

**BEFORE THE MINNESOTA OFFICE OF ADMINISTRATIVE HEARINGS
600 North Robert Street
St. Paul, MN 55101**

**FOR THE MINNESOTA PUBLIC UTILITIES COMMISSION
121 Seventh Place East, Suite 350
St Paul, MN 55101-2147**

**In the Matter of the Application of
Minnesota Power for Authority to
Increase Rates for Electric Utility
Service in Minnesota**

**PUC Docket No. E015/GR-16-664
OAH Docket No. 5-2500-34078**

REBUTTAL TESTIMONY OF UDAY VARADARAJAN

On Behalf of

Clean Energy Organizations

June 29, 2017

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1 **I. Introduction**

2 **Q: Please state your name, employer, and position.**

3 **A:** My name is Uday Varadarajan. I am a principal in Climate Policy Initiative’s Energy
4 Finance Program.

5 **Q: Have you previously provided testimony in this proceeding?**

6 **A:** Yes, I filed Direct Testimony on behalf of Minnesota Center for Environmental
7 Advocacy, Fresh Energy, Wind on the Wires, and the Sierra Club (collectively “Clean
8 Energy Organizations” or “CEOs”) in response to Minnesota Power’s proposal to extend
9 the economic lives of its four coal units at the Boswell Energy Center to 2050.

10 **Q: What is the purpose of your Rebuttal Testimony?**

11 **A:** In this Rebuttal Testimony I respond to the Direct Testimony filed by other intervenors
12 regarding Minnesota Power’s proposal to extend the economic lives of its four coal units
13 at the Boswell Energy Center to 2050.

14 **Q: To which witnesses are you responding?**

15 **A:** Specifically, I respond to the Direct Testimony of Shoua Lee, who testified on behalf of
16 the Residential Utilities and Antitrust Division of the Office of the Attorney General;
17 Nancy Campbell who testified on behalf of the Department of Commerce, Division of
18 Energy Resources; and William Blazar who testified on behalf of the Minnesota Chamber
19 of Commerce.

1 **Q: Please summarize your Rebuttal Testimony.**

2 **A:** In general, I agree with the analysis of Ms. Lee and find errors in the analysis of Ms.
3 Campbell and Mr. Blazar.

4 I disagree slightly with Ms. Lee regarding Boswell Units 1 and 2, because including the
5 remaining unrecovered plant balances in the test year even after the plants are retired in
6 2018 is consistent with transitioning those units to a regulatory asset, and is therefore
7 reasonable at this time without the need for additional information. Regarding Units 3
8 and 4, Ms. Lee is correct in her arguments that extending their lives and depreciation to
9 2050 would be financially risky and a burden on ratepayers, and the Commission should
10 reject this proposal. Ratepayer-backed bond securitization could address many of the
11 issues raised by Ms. Lee, and provides a solution that further demonstrates why the
12 Company's proposal is unreasonable and harmful to ratepayers.

13 I disagree with Ms. Campbell's conclusion that it would be reasonable to assume Units 3
14 and 4 could continue operations until 2050. There is insufficient proof that the units will
15 continue to be cost-effective, especially compared to the dropping price of wind
16 generation, and her assumption ignores the other policy reasons that are leading to early
17 retirement of coal generation.

18 I disagree with Mr. Blazar's assertions that Minnesota Power's proposal benefits
19 ratepayers while allowing the company to transition to new generation. Instead, I have
20 testified that the Company's proposal provides short-term relief to customers at the
21 expense of significant long-term costs, and it incentivizes shareholders to keep coal
22 generation operating past its optimal retirement date.

1 **II. Rebuttal to Shoua Lee**

2 **Q: Can you summarize the Direct Testimony and conclusions of Ms. Lee related to**
3 **Minnesota Power's proposal to extend the economic lives of the four Boswell units?**

4 **A:** Ms. Lee testified that Minnesota Power's proposal to extend the economic lives of the
5 Boswell units would mean that the depreciation schedule would no longer be based on
6 the remaining life of the units, which are scheduled to close in 2018 (Units 1 and 2), 2034
7 (Unit 3), and 2035 (Unit 4). She testified that this proposal is not consistent with the
8 standard accounting rules that Minnesota Power is required to follow or Commission
9 Rules on depreciation. She found that the proposal is unreasonable for multiple reasons,
10 including: the fact that it will require ratepayers to cover stranded costs; the failure to
11 provide sufficient removal cost funding for on-time decommissioning of Units 3 and 4;
12 the uncertainty of future Operations and Maintenance or replacement costs; increased
13 long-run returns for shareholders; and delay of coal retirements. Ms. Lee concluded that
14 the Commission should deny Minnesota Power's proposal to combine the four units into
15 one depreciation schedule and extend recovery of depreciation expenses to 2050.
16 Regarding Boswell Units 1 and 2, Ms. Lee recommended that the Commission reject
17 Minnesota Power's proposal to extend the cost recovery of depreciation expense to 2050.
18 For Units 3 and 4, she recommended that the Commission reject Minnesota Power's
19 proposal and take no action to separate the current remaining existing lives from the
20 depreciation schedules for these units. These recommendations will increase the revenue
21 requirement by \$15,936,118, according to Ms. Lee.

