

BEFORE THE  
NORTH DAKOTA PUBLIC SERVICE COMMISSION

*Montana-Dakota Utilities Co.*  
*Advance Determination of Prudence*  
*Thunder Spirit Wind Project*  
*Case Nos. PU-14-843 & PU-14-844*

DIRECT TESTIMONY  
OF  
MIKE DILLER

ON BEHALF OF THE  
NORTH DAKOTA PUBLIC SERVICE COMMISSION  
ADVOCACY STAFF

April 10, 2015

1 Q: Provide your name and qualifications.

2 A: My name is Mike Diller. I am the Director of Economic Regulation for the  
3 North Dakota Public Service Commission (commission). I am a utility analyst  
4 and provide direction to a small staff. I have 30 years of utility regulatory  
5 experience including service to the Oklahoma Corporation Commission.

6 I received a Bachelor of Science Degree in Accounting from Oklahoma  
7 Christian University in Edmond, Oklahoma in 1981. I am a Certified Public  
8 Accountant and member of the American Institute of Certified Public  
9 Accountants. I have testified before the commission on numerous occasions  
10 including acquisition and merger proposals, rate cases, settlements, advance  
11 determination of prudence requests and rule changes.

12  
13 Q: What is the purpose of your testimony?

14 A: The commission has appointed me to advocacy staff (staff) in this  
15 proceeding. As such, I will provide the commission with an analysis of  
16 Montana-Dakota Utilities Co.'s (MDU) application for Advance Determination  
17 of Prudence (ADP) for its proposed Thunder Spirit Wind Project (TSW).

18  
19 Q: Please summarize your testimony.

20 A: Staff believes that ownership of the TSW represents the least cost option  
21 available to MDU to meet its future energy needs. MDU has met its  
22 rebuttable presumption of prudence for resources located in ND.<sup>1</sup> Staff  
23 recommends approval of both the ADP Application and the requested  
24 Certificate of Public Convenience and Necessity (CPCN).

25  
26 Q: How did you determine that the TSW is a least cost resource?

27 A: The decision to expand generation resources is developed through an  
28 Integrated Resource Plan (IRP) and so staff spent a lot of time reviewing

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<sup>1</sup> N.D.C.C. 49-05-16(7).

1 MDU's latest filed IRP and gathering additional supporting documentation.  
2 The IRP is developed through an econometric model that assists in  
3 forecasting energy and demand requirements and then matches up least cost  
4 generation resources to fill those needs.

5  
6 In developing its IRP, MDU utilizes the Electric Power Research Institute's  
7 generation expansion software known as Electric Generation Expansion  
8 Analysis System (EGEAS). Otter Tail Power Company and Northern States  
9 Power Company use a different model known as Strategist which is required  
10 by the Minnesota Public Utilities Commission. Both models have been used  
11 extensively by industry and can be relied upon to assist in evaluating the  
12 need and timing for adding generation resources.

13  
14 Q: What were the results of MDU's latest IRP?

15 A: The 2013 IRP's Optimal Resource Case includes adding environmental  
16 controls to the Lewis & Clark generating station, 50 megawatts (MW) of  
17 purchased wind power and two 36.6 MW Wartsila Reciprocating Engines by  
18 the end of 2015.<sup>2</sup> After reviewing the modeling results, MDU concluded that  
19 contracting for 50 to 100 MW of wind energy in 2015 was part of its least cost  
20 plan.<sup>3</sup> At the time, MDU modeled the purchased wind energy at \$28 per  
21 megawatt hour (MWh) for the cost of wind.<sup>4</sup>

22  
23 Q: Has MDU followed its 2013 IRP?

24 A: Yes. MDU is in the process of retrofitting the coal fired generator at the Lewis  
25 & Clark station to comply with EPA's Mercury and Air Toxics Standard. MDU  
26 is also installing the two Wartsila engines at the Lewis & Clark generating  
27 station; although the size was reduced to 9 MW machines. In this

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<sup>2</sup> MDU's 2013 IRP, Volume IV, Page 17 (Case No. PU-13-510).

<sup>3</sup> MDU's 2013 IRP, Volume I, Page 48 (Case No. PU-13-510).

<sup>4</sup> MDU's 2013 IRP, Volume IV, Table 2-5, Page 15 (Case No. PU-13-510).

1 proceeding, MDU requests an ADP for an ownership position in the 107.5  
2 MW TSW for a net present value cost of \$32 per MWh.<sup>5</sup>

3

4 Q: Do you have any concerns with the price of the TSW?

5 A: No. I have been with the commission during the build-out of wind generation,  
6 beginning in earnest in 2004, and have not witnessed a lower priced energy  
7 source to date. The wind farms already approved by the commission in  
8 previous ADP cases and rate orders are higher priced resources than  
9 proposed in this proceeding.

10

11 Q: Do you have an opinion as to why wind generation costs are this low?

12 A: I believe the main reason is the ever increasing tax subsidies available to  
13 wind developers. According to Mr. Neigum's testimony, the Production Tax  
14 Credits (PTC) will pay for about 40% of the TSW.<sup>6</sup> The state of North Dakota  
15 also offers a 15% investment tax credit spread over the first 5 years of  
16 operation.

