



May 4, 2016

MEMORANDUM

Analysis of Costs to Ratepayers if NorthWestern Energy or State of Montana Purchase Colstrip Plant

By David Schlissel, Director of Resource Planning Analysis, IEEFA

As Montana leaders consider the future use and ownership of the Colstrip plants, IEEFA wants to provide those leaders and other stakeholders with the results of the financial analyses of the plant we have conducted over the past year. I would be glad to share the details and methodology and am available to discuss this at any time.

IEEFA's research on the plant has shown that due to unavoidable market forces, Colstrip Units 1&2 have become increasingly uneconomic for the owners to run, and that this situation will only get worse in the coming years. Our conservative analysis shows that, if NorthWestern Energy were to buy part or all of Colstrip Units 1&2, its customers would have to pay at least an extra \$207 million to \$414 million in electric bills over the cost of market power through 2022 (or the state would have to subsidize this amount). These numbers would be much higher (between \$405 million and \$810 million) if the analysis is extended to 2030.

Moreover, as stark as the numbers above are, they actually substantially understate the high cost of power from Colstrip Units 1&2 as they reflect only the fixed and variable operating maintenance costs of producing power at Colstrip. They do not include any of the following significant costs that would have to be paid by ratepayers (or taxpayers if the State of Montana subsidizes Colstrip's continued operation):

- An estimated \$134 to \$195 million in environmental remediation and decommissioning costs. These will rise further the longer the units stay open.¹
- Annual capital expenditures (capex) needed to keep Units 1&2 operating efficiently and effectively and in accordance with environmental regulations. NorthWestern Energy has

¹ Washington Utilities and Transportation Commission Staff "Investigation of Coal-Fired Generation Unit Decommissioning and remediation Costs." Available at <http://www.utc.wa.gov/regulatedIndustries/utilities/Documents/Colstrip%20Investigation%20Report%20UE-151500.pdf>

estimated that at least \$75 million in annual capex would be required between 2017 and 2022 just for Talen Energy's 50 percent share of Units 1&2, and that an additional \$72 million in annual capex would be needed between 2023 and 2030. These figures are from NorthWestern's "Expected Case" for possible future capex, not its "High Case."

- Costs of carbon emissions. In its 2015 Integrated Resource Plan filing, NorthWestern Energy estimated that these costs could start at \$20 per ton in 2022 and increase at 2 percent annually in subsequent years. This could add another \$20 to \$40 million of additional costs each year for whoever owns all of Colstrip Units 1&2.
- Annual debt costs, return (profit) and depreciation expenses associated with the acquisition price if NorthWestern pays to acquire part or all Colstrip 1&2 from Puget Sound Energy and/or Talen Energy.

The same unavoidable market forces that have made Colstrip Units 1&2 increasingly uneconomic are also affecting Colstrip Unit 3. It is unclear whether the options being discussed include the purchase of part or all of the shares of Colstrip Unit 3 owned by Puget Sound Energy and Talen Energy. If NorthWestern Energy were to acquire either or both of the shares of Unit 3 from Puget Sound and/or Talen Energy, its ratepayers would pay another \$131 million to \$287 million, again just through 2022, for expensive power from Colstrip above what it would cost to purchase the same electricity from the market. Also, as discussed above with regard to Colstrip Units 1&2, these costs will be higher if the analysis is extended to 2030 and/or a number of important costs that would have to be paid by ratepayers are included.

The assumptions behind our analysis are described below. If current trends in the energy markets continue—and we have every reason to believe they will – a takeover of the plant could commit consumers to paying hundreds of millions in higher electricity rates for years, if not decades, and, as a result, would create severe financial hardship for Montana ratepayers, NorthWestern Energy, and/or the state and its taxpayers.

1. NorthWestern Rejected the Idea of Purchasing Colstrip in 2012 and 2013 for Sound Economic Reasons

NorthWestern Energy submitted bids in response to PPL's efforts to auction the generating assets owned by its Montana subsidiary (PPLM) in 2012 and 2013. NorthWestern initially submitted two bids in the fall of 2012: One for \$740 million, to acquire only PPLM's hydropower assets, and a second for \$400 million to acquire all of PPLM's hydro and coal assets, including half of Colstrip Units 1&2 and 222 MW of Colstrip Unit 3.

