and are therefore excluded from the costs in this Study.

5.2.7 Cheyenne Ridge Wind Farm

1. A site cost index of 91.0 percent for Colorado Springs, CO was used.
1. The offsite landfill, Firstview Sanitary Landfill is used for disposal of demolition waste. The hauling distance to this landfill is approximately 25 miles from the Project site, and the cost for disposal of debris and concrete is $43.00 per ton.

2. Fluids located within the turbine nacelle, including oils, fuels, solvents and process chemicals, are assumed to be drained and disposed of offsite as part of the decommissioning.
3. It is assumed that all containers and chemical storage tanks owned by the Project will be drained and the material disposed of prior to demolition; these costs are excluded from the estimate.
4. All underground equipment will be removed to a depth listed below in accordance with the Cheyenne Ridge Decommissioning Plan. All non-hazardous structures or foundations greater than this depth below grade will remain and are excluded from the decommissioning estimate.
    - 48 inches in Cheyenne County
    - 36 inches in Lincoln County
    - 24 inches in Kit Carson County
5. Access roads, parking areas, storage yards, crane pads, and all other areas constructed from asphalt, concrete, gravel, or compactable fill will be removed, recycled, and reclaimed.
6. Costs are included to remove the crushed rock from roads, balance-of-plant areas, and turbine foundation areas, load it into dump trucks, and haul it offsite.
7. It is assumed that all disturbed areas will be restored to original grade, reclaimed with native soils, seeded, and replanted with native vegetation consistent with the surrounding land use.
8. Transformers will be removed and processed on-site. The cost to drain and dispose of transformer oil off-site is included in the decommissioning cost estimate.
9. The Project laydown yard utilized during construction of the Project is assumed to be reclaimed and restored prior to the time of decommissioning; no further grading, seeding, or other restoration of the laydown yard is included in this estimate.
10. Information on meteorological towers was not provided for review. As such, based on 1898 & Co.'s experience, the site is assumed to have two permanent, self-supporting, lattice-type meteorological towers. The towers are assumed to be fully removed as part of this Study, including their supporting foundations.
11. Detailed documentation for the two project substations was not available for review at the time of the Study. As such, substation removal costs were based on 1898 & Co.'s experience.
12. All underground collector cables are assumed to be buried at a minimum depth of 4 feet; therefore, all underground cabling is assumed to be left in place.

5.2.8 Rush Creek Wind Farm

1. A site cost index of 93 percent for Colorado Springs, CO was used.
2. The offsite landfill, Lincoln County Landfill is used for disposal of demolition waste. The hauling distance to this landfill is approximately 22 miles from the Project site, and the cost for disposal of debris and concrete is $20.00 per ton.
3. Fluids located within the turbine nacelle, including oils, fuels, solvents and process chemicals, are assumed to be drained and disposed of offsite as part of the decommissioning.
4. It is assumed that all containers and chemical storage tanks owned by the Project will be drained and the material disposed of prior to demolition; these costs are excluded from the estimate.
5. All underground equipment will be removed to a depth of 48 inches in accordance with the average required removal depth. All non-hazardous structures or foundations greater than this depth below grade will remain and are excluded from the decommissioning estimate.
6. Access roads, parking areas, storage yards, crane pads, and all other areas constructed from asphalt, concrete, gravel, or compactable fill will be removed, recycled, and reclaimed.
7. Costs are included to remove the crushed rock from roads, balance-of-plant areas, and turbine foundation areas, load it into dump trucks, and haul it offsite.
8. It is assumed that all disturbed areas will be restored to original grade, reclaimed with native soils, seeded, and replanted with native vegetation consistent with the surrounding land use.
9. Transformers will be removed and processed on-site. The cost to drain and dispose of transformer oil off-site is included in the decommissioning cost estimate.
10. The Project laydown yard utilized during construction of the Project is assumed to be reclaimed and restored prior to the time of decommissioning; no further grading, seeding, or other restoration of the laydown yard is included in this estimate.
11. Information on meteorological towers was not provided for review. As such, based on 1898 & Co.'s experience, the site is assumed to have two permanent, self-supporting, lattice-type meteorological towers. The towers are assumed to be fully removed as part of this Study, including their supporting foundations.
12. Detailed documentation for the two project substations was not available for review at the time of the Study. As such, substation removal costs were based on 1898 & Co.'s experience.

13. All underground collector cables are assumed to be buried at a minimum depth of 4 feet; therefore, all underground cabling is assumed to be left in place.

5.2.9 Arapahoe Solar

1. A lease agreement was not available for review for the Arapahoe Solar Farm. As such, standard lease stipulations were assumed, including returning the site to pre-construction conditions.
2. A site cost index of 103.3 percent for Denver, CO was used.
3. All below-grade facilities and foundations were assumed to be removed to 4 feet below existing grade.
4. When information was absent, the transformer weights, panel types, inverter weights, and support systems were estimated from similar projects studied by 1898 & Co. in the past.
5. The GSU transformer is excluded from the scope of this estimate since the GSU is situated outside of the PSCO ownership at the facility.

5.2.10 Valmont Solar

1. A lease agreement was not available for review for the Valmont Solar Farm. As such, standard lease stipulations were assumed, including returning the site to pre-construction conditions.
2. A site cost index of 93.6 percent for Boulder, CO was used.
3. All below-grade facilities and foundations were assumed to be removed to 4 feet below existing grade.
4. When information was absent, the transformer weights, panel types, inverter weights, and support systems were estimated from similar projects studied by 1898 & Co. in the past.
5. The GSU transformer is excluded from the scope of this estimate since the GSU is situated outside of the PSCO ownership at the facility.

5.3 Coal-Fired Generic Cost Estimates

The following assumptions served as the basis of evaluation for each of the coal-fired generating facilities for which generic decommissioning cost estimates will be developed.

5.3.1 Comanche Coal-Fired Plant

A generic cost estimate has been prepared for the Comanche plant. This estimate has been prepared by using a site-specific estimate from a similar size plant as a starting point, and adjusting the cost estimate to account for differences between the plants. This included

adjusting the costs based on differences in the physical size of the plants, differences in balance of plant equipment, and differences in pond sizes and other environmental costs. The following assumptions will be made as part of the development of the cost estimate.

1. A site cost index of 97.3 percent for Pueblo, CO was used.
2. Units 1 and 2 are assumed to be demolished using union labor, while Unit 3 and the common facilities are assumed to be demolished using non-union labor.
3. The plant is assumed to have a small quantity of asbestos. Unit 3 is considered to be free of asbestos. The boilers have no asbestos, and the building paneling is asbestos free. Asbestos estimates were calculated based on the Cherokee asbestos costs, scaled for estimated physical size differences in the units, and adjusted to reflect the percent of asbestos assumed to be remaining.
4. The Cherokee and Pawnee decommissioning costs were used as the basis for the Comanche Unit 1 and Comanche Unit 2 costs. Adjustments were made to the costs to account for the differences in AQCS equipment demolition costs estimated across all the units at the different sites.
5. Comanche Unit 3 costs were developed using Cherokee and Pawnee costs, scaled up for an estimated factor of physical size of Comanche Unit 3 compared to Cherokee and Pawnee. Adjustments were made to the costs to account for the differences in AQCS equipment demolition costs estimated across all the units at the different sites.
6. Common facilities demolition was estimated based on the Cherokee and Pawnee common facilities on a per megawatt basis. Adjustments were made to account for cooling tower sizes and the size of the coal handling facilities.
7. Coal runoff and wastewater pond closure costs were estimated, based on an average cost per acre for coal runoff and wastewater pond closures, calculated from the site-specific cost estimates (Cherokee and Pawnee) where residuals had to be excavated and disposed of offsite. This average cost per acre was then applied to the total acreage of pond closure required for the Comanche Plant.
8. Storm water and raw water pond closure costs will be estimated, based on an average cost per acre for similar pond closure costs, calculated from the site-specific cost estimates (Cherokee, Fort St. Vrain, and Pawnee). The average cost per acre will then be applied to the total acreage of pond closures required for the Comanche Plant.
9. Coal storage area restoration costs were estimated, based on an average cost per acre for coal storage restoration, calculated from the site-specific cost estimates (Pawnee). This average cost per acre was then applied to the total acreage of coal storage restoration required for the Comanche Plant.

10. Landfill closure costs were estimated, based on an average cost per acre for landfill closure, calculated from the site-specific cost estimates (Pawnee). This average cost per acre was then applied to the active portion of acreage of the landfill required to be closed at the Comanche Plant.

5.3.2 Craig Coal-Fired Plant

A generic cost estimate has been prepared for the Craig plant. This estimate has been prepared by using a site-specific estimate from a similar plant as a starting point, and adjusting the cost estimate to account for differences between the plants. This included adjusting the costs based on differences in the physical size of the plants, differences in balance of plant equipment, and differences in pond sizes and other environmental costs. The following assumptions will be made as part of the development of the cost estimate.

1. A site cost index of 110.3 percent for Glenwood Springs, CO was used.
2. The plant is assumed to have very little asbestos.
3. The Cherokee and Pawnee decommissioning costs were used as the basis for the Craig Unit 1 and Craig Unit 2, scaled according to megawatts. Adjustments were made to the costs to account for the differences in AQCS equipment demolition costs estimated across all the units at the different sites.
4. The cost of SCR removal will be added to the previous estimate.
5. Common facilities demolition was estimated based on the Cherokee and Pawnee common facilities estimates on a per megawatt basis. Adjustments were made to account for cooling tower sizes and the size of the coal handling facilities.
6. Evaporation and wastewater pond closure costs were estimated, based on an average cost per acre for ash and wastewater pond closure, calculated from the site-specific cost estimates (Cherokee, Fort St. Vrain, and Pawnee) where residuals had to be excavated and disposed of offsite. This average cost per acre was then applied to the total acreage of pond closure required for the Craig Plant.
7. Raw water pond closure cost was estimated based on an average cost per acre for raw water pond closure, calculated from the site-specific cost estimates (Cherokee, Fort St. Vrain, and Pawnee). This average cost per acre was then applied to the total acreage of pond closure required for the Craig Plant.
8. Coal storage area restoration costs were estimated, based on an average cost per acre for coal storage restoration, calculated from the site-specific cost estimates (Pawnee). This average cost per acre was then applied to the total acreage of coal storage restoration required for the Craig Plant.

5.3.3 Hayden Coal-Fired Plant

A generic cost estimate has been prepared for the Hayden plant. This estimate has been prepared by using a site-specific estimate from a similar plant as a starting point, and adjusting the cost estimate to account for differences between the plants. This included adjusting the costs based on differences in the physical size of the plants, differences in balance of plant equipment, and differences in pond sizes and other environmental costs. The following assumptions will be made as part of the development of the cost estimate.

1. A site cost index of 110.3 percent for Glenwood Springs, CO was used.
2. The Unit 1 boiler is asbestos free. The remainder of the equipment and piping insulation is assumed to contain asbestos.
3. The Cherokee asbestos removal costs and the Cherokee and Pawnee decommissioning costs will be used as the basis for the Hayden Unit 1 remaining asbestos removal and structural demolition costs, scaled according to megawatts. Adjustments will be made to the costs to account for the differences in AQCS equipment demolition costs estimated across all the units at the different sites.
4. The Cherokee asbestos removal costs and the Cherokee and Pawnee decommissioning costs will be used as the basis for the Hayden Unit 2 remaining asbestos removal and structural demolition costs, scaled according to megawatts. Adjustments will be made to the costs to account for the differences in AQCS equipment demolition costs estimated across all the units at the different sites.
5. Common facilities demolition will be estimated based on the Cherokee and Pawnee common facilities estimates on a per megawatt basis. Adjustments will be made to account for cooling tower sizes and the size of the coal handling facilities.
6. Coal runoff pond closure costs will be estimated, based on an average cost per acre for ash and wastewater pond closure, calculated from the site-specific cost estimates (Pawnee) where residuals had to be excavated and disposed of offsite. This average cost per acre will be then applied to the total acreage of pond closure required for the Hayden Plant.
7. Closure costs for the water intake and raw waters will be estimated, based on an average cost per acre for raw water pond closure, calculated from the site-specific cost estimates (Cherokee, Fort St. Vrain and Pawnee). This average cost per acre will be then applied to the total acreage of pond closure required for the Hayden Plant.
8. Coal storage area restoration costs will be estimated, based on an average cost per acre for coal storage restoration, calculated from the site-specific cost estimates

(Pawnee). This average cost per acre will be then applied to the total acreage of coal storage restoration required for the Hayden Plant.

5.4 Natural Gas-Fired Generic Cost Estimates

The following assumptions served as the basis of evaluation for each of the natural gas-fired generating facilities for which generic decommissioning cost estimates will be developed.

