

April 29, 2024

included to connect to all air users, and provide air connections around the perimeter of the top of the new equipment and between the rows of hoppers under the new equipment.

The ash handling system is a negative pressure conveying arrangement designed such that the ash from the hoppers will be conveyed in a single conveying line to a new common ash silo. At the ash silo there will be a single filter/separator on top of the silo with an 18" double gate valve. The filter separator will be operated intermittently and will be equipped with a vacuum breaker. Mechanical exhausters (2x100%), with automatic crossover valves, are included.

5.2 OPERATION AND MAINTENANCE, LEVELIZED COSTS

The O&M cost estimates for the various control technology options evaluated for Colstrip included in this study are summarized in Table 5-2.

Table 5-2: O&M Cost and Levelized Cost Summary

Summary of Particulate Emissions Control Costs from Colstrip for Units 3&4

PM-10 Control Alternative (Ranked by PM-10 Rate)	PM Removal Efficiency %	Emissions				Economic Impacts			
		Emission Rate lb/MMBtu	Hourly Emission Lbs/Hr	Annual Emission Tons/yr	Emission Reduction Tons/yr	Installed	Annual	Total	Average
						Capital Cost \$1,000	O & M Cost \$1,000	Annual Cost \$1000/yr	Control Cost \$/ton
Reheat ESP	71.45	0.006	95	355	890	568,722	21,085	88,546	99,536
Reheat fabric filter	71.45	0.006	95	355	890	356,426	14,786	57,065	64,148
2022 Baseline (Scrubber)		0.0220	334	1245		N/A	N/A	N/A	N/A

5.2.1 O&M Cost Basis

O&M costs for the evaluated systems at Colstrip assuming the following parameters:

- Power cost of \$45/MWh.
- Operating labor rate of \$200,000 for one full time equivalent (FTE).
- Cost of Money 8.25%
- Levelization period, 15 years
- Waste disposal cost, \$15/ton
- Unit 3 and 4 capacity factor of 85.0%
- Bag replacement every 5 years for the fabric filter.
- 5% of direct cost for average annual equipment maintenance

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