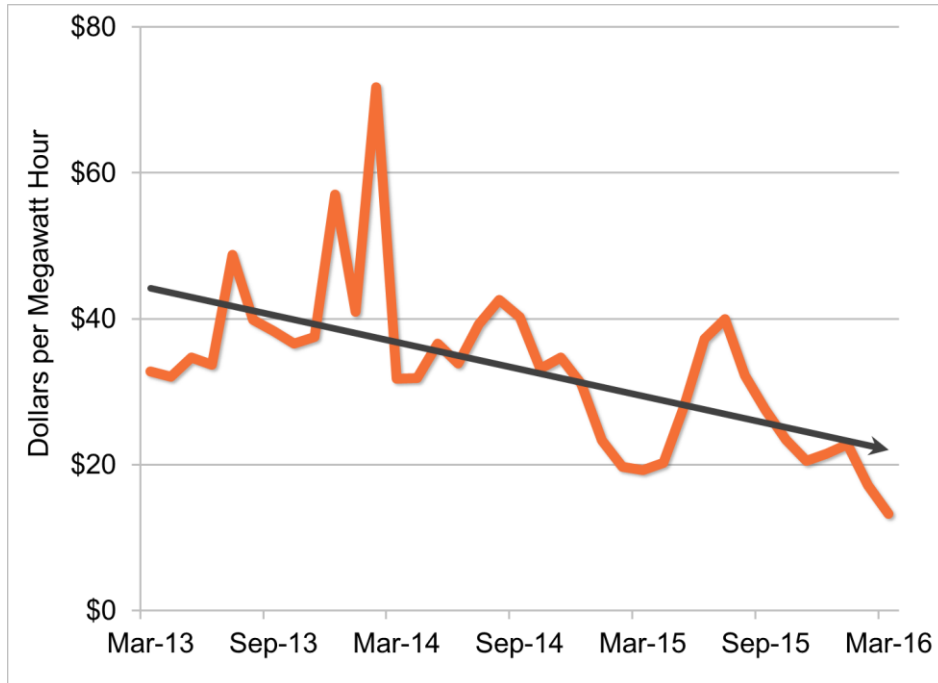
In other words, including the coal assets in the bid *diminished* the value of the acquisition by \$340 million. NorthWestern had concluded that purchasing 50 percent of Colstrip Units 1&2 and PPLM's 222-megawatt (MW) share of Colstrip Unit 3 was not economic for its ratepayers due to "recent EPA actions and uncertainty around the viability of coal-fired assets in the future, particularly the older units (Corette and Colstrip Units 1&2)." A subsequent bid by NorthWestern to purchase only PPLM's hydro assets at a price of \$900 million was accepted by PPL and approved by the Montana Public Service Commission.²

² Prefiled Direct Testimony of John D. Hines on behalf of NorthWestern Energy in Montana Public Service Commission Docket No. D2013.12.85.

2. The Colstrip Plant is Increasingly Uneconomic Today, and Is Likely To Remain So

The continued viability of Colstrip Units 1, 2 & 3 is even more in question today than it was in 2013, given the dramatic declines in the market price of electricity, which is driven by low natural gas prices. Figure 1 below shows the decline in the monthly average of peak hour prices for natural gas at the Mid-Columbia Hub since 2013, with a linear trend line showing the clearly downward direction of these prices.³ Off peak hour market prices are even lower.