1 **Q: Do you agree with Ms. Lee's conclusions with respect to Boswell Units 1 and 2?**

2 A: Yes, but only in part. Ms. Lee concluded that it is premature to make a recommendation
3 relative to Boswell Units 1 and 2 until the costs to retire those units and replace the
4 energy and capacity are better understood. Ms. Lee further argued that it would be
5 inappropriate for the Company to include both recovery of Boswell Units 1 and 2 and
6 recovery of costs for its replacement energy and capacity in its test year, as this would
7 result in double recovery. While I agree that understanding the costs to replace the units
8 is important, I believe that including the remaining unrecovered plant balances in the test
9 year even after the plants are retired in 2018 is consistent with transitioning those units to
10 a regulatory asset, and is a reasonable decision at this time. If approved depreciation rates
11 were not modified, the Company would continue to recover its remaining balances for
12 Boswell Units 1 and 2 by 2024 as amortization of the resulting regulatory asset at the
13 same rates. This approach provides certainty regarding future rates at current levels for
14 ratepayers and allows the company to fully recover its costs in a reasonable period of
15 time (over six years after retirement) without creating undue burdens to future customers.

16 **Q: Do you agree with Ms. Lee's conclusions with respect to Boswell Units 3 and 4?**

17 A: Yes. Ms. Lee concluded that Minnesota Power's proposal to extend the economic lives of
18 these units until 2050 is not reasonable and should be rejected by the Commission and I
19 agree with that conclusion. Specifically, Ms. Lee argued that:

20 1) While the company has provided some technical evidence that Boswell Units 3 and 4
21 could be operated through 2050, they have not provided evidence that such operation
22 could be done at a reasonable cost.

1 2) Given recent economic and environmental pressures on continued use of coal-fired
2 electric generating units throughout the industry, the Commission may be asked to
3 consider retirement of Boswell Units 3 and 4 before their current retirement dates—let
4 alone before 2050. That extension would result in large unrecovered balances that could
5 complicate future retirement decisions.

6 3) Even if all units of Boswell plant were retired as scheduled, the extension would require
7 ratepayer in the late 2030s and 2040s to continue paying for a plant they never used.

8 4) Changing the depreciation rate for Boswell Units 3 and 4 requires the company to
9 provide evidence that the operational life of the assets should be extended through 2050,
10 an issue best addressed in the Company's next IRP filing.

11 I agree with each of these arguments.

12 **Q: In your Direct Testimony, you suggest that there are alternatives to extending the**
13 **economic depreciation lives of the four Boswell coal units to 2050 that would better**
14 **protect ratepayers and reduce risk. Can you explain how ratepayer backed bonding**
15 **could address the challenges raised by Ms. Lee?**

16 **A:** Yes. Ratepayer-backed bond securitization could address many of the issues raised by
17 Ms. Lee, by providing an option to mitigate both the expected rate impacts of the early
18 retirement of Boswell Units 1 and 2, as well as the risk to rates associated with any
19 possible early retirement of Boswell Units 3 and 4. To demonstrate these savings, I
20 compared the customer cost impact of the Company's cost recovery proposal to the use
21 of securitization in several scenarios in which Boswell Units 3 and 4 were retired earlier
22 than anticipated (in 2018, 2020, 2022, 2024, and 2026). In each of these cases, I assume
23 that any remaining plant balances (including decommissioning costs net of salvage as

1 well as any remaining balances on all units—including Units 1 and 2—using approved
 2 depreciation rates) are immediately recovered through the use of a ratepayer-backed bond
 3 with an interest rate of 3% amortized out to 2034.
 4 I find that in each of these cases, customers see immediate savings relative to approved
 5 depreciation rates (see Figures 1, 2, and 3) as well as NPV savings (see Table 1) over the
 6 life of the bond (regardless of the discount rate used).