17

18 The Energy Policy Act 1992 started the renewable energy tax credits based  
19 on production at 1.5 cents per kWh for the first 10 years of operations. Since  
20 then, the PTC has increased to the current level of 2.3 cents per kWh. Wind  
21 farms continue to become more and more efficient as evidenced in the  
22 proceeding with an estimated capacity factor of 45.2%. As a result, higher tax  
23 credit rates applied to higher levels of output results in more and more federal  
24 subsidies. It is an ill-conceived plan and a poor use of tax dollars. Still, it  
25 represents the policy decisions' of North Dakota and the federal government.  
26 MDU is effectively utilizing the subsidies to meet its resource needs at the  
27 lowest cost to its consumers.

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<sup>5</sup> MDU's Application, Page 5.

<sup>6</sup> Direct Testimony of Darcy Neigum, bottom of Page 7.

1 Q: Did MDU work hard to manage the costs of the TSW?

2 A: Yes. MDU issued a request for proposals and the TSW submitted a least  
3 cost alternative. The original developer of the TSW was unable to secure  
4 financing. Even after MDU agreed to adjust the term of the contract to better  
5 enable financing, the developer was still unable to secure financing. MDU  
6 contacted other developers on the short list of least cost alternatives but was  
7 unsuccessful in finding a better resource.<sup>7</sup> In the end, MDU contacted Allete  
8 Clean Energy (ACE) to see if they would consider acquiring and developing  
9 the TSW which they did. The TSW took a lot of effort and resolve by MDU to  
10 bring to fruition.

11

12 Q: If the IRP modeled a purchased power agreement, why should an ownership  
13 position be considered in this proceeding?

14 A: Ownership of the TSW results in a lower cost to ratepayers. It is about \$30  
15 million cheaper on a net present value basis compared to the  
16 contemporaneous PPA agreement with ACE should the commission decide  
17 to not grant an ADP and CPCN for the TSW.<sup>8</sup>

18

19 A price discount for wind ownership was observed during proceedings for  
20 Otter Tail's three owned North Dakota wind farms and the same can be  
21 observed in this proceeding. Staff is generally supportive of ownership  
22 positions. Ownership is generally less expensive because it shifts much of  
23 the operational and financial risk to the utility company. In addition, utilities  
24 generally have access to lower cost of capital than developers. Staff believes  
25 the discounted price of ownership is worth the added risk and that MDU is  
26 capable of effectively managing the property.

27

28 Q: What other value do you see for owning wind generation facilities?

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<sup>7</sup> Response to staff's data request No. 4.

<sup>8</sup> See Direct Testimony of Darcy Neigum, second to last page (DJN-1).

1 A: While the wind industry is relatively new, it is not unreasonable to think that  
2 the turbines will outlast MDU's planned book depreciation of 20 years. For  
3 example, it is not uncommon in the industry to see projected lives of 25 years  
4 for wind turbines. In this case, the developer of the TSW is willing to enter  
5 into a 25 year PPA rather than selling it to MDU. For every year that the  
6 turbines operate beyond 20 years, electricity will be essentially free other than  
7 for landowner lease payments, property taxes and operation and  
8 maintenance costs.

9  
10 Longevity of wind turbines is important in the overall evaluation of cost  
11 effectiveness and so staff continues to monitor the production of wind turbines  
12 in North Dakota through Otter Tail's annual renewable energy rider for its  
13 three large wind farms. All three wind farms, including Otter Tail's oldest wind  
14 farm placed into service in 2007 near Langdon, ND, continue to produce  
15 annual capacity factors (about 40%) similar to when the units were first  
16 installed showing no signs of production degradation to date.<sup>9</sup>

17  
18 Q: Can a common sense analysis be done to make sure the TSW is a good  
19 investment?

20 A: A simple and conservative approach is to compare the all-in-cost of the TSW  
21 to only the fuel costs of the other supply side resources. In this case, the net *CoRR*  
22 present value of the all-in-cost of the TSW of \$32 per MWh is less expensive  
23 than just the fuel per MWh to run the most efficient gas *combustion engine*  
24 ~~cycle and combined cycle~~ turbines (both simple  
25 Million British Thermal Units (MBtu)).<sup>10</sup>

26  
27 While it is true that the current cost of natural gas is only about \$3 per MBtu,  
28 one does not have to go back very far in time to find much more expensive

<sup>9</sup> Per Otter Tail's Data Response in its last Renewable Rider, Case No. PU-15-14.

<sup>10</sup> Calculated from Table 2-5, MDU's 2013 IRP, Vol. 4, Page 15.

1 gas. For six years ending 2008, natural gas prices were considerably higher  
2 than \$5 per MBtu.<sup>11</sup> There are a couple of notable reasons why natural gas  
3 prices have remained below \$5 since then including a long running recession  
4 since 2008. In that regard, it is unlikely that the United States economy will  
5 remain in a recession indefinitely and the eventual turnaround will add to the  
6 demand for natural gas resulting in upward pressure on prices.