5.4.1 Alamosa Combustion Turbine Plant

A generic cost estimate has been prepared for the Alamosa plant. This estimate has been prepared by using a site-specific estimate from a similar plant as a starting point, and adjusting the cost estimate to account for differences between the plants. This included adjusting the costs based on differences in the physical size of the plants and differences in balance of plant equipment. The following assumptions will be made as part of the development of the cost estimate.

1. The Alamosa combustion turbine decommissioning costs were calculated based on the Ft. Lupton and Manchief combustion turbine costs, on a per megawatt basis.
2. The Alamosa common facilities decommissioning costs were calculated based on the Ft. Lupton and Manchief common facilities costs, on a per megawatt basis.
3. The site will be graded and seeded. The cost were based on a cost per acre for seeding, based on the Ft. Lupton and Manchief common facilities costs, applied to the acreage of seeding required at the Alamosa Plant.
4. The costs associated with decommissioning the GSUs for Unit 1 and Unit 2 have already been accounted for in the Transmission or Distribution scope, and are therefore excluded from the costs in this Study.

5.4.2 Blue Spruce Combustion Turbine Plant

A generic cost estimate has been prepared for the Blue Spruce plant. This estimate has been prepared by using a site-specific estimate from a similar plant as a starting point, and adjusting the cost estimate to account for differences between the plants. This included adjusting the costs based on differences in the physical size of the plants and differences in balance of plant equipment. The following assumptions will be made as part of the development of the cost estimate.

1. The Blue Spruce Unit 1 and Unit 2 combustion turbine decommissioning costs will be calculated based on the Ft. Lupton and Manchief combustion turbine costs, on a per megawatt basis.

2. The Blue Spruce common facilities decommissioning costs were calculated based on the Ft. Lupton and Manchief common facilities costs, on a per megawatt basis.
3. The site will be graded and seeded. The cost will be based on a cost per acre for seeding, based on the Ft. Lupton and Manchief common facilities costs, applied to the acreage of seeding required at the Blue Spruce Plant.
4. The costs associated with decommissioning the GSUs for Unit 1 and Unit 2 have already been accounted for in the Transmission or Distribution scope, and are therefore excluded from the costs in this Study.

5.4.3 Fruita Combustion Turbine Plant

A generic cost estimate has been prepared for the Fruita plant. This estimate has been prepared by using a site-specific estimate from a similar plant as a starting point, and adjusting the cost estimate to account for differences between the plants. This included adjusting the costs based on differences in the physical size of the plants and differences in balance of plant equipment. The following assumptions will be made as part of the development of the cost estimate.

1. The Fruita combustion turbine decommissioning costs will be calculated based on the Ft. Lupton and Manchief combustion turbine costs, on a per megawatt basis.
2. The Fruita common facilities decommissioning costs will be calculated based on the Ft. Lupton and Manchief common facilities costs, on a per megawatt basis
3. The site will be graded and seeded. The cost will be based on a cost per acre for seeding, based on the Ft. Lupton and Manchief common facilities costs, applied to the acreage of seeding required at the Fruita Plant.
4. The costs associated with decommissioning the GSUs for Unit 1 have already been accounted for in the Transmission or Distribution scope, and are therefore excluded from the costs in this Study.

5.4.4 Rocky Mountain Combined Cycle

A generic cost estimate has been prepared for the Rocky Mountain plant. This estimate has been prepared by using a site-specific estimate from a similar plant as a starting point, and adjusting the cost estimate to account for differences between the plants. This included adjusting the costs based on differences in the physical size of the plants and differences in balance of plant equipment. The following assumptions will be made as part of the development of the cost estimate.

1. The costs for decommissioning of the power block will be taken directly from the Cherokee Unit 5, Unit 6, and Unit 7 and Fort St. Vrain Unit 1, Unit 2, and Unit 3 total costs.
2. The Rocky Mountain combined cycle common facilities decommissioning costs will be calculated based on the Cherokee Unit 5, Unit 6, and Unit 7 and Fort St. Vrain Unit 1, Unit 2, and Unit 3 common facilities costs, on a per megawatt basis.
3. Since the prior Study, an evaporation pond has been installed on the northwest corner of the site.
4. The evaporation and wastewater pond closure costs will be estimated, based on an average cost per acre for similar pond closure cost, calculated from the site-specific cost estimates (Cherokee, Fort St. Vrain and Pawnee) where residuals had to be excavated. This average cost per acre will then be applied to the total acreage of pond closure required for the Rocky Mountain Plant.
5. Storm water and raw water pond closure costs will be estimated, based on an average cost per acre for similar pond closure, calculated from the site-specific cost estimates (Cherokee, Fort St. Vrain and Pawnee). This average cost per acre will then be applied to the total acreage of pond closure required for the Rocky Mountain Plant.
6. The site will be graded to promote drainage, using onsite materials, then amended with imported topsoil and seeded. The seeding cost was based on a cost per acre for seeding, based on the Cherokee Unit 5, Unit 6, and Unit 7 and Fort St. Vrain Unit 1, Unit 2, and Unit 3 common facilities costs, applied to the acreage of seeding required at the Rocky Mountain Plant.
7. The costs associated with decommissioning the GSUs for Unit 1, Unit 2, and Unit 3 have already been accounted for in the Transmission or Distribution scope, and are therefore excluded from the costs in this Study.

5.4.5 Valmont Units 7 and 8 Combustion Turbines

A generic cost estimate has been prepared for Valmont Units 7 and 8. This estimate has been prepared by using a site-specific estimate from a similar plant as a starting point, and adjusting the cost estimate to account for differences between the plants. This included adjusting the costs based on differences in the physical size of the plants and differences in balance of plant equipment. The following assumptions will be made as part of the development of the cost estimate.

1. The Valmont combustion turbine decommissioning costs will be calculated based on the Ft. Lupton and Manchief combustion turbine costs, on a per megawatt basis.

2. The Valmont common facilities decommissioning costs will be calculated based on the Ft. Lupton and Manchief common facilities costs, on a per megawatt basis
3. The site will be graded and seeded. The cost will be based on a cost per acre for seeding, based on the Ft. Lupton and Manchief common facilities costs, applied to the acreage of seeding required at the Valmont Plant.
4. The costs associated with decommissioning the GSUs for Units 7 and 8 have already been accounted for in the Transmission or Distribution scope, and are therefore excluded from the costs in this Study.

5.5 Hydroelectric-Fired Generic Cost Estimates

The following assumptions served as the basis of evaluation for each of the hydroelectric generating facilities for which generic decommissioning cost estimates will be developed.

5.5.1 Ames Hydroelectric Plant

A generic cost estimate has been prepared for the Ames plant. This estimate has been prepared by developing generic unit pricing for closure activities required and applying them to estimated quantities for the facilities. This includes equipment removal on a per unit basis adjusted for unit size, penstock removal lengths, plugging of below grade penstocks, asbestos abatement based on the size of the buildings, and differences in the level of building and dam demolition to be performed. The following assumptions will be made as part of the development of the cost estimate.

1. A multiplier of 1.5 was applied to the demolition cost estimate for this plant due its remote location.
2. All power generation equipment will be removed.
3. The building has been designated as a historical site. It will have asbestos abated but the structure will remain standing.
4. The Trout Lake and Lake Hope reservoirs will remain. The Trout Lake dam will also remain.
5. The Howard Fork dam and reservoir will be removed.
6. The scope includes removal of 10 feet of sediment from the Howard Fork Reservoir.
7. Approximately 60 percent of the Howard Fork penstock will be removed and scrapped. The Trout Lake penstock is approximately 50 percent above ground and 50 percent below ground. The above-ground portions will be sold or decommissioned. The below ground portions will be abandoned in place and capped.
8. The scope includes the removal of the Howard Fork Diversion structure.

9. Below-grade penstocks will have the openings capped with a concrete plug. The estimate includes 50 percent of the below ground pipe, or 25 percent of the total penstock length, being filled with grout due to its shallow burial depth.

5.5.2 Cabin Creek Hydroelectric Plant

A generic cost estimate has been prepared for the Cabin Creek plant. This estimate has been prepared by developing generic unit pricing for required closure activities and applying them to estimated quantities for the facilities. This included equipment removal on a per unit basis adjusted for unit size, penstock removal lengths, plugging of below grade penstocks, asbestos abatement based on the size of the buildings, and differences in the level of building and dam demolition to be performed. The following assumptions will be made as part of the development of the cost estimate.

1. A multiplier of 2 was applied to the demolition cost estimate for this plant due its remote location.
2. Plant personnel reported the asbestos surrounding the generator has been removed. Remaining asbestos will be abated from the powerhouse and all power generation equipment will be removed.
3. The penstock between the reservoirs will remain in place and the penstock will be plugged at both ends and filled with flowable fill underneath the road.
4. The upper dam will be demolished, and the upper reservoir removed. Since the prior Study, 9 feet has been added to the parapet wall of the Upper Reservoir. Associated removal costs are included in the cost estimate. The lower reservoir will remain in place.
5. No sediment will be removed from the upper reservoir.
6. The powerhouse will be demolished to three feet below grade.
7.

5.5.3 Georgetown Hydroelectric Plant

A generic cost estimate has been prepared for the Georgetown plant. This estimate has been prepared by developing generic unit pricing for closure activities required and applying them to estimated quantities for the facilities. This included equipment removal on a per unit basis adjusted for unit size, penstock removal lengths, plugging of below grade penstocks, asbestos abatement based on the size of the buildings, and differences in the level of building and dam demolition to be performed. The following assumptions will be made as part of the development of the cost estimate.

1. A site cost index of 110.3 percent for Glenwood Springs, CO was used.
2. Asbestos will be abated from the powerhouse and all power generation equipment will be removed. The building will remain intact as a historical structure.
3. The reservoir and dam will remain in place, as they serve as water storage for the city of Georgetown.
4. An average of 3 feet of sediment will be removed from the reservoir.
5. The above-grade penstock piping will be removed and scrapped, and 100 percent of the below-grade penstock will be filled with grout. Below-grade penstocks will have the openings capped with a concrete plug.

5.5.4 Salida Hydroelectric Plant

A generic cost estimate has been prepared for the Salida plant. This estimate has been prepared by developing generic unit pricing for closure activities required and applying them to estimated quantities for the facilities. This included equipment removal on a per unit basis adjusted for unit size, penstock removal lengths, plugging of below grade penstocks, asbestos abatement based on the size of the buildings, and differences in the level of building and dam demolition to be performed. The following assumptions will be made as part of the development of the cost estimate.

1. A multiplier of 1.25 was applied to the demolition cost estimate for this plant due its remote location.
2. All asbestos will be abated and the Salida 1 powerhouse building will be removed. The Salida 2 powerhouse building will remain, so costs for its removal will not be included.
3. Approximately 60 feet of dam at Garfield Reservoir will be removed and the water drained.
4. The Fooses Reservoir will be removed when the facility is decommissioned, and the area restored to match the surroundings.
5. The scope includes removal of ten feet of silt from the Garfield reservoir and fifteen feet of sediment from the Fooses Reservoir.
6. The above-grade penstock between Garfield and Fooses Reservoir will be removed.
7. Approximately 50 percent of the penstock between Fooses Reservoir and Salida 1 will be removed in six separate locations. The remaining below-grade piping will be filled with grout.
8. Approximately 50 percent of the penstock between Salida 1 and Salida 2 forebay will be removed in four separate locations. The remaining below grade penstock will be capped, but not filled with grout.

9. Below-grade penstocks will have the openings capped with a concrete plug.

5.5.5 Shoshone Hydroelectric Plant

A generic cost estimate has been prepared for the Shoshone plant. This estimate has been prepared by developing generic unit pricing for closure activities required and applying them to estimated quantities for the facilities. This includes equipment removal on a per unit basis adjusted for unit size, penstock removal lengths, plugging of below grade penstocks, asbestos abatement based on the size of the buildings, and differences in the level of building and dam demolition to be performed. The following assumptions will be made as part of the development of the cost estimate.

1. A site cost index of 110.3 percent for Glenwood Springs, CO was used.
2. All power generation equipment will be removed and scrapped. Asbestos will be abated, and the powerhouse building will be removed.
3. The penstock between the dam and the adits will remain in place. The four access ports in the penstock will be plugged.
4. The 300 feet of above-ground penstock between the forebay and powerhouse will be removed and scrapped. The forebay and powerhouse ends will be plugged with concrete.
5. The dam and reservoir will remain.
6. No sediment will be removed from the dam or reservoir.
7. Costs associated with relinquishing control of the dam to a third party have not been included in the facility decommissioning cost estimate.