Table 1: NPV impact on customer costs of the Company’s proposal relative to current approved depreciation rates compared with the use of securitization in cases in which Boswell Plant is retired early (negative changes in red indicate net savings)

| NPV of Change in Customer Costs | Discount Rate | | | | | |
|---------------------------------|---------------|-------------|--------------|--------------|--------------|--------------|
| | 11.49% | 6.74% | 6.00% | 4.00% | 2.00% | 0.00% |
| MSP Proposal | -53,591,178 | 5,068,231 | 23,240,917 | 95,477,444 | 219,686,546 | 434,565,014 |
| Securitization in 2018 | -82,164,826 | -98,967,258 | -101,631,727 | -108,667,210 | -114,949,001 | -119,594,216 |
| Securitization in 2020 | -48,147,417 | -61,267,535 | -63,442,096 | -69,361,522 | -74,990,702 | -79,710,843 |
| Securitization in 2022 | -25,021,907 | -33,338,426 | -34,750,273 | -38,641,361 | -42,411,683 | -45,642,389 |
| Securitization in 2024 | -9,211,163 | -12,490,947 | -13,022,097 | -14,408,924 | -15,562,000 | -16,176,530 |
| Securitization in 2026 | -2,164,378 | -2,358,002 | -2,312,952 | -1,994,012 | -1,239,528 | 226,656 |

Figure 1: Change in customer costs for the Company’s proposal compared with securitization in the case in which Boswell Plant is retired in 2018

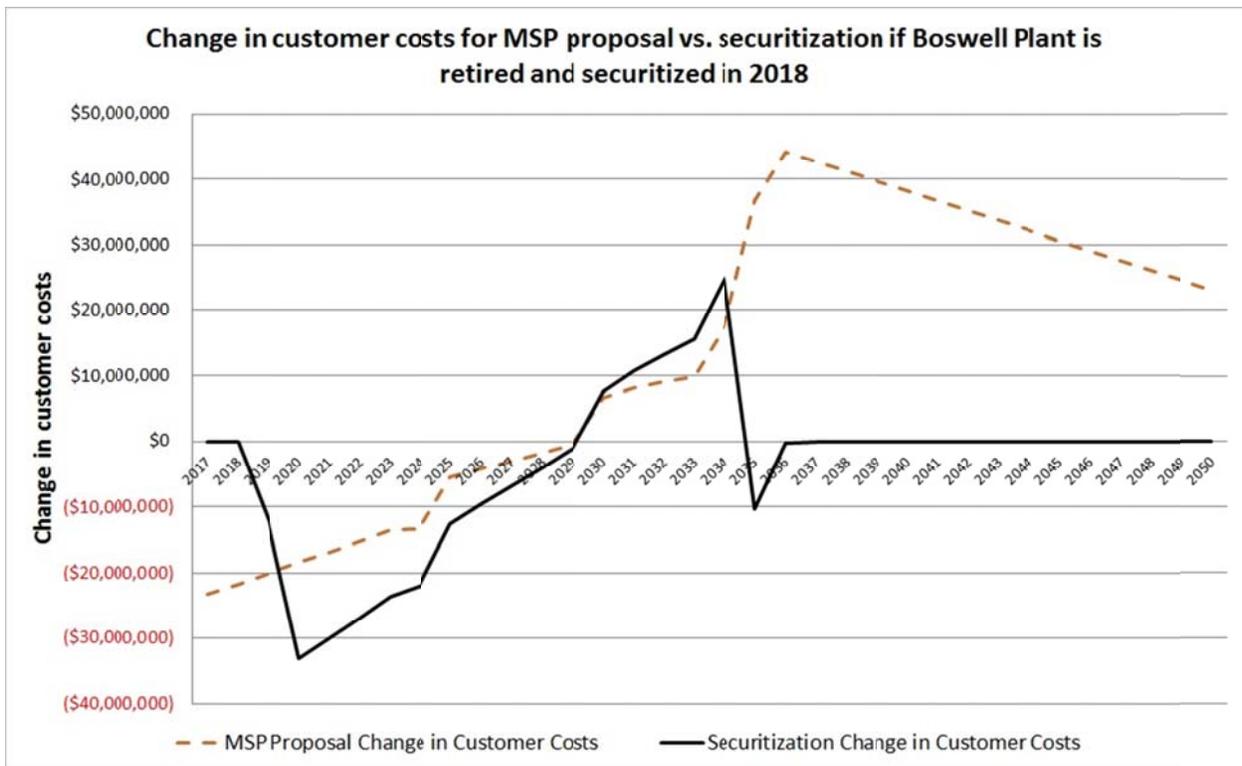


Figure 2: Change in customer costs for the Company’s proposal compared with securitization in the case in which Boswell Plant is retired in 2022