7

8 Another reason the price of natural gas is low is due to increased production  
9 through horizontal drilling and fracking. Fracking will likely remain as long as  
10 the industry can continue to stave off the environmentalists' concerns and  
11 government interference; but that remains a challenge.

12

13 A significant factor in the long-term availability and price of natural gas may  
14 be the implementation of the U.S. Environmental Protection Agency's (EPA)  
15 Clean Power Plan. If EPA is successful in shutting down existing useful coal  
16 fired generating stations and if most of the nation's new capacity needs  
17 continue to be met by natural gas fired generating stations, upward pressure  
18 on the price of natural gas will certainly occur.

19

20 Given the multitude of significant factors that will impact the future price of  
21 natural gas and the volatility of natural gas prices in the past, staff believes  
22 that locking down low cost energy prices that compare favorably to just the  
23 fuel cost of alternative resources is a good value for ratepayers. It is all the  
24 more valuable when adding in the additional cost of capital, depreciation,  
25 operation and maintenance expenses, taxes etc. of the other alternative  
26 energy resources beyond just the cost of fuel.

27

28 Q: How does the TSW compare to market priced energy?

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<sup>11</sup> U.S. Energy Information Administration website, Henry Hub Spot Price.

1 A: The actual average Locational Marginal Price in Bismarck, ND for market  
2 energy in 2014 ranged between \$22.80 and \$51.01 per MWh.<sup>12</sup> MDU's latest  
3 projection for the market price of energy shows that average "off-peak" prices  
4 will exceed the PPA agreement with ACE every year of the contract.<sup>13</sup> Please  
5 note that average projected on-peak prices are more than \$10 per MWh more  
6 than off-peak prices. MDU's market energy price projections are based on  
7 the average of the last 5 years prices and then escalated going forward.

8

9 Q: How exposed is MDU to the market price of energy?

10 A: In the last three calendar years ending 2014, MDU has purchased about 30%  
11 of its energy needs.<sup>14</sup> For the calendar year ending 2014, MDU purchased  
12 892,469 MWh's of its energy needs.<sup>15</sup> If the TSW produces at the estimated  
13 capacity factor of 45.2%, it will generate about 426,000 MWh's of energy or a  
14 little less than half of MDU's 2014 purchased energy levels. According to Mr.  
15 Neigum's testimony, MDU expects its exposure to market priced energy to  
16 grow to 40% by 2016 absent the addition of the TSW.<sup>16</sup> This level of  
17 exposure is high and beneficial to ratepayers as long as energy prices remain  
18 low. The TSW will lock down low energy costs for the next 20 years and  
19 remove a good bit of exposure to market priced energy.

20

21 Q: What if MDU's forecasted sales fall flat?

22 A: As evidenced in the last paragraph, the TSW energy will satisfy less than  
23 one-half the energy needs currently being purchased. However, staff  
24 requested that MDU provide model results assuming a low growth scenario  
25 which utilizes a .5% annual growth factor. Since the turn of the century, sales  
26 growth in North Dakota has only been less than .5% once.<sup>17</sup> Even in this

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<sup>12</sup> MDU's Data Response No. 14, Attachment A.

<sup>13</sup> MDU's Data Response No. 18, Attachment C.

<sup>14</sup> Calculated from MDU Data Response 11, Attachment A.

<sup>15</sup> Ibid.

<sup>16</sup> Neigum Direct Testimony, bottom of Page 6.

<sup>17</sup> According to a review of MDU's Annual Reports to the commission.

1 scenario, the model selected the TSW as a least cost resource; although  
2 deployment was delayed until 2016.<sup>18</sup>

3

4 Q: Is MDU able to accurately forecast its energy needs?

5 A: MDU has been pretty successful at forecasting its load requirements  
6 according to its own 2009 study of its five-year-ahead forecasts noting that  
7 average predictions five years out were within 7% of forecast.<sup>19</sup>

8

9 Staff also compared MDU's sales forecasts in its 2013 IRP for 2013 and 2014  
10 noting that actual sales fell short of forecasted sales by about 5% for each  
11 year.<sup>20</sup> Missing the forecasts by 5% just a year or two out may seem a little  
12 high. However, note that 2013 and 2014 were warmer than normal years  
13 reducing the need for electric heat.<sup>21</sup> Also, 2014 sales were lower than  
14 expected because MDU's projected sales included substantial sales to  
15 TransCanada Keystone XL Pipeline which still has not received a Presidential  
16 Permit to cross the U.S. / Canada border.<sup>22</sup>

17

18 Q: Provide a high level summary of MDU's forecasted energy needs?

19 A: Actual North Dakota sales volumes (about 70% of MDU's total sales) have  
20 increased by a little more than 3% a year from 2005 to 2013.<sup>23</sup> In 2013 and  
21 2014, actual total sales (ND, SD & MT) volumes increased by 6.5% each  
22 year.<sup>24</sup> MDU's total load forecast includes a 4% growth in 2015 followed by  
23 2.6% in 2016 and then less than 2% growth per year through 2032.<sup>25</sup>

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25 Q: What does staff conclude?