5.5.6 Tacoma Hydroelectric Plant

A generic cost estimate has been prepared for the Tacoma plant. This estimate has been prepared by developing generic unit pricing for closure activities required and applying them to estimated quantities for the facilities. This includes equipment removal on a per unit basis adjusted for unit size, penstock removal lengths, plugging of below grade penstocks, asbestos abatement based on the size of the buildings, and differences in the level of building and dam demolition to be performed. The following assumptions will be made as part of the development of the cost estimate.

1. A multiplier of 1.5 was applied to the demolition cost estimate for this plant due its remote location.
2. Asbestos will be abated from the building, all power generation equipment will be removed, and the powerhouse will be demolished.

3. The above-ground Cascade Dam flume will be removed.
4. No sediment will be removed from the dam or reservoir.
5. The first 10 percent of the above-ground portion of the Cascade penstock will be removed. The remaining below-grade penstock will be left in place and the ends capped with concrete plugs. All of the Cascade penstock that is below grade will be filled with grout.
6. The above-ground penstock between Terminal Dam and the powerhouse will be removed. The last 100 feet is below grade and will be left in place. Cut ends will be capped with concrete plugs.

6.0 RESULTS

1898 & Co. has prepared a planning level cost estimate in 2020 dollars for the decommissioning of the Plants. These costs are summarized in Table 6-1 and Table 6-2 for the site specific and generic decommissioning cost estimates, respectively. When PSCO determines that the Plants should be removed, the above grade equipment and steel structures are assumed to have sufficient scrap value to a salvage contractor to offset a portion of the decommissioning costs. PSCO will incur costs in the demolition and restoration of the sites less the salvage value of equipment and bulk steel.

Table 6-1: Site-Specific Decommissioning Cost Summary

Asset	Fuel Type	Decommissioning Costs	Salvage Credits	Net Project Cost
Cherokee Coal	Coal	$ 50,838,000	$ (2,439,000)	$ 48,399,000
Cherokee CC	Natural Gas	$ 11,880,000	$ (2,817,000)	$ 9,063,000
Fort Lupton	Natural Gas	$ 1,406,000	$ (223,000)	$ 1,183,000
Fort St. Vrain	Natural Gas	$ 29,795,000	$ (4,917,000)	$ 24,878,000
Manchief	Natural Gas	$ 4,193,000	$ (1,294,000)	$ 2,899,000
Pawnee	Natural gas	$ 81,327,000	$ (4,262,000)	$ 77,065,000
Valmont 1-5	Coal	$ 29,849,000	$ (1,875,000)	$ 27,974,000
Valmont 6	Natural Gas	$ 300,000	$ (145,000)	$ 155,000
Cheyenne Ridge	Wind	$ 26,915,200	$ (11,195,000)	$ 15,720,200
Rush Creek	Wind	$ 33,744,450	$ (15,931,000)	$ 17,813,450
Arapahoe Solar	Solar	$ 265,100	$ (27,800)	$ 237,300
Valmont Solar	Solar	$ 508,400	$ (55,800)	$ 452,600
SUBTOTAL DECOMMISSIONING COST (Site Specific Only)				$ 225,839,550

Table 6-2: Generic Site Decommissioning Cost Summary

Asset	Fuel Type	Decommissioning Costs	Salvage Credits	Net Project Cost
Comanche	Coal	$ 89,564,000	$ (8,273,000)	$ 81,291,000
Craig	Coal	$ 102,926,000	$ (4,784,000)	$ 98,142,000
Hayden	Coal	$ 51,523,000	$ (2,607,000)	$ 48,916,000
Alamosa	Natural Gas	$ 766,000	$ (56,000)	$ 710,000
Blue Spruce	Natural Gas	$ 4,487,000	$ (455,000)	$ 4,032,000
Fruita	Natural Gas	$ 410,000	$ (61,000)	$ 349,000
Rocky Mountain	Natural Gas	$ 24,987,000	$ (2,886,000)	$ 22,101,000
Valmont 7-8	Natural Gas	$ 1,603,000	$ (166,000)	$ 1,437,000
Ames	Hydro	$ 7,363,000	$ (176,000)	$ 7,187,000
Cabin Creek	Hydro	$ 46,549,000	$ (2,556,000)	$ 43,993,000
Georgetown	Hydro	$ 6,543,000	$ (59,000)	$ 6,484,000
Salida	Hydro	$ 9,169,000	$ (69,000)	$ 9,100,000
Shoshone	Hydro	$ 2,011,000	$ (477,000)	$ 1,534,000
Tacoma	Hydro	$ 9,377,000	$ (357,000)	$ 9,020,000
SUBTOTAL DECOMMISSIONING COST (Generic Only)				$ 334,296,000
TOTAL DECOMMISSIONING COST (All Sites)				$ 560,135,550

The total project costs presented above include the costs to return the sites to an industrial condition suitable for reuse for development as an industrial facility. Included are the costs to dismantle all power generating equipment and balance of plant facilities and, where applicable, to perform environmental site restoration activities. Further details including estimates for the major cost categories of each plant estimate are provided in the Appendices.

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APPENDIX A – SITE-SPECIFIC DECOMMISSIONING COST SUMMARIES

Table A-1
Cherokee Units 1-4
Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value
Cherokee Units 1-4						
Unit 1						
Asbestos Removal	$ -	$ -	$ -	$ 939,000	$ 939,000	$ -
Steam Turbine & Building	$ 6,000	$ 6,000	$ -	$ -	$ 12,000	$ -
GSU & Foundation	$ 38,000	$ 38,000	$ -	$ -	$ 76,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (133,000)
Subtotal	**$ 44,000**	**$ 44,000**	**$ -**	**$ 939,000**	**$ 1,027,000**	**$ (133,000)**
Unit 2						
Asbestos Removal	$ -	$ -	$ -	$ 939,000	$ 939,000	$ -
Steam Turbine & Building	$ 362,000	$ 362,000	$ -	$ -	$ 724,000	$ -
Cooling Water Intakes and Circulating Water Pumps	$ 9,000	$ 9,000	$ -	$ -	$ 18,000	$ -
GSU & Foundation	$ 38,000	$ 38,000	$ -	$ -	$ 76,000	$ -
On-site Concrete Crushing & Disposal	$ -	$ -	$ 17,000	$ -	$ 17,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (169,000)
Subtotal	**$ 409,000**	**$ 409,000**	**$ 17,000**	**$ 939,000**	**$ 1,774,000**	**$ (169,000)**
Unit 3						
Asbestos Removal	$ -	$ -	$ -	$ 6,556,000	$ 6,556,000	$ -
Boiler	$ 489,000	$ 488,000	$ -	$ -	$ 977,000	$ -
Steam Turbine & Building	$ 391,000	$ 390,000	$ -	$ -	$ 781,000	$ -
Scrubber / FGD	$ 108,000	$ 108,000	$ -	$ -	$ 216,000	$ -
Baghouse	$ 111,000	$ 111,000	$ -	$ -	$ 222,000	$ -
Stacks	$ 39,000	$ 39,000	$ -	$ -	$ 78,000	$ -
Cooling Water Intakes and Circulating Water Pumps	$ 29,000	$ 29,000	$ -	$ -	$ 58,000	$ -
GSU & Foundation	$ 12,000	$ 12,000	$ -	$ -	$ 24,000	$ -
On-site Concrete Crushing & Disposal	$ -	$ -	$ 40,000	$ -	$ 40,000	$ -
Debris	$ -	$ -	$ 11,000	$ -	$ 11,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (551,000)
Subtotal	**$ 1,179,000**	**$ 1,177,000**	**$ 51,000**	**$ 6,556,000**	**$ 8,963,000**	**$ (551,000)**
Unit 4						
Asbestos Removal	$ -	$ -	$ -	$ 4,689,000	$ 4,689,000	$ -
Boiler	$ 1,523,000	$ 1,520,000	$ -	$ -	$ 3,043,000	$ -
Steam Turbine & Building	$ 700,000	$ 699,000	$ -	$ -	$ 1,399,000	$ -
Scrubber / FGD	$ 170,000	$ 169,000	$ -	$ -	$ 339,000	$ -
Baghouse	$ 119,000	$ 119,000	$ -	$ -	$ 238,000	$ -
Stacks	$ 74,000	$ 73,000	$ -	$ -	$ 147,000	$ -
Cooling Water Intakes and Circulating Water Pumps	$ 29,000	$ 29,000	$ -	$ -	$ 58,000	$ -
GSU & Foundation	$ 31,000	$ 31,000	$ -	$ -	$ 62,000	$ -
On-site Concrete Crushing & Disposal	$ -	$ -	$ 71,000	$ -	$ 71,000	$ -
Debris	$ -	$ -	$ 36,000	$ -	$ 36,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (1,414,000)
Subtotal	**$ 2,646,000**	**$ 2,640,000**	**$ 107,000**	**$ 4,689,000**	**$ 10,082,000**	**$ (1,414,000)**
Handling						
Coal Handling Facilites	$ 172,000	$ 172,000	$ -	$ -	$ 344,000	$ -
Limestone Handling Facilities	$ 8,000	$ 8,000	$ -	$ -	$ 16,000	$ -
On-site Concrete Crushing & Disposal	$ -	$ -	$ 3,000	$ -	$ 3,000	$ -
Debris	$ -	$ -	$ 25,000	$ -	$ 25,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (68,000)
Subtotal	**$ 180,000**	**$ 180,000**	**$ 28,000**	**$ -**	**$ 388,000**	**$ (68,000)**
Common						
Cooling Water Intakes and Circulating Water Pumps	$ 71,000	$ 71,000	$ -	$ -	$ 142,000	$ -
All BOP Buildings	$ 457,000	$ 457,000	$ -	$ -	$ 914,000	$ -
All Other Tanks	$ 74,000	$ 74,000	$ -	$ -	$ 148,000	$ -
Transformers & Foundation	$ 1,000	$ 1,000	$ -	$ -	$ 2,000	$ -
Mercury & Universal Waste Disposal	$ -	$ -	$ -	$ 38,000	$ 38,000	$ -
Transformer Oil Disposal	$ -	$ -	$ -	$ 67,000	$ 67,000	$ -
Ash Removal	$ -	$ -	$ -	$ 8,399,000	$ 8,399,000	$ -
Pond Closure	$ -	$ -	$ -	$ 2,650,000	$ 2,650,000	$ -
Cooling Towers and Basin	$ 51,000	$ 51,000	$ -	$ -	$ 102,000	$ -
Concrete Removal, Crushing, & Disposal	$ -	$ -	$ 31,000	$ -	$ 31,000	$ -
Grading & Seeding	$ -	$ -	$ -	$ 4,378,000	$ 4,378,000	$ -
Debris	$ -	$ -	$ 1,000	$ -	$ 1,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (104,000)
Subtotal	**$ 654,000**	**$ 654,000**	**$ 32,000**	**$ 15,532,000**	**$ 16,872,000**	**$ (104,000)**
Cherokee Units 1-4 Subtotal	**$ 5,112,000**	**$ 5,104,000**	**$ 235,000**	**$ 28,655,000**	**$ 39,106,000**	**$ (2,439,000)**
TOTAL DECOM COST (CREDIT)					**$ 39,106,000**	**$ (2,439,000)**
PROJECT INDIRECTS (10%)					**$ 3,911,000**	
CONTINGENGY (20%)					**$ 7,821,000**	
TOTAL PROJECT COST (CREDIT)					**$ 50,838,000**	**$ (2,439,000)**
TOTAL NET PROJECT COST (CREDIT)					**$ 48,399,000**	