Figure 1: Decline in Peak Hour Mid-Columbia Market Prices Since March 2013⁴

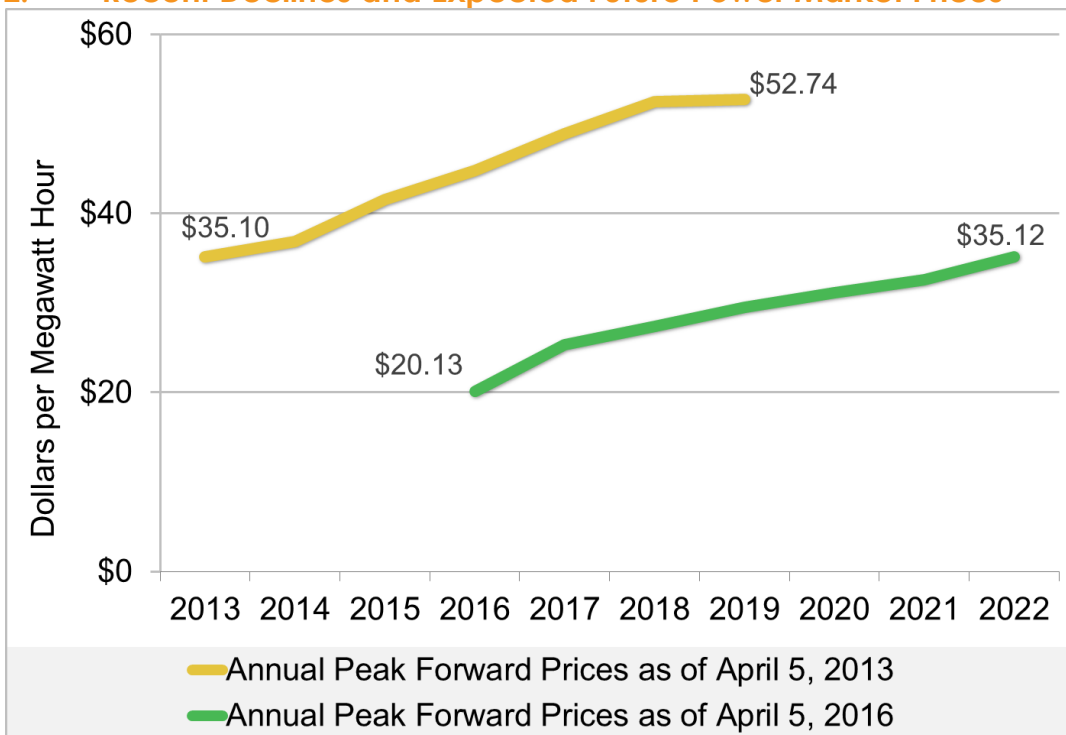


Expectations for future electricity market prices also have decreased significantly since 2013, as shown in Figure 2. While in 2013, forward prices were expected to increase from \$35/megawatt hour to \$52/megawatt hour by 2019, today market prices are only \$20/megawatt hour and expected to get up to only \$35/megawatt hour by 2022. These forward prices represent the prices at which power can be purchased from the market today for delivery in each of the future years and, consequently, represent what the market anticipates the prices for power during peak hours will be in future years.

³ Peak hours at the Mid-Columbia Hub are 7 am to 10 pm, Monday through Friday. All other hours are off peak.

⁴ Data on actual Mid-Columbia market prices downloaded from SNL Financial on April 5, 2016.

Figure 2: Recent Declines and Expected Future Power Market Prices⁵



As part of its 2013 assessment of the economics of purchasing PPL Montana's share of Colstrip Units 1, 2, and 3, NorthWestern projected the future costs of producing electricity from these plants, and compared these future costs to its expected market revenues from the sale of the electricity at the Mid-Columbia Hub. We have replicated NorthWestern's 2013 analysis, making changes only to reflect today's much lower expectations for future power prices at the Mid-Columbia, as shown in Figure 2, above.⁶ The results of our comparisons are shown in Figures 3 and 4, below.

⁵ Forward prices from OTC Global Holding as of April 2013 and April 2016, downloaded from SNL Financial.

⁶ We also assumed that Mid-Columbia market prices would escalate at an annual rate of 5 percent after 2022.