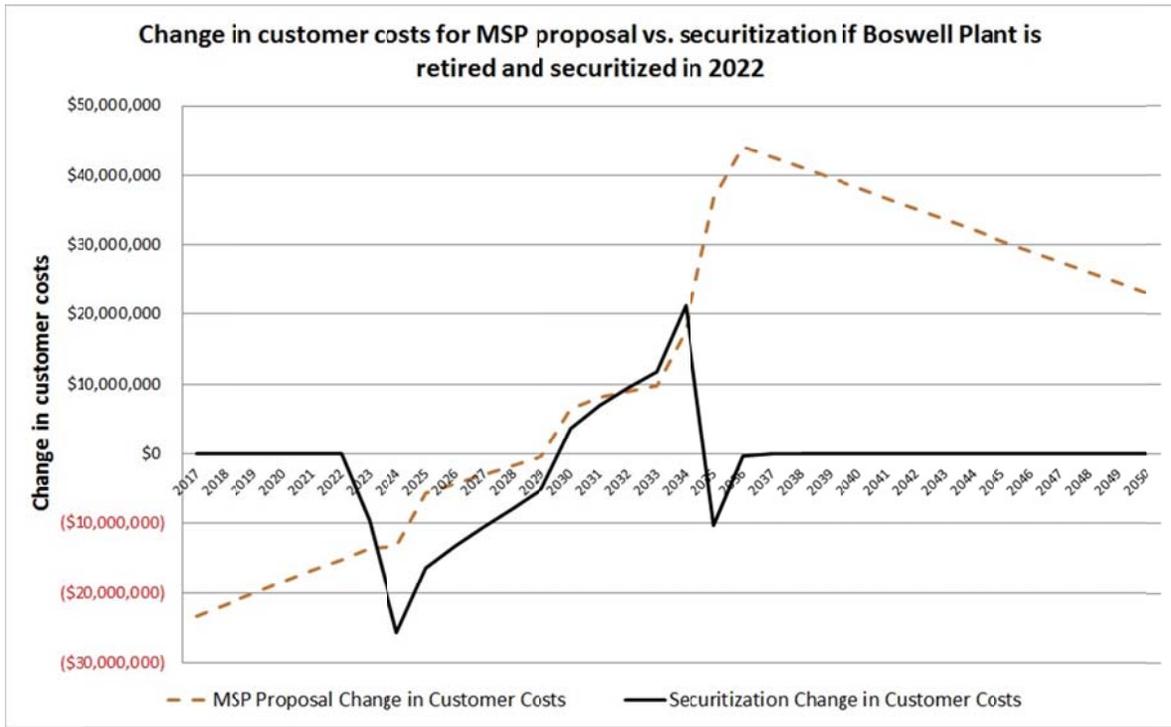
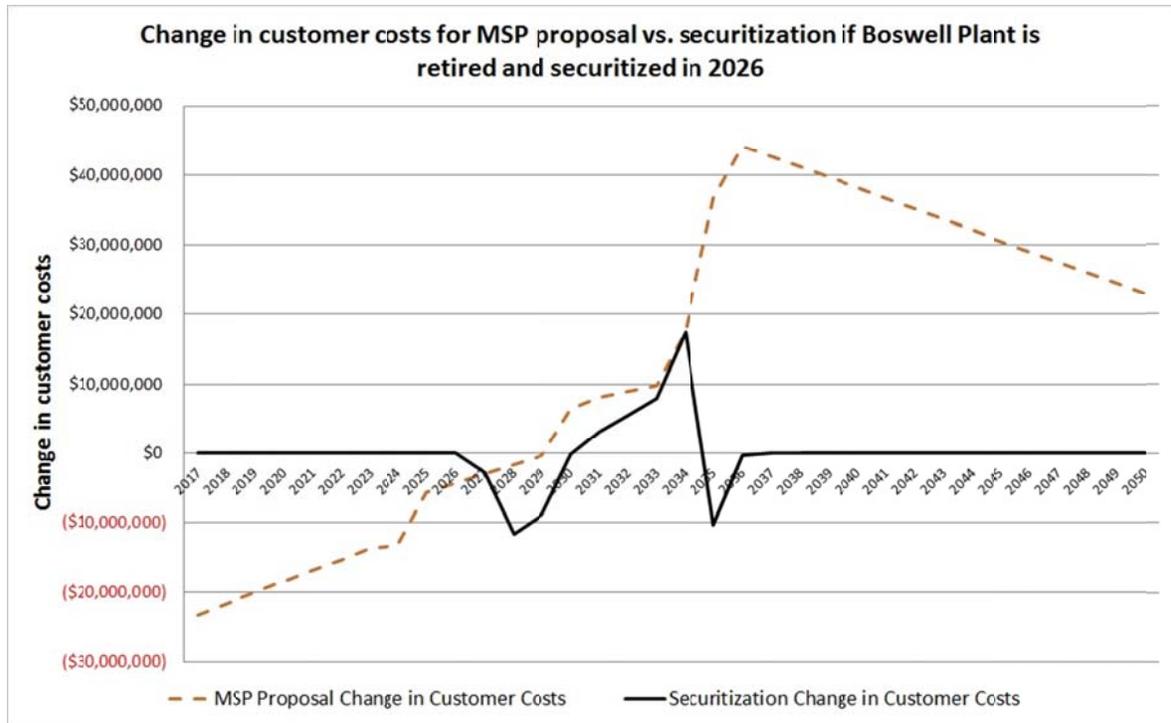