Table A-2
Cherokee CC
Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value
Cherokee CC						
Units 5, 6, 7						
CTGs and HRSGs	$ 1,800,000	$ 1,759,000	$ -	$ -	$ 3,559,000	$ -
Steam Turbine & Building	$ 1,089,000	$ 1,064,000	$ -	$ -	$ 2,153,000	$ -
Cooling Towers & Basin	$ 130,000	$ 127,000	$ -	$ -	$ 257,000	$ -
Stacks	$ 92,000	$ 90,000	$ -	$ -	$ 182,000	$ -
Cooling Water Intakes and Circulating Water Pumps	$ 3,000	$ 3,000	$ -	$ -	$ 6,000	$ -
Switchgear & Electrical	$ 5,000	$ 5,000	$ -	$ -	$ 10,000	$ -
GSU & Foundation	$ 331,000	$ 323,000	$ -	$ -	$ 654,000	$ -
On-site Concrete Crushing & Disposal	$ -	$ -	$ 59,000	$ -	$ 59,000	$ -
Debris	$ -	$ -	$ 24,000	$ -	$ 24,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (2,721,000)
Subtotal	**$ 3,450,000**	**$ 3,371,000**	**$ 83,000**	**$ -**	**$ 6,904,000**	**$ (2,721,000)**
Common						
Cooling Water Intakes and Circulating Water Pumps	$ 44,000	$ 43,000	$ -	$ -	$ 87,000	$ -
BOP Misc.	$ 20,000	$ 19,000	$ -	$ -	$ 39,000	$ -
Roads	$ 62,000	$ 60,000	$ -	$ -	$ 122,000	$ -
All BOP Buildings	$ 270,000	$ 263,000	$ -	$ -	$ 533,000	$ -
Fuel Equipment	$ 12,000	$ 12,000	$ -	$ -	$ 24,000	$ -
All Other Tanks	$ 67,000	$ 65,000	$ -	$ -	$ 132,000	$ -
Mercury & Universal Waste Disposal	$ -	$ -	$ -	$ 23,000	$ 23,000	$ -
Transformer Oil Disposal	$ -	$ -	$ -	$ 54,000	$ 54,000	$ -
Transformer Pad and Soil Removal	$ -	$ -	$ -	$ 46,000	$ 46,000	$ -
Cooling Towers and Basin	$ 568,000	$ 555,000	$ -	$ -	$ 1,123,000	$ -
Concrete Removal, Crushing, & Disposal	$ -	$ -	$ 51,000	$ -	$ 51,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (96,000)
Subtotal	**$ 1,043,000**	**$ 1,017,000**	**$ 51,000**	**$ 123,000**	**$ 2,234,000**	**$ (96,000)**
Cherokee CC Subtotal	**$ 4,493,000**	**$ 4,388,000**	**$ 134,000**	**$ 123,000**	**$ 9,138,000**	**$ (2,817,000)**
TOTAL DECOM COST (CREDIT)					**$ 9,138,000**	**$ (2,817,000)**
PROJECT INDIRECTS (10%)					**$ 914,000**	
CONTINGENGY (20%)					**$ 1,828,000**	
TOTAL PROJECT COST (CREDIT)					**$ 11,880,000**	**$ (2,817,000)**
TOTAL NET PROJECT COST (CREDIT)					**$ 9,063,000**	

Table A-3
Ft. Lupton
Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value	Total Net
Ft. Lupton							
Unit 1							
CTGs	$ 111,000	$ 109,000	$ -	$ -	$ 220,000	$ -	$ 220,000
Off-site Concrete Disposal	$ -	$ -	$ 13,000	$ -	$ 13,000	$ -	$ 13,000
Debris	$ -	$ -	$ 2,000	$ -	$ 2,000	$ -	$ 2,000
Scrap	$ -	$ -	$ -	$ -	$ -	$ (105,000)	$ (105,000)
Subtotal	**$ 111,000**	**$ 109,000**	**$ 15,000**	**$ -**	**$ 235,000**	**$ (105,000)**	**$ 130,000**
Unit 2							
CTGs	$ 111,000	$ 109,000	$ -	$ -	$ 220,000	$ -	$ 220,000
Off-site Concrete Disposal	$ -	$ -	$ 13,000	$ -	$ 13,000	$ -	$ 13,000
Debris	$ -	$ -	$ 2,000	$ -	$ 2,000	$ -	$ 2,000
Scrap	$ -	$ -	$ -	$ -	$ -	$ (105,000)	$ (105,000)
Subtotal	**$ 111,000**	**$ 109,000**	**$ 15,000**	**$ -**	**$ 235,000**	**$ (105,000)**	**$ 130,000**
Common							
BOP Misc.	$ 8,000	$ 8,000	$ -	$ -	$ 16,000	$ -	$ 16,000
Roads	$ 9,000	$ 9,000	$ -	$ -	$ 18,000	$ -	$ 18,000
All BOP Buildings	$ 78,000	$ 77,000	$ -	$ -	$ 155,000	$ -	$ 155,000
Fuel Equipment	$ 54,000	$ 53,000	$ -	$ -	$ 107,000	$ -	$ 107,000
All Other Tanks	$ 15,000	$ 15,000	$ -	$ -	$ 30,000	$ -	$ 30,000
Fuel Oil Tank Area	$ -	$ -	$ -	$ 53,000	$ 53,000	$ -	$ 53,000
Fuel Oil Line Flushing/Cleaning	$ -	$ -	$ -	$ 2,000	$ 2,000	$ -	$ 2,000
Off-site Concrete Disposal	$ -	$ -	$ 42,000	$ -	$ 42,000	$ -	$ 42,000
Grading & Seeding	$ -	$ -	$ -	$ 189,000	$ 189,000	$ -	$ 189,000
Scrap	$ -	$ -	$ -	$ -	$ -	$ (13,000)	$ (13,000)
Subtotal	**$ 164,000**	**$ 162,000**	**$ 42,000**	**$ 244,000**	**$ 612,000**	**$ (13,000)**	**$ 599,000**
Ft. Lupton Subtotal	**$ 386,000**	**$ 380,000**	**$ 72,000**	**$ 244,000**	**$ 1,082,000**	**$ (223,000)**	**$ 859,000**
TOTAL DECOM COST (CREDIT)					**$ 1,082,000**	**$ (223,000)**	
PROJECT INDIRECTS (10%)					**$ 108,000**		
CONTINGENGY (20%)					**$ 216,000**		
TOTAL PROJECT COST (CREDIT)					**$ 1,406,000**	**$ (223,000)**	
TOTAL NET PROJECT COST (CREDIT)					**$ 1,183,000**		

Table A-4
Fort St. Vrain
Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value
Fort St. Vrain						
Units 1-4						
Asbestos Removal	$ -	$ -	$ -	$ 1,464,000	$ 1,464,000	$ -
CTGs and HRSGs	$ 3,030,000	$ 2,961,000	$ -	$ -	$ 5,991,000	$ -
Steam Turbine & Building	$ 738,000	$ 721,000	$ -	$ -	$ 1,459,000	$ -
Stacks	$ 125,000	$ 122,000	$ -	$ -	$ 247,000	$ -
GSU & Foundation	$ 163,000	$ 160,000	$ -	$ -	$ 323,000	$ -
On-site Concrete Crushing & Disposal	$ -	$ -	$ 79,000	$ -	$ 79,000	$ -
Debris	$ -	$ -	$ 12,000	$ -	$ 12,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (3,034,000)
Subtotal	**$ 4,056,000**	**$ 3,964,000**	**$ 91,000**	**$ 1,464,000**	**$ 9,575,000**	**$ (3,034,000)**
Units 5-6						
CTGs	$ 440,000	$ 430,000	$ -	$ -	$ 870,000	$ -
Cooling Towers & Basin	$ 32,000	$ 31,000	$ -	$ -	$ 63,000	$ -
Stacks	$ 8,000	$ 8,000	$ -	$ -	$ 16,000	$ -
GSU & Foundation	$ 108,000	$ 106,000	$ -	$ -	$ 214,000	$ -
On-site Concrete Crushing & Disposal	$ -	$ -	$ 6,000	$ -	$ 6,000	$ -
Debris	$ -	$ -	$ 9,000	$ -	$ 9,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (978,000)
Subtotal	**$ 588,000**	**$ 575,000**	**$ 15,000**	**$ -**	**$ 1,178,000**	**$ (978,000)**
Common						
Cooling Water Intakes and Circulating Water Pumps	$ 21,000	$ 20,000	$ -	$ -	$ 41,000	$ -
BOP Misc.	$ 18,000	$ 18,000	$ -	$ -	$ 36,000	$ -
Roads	$ 40,000	$ 40,000	$ -	$ -	$ 80,000	$ -
All BOP Buildings	$ 912,000	$ 891,000	$ -	$ -	$ 1,803,000	$ -
Fuel Equipment	$ 6,000	$ 5,000	$ -	$ -	$ 11,000	$ -
All Other Tanks	$ 79,000	$ 78,000	$ -	$ -	$ 157,000	$ -
Transformers & Foundation	$ 7,000	$ 7,000	$ -	$ -	$ 14,000	$ -
Former Steam Plant Facility	$ 2,306,000	$ 2,254,000	$ -	$ -	$ 4,560,000	$ -
Mercury & Universal Waste Disposal	$ -	$ -	$ -	$ 28,000	$ 28,000	$ -
Transformer Oil Disposal	$ -	$ -	$ -	$ 75,000	$ 75,000	$ -
Transformer Pad and Soil Removal	$ -	$ -	$ -	$ 32,000	$ 32,000	$ -
Pond Closure	$ -	$ -	$ -	$ 2,634,000	$ 2,634,000	$ -
Cooling Towers and Basin	$ 211,000	$ 206,000	$ -	$ -	$ 417,000	$ -
Concrete Removal, Crushing, & Disposal	$ -	$ -	$ 152,000	$ -	$ 152,000	$ -
Grading & Seeding	$ -	$ -	$ -	$ 2,086,000	$ 2,086,000	$ -
Debris	$ -	$ -	$ 40,000	$ -	$ 40,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (905,000)
Subtotal	**$ 3,600,000**	**$ 3,519,000**	**$ 192,000**	**$ 4,855,000**	**$ 12,166,000**	**$ (905,000)**
Fort St. Vrain Subtotal	**$ 8,244,000**	**$ 8,058,000**	**$ 298,000**	**$ 6,319,000**	**$ 22,919,000**	**$ (4,917,000)**
TOTAL DECOM COST (CREDIT)					**$ 22,919,000**	**$ (4,917,000)**
PROJECT INDIRECTS (10%)					**$ 2,292,000**	
CONTINGENGY (20%)					**$ 4,584,000**	
TOTAL PROJECT COST (CREDIT)					**$ 29,795,000**	**$ (4,917,000)**
TOTAL NET PROJECT COST (CREDIT)					**$ 24,878,000**	

Table A-5
Manchief
Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value
Manchief						
Units 1-2						
CTGs	$ 1,037,000	$ 1,013,000	$ -	$ -	$ 2,050,000	$ -
Cooling Towers & Basin	$ 35,000	$ 34,000	$ -	$ -	$ 69,000	$ -
Stacks	$ 21,000	$ 21,000	$ -	$ -	$ 42,000	$ -
Cooling Water Intakes and Circulating Water Pumps	$ 3,000	$ 3,000	$ -	$ -	$ 6,000	$ -
GSU & Foundation	$ 55,000	$ 54,000	$ -	$ -	$ 109,000	$ -
On-site Concrete Crushing & Disposal	$ -	$ -	$ 25,000	$ -	$ 25,000	$ -
Debris	$ -	$ -	$ 9,000	$ -	$ 9,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (1,142,000)
Subtotal	**$ 1,151,000**	**$ 1,125,000**	**$ 34,000**	**$ -**	**$ 2,310,000**	**$ (1,142,000)**
Common						
Cooling Water Intakes and Circulating Water Pumps	$ 2,000	$ 2,000	$ -	$ -	$ 4,000	$ -
BOP Misc.	$ 13,000	$ 12,000	$ -	$ -	$ 25,000	$ -
All BOP Buildings	$ 101,000	$ 98,000	$ -	$ -	$ 199,000	$ -
Fuel Equipment	$ 11,000	$ 11,000	$ -	$ -	$ 22,000	$ -
All Other Tanks	$ 113,000	$ 110,000	$ -	$ -	$ 223,000	$ -
Transformers & Foundation	$ 25,000	$ 24,000	$ -	$ -	$ 49,000	$ -
Mercury & Universal Waste Disposal	$ -	$ -	$ -	$ 18,000	$ 18,000	$ -
Transformer Oil Disposal	$ -	$ -	$ -	$ 59,000	$ 59,000	$ -
Transformer Pad and Soil Removal	$ -	$ -	$ -	$ 6,000	$ 6,000	$ -
Concrete Removal, Crushing, & Disposal	$ -	$ -	$ 11,000	$ -	$ 11,000	$ -
Grading & Seeding	$ -	$ -	$ -	$ 298,000	$ 298,000	$ -
Debris	$ -	$ -	$ 1,000	$ -	$ 1,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (152,000)
Subtotal	**$ 265,000**	**$ 257,000**	**$ 12,000**	**$ 381,000**	**$ 915,000**	**$ (152,000)**
Manchief Subtotal	**$ 1,416,000**	**$ 1,382,000**	**$ 46,000**	**$ 381,000**	**$ 3,225,000**	**$ (1,294,000)**
TOTAL DECOM COST (CREDIT)					**$ 3,225,000**	**$ (1,294,000)**
PROJECT INDIRECTS (10%)					**$ 323,000**	
CONTINGENGY (20%)					**$ 645,000**	
TOTAL PROJECT COST (CREDIT)					**$ 4,193,000**	**$ (1,294,000)**
TOTAL NET PROJECT COST (CREDIT)					**$ 2,899,000**	