Figure 3: Annual Per MWh Cost of Producing Power at Colstrip Units 1&2 vs. Cost of Market Power⁷

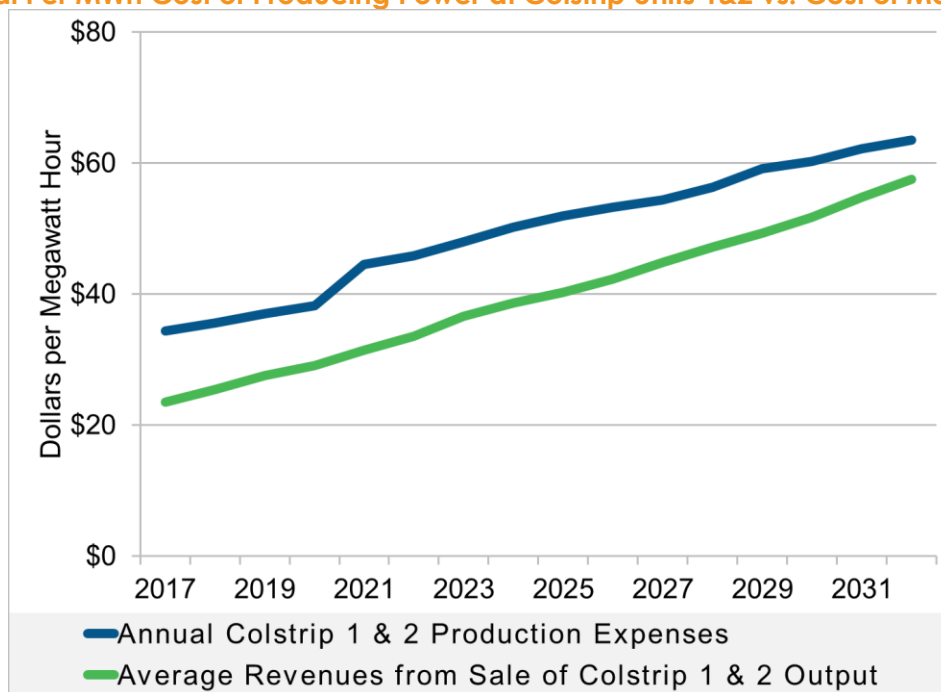
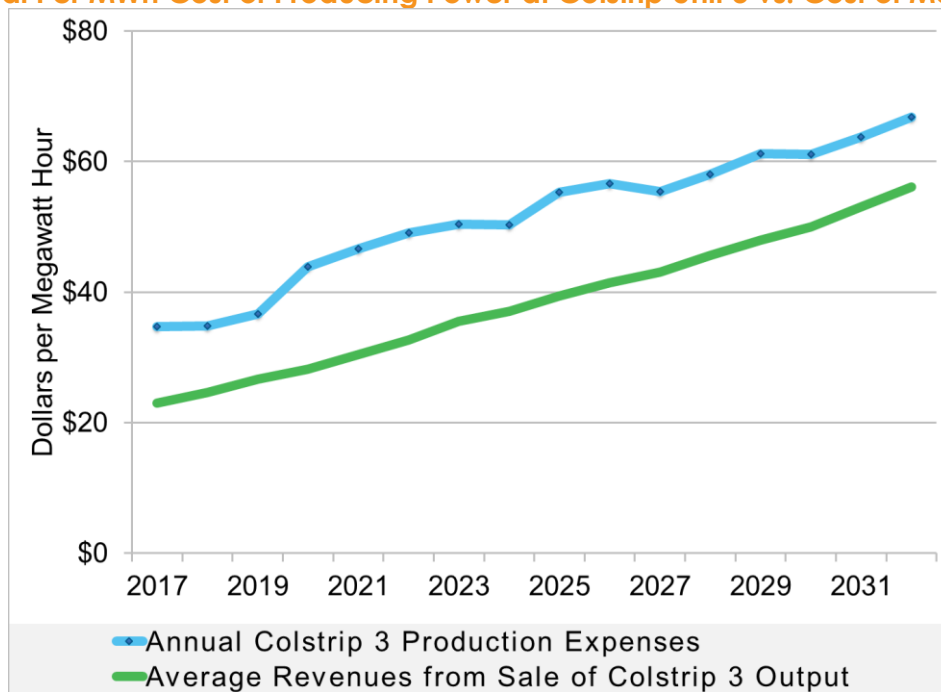