Figure 3: Change in customer costs for the Company’s proposal compared with securitization in the case in which Boswell Plant is retired in 2026



1 Specifically, in Table 1 we see that the negative change in the NPV of customer costs for
2 virtually all the securitization examples shows that the mechanism can result in cost
3 savings for early retirement regardless of the discount rate used. The Company's
4 proposal, on the other hand, only shows cost savings in the early years, and results in net
5 costs to ratepayers only when a high discount rate is used. As the use of a high discount
6 rate significantly reduces the importance of cost impacts on future generations, this
7 demonstrates how the Company's proposal helps current ratepayers at the expense of
8 future ratepayers.

9 In summary, I find that securitization can cover this risk without excessively burdening
10 future ratepayers as the Company's proposal does. That is, the option to use securitization
11 will provide relief to customers to mitigate the immediate cost impact of any early
12 retirement while also protecting future ratepayers resulting in overall cost savings.

13 **Q: In these examples, you amortized the bond repayment to 2034 but changed the date**
14 **at which the plant retires and the unpaid balance is securitized. Is it fair to say that**
15 **the earlier the plant is retired, the greater savings ratepayers see?**

16 **A:** As far as reductions in capital costs go, my analysis does show that the earlier the plant is
17 retired, the greater the savings from securitization would be. However, overall savings to
18 ratepayers in each of these scenarios also depends on the cost of replacement capacity
19 and generation (if any). In my direct testimony, I argued that the total cost of new wind
20 generation with the Federal Production Tax Credit (PTC) could be less expensive than
21 continued operation of Boswell. Therefore, I would argue that if the generation and
22 capacity from Boswell could be replaced largely by wind generation with the full PTC, it

1 is possible that the savings from early retirement could be even larger than my analysis of
2 capital costs alone suggest.

3 **Q: Does securitization affect the Company's earnings?**

4 **A:** Early retirement and recovery of capital invested in any utility asset will reduce future
5 earnings for the Company—but only if the capital is not reinvested in new assets (either
6 replacement generation and capacity or other grid infrastructure allowed in ratebase). In
7 fact, if the Company can reinvest its capital in new wind assets that are allowed in
8 ratebase, the Company's earnings can actually go up while rates fall. This is possible due
9 to the additional contribution to earnings provided by the PTC (as long as the Company
10 has the tax capacity to fully monetize the tax credits in each year they are generated).

11 To see how this works, I have provided a hypothetical example of the impact on customer
12 costs per MWh in the current year, customer costs on a levelized basis, and on
13 shareholder earnings of the early retirement of an uncompetitive fictitious coal generator
14 in Figures 4, 5, and 6. In each figure, the first bar shows the status quo—continued
15 operation of the coal asset. The second bar represents the impact of retiring the old coal
16 plant, replacing it with low-cost purchased generation (wind with PTC) and accelerating
17 its cost recovery. Note that in Figure 4, the second bar shows how replacement of the
18 asset can lead to higher costs in the short term due to potentially accelerated cost
19 recovery, even if the replacement generation (wind with PTC) can be purchased at below
20 the operating cost of the old coal plant. The third bar shows how securitization can
21 remedy this problem, but at the cost of eliminating the company's future earnings on the
22 generation. The final bar shows how allowing the company to ratebase wind generation
23 with PTC could both reduce overall customer costs and increase shareholder earnings.

Figure 4 - The impact of securitization of a coal asset and replacing it with wind in ratebase on customer cost of electricity in the year of retirement