Table A-6
Pawnee
Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value
Pawnee						
Unit 1						
Boiler	$ 2,756,000	$ 2,693,000	$ -	$ -	$ 5,449,000	$ -
Steam Turbine & Building	$ 1,209,000	$ 1,181,000	$ -	$ -	$ 2,390,000	$ -
SCR	$ 22,000	$ 21,000	$ -	$ -	$ 43,000	$ -
Scrubber / FGD	$ 77,000	$ 75,000	$ -	$ -	$ 152,000	$ -
Baghouse	$ 366,000	$ 357,000	$ -	$ -	$ 723,000	$ -
Cooling Towers & Basin	$ 356,000	$ 348,000	$ -	$ -	$ 704,000	$ -
Stacks	$ 208,000	$ 203,000	$ -	$ -	$ 411,000	$ -
Cooling Water Intakes and Circulating Water Pumps	$ 302,000	$ 295,000	$ -	$ -	$ 597,000	$ -
GSU & Foundation	$ 90,000	$ 88,000	$ -	$ -	$ 178,000	$ -
On-site Concrete Crushing & Disposal	$ -	$ -	$ 203,000	$ -	$ 203,000	$ -
Debris	$ -	$ -	$ 39,000	$ -	$ 39,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (3,268,000)
Subtotal	**$ 5,386,000**	**$ 5,261,000**	**$ 242,000**	**$ -**	**$ 10,889,000**	**$ (3,268,000)**
Handling						
Coal Handling Facilites	$ 1,028,000	$ 1,005,000	$ -	$ -	$ 2,033,000	$ -
Limestone Handling Facilities	$ 23,000	$ 23,000	$ -	$ -	$ 46,000	$ -
On-site Concrete Crushing & Disposal	$ -	$ -	$ 39,000	$ -	$ 39,000	$ -
Debris	$ -	$ -	$ 61,000	$ -	$ 61,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (226,000)
Subtotal	**$ 1,051,000**	**$ 1,028,000**	**$ 100,000**	**$ -**	**$ 2,179,000**	**$ (226,000)**
Common						
Cooling Water Intakes and Circulating Water Pumps	$ 103,000	$ 101,000	$ -	$ -	$ 204,000	$ -
BOP Misc.	$ 4,000	$ 4,000	$ -	$ -	$ 8,000	$ -
Roads	$ 165,000	$ 162,000	$ -	$ -	$ 327,000	$ -
All BOP Buildings	$ 471,000	$ 460,000	$ -	$ -	$ 931,000	$ -
All Other Tanks	$ 1,037,000	$ 1,013,000	$ -	$ -	$ 2,050,000	$ -
Mercury & Universal Waste Disposal	$ -	$ -	$ -	$ 50,000	$ 50,000	$ -
Transformer Oil Disposal	$ -	$ -	$ -	$ 28,000	$ 28,000	$ -
Transformer Pad and Soil Removal	$ -	$ -	$ -	$ 5,000	$ 5,000	$ -
Fuel Oil Tank Cleaning	$ -	$ -	$ -	$ 42,000	$ 42,000	$ -
Pond Closures	$ -	$ -	$ -	$ 37,551,000	$ 37,551,000	$ -
Coal Pile Remediation	$ -	$ -	$ -	$ 5,915,000	$ 5,915,000	$ -
Concrete Removal, Crushing, & Disposal	$ -	$ -	$ 33,000	$ -	$ 33,000	$ -
Grading & Seeding	$ -	$ -	$ -	$ 2,328,000	$ 2,328,000	$ -
Debris	$ -	$ -	$ 19,000	$ -	$ 19,000	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (768,000)
Subtotal	**$ 1,780,000**	**$ 1,740,000**	**$ 52,000**	**$ 45,919,000**	**$ 49,491,000**	**$ (768,000)**
Pawnee Subtotal	**$ 8,217,000**	**$ 8,029,000**	**$ 394,000**	**$ 45,919,000**	**$ 62,559,000**	**$ (4,262,000)**
TOTAL DECOM COST (CREDIT)					**$ 62,559,000**	**$ (4,262,000)**
PROJECT INDIRECTS (10%)					**$ 6,256,000**	
CONTINGENGY (20%)					**$ 12,512,000**	
TOTAL PROJECT COST (CREDIT)					**$ 81,327,000**	**$ (4,262,000)**
TOTAL NET PROJECT COST (CREDIT)					**$ 77,065,000**	

Table A-7
Valmont 1-5
Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value	Total Net
Valmont 1-5							
Unit 5							
Asbestos Removal	$ -	$ -	$ -	$ 4,298,000	$ 4,298,000	$ -	$ 4,298,000
Boiler	$ 1,176,000	$ 1,150,000	$ -	$ -	$ 2,326,000	$ -	$ 2,326,000
Steam Turbine & Building	$ 1,302,000	$ 1,272,000	$ -	$ -	$ 2,574,000	$ -	$ 2,574,000
Scrubber / FGD	$ 18,000	$ 17,000	$ -	$ -	$ 35,000	$ -	$ 35,000
Baghouse	$ 421,000	$ 412,000	$ -	$ -	$ 833,000	$ -	$ 833,000
Stacks	$ 68,000	$ 66,000	$ -	$ -	$ 134,000	$ -	$ 134,000
Cooling Water Intakes and Circulating Water Pumps	$ 21,000	$ 20,000	$ -	$ -	$ 41,000	$ -	$ 41,000
Fuel Storage Area Remediation	$ -	$ -	$ -	$ 618,000	$ 618,000	$ -	$ 618,000
GSU & Foundation	$ 87,000	$ 85,000	$ -	$ -	$ 172,000	$ -	$ 171,000
On-site Concrete Crushing & Disposal	$ -	$ -	$ 114,000	$ -	$ 114,000	$ -	$ 114,000
Debris	$ -	$ -	$ 51,000	$ -	$ 51,000	$ -	$ 51,000
Scrap	$ -	$ -	$ -	$ -	$ -	$ (1,594,000)	$ (1,594,000)
Subtotal	**$ 3,093,000**	**$ 3,022,000**	**$ 165,000**	**$ 4,916,000**	**$ 11,196,000**	**$ (1,594,000)**	**$ 9,601,000**
Units 1-4							
Stacks (2)	$ 215,000	$ 551,000	$ 45,000	$ -	$ 811,000	$ -	$ 811,000
Dry Scrubber & Fabric Filter Dust Control	$ 599,000	$ 555,000	$ 56,000	$ -	$ 1,210,000	$ -	$ 1,210,000
Old Unit 4 Boiler and House	$ 2,082,000	$ 1,929,000	$ 183,000	$ -	$ 4,194,000	$ -	$ 4,194,000
Subtotal	**$ 2,896,000**	**$ 3,035,000**	**$ 284,000**	**$ -**	**$ 6,215,000**	**$ -**	**$ 6,215,000**
Handling							
Coal Handling Facilites	$ 226,000	$ 221,000	$ -	$ -	$ 447,000	$ -	$ 447,000
Limestone Handling Facilities	$ 12,000	$ 12,000	$ -	$ -	$ 24,000	$ -	$ 24,000
On-site Concrete Crushing & Disposal	$ -	$ -	$ 3,000	$ -	$ 3,000	$ -	$ 3,000
Debris	$ -	$ -	$ 32,000	$ -	$ 32,000	$ -	$ 32,000
Scrap	$ -	$ -	$ -	$ -	$ -	$ (124,000)	$ (124,000)
Subtotal	**$ 238,000**	**$ 233,000**	**$ 35,000**	**$ -**	**$ 506,000**	**$ (124,000)**	**$ 382,000**
Common							
Cooling Water Intakes and Circulating Water Pumps	$ 2,000	$ 2,000	$ -	$ -	$ 4,000	$ -	$ 4,000
BOP Misc.	$ 257,000	$ 251,000	$ -	$ -	$ 508,000	$ -	$ 508,000
Roads	$ 6,000	$ 6,000	$ -	$ -	$ 12,000	$ -	$ 12,000
All BOP Buildings	$ 605,000	$ 591,000	$ -	$ -	$ 1,196,000	$ -	$ 1,196,000
Fuel Equipment	$ 7,000	$ 6,000	$ -	$ 2,000	$ 15,000	$ -	$ 15,000
Mercury & Universal Waste Disposal	$ -	$ -	$ -	$ 38,000	$ 38,000	$ -	$ 38,000
Plant Wash Down & Disposal	$ -	$ -	$ -	$ 79,000	$ 79,000	$ -	$ 79,000
Transformer Oil Disposal	$ -	$ -	$ -	$ 10,000	$ 10,000	$ -	$ 10,000
Transformer Pad and Soil Removal	$ -	$ -	$ -	$ 11,000	$ 11,000	$ -	$ 11,000
Coal Pile Remediation	$ -	$ -	$ -	$ 555,000	$ 555,000	$ -	$ 555,000
Landfill Closure	$ -	$ -	$ -	$ 1,854,000	$ 1,854,000	$ -	$ 1,854,000
Plant Washdown & Materials Disposal	$ -	$ -	$ -	$ 79,000	$ 79,000	$ -	$ 79,000
Concrete Removal, Crushing, & Disposal	$ -	$ -	$ 41,000	$ -	$ 41,000	$ -	$ 41,000
Grading & Seeding	$ -	$ -	$ -	$ 625,000	$ 625,000	$ -	$ 625,000
Debris	$ -	$ -	$ 17,000	$ -	$ 17,000	$ -	$ 17,000
Scrap	$ -	$ -	$ -	$ -	$ -	$ (157,000)	$ (157,000)
Subtotal	**$ 877,000**	**$ 856,000**	**$ 58,000**	**$ 3,253,000**	**$ 5,044,000**	**$ (157,000)**	**$ 4,887,000**
Valmont 1-5 Subtotal	**$ 7,104,000**	**$ 7,146,000**	**$ 542,000**	**$ 8,169,000**	**$ 22,961,000**	**$ (1,875,000)**	**$ 21,085,000**
TOTAL DECOM COST (CREDIT)					**$ 22,961,000**	**$ (1,875,000)**	
PROJECT INDIRECTS (10%)					**$ 2,296,000**		
CONTINGENGY (20%)					**$ 4,592,000**		
TOTAL PROJECT COST (CREDIT)					**$ 29,849,000**	**$ (1,875,000)**	
TOTAL NET PROJECT COST (CREDIT)					**$ 27,974,000**		

Table A-8
Valmont 6
Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value	Total Net
Valmont 6							
Unit 6							
CTGs	$ 73,000	$ 71,000	$ -	$ -	$ 144,000	$ -	$ 144,000
Switchgear & Electrical	$ 36,000	$ 35,000	$ -	$ -	$ 71,000	$ -	$ 71,000
GSU & Foundation	$ 7,000	$ 6,000	$ -	$ -	$ 13,000	$ -	$ 13,000
On-site Concrete Crushing & Disposal	$ -	$ -	$ 1,000	$ -	$ 1,000	$ -	$ 1,000
Debris	$ -	$ -	$ 2,000	$ -	$ 2,000	$ -	$ 2,000
Scrap	$ -	$ -	$ -	$ -	$ -	$ (145,000)	$ (145,000)
Subtotal	**$ 116,000**	**$ 112,000**	**$ 3,000**	**$ -**	**$ 231,000**	**$ (145,000)**	**$ 86,000**
Valmont 6 Subtotal	**$ 116,000**	**$ 112,000**	**$ 3,000**	**$ -**	**$ 231,000**	**$ (145,000)**	**$ 86,000**
TOTAL DECOM COST (CREDIT)					**$ 231,000**	**$ (145,000)**	
PROJECT INDIRECTS (10%)					**$ 23,000**		
CONTINGENGY (20%)					**$ 46,000**		
TOTAL PROJECT COST (CREDIT)					**$ 300,000**	**$ (145,000)**	
TOTAL NET PROJECT COST (CREDIT)					**$ 155,000**		

Table A-9: Estimated Cost for Wind Turbine Decommissioning (2020$)