Figure 4: Annual Per MWh Cost of Producing Power at Colstrip Unit 3 vs. Cost of Market Power



⁷ The costs of producing power at Colstrip Units 1&2 and Unit 3 shown in Figures 3 and 4 were derived from NorthWestern Energy's Submitting to the Montana Public Service Commission, Project Mustang Valuation Spreadsheet, "PSC-066 Mustang Valuation – 2032 Case -6-24-13." The market power costs reflect current forward prices, shown in Figure 2, escalated at an annual 5 percent rate after 2022.

Thus, the cost of generating power at Colstrip will be much more expensive for ratepayers in coming years than either the cost of purchasing power from the market at the Mid-Columbia Hub or the prices at which Colstrip power can be sold into the market. And Figures 3 and 4 do not reflect the environmental remediation and decommissioning, capex, carbon emissions, debt, profit and depreciation costs identified earlier.

3. Purchasing Colstrip Today Would Cost Montana Customers – or the State – Hundreds of Millions of Dollars in Higher Utility Rates

If NorthWestern were to purchase a larger share of Colstrip today, either its ratepayers or Montana’s taxpayers (if the deal were subsidized with state funds), will be paying hundreds of millions of dollars more for the power from Colstrip compared to the cost of market power.

Figure 5: Cumulative Cost to Ratepayers (Above Market Price of Power) for Acquiring Colstrip 1&2 During the Years 2017 through 2022 and 2017 through 2030