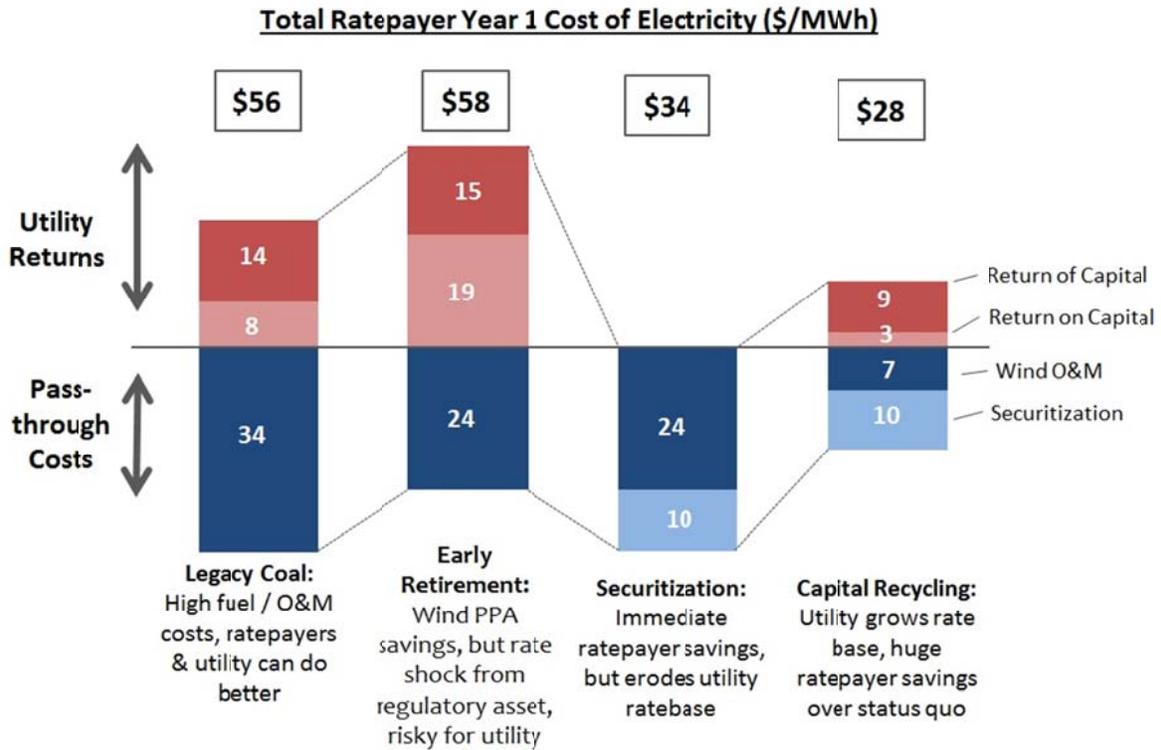


Figure 5 - The impact of securitization of a coal asset and replacing it with wind in ratebase on levelized customer cost of electricity

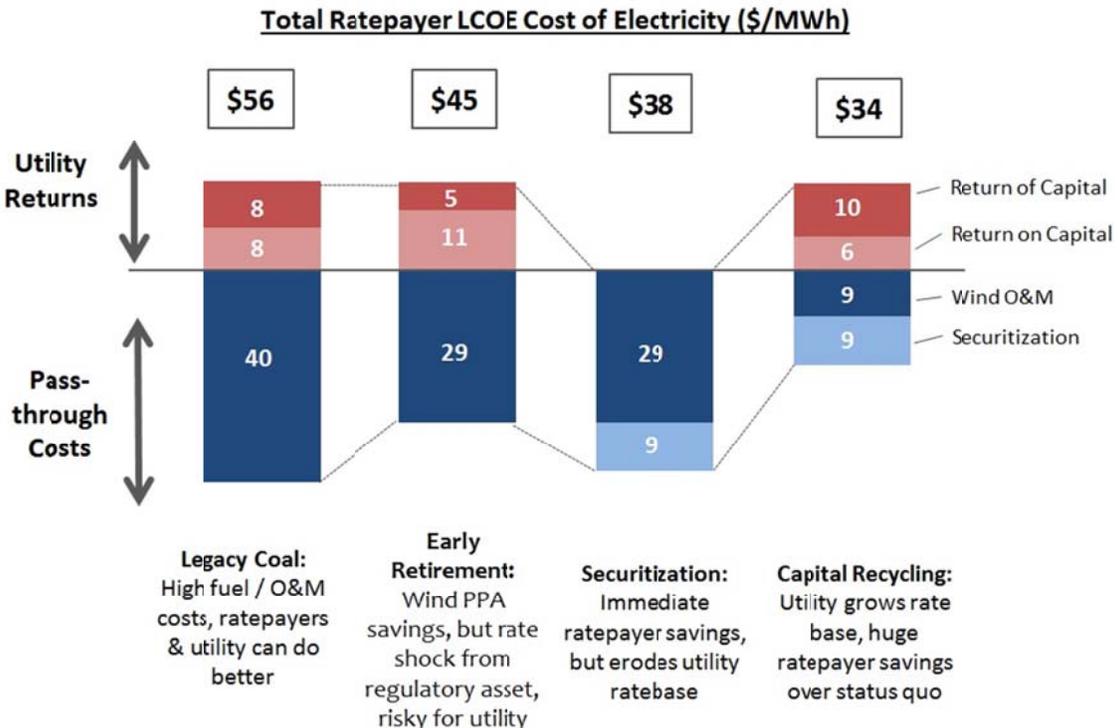
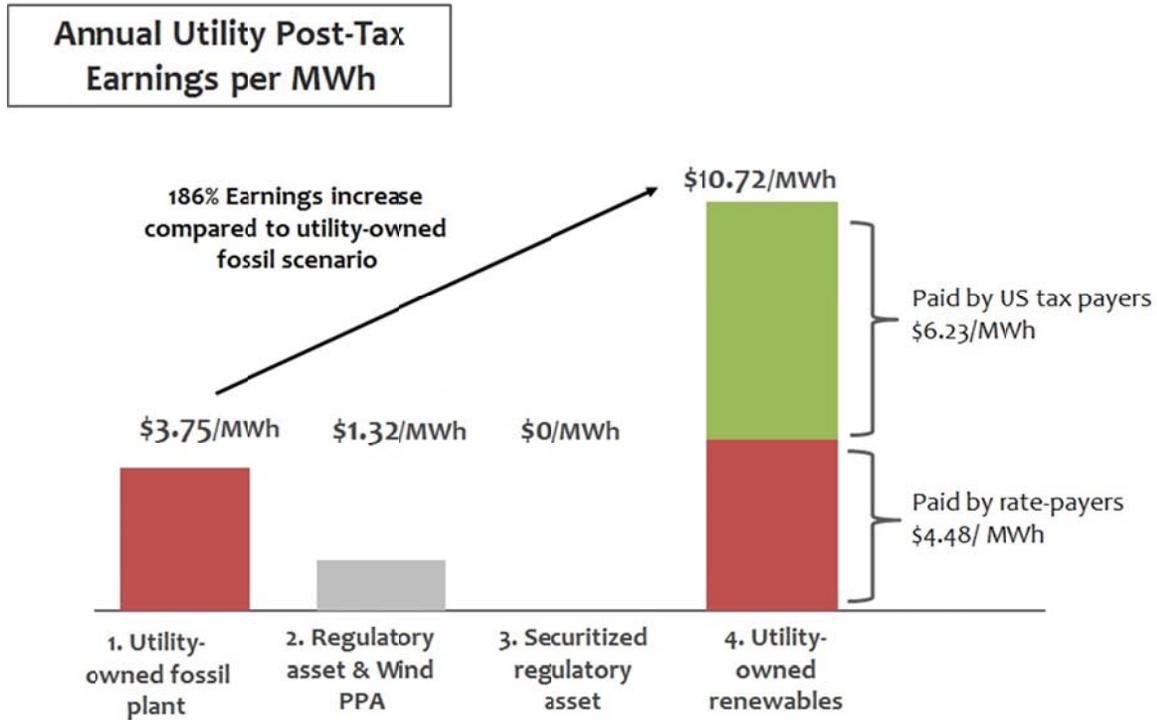