Cheyenne Ridge Wind Project
Decommissioning Cost Evaluation

Wind Turbine Removal Cost		
Removal	$	13,215,000
Hauling & Disposal	$	523,000
Total	**$**	**13,738,000**
Scrap Value	**$**	**(10,884,000)**
Wind Turbine Foundation Removal Cost		
Removal	$	895,000
Hauling & Disposal	$	439,000
Total	**$**	**1,334,000**
Scrap Value	**$**	**-**
Collection System Removal Cost		
Removal	$	8,000
Hauling & Disposal	$	-
Total	**$**	**8,000**
Scrap Value	**$**	**-**
Substation Removal Cost		
Removal	$	424,000
Hauling & Disposal	$	12,000
Total	**$**	**436,000**
Scrap Value	**$**	**(294,000)**
Transmission Line Removal Cost		
Equipment Removal	$	-
Hauling & Disposal	$	-
Total	**$**	**-**
Scrap Value	**$**	**-**
Civil Works Removal Cost		
Removal	$	1,074,000
Hauling & Disposal	$	3,258,000
Grading & Seeding Costs	$	684,000
Total	**$**	**5,016,000**
Scrap Value	**$**	**-**
O&M Facility Removal		
Removal	$	48,000
Hauling & Disposal	$	11,000
Total	**$**	**59,000**
Scrap Value	**$**	**(14,000)**
Met Tower Removal		
Removal	$	21,000
Hauling & Disposal	$	2,000
Total	**$**	**23,000**
Scrap Value	**$**	**(3,000)**
Other Costs		
Oils & Chemicals Removal & Disposal	$	90,000
Total	**$**	**90,000**
Total Estimated Cost	**$**	**20,704,000**
Owner Indirects (10%)	**$**	**2,070,400**
Contingency (20%)	**$**	**4,140,800**
Total Gross Cost	**$**	**26,915,200**
Total Scrap Value	**$**	**(11,195,000)**
Total Net Cost	**$**	**15,720,200**

Table A-10: Estimated Cost for Wind Turbine Decommissioning (2020$)

Rush Creek Wind Project
Decommissioning Cost Evaluation

Wind Turbine Removal Cost		
Removal	$	17,872,000
Hauling & Disposal	$	982,000
Total	**$**	**18,854,000**
Scrap Value	**$**	**(15,592,000)**
Wind Turbine Foundation Removal Cost	$	-
Removal	$	1,546,000
Hauling & Disposal	$	1,033,000
Total	**$**	**2,579,000**
Scrap Value	**$**	**-**
Collection System Removal Cost	$	-
Removal	$	-
Hauling & Disposal	$	-
Total	**$**	**-**
Scrap Value	**$**	**-**
Substation Removal Cost	$	-
Removal	$	566,000
Hauling & Disposal	$	12,000
Total	**$**	**578,000**
Scrap Value	**$**	**(296,000)**
Transmission Line Removal Cost	$	-
Equipment Removal	$	-
Hauling & Disposal	$	-
Total	**$**	**-**
Scrap Value	**$**	**-**
Civil Works Removal Cost	$	-
Removal	$	1,177,000
Hauling & Disposal	$	3,062,000
Grading & Seeding Costs	$	792,000
Total	**$**	**5,031,000**
Scrap Value	**$**	**-**
O&M Facility Removal	$	-
Removal	$	76,000
Hauling & Disposal	$	14,000
Total	**$**	**90,000**
Scrap Value	**$**	**(35,000)**
Met Tower Removal	$	-
Removal	$	42,000
Hauling & Disposal	$	6,000
Total	**$**	**48,000**
Scrap Value	**$**	**(8,000)**
Other Costs	$	-
Oils & Chemicals Removal & Disposal	$	-
Total	**$**	**-**

Total Estimated Cost	**$**	**27,180,000**
Owner Indirects (10%)	**$**	**2,188,150**
Contingency (15%)	**$**	**4,376,300**
Total Gross Cost	**$**	**33,744,450**
Total Scrap Value	**$**	**(15,931,000)**
Total Net Cost	**$**	**17,813,450**

Table A-11
Arapahoe Solar
Solar Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value
Arapahoe Solar						
Solar Farm						
Solar Panel Removal/Recycling	$ 37,200	$ 36,400	$ 9,700	$ -	$ 83,300	$ -
Panel Supports/Rack	$ 17,200	$ 16,900	$ -	$ -	$ 34,100	$ -
Electrical & Wiring	$ 2,900	$ 2,900	$ -	$ -	$ 5,800	$ -
Site Restoration	$ 13,800	$ 13,500	$ -	$ 53,200	$ 80,500	$ -
On-site Concrete Crushing and Removal	$ -	$ -	$ 100	$ -	$ 100	$ -
Debris	$ -	$ -	$ 100	$ -	$ 100	$ -
Scrap	$ -	$ -	$ -	$ -	$ -	$ (27,800)
Subtotal	**$ 71,100**	**$ 69,700**	**$ 9,900**	**$ 53,200**	**$ 203,900**	**$ (27,800)**
Arapahoe Solar Subtotal	**$ 71,100**	**$ 69,700**	**$ 9,900**	**$ 53,200**	**$ 203,900**	**$ (27,800)**
TOTAL DECOM COST (CREDIT)					**$ 203,900**	**$ (27,800)**
PROJECT INDIRECTS (10%)					**$ 20,400**	
CONTINGENGY (20%)					**$ 40,800**	
TOTAL PROJECT COST (CREDIT)					**$ 265,100**	**$ (27,800)**
TOTAL NET PROJECT COST (CREDIT)					**$ 237,300**	

Table A-12
Valmont Solar
Solar Decommissioning Cost Summary

	Labor	Material and Equipment	Disposal	Environmental	Total Cost	Scrap Value	Total Net
Valmont Solar							
Solar Farm							
O&M Building	$ -	$ -	$ -	$ -	$ -	$ -	
Solar Panel Removal/Recycling	$ 71,300	$ 69,700	$ 19,200	$ -	$ 160,200	$ -	
Panel Supports/Rack	$ 32,100	$ 31,300	$ -	$ -	$ 63,400	$ -	
Electrical & Wiring	$ 5,700	$ 5,500	$ -	$ -	$ 11,200	$ -	
Site Restoration	$ 26,400	$ 25,800	$ -	$ 103,700	$ 155,900	$ -	
On-site Concrete Crushing and Removal	$ -	$ -	$ 100	$ -	$ 100	$ -	
Debris	$ -	$ -	$ 300	$ -	$ 300	$ -	
Scrap	$ -	$ -	$ -	$ -	$ -	$ (55,800)	
Subtotal	**$ 135,500**	**$ 132,300**	**$ 19,600**	**$ 103,700**	**$ 391,100**	**$ (55,800)**	$ -
Valmont Solar Subtotal	**$ 135,500**	**$ 132,300**	**$ 19,600**	**$ 103,700**	**$ 391,100**	**$ (55,800)**	$ -
TOTAL DECOM COST (CREDIT)					**$ 391,100**	**$ (55,800)**	
PROJECT INDIRECTS (10%)					**$ 39,100**		
CONTINGENGY (20%)					**$ 78,200**		
TOTAL PROJECT COST (CREDIT)					**$ 508,400**	**$ (55,800)**	
TOTAL NET PROJECT COST (CREDIT)					**$ 452,600**		

APPENDIX B – GENERIC COAL-FIRED FACILITY DECOMMISSIONING SUMMARIES

Table B-1
Comanche
Decommissioning Cost Summary

	Total Cost	Salvage
Comanche		
COMANCHE Unit 1		
Asbestos	$ 517,000	
Demolition	$ 7,657,000	
Scrap		$ (1,696,000)
Subtotal	**$ 8,174,000**	**$ (1,696,000)**
COMANCHE Unit 2		
Asbestos	$ 524,000	
Demolition	$ 7,764,000	
Scrap		$ (1,719,000)
Subtotal	**$ 8,288,000**	**$ (1,719,000)**
COMANCHE Unit 3		
Demolition	$ 14,071,000	
Scrap		$ (3,868,000)
Subtotal	**$ 14,071,000**	**$ (3,868,000)**
COMANCHE Common Facilities		
Pond Closures	$ 6,499,000	
Coal Area Restoration	$ 15,504,000	
Landfill Closure	$ 3,387,000	
Coal Handling Facilities	$ 532,000	
Demolition	$ 2,373,000	
Grading & Seeding	$ 10,067,000	
Scrap		$ (990,000)
Subtotal	**$ 38,362,000**	**$ (990,000)**
Comanche Subtotal	**$ 68,895,000**	**$ (8,273,000)**
TOTAL COST (CREDIT)	**$ 68,895,000**	**$ (8,273,000)**
PROJECT INDIRECTS (10%)	**$ 6,890,000**	
CONTINGENGY (20%)	**$ 13,779,000**	
TOTAL PROJECT COST (CREDIT)	**$ 89,564,000**	**$ (8,273,000)**
TOTAL NET PROJECT COST (CREDI	**$ 81,291,000**	

Table B-2
Craig
Decommissioning Cost Summary

		Total Cost		Salvage
Craig				
CRAIG Unit 1				
Asbestos	$	128,000	$	-
Demolition	$	7,661,000	$	-
Scrap	$	-	$	(2,106,000)
Subtotal	**$**	**7,789,000**	**$**	**(2,106,000)**
CRAIG Unit 2				
Asbestos	$	128,000	$	-
Demolition	$	7,661,000	$	-
Scrap	$	-	$	(2,106,000)
Subtotal	**$**	**7,789,000**	**$**	**(2,106,000)**
CRAIG Common Facilities				
Pond Closures	$	24,822,000		
Coal Area Restoration	$	30,901,000		
Coal Handling Facilities	$	532,000		
Demolition	$	1,580,000		
Grading & Seeding	$	5,761,000		
Scrap			$	(572,000)
Subtotal	**$**	**63,596,000**	**$**	**(572,000)**
Craig Subtotal	**$**	**79,174,000**	**$**	**(4,784,000)**
TOTAL COST (CREDIT)	**$**	**79,174,000**	**$**	**(4,784,000)**
PROJECT INDIRECTS (10%)	**$**	**7,917,000**		
CONTINGENGY (20%)	**$**	**15,835,000**		
TOTAL PROJECT COST (CREDIT)	**$**	**102,926,000**	**$**	**(4,784,000)**
TOTAL NET PROJECT COST (CREDI	**$**	**98,142,000**		

Table B-3
Hayden
Decommissioning Cost Summary

		Total Cost		Salvage
Hayden				
HAYDEN Unit 1				
Asbestos	$	6,202,000	$	-
Demolition	$	3,462,000	$	-
Scrap	$	-	$	(952,000)
Subtotal	**$**	**9,664,000**	**$**	**(952,000)**
HAYDEN Unit 2				
Asbestos	$	4,091,000	$	-
Demolition	$	4,885,000	$	-
Scrap	$	-	$	(1,343,000)
Subtotal	**$**	**8,976,000**	**$**	**(1,343,000)**
HAYDEN Common Facilities				
Pond Closures	$	7,452,000		
Coal Area Restoration	$	4,156,000		
Landfill Closure	$	5,877,000		
Coal Handling Facilities	$	313,000		
Demolition	$	976,000		
Grading & Seeding	$	2,219,000		
Scrap			$	(312,000)
Subtotal	**$**	**20,993,000**	**$**	**(312,000)**
Hayden Subtotal	**$**	**39,633,000**	**$**	**(2,607,000)**
TOTAL COST (CREDIT)	**$**	**39,633,000**	**$**	**(2,607,000)**
PROJECT INDIRECTS (10%)	**$**	**3,963,000**		
CONTINGENGY (20%)	**$**	**7,927,000**		
TOTAL PROJECT COST (CREDIT)	**$**	**51,523,000**	**$**	**(2,607,000)**
TOTAL NET PROJECT COST (CREDI	**$**	**48,916,000**		

APPENDIX C – GENERIC NATURAL GAS-FIRED FACILITY DECOMMISSIONING COST SUMMARIES

Table C-1
Alamosa
Decommissioning Cost Summary

		Total Cost		Salvage
Alamosa				
ALAMOSA CT Units 1 & 2				
Demolition	$	211,000	$	-
Scrap	$	-	$	(56,000)
Subtotal	**$**	**211,000**	**$**	**(56,000)**
ALAMOSA Common Facilities				
Seeding & Restoration	$	175,000	$	-
Demolition	$	203,000	$	-
Subtotal	**$**	**378,000**	**$**	**-**
Alamosa Subtotal	**$**	**589,000**	**$**	**(56,000)**
TOTAL COST (CREDIT)	**$**	**589,000**	**$**	**(56,000)**
PROJECT INDIRECTS (10%)	**$**	**59,000**		
CONTINGENGY (20%)	**$**	**118,000**		
TOTAL PROJECT COST (CREDIT)	**$**	**766,000**	**$**	**(56,000)**
TOTAL NET PROJECT COST (CREDIT)	**$**	**710,000**		