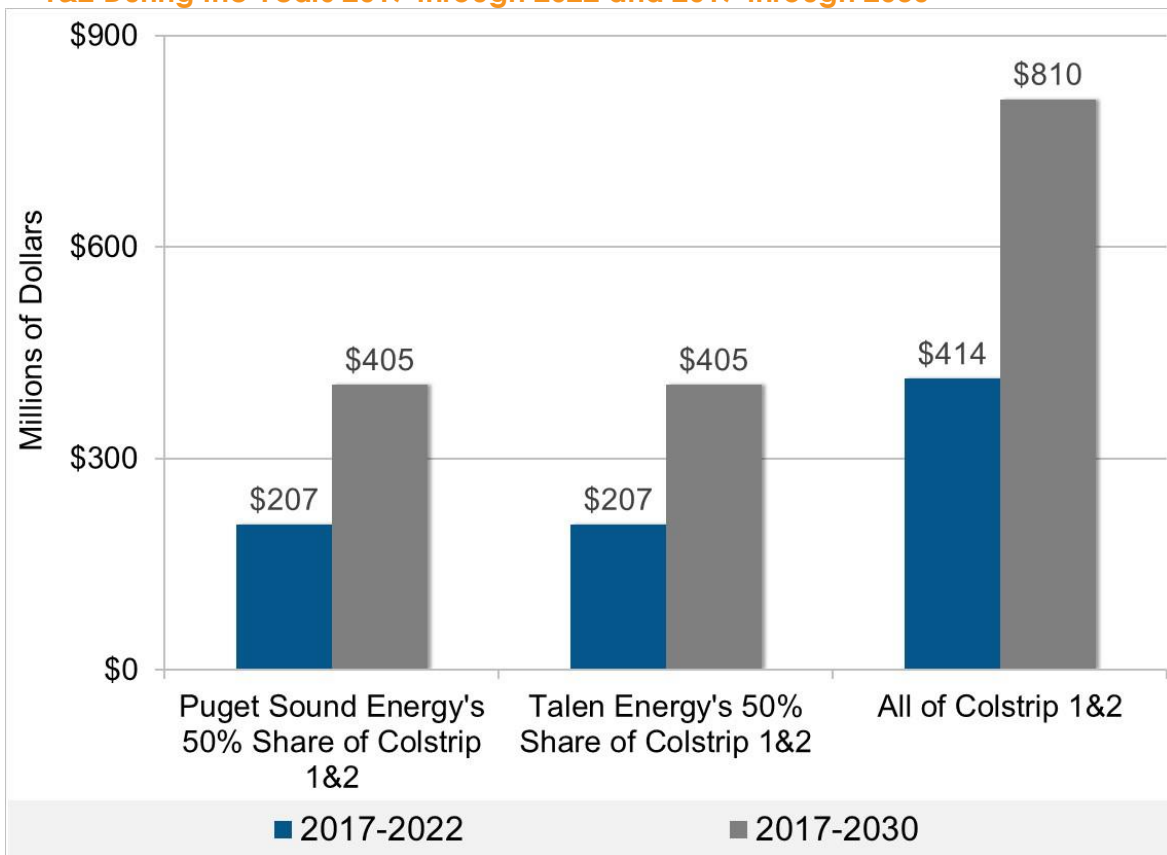


Figure 6: Cumulative Cost to Ratepayers (Above Market Price of Power) for Acquiring Puget Sound Energy and/or Talen Energy's Shares of Colstrip 3 During the Years 2017 through 2022 and 2017 through 2030

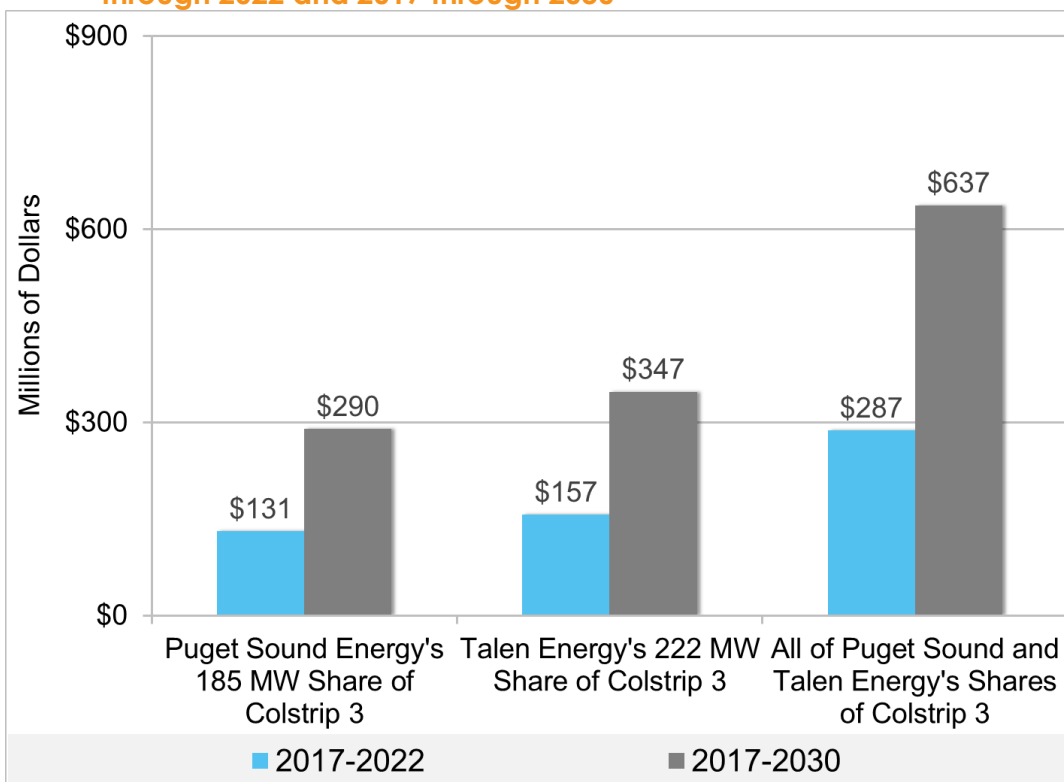
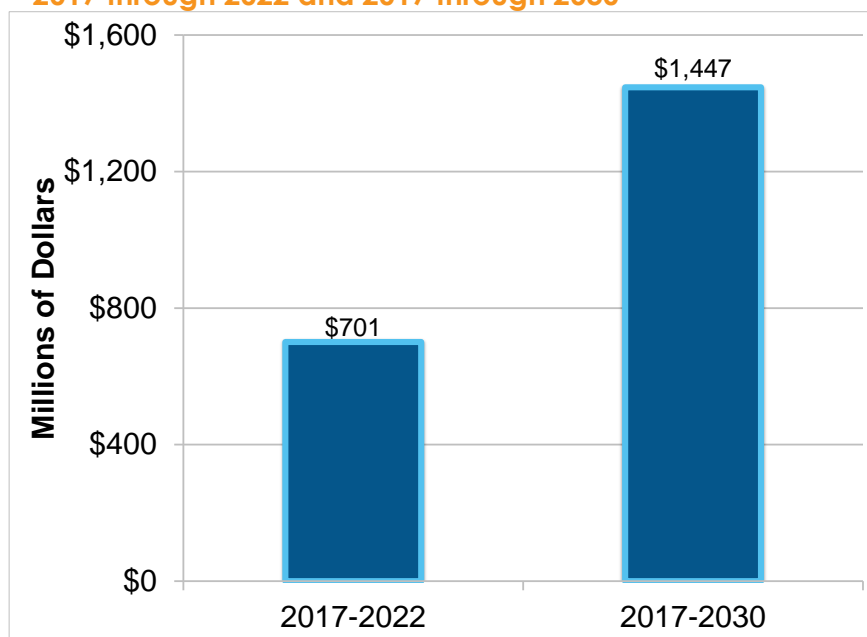