Figure 6 - Shareholder earnings impact of coal asset retirement, replacement by wind, securitization, and allowing wind in ratebase



1 **III. Rebuttal to Nancy Campbell**

2 **Q: Can you summarize the Direct Testimony and conclusions of Ms. Campbell as they**
 3 **relate to Minnesota Power’s proposal to extend the economic lives of the four coal**
 4 **units at Boswell?**

5 **A:** Ms. Campbell found it was reasonable to assume that Units 3 and 4 and related common
 6 facilities could operate until 2050 in light of significant capital upgrades to these units.
 7 She also determined that Units 1 and 2 are not environmentally compliant, did not receive
 8 similar upgrades as the other units, are ordered for retirement by 2022, and are scheduled
 9 for retirement in 2018, and therefore it is not reasonable to assume these units could
 10 operate until 2050. Ms. Campbell recommended that Units 1 and 2 have a depreciation
 11 remaining life until 2022, or 2018 if MP will close them in 2018.

1 **Q: Do you agree with Ms. Campbell’s conclusion that it seems reasonable that Boswell**
2 **3 & 4 and the related common facilities could operate until 2050?**

3 **A:** No. I disagree for two reasons. First, I agree with Ms. Lee that the report provided by
4 Minnesota Power to support its assertion that these units could operate until 2050 is
5 insufficient evidence to meet Minnesota Power’s burden of proof in support of its
6 proposal.
7 Second, the technical ability to operate is only one factor in considering whether
8 operating a coal plant until 2050 is reasonable. As argued by Ms. Lee, future
9 environmental and economic costs and risks associated with continued operation must be
10 considered. In fact, according to Moody’s, “‘Wind power economics are driving coal
11 generation up the dispatch curve and into earlier retirement,’ says Jairo Chung, a Moody’s
12 analyst. ‘Around 56 gigawatts of regulated coal-fired capacity in the Midwest has
13 operating costs that are higher than the all-in costs of new wind power.’”¹
14 That is, continued operation of coal generating units (even before consideration of
15 possible environmental costs and risks) are already being rendered uncompetitive by
16 wind generation across the Midwest, As a result, I do not believe that it is reasonable to
17 assume the Boswell Units 3 and 4 could continue to operate economically until 2050.