Table C-2
Blue Spruce
Decommissioning Cost Summary

		Total Cost		Salvage
Blue Spruce				
BLUE SPRUCE CT Unit 1				
Demolition	$	826,000	$	-
Scrap	$	-	$	(455,000)
Subtotal	**$**	**826,000**	**$**	**(455,000)**
BLUE SPRUCE CT Unit 2				
Demolition	$	809,000	$	-
Scrap	$	-	$	-
Subtotal	**$**	**809,000**	**$**	**-**
BLUE SPRUCE Common Facilities				
Seeding & Restoration	$	245,000	$	-
Demolition	$	1,572,000	$	-
Subtotal	**$**	**1,817,000**	**$**	**-**
Blue Spruce Subtotal	**$**	**3,452,000**	**$**	**(455,000)**
TOTAL COST (CREDIT)	**$**	**3,452,000**	**$**	**(455,000)**
PROJECT INDIRECTS (10%)	**$**	**345,000**		
CONTINGENGY (20%)	**$**	**690,000**		
TOTAL PROJECT COST (CREDIT)	**$**	**4,487,000**	**$**	**(455,000)**
TOTAL NET PROJECT COST (CREDIT)	**$**	**4,032,000**		

Table C-3
Fruita
Decommissioning Cost Summary

		Total Cost		Salvage
Fruita				
FRUITA CT Unit 1				
Demolition	$	111,000	$	-
Scrap	$	-	$	(61,000)
Subtotal	**$**	**111,000**	**$**	**(61,000)**
FRUITA Common Facilities				
Seeding & Restoration	$	99,000	$	-
Demolition	$	105,000	$	-
Subtotal	**$**	**204,000**	**$**	**-**
Fruita Subtotal	**$**	**315,000**	**$**	**(61,000)**
TOTAL COST (CREDIT)	**$**	**315,000**	**$**	**(61,000)**
PROJECT INDIRECTS (10%)	**$**	**32,000**		
CONTINGENGY (20%)	**$**	**63,000**		
TOTAL PROJECT COST (CREDIT)	**$**	**410,000**	**$**	**(61,000)**
TOTAL NET PROJECT COST (CREDIT)	**$**	**349,000**		

Table C-4
Rocky Mountain
Decommissioning Cost Summary

		Total Cost		Salvage
Rocky Mountain				
ROCKY MOUNTAIN 1,2,3 CC 2x1				
Demolition	$	6,656,000	$	-
Scrap	$	-	$	(2,886,000)
Subtotal	**$**	**6,656,000**	**$**	**(2,886,000)**
ROCKY MOUNTAIN Common Facilities				
Pond Closures	$	7,851,000	$	-
Seeding & Restoration	$	969,000		
Demolition	$	3,745,000	$	-
Subtotal	**$**	**12,565,000**	**$**	**-**
Rocky Mountain Subtotal	**$**	**19,221,000**	**$**	**(2,886,000)**
TOTAL COST (CREDIT)	**$**	**19,221,000**	**$**	**(2,886,000)**
PROJECT INDIRECTS (10%)	**$**	**1,922,000**		
CONTINGENGY (20%)	**$**	**3,844,000**		
TOTAL PROJECT COST (CREDIT)	**$**	**24,987,000**	**$**	**(2,886,000)**
TOTAL NET PROJECT COST (CREDIT)	**$**	**22,101,000**		

Table C-5
Valmont
Decommissioning Cost Summary

		Total Cost		Salvage
Valmont				
VALMONT CT Units 7 & 8				
Demolition	$	599,000		
Scrap			$	(166,000)
Subtotal	**$**	**599,000**	**$**	**(166,000)**
ALAMOSA Common Facilities				
Seeding & Restoration	$	59,000		
Demolition	$	575,000		
Subtotal	**$**	**634,000**	**$**	**-**
Valmont Subtotal	**$**	**1,233,000**	**$**	**(166,000)**
TOTAL COST (CREDIT)	**$**	**1,233,000**	**$**	**(166,000)**
PROJECT INDIRECTS (10%)	**$**	**123,000**		
CONTINGENGY (20%)	**$**	**247,000**		
TOTAL PROJECT COST (CREDIT)	**$**	**1,603,000**	**$**	**(166,000)**
TOTAL NET PROJECT COST (CREDIT)	**$**	**1,437,000**		

APPENDIX D – GENERIC HYDROELECTRIC FACILITY DECOMMISSIONING COST SUMMARIES

Table D-1
Ames
Decommissioning Cost Summary

	Total Cost	Salvage
Ames		
AMES Hydro Facility		
Asbestos	$ 192,000	
Penstock Filling & Removal	$ 849,000	
Reservoir Removal	$ 1,017,000	
Powerhouse Demolition & Equipment Removal	$ 932,000	
Dam Removal	$ 2,674,000	
Scrap		$ (176,000)
Subtotal	**$ 5,664,000**	**$ (176,000)**
Ames Subtotal	**$ 5,664,000**	**$ (176,000)**
TOTAL COST (CREDIT)	**$ 5,664,000**	**$ (176,000)**
PROJECT INDIRECTS (10%)	**$ 566,000**	
CONTINGENGY (20%)	**$ 1,133,000**	
TOTAL PROJECT COST (CREDIT)	**$ 7,363,000**	**$ (176,000)**
TOTAL NET PROJECT COST (CREDIT)	**$ 7,187,000**	

Table D-2
Cabin Creek
Decommissioning Cost Summary

	Total Cost	Salvage
Cabin Creek		
CABIN CREEK Hydro Facility		
Asbestos	$ 321,000	$ -
Penstock Filling & Removal	$ 11,000	
Upper Reservoir Removal	$ 11,711,000	
Powerhouse Demolition & Equipment Removal	$ 2,525,000	
Dam Removal	$ 21,239,000	
Scrap		$ (2,556,000)
Subtotal	**$ 35,807,000**	**$ (2,556,000)**
Cabin Creek Subtotal	**$ 35,807,000**	**$ (2,556,000)**
TOTAL COST (CREDIT)	**$ 35,807,000**	**$ (2,556,000)**
PROJECT INDIRECTS (10%)	**$ 3,581,000**	
CONTINGENGY (20%)	**$ 7,161,000**	
TOTAL PROJECT COST (CREDIT)	**$ 46,549,000**	**$ (2,556,000)**
TOTAL NET PROJECT COST (CREDIT)	**$ 43,993,000**	

Table D-3
Georgetown
Decommissioning Cost Summary

	Total Cost	Salvage
Georgetown		
GEORGETOWN Hydro Facility		
Asbestos	$ 179,000	$ -
Penstock Filling & Removal	$ 1,483,000	
Powerhouse Demolition & Equipment Removal	$ 1,371,000	
Sediment Removal	$ 2,000,000	
Scrap		$ (59,000)
Subtotal	**$ 5,033,000**	**$ (59,000)**
Georgetown Subtotal	**$ 5,033,000**	**$ (59,000)**
TOTAL COST (CREDIT)	**$ 5,033,000**	**$ (59,000)**
PROJECT INDIRECTS (10%)	**$ 503,000**	
CONTINGENGY (20%)	**$ 1,007,000**	
TOTAL PROJECT COST (CREDIT)	**$ 6,543,000**	**$ (59,000)**
TOTAL NET PROJECT COST (CREDIT)	**$ 6,484,000**	

Table D-4
Salida
Decommissioning Cost Summary

	Total Cost	Salvage
Salida		
SALIDA Hydro Facility		
Asbestos	$ 126,000	$ -
Penstock Filling & Removal	$ 697,000	
Reservoir Removal	$ 3,703,000	
Powerhouse Demolition & Equipment Removal	$ 1,578,000	
Dam Removal	$ 949,000	$ -
Scrap		$ (69,000)
Subtotal	**$ 7,053,000**	**$ (69,000)**
Salida Subtotal	**$ 7,053,000**	**$ (69,000)**
TOTAL COST (CREDIT)	**$ 7,053,000**	**$ (69,000)**
PROJECT INDIRECTS (10%)	**$ 705,000**	
CONTINGENGY (20%)	**$ 1,411,000**	
TOTAL PROJECT COST (CREDIT)	**$ 9,169,000**	**$ (69,000)**
TOTAL NET PROJECT COST (CREDIT)	**$ 9,100,000**	

Table D-5
Shoshone
Decommissioning Cost Summary

	Total Cost	Salvage
Shoshone		
SHOSHONE Hydro Facility		
Asbestos	$ 132,000	$ -
Penstock Filling & Removal	$ 22,000	
Powerhouse Demolition & Equipment Removal	$ 1,393,000	
Dam Removal	$ -	
Scrap		$ (477,000)
Subtotal	**$ 1,547,000**	**$ (477,000)**
Shoshone Subtotal	**$ 1,547,000**	**$ (477,000)**
TOTAL COST (CREDIT)	**$ 1,547,000**	**$ (477,000)**
PROJECT INDIRECTS (10%)	**$ 155,000**	
CONTINGENGY (20%)	**$ 309,000**	
TOTAL PROJECT COST (CREDIT)	**$ 2,011,000**	**$ (477,000)**
TOTAL NET PROJECT COST (CREDIT)	**$ 1,534,000**	

Table D-6
Tacoma
Decommissioning Cost Summary

	Total Cost	Salvage
Tacoma		
TACOMA Hydro Facility		
Asbestos	$ 132,000	$ -
Penstock Filling & Removal	$ 3,401,000	
Powerhouse Demolition & Equipment Removal	$ 2,826,000	
Dam Removal	$ 854,000	$ -
Scrap		$ (357,000)
Subtotal	**$ 7,213,000**	**$ (357,000)**
Tacoma Subtotal	**$ 7,213,000**	**$ (357,000)**
TOTAL COST (CREDIT)	**$ 7,213,000**	**$ (357,000)**
PROJECT INDIRECTS (10%)	**$ 721,000**	
CONTINGENGY (20%)	**$ 1,443,000**	
TOTAL PROJECT COST (CREDIT)	**$ 9,377,000**	**$ (357,000)**
TOTAL NET PROJECT COST (CREDIT)	**$ 9,020,000**	