Figure 7: Impact of Acquiring All of Colstrip 1&2 and 407 MW of Colstrip 3 on NorthWestern's Ratepayers During the Years 2017 through 2022 and 2017 through 2030

Acquiring all of Colstrip Units 1&2 and all of Puget Sound Energy and Talen Energy's 407 MW share of Colstrip Unit 3 likely would cost NorthWestern's ratepayers (and/or Montana taxpayers) more than \$700 million more, just through 2022, than buying the same amount of electricity from the market, and more than \$1.4 billion more through 2030.



Most importantly, the impacts on NorthWestern's ratepayers (and/or Montana taxpayers) of acquiring more of Colstrip shown in Figures 5, 6, and 7 do not include the environmental remediation and decommissioning, capex, carbon emissions, debt, profit and depreciation costs we discussed earlier.

It is very unlikely that ratepayers will receive any relief from these higher costs from selling any excess power from Colstrip into the market (or to other owners) given low market prices and the higher costs of generating power at Colstrip Units 1, 2 and 3, as shown in Figures 3 and 4. For example, NorthWestern's 2015 Integrated Resource Plan explained why the generation at Colstrip Unit 4 is scaled back during periods of high hydro and low load instead of being sold to other Colstrip owners:

Exportation of excess generation to other markets is generally not cost effective due to the added transmission costs for delivery which include energy losses. Furthermore, other Colstrip owners may experience similar conditions such as low load and excess generation due to increased hydro production and therefore have no interest in purchasing NWE's excess generation.⁸

4. Conclusion

Colstrip has become increasingly uneconomic due to market forces and economic trends, most significantly the steep decline in natural gas and energy market prices and the increasing competition from natural gas-fired and renewable resources. Having NorthWestern Energy acquire either Puget Sound or Talen Energy's shares of Colstrip, or both, in order to subsidize the continued operation of Colstrip Units 1, 2 and 3 would not reverse or eliminate these market forces or make Colstrip more economic. Instead, the acquisition would be extremely expensive for the ratepayers of NorthWestern Energy or Montana taxpayers depending on whether, and to what extent, the state subsidizes this acquisition. IEEFA recommends that rather than spending hundreds of millions of state and community resources to keep these uneconomic plants operating, the State of Montana should investigate how to provide the necessary resources to affect an orderly transition to support the communities and workers and to invest in more economical and cleaner sources of energy to provide electricity.

⁸ NorthWestern Energy 2015 Integrated Resource Plan, at page 8-11. Available at <http://psc.mt.gov/Docs/ElectronicDocuments/pdfFiles/Volume1.pdf>.