¹*Moody’s: Utilities increasingly adding low cost wind power t rate base, leaving inefficient coal plants at risk* (Mar. 15, 2017), available at https://www.moody.com/research/Moodys-Utilities-increasingly-adding-low-cost-wind-power-to-rate--PR_363547.

1 **IV. Rebuttal to William Blazar**

2 **Q: Can you summarize the Direct Testimony and conclusions of Mr. Blazar as they**
3 **relate to Minnesota Power's proposal to extend the economic lives of the four coal**
4 **units at Boswell?**

5 **A:** Mr. Blazar supports Minnesota Power's proposal to extend depreciation to 2050 and have
6 ratepayers pay for non-operating plants during that time. He expressed appreciation for
7 Minnesota Power's proposal on how to reduce rate impacts, focusing on the fact that
8 Minnesota Power's proposal prevents short-term increases on ratepayers and covers the
9 Company's costs, while allowing the utility to transition away from carbon-intensive
10 resources.

11 **Q: Do you agree with Mr. Blazar's conclusion that Minnesota Power's proposal to**
12 **extend the economic lives of the four coal units at Boswell to 2050 is reasonable way**
13 **to make Minnesota Power whole without imposing additional short-term rate**
14 **increases on ratepayers?**

15 **A:** No. As I discussed in my Direct Testimony, and earlier in this Rebuttal Testimony, the
16 Company's proposal provides short-term relief to customers at the expense of significant
17 long-term costs. Further, the proposal provides shareholders with an incentive to keep
18 carbon-polluting coal facilities in operation for as long as possible. I have identified two
19 approaches that could mitigate the near-term impacts to customers of an early retirement
20 of any further units in Boswell without creating the intergenerational impact of the
21 Company's proposal.

1 **V. Conclusion**

2 **Q: Has your recommendation to the Commission with respect to Minnesota Power’s**
3 **proposal to extend the economic lives of its four units at the Boswell Energy Center**
4 **changed in light of the other intervenors’ Direct Testimony?**

5 **A:** No. This proposal should be rejected as presented. There are alternative mechanisms to
6 achieve Minnesota Power’s stated goals without jeopardizing future ratepayers and
7 without the economic and regulatory risk of continuing to run uncompetitive and high-
8 polluting resources.

9 **Q: Are you recommending that the Commission order Minnesota Power to securitize**
10 **the remaining debt on the Boswell units through ratepayer-backed bonding at this**
11 **time?**

12 **A:** No, not necessarily. Securitization of ratepayer revenues has only been successfully
13 implemented in states where authorizing legislation has been put in place that enshrines
14 in statute certain protections for bondholders from regulatory and policy risk. As
15 discussed in greater detail in Moody’s (2015) “Rating Methodology: Moody’s Global
16 Approach to Rating Securities Backed by Utility Cost Recovery Charges,” these
17 protections generally need to include:

- 18 1) Property rights to ratepayer cash flows: “A property that entitles the owner of such
19 property—the utility, or, in some cases, a public trust or corporation—the right to charge
20 the fee throughout the life of the security in an amount sufficient to make full and timely
21 repayment of principal and interest on the security”;
- 22 2) Fee collection process: “the process the owner of the property must follow to charge the
23 fee”;

- 1 3) Irrevocable right to transfer fee collection rights: “the irrevocable right of the owner of
2 the property to transfer the fee to a special purpose financing vehicle for securitization
3 purposes”;
- 4 4) Authorization to issue bond: “the type of financing vehicle authorized to issue securities
5 backed by the fees”;
- 6 5) “True sale” requirements: “the process to be followed such that the transfer would be
7 viewed as a ‘true sale’ of the rights to the cash flows rather than a pledge of collateral for
8 a financing for transactions that involve the transfer of the property from the utility to the
9 issuer”;
- 10 6) Bankruptcy remoteness: “the likelihood that other potential claimants, such as other
11 creditors of the financing vehicle if it were to become bankrupt or investors in other
12 securities that have been issued by the utility, might make a successful claim on the cash
13 flows of the securitization”;
- 14 7) Non-bypassability of the charges: “whether the charges must be collected from all
15 existing and future customers of the utility or its successors or assignees within the
16 utility’s service territory, and whether the financing order provides that a severance fee be
17 charged to customers who switch to other service providers within the territory during the
18 life of the bonds.”
- 19 We note that over 20 states have such legislation in place, but Minnesota currently does
20 not.
- 21 At this time, we are recommending that the Commission deny the proposed extension.
22 We raise these alternatives for Minnesota Power to consider as future ways to relieve the
23 ratepayer burden of paying the depreciation expenses on these coal units.

1 **Q:** Does this conclude your testimony?

2 **A:** Yes.