APPENDIX E – COAL AND GAS SITE AERIAL FIGURES

Figure E-1: Cherokee Site Aerial

Figure E-2: Ft Lupton Site Aerial

Figure E-3: Fort St Vrain Site Aerial

Figure E-4: Manchief Site Aerial

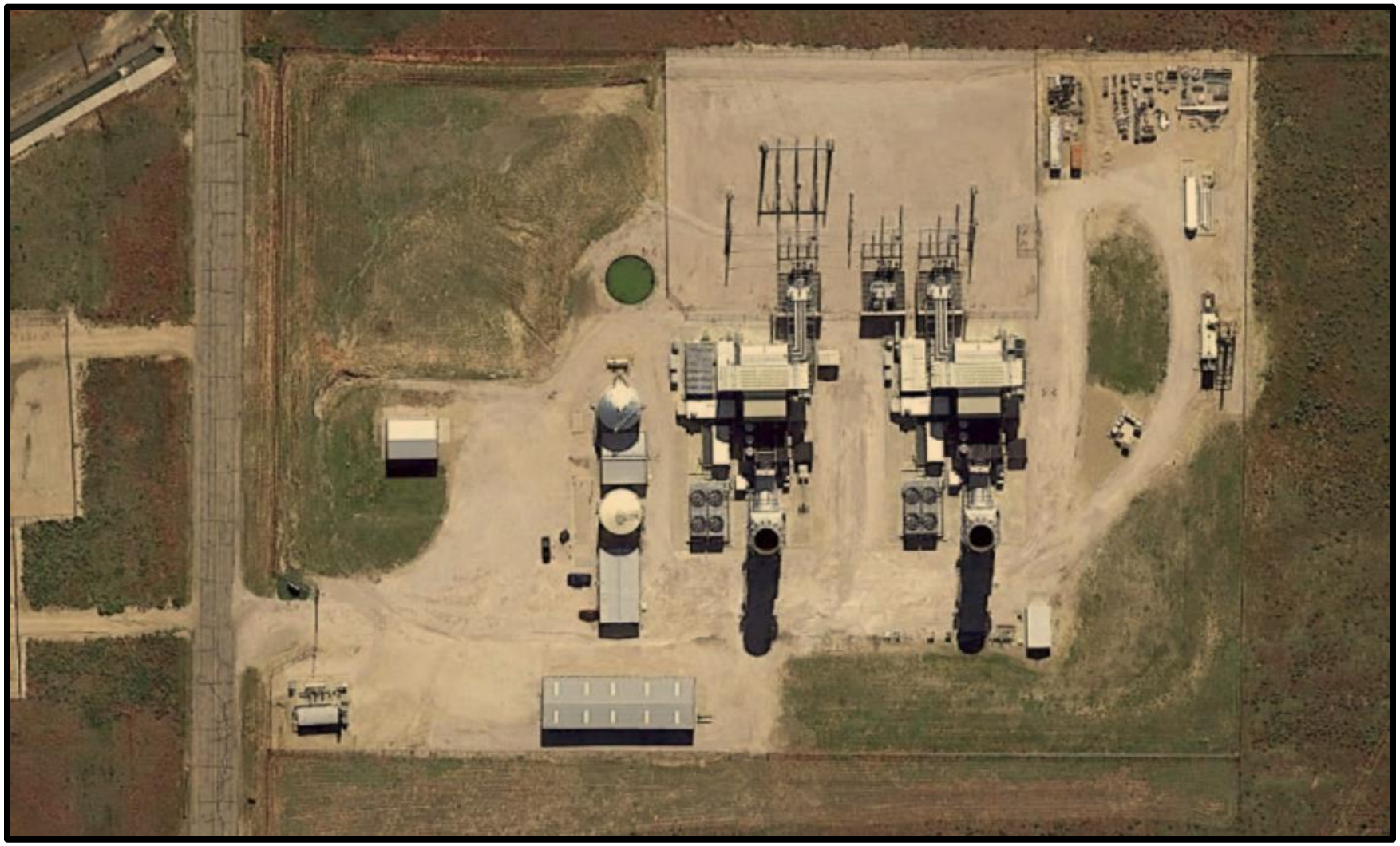


Figure E-5: Pawnee Site Aerial

Figure E-6: Valmont Site Aerial

Figure E-7: Comanche Site Aerial

Figure E-8: Hayden Site Aerial

Figure E-9: Alamosa Site Aerial

Figure E-10: Blue Spruce Site Aerial

Figure E-11: Fruita Site Aerial

Figure E-12: Rocky Mountain Site Aerial

APPENDIX F – EXAMPLE CALCULATION FOR GENERIC SITE ESTIMATES

Example Calculation for Generic Site Estimates

Calculations are presented in this Appendix to summarize the methodology used for developing the generic cost estimates for the Craig Plant, using site-specific Cherokee and Pawnee Plant costs as the basis. A similar methodology was utilized for all the generic cost estimates. Following is a narrative description of the calculations for the Craig Plant estimate, followed by the calculations.

The site-specific costs from the Cherokee and Pawnee Plants that were used as a basis for developing the generic cost are show in Section 1. The application of these values to the Craig Plant, to determine the Craig generic estimate, is shown in Section 2. The totals from Section 2 then flow directly into Table B-2, as included in Appendix B.

The Cherokee and Pawnee site-specific cost estimates were used to calculate the estimates for Craig Units 1 and 2. Asbestos costs were not used directly in this case, since it was known that little asbestos remained at the Craig plant; therefore, asbestos costs were estimated based directly on known plant conditions. Costs for boiler, steam turbine & building, GSUs and foundations, AQCS, and on-site concrete crushing and disposal were calculated on a dollar per megawatt basis for Cherokee and Pawnee Plants. Cherokee Units 1 and 2 have been partially demolished, so some of these costs were not used in determining the average on a per megawatt basis. These dollars per megawatt values were then applied to the megawatt size of Craig Units 1 and 2 to determine the costs for each of these categories. Scrap metal credits were averaged over all the site-specific cost estimates, also shown in Section 3, and this average value was applied to Craig Units 1 and 2 as well. Tons of scrap steel, pounds of scrap copper, and pounds of non-ferrous scrap from Cherokee and Pawnee were used to calculate the quantity of scrap per megawatt, as shown in Section 1. Then in Section 2, this per megawatt value was multiplied by the megawatt size of Craig Units 1 and 2 (which would give total tons or pounds) and also multiplied by the value of scrap per ton or per pound to determine the total scrap value of each type of scrap metal for that unit.

Common facility costs were estimated based on the common facilities of Cherokee and Pawnee. Averages across the site-specific estimates were determined where appropriate or representative values were estimated for some common facilities, as shown in Section 3. Raw water pond closures, wastewater pond closures, evaporation pond closures, and cola runoff pond closures were estimated on a dollar per square foot basis. These values are not conducive to dollar per megawatt values, since decommissioning costs will be directly proportional to the physical size of these facilities, not the capacity of the generating facilities.

Cooling tower decommissioning was estimated on a dollar per megawatt basis from the average from the site-specific estimates, since the physical size of the cooling towers will be proportional to the megawatts of steam cycle that requires heat rejection. Balance of plant buildings were estimated in size ranges, since these facilities will not scale up directly on a per megawatt basis. On-site concrete crushing and reuse is a relatively small portion of the common facilities decommissioning costs, and was simply calculated on a dollar per megawatt basis. Coal handling facilities were also estimated similar to balance of plant buildings, by developing cost values for different size ranges; however, coal handling facilities were estimated on the size of the coal handling facilities themselves, not the megawatt output of the plant, since coal handling facility sizes can vary for several other factors, such as days storage required, number of units, length of conveyor required, etc

SECTION 1

Category	Cherokee Unit 1 (107 MW)	Cherokee Unit 2 (107 MW)	Cherokee Unit 3 (165 MW)	Cherokee Unit 4 (330 MW)	Pawnee Unit 1 (536 MW)	Steam Units Average ($/MW)
Asbestos	Section 3					
Boiler	-	-	-	$ 3,043,000	$ 5,449,000	$ 9,694
Steam Turbine & Building	-	$ 724,000	$ 781,000	$ 1,399,000	$ 2,390,000	$ 5,050
GSU&Foundation	$ 76,000	$ 76,000	$ 24,000	$ 62,000	$ 178,000	$ 417
Stack	-	-	$ 78,000	$ 147,000	$ 411,000	$ 562
AQCS	-	-	$ 216,000	$ 339,000	$ 918,000	$ 1,168
On-site Concrete Crushing & Disposa	-	$ 17,000	$ 40,000	$ 71,000	$ 203,000	$ 249

Category	Cherokee	Pawnee	Units Average Quantity per MW
Scrap Steel (tons)	8,099	15,489	27
Scrap Copper (lbs)	34,010	360,620	388
Non-Ferrous Scrap (lbs)	-	-	-

Category	Cherokee Unit 1 (107 MW)	Cherokee Unit 2 (107 MW)	Cherokee Unit 3 (165 MW)	Cherokee Unit 4 (330 MW)	Pawnee Unit 1 (536 MW)	Steam Units Average ($/MW)
Asbestos	Section 3					
Boiler	-	-	-	$ 3,043,000	$ 5,449,000	$ 9,694
Steam Turbine & Building	-	$ 724,000	$ 781,000	$ 1,399,000	$ 2,390,000	$ 5,050
GSU&Foundation	$ 76,000	$ 76,000	$ 24,000	$ 62,000	$ 178,000	$ 417
Stack	-	-	$ 78,000	$ 147,000	$ 411,000	$ 562
AQCS	-	-	$ 216,000	$ 339,000	$ 918,000	$ 1,168
On-site Concrete Crushing & Disposa	-	$ 17,000	$ 40,000	$ 71,000	$ 203,000	$ 249

Category	Cherokee	Pawnee	Units Average Quantity
Scrap Steel (tons)	8,099	15,489	27
Scrap Copper (lbs)	34,010	360,620	388
Non-Ferrous Scrap (lbs)	-	-	-

Category	Cherokee Common	Pawnee Common	Steam Units Average ($/MW)
Cooling Towers	102,000	704,000	1,133
BOP Buildings	Section 3		
On-site Concrete Crushing & Disposa	Section 3		
Coal Handling Facilities	Section 3		
Grading & Seeding	Section 3		
Raw water	Section 3		
Wastewater	Section 3		
Evaporation Pond	Section 3		
Coal Runoff Pond	Section 3		
Coal Pile Restoratior		$5,915,000	$ 7.73

Category	Pawnee Common	Steam Units Average ($/MW)
Scrap Steel (tons)	4614	4
Scrap Copper (lbs	0	0
Non-Ferrous Scrap	0	0

SECTION 2

Item	Craig Unit 1 (447 MW Coal) $/unit measure	Quantity	Total
Asbestos Removal (MW	Remaining Fact	2%	$ 128,324.31
Boiler (MW)	$ 9,693.63	$ 447	$ 4,333,051.92
Steam Turbine & Buildi	$ 5,049.51	$ 447	$ 2,257,130.71
GSU&Foundation (MW	$ 417.20	$ 447	$ 186,486.94
Stack (#)	$ 561.66	$ 447	$ 251,060.96
AQCS (MW)	$ 1,168.18	$ 447	$ 522,177.27
On-site Concrete Crus	$ 248.80	$ 447	$ 111,211.99
Subtotal			$ 7,661,119.78

Item	$/unit measure	Quantity	Total
Scrap Steel (tons)	$ (148.71)	27	$ (1,776,085.87)
Scrap Copper (lbs)	$ (1.90)	388	$ (329,654.47)
Non-ferrous Scrap (lbs)	$ (1.47)	0	$ -
Subtotal Scrap / Salvage			$ (2,105,740.34)

Item	Craig Unit 2 (447 MW Coal) $/unit measure	Quantity	Total
Asbestos Removal (MW	Remaining Fact	2%	$ 128,324.31
Boiler (MW)	$ 9,693.63	447	$ 4,333,051.92
Steam Turbine & Buildi	$ 5,049.51	447	$ 2,257,130.71
GSU&Foundation (MW	$ 417.20	447	$ 186,486.94
Stack (#)	$ 561.66	447	$ 251,060.96
AQCS (MW)	$ 1,168.18	447	$ 522,177.27
On-site Concrete Crus	$ 248.80	447	$ 111,211.99
Subtotal			$ 7,661,119.78

Item	$/unit measure	Quantity	Total
Scrap Steel (tons)	$ (148.71)	27	$ (1,776,085.87)
Scrap Copper (lbs)	$ (1.90)	388	$ (329,654.47)
Non-ferrous Scrap (lbs)	$ (1.47)	0	$ -
Subtotal Scrap / Salvage			$ (2,105,740.34)

Common Facilities	$/unit measure	Quantity	Total
Cooling Towers (MW)	$1,133	894	$ 1,013,216.63
BOP Buildings (Plant Size)			$ 492,630.34
Onsite Concrete Crush	$83	894	$ 74,233.81
Coal Handling Facilities (Facility Size)			$ 531,712.34
Grading & Seeding (ac	$24,944	230.9527089	$ 5,760,800.57
Raw water	$ 1.86	$ 1,106,000.00	$ 2,059,576.41
Wastewater	$ 7.47	$ 129,500.00	$ 967,371.16
Evaporation Pond	$ 7.09	$2,900,000.00	$ 20,561,427.57
Coal Runoff Pond	$ 4.64	$ 266,000.00	$ 1,233,813.71
Coal Pile Restoration (I	$ 7.73	$ 3,996,500.00	$ 30,901,042.48
Subtotal			$ 63,595,825.03

Item	$/unit measure	Quantity	Total
Scrap Steel (tons)	$ (148.71)	4	$ (572,241.02)
Scrap Copper (lbs)	$ (1.90)	0	$ -
Non-ferrous Scrap (lbs)	$ (1.47)	0	$ -
Subtotal Scrap / Salvage			$ (572,241.02)

Craig Subtotal			$ 78,918,064.59
Indirects (10%)			$ 7,891,806.46
Contingency (20%)			$ 15,783,612.92
Total Cost ($)			$ 97,809,762.26
Total Cost ($/MW)			$ 109,406.89

SECTION 3

Asbestos Removal	Demo Cost
Amount Assumed (tons/MW)	65.00
Removal Cost/ Ton	$ 220.83

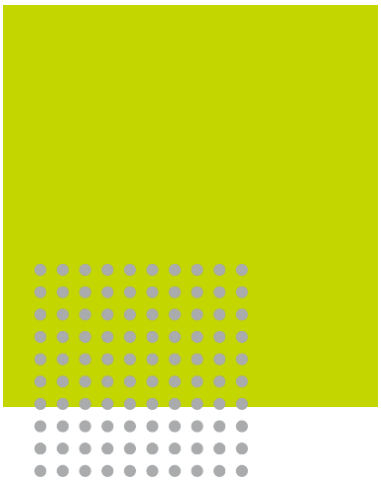
BOP Buildings	Demo Cost
0-200 MW	$ 273,683.52
200-600 MW	$ 383,156.93
>600 MW	$ 492,630.34

Coal Handling Facilities	Cost
Small	$ 312,765.53
Large	$ 531,712.34

Grading & Seeding	Value
Grading & Seeding (acres)	$24,944
Grading & Seeding (CY)	$ 0.57

Pond	$/sqft
Raw water	$ 1.86
Wastewater	$ 7.47
Evaporation Pond	$ 7.09
Coal Runoff Pond	$ 4.64

Common Concrete	Cost
Onsite Concrete Crushing & Disposal	$ 83.04



9400 Ward Parkway

Kansas City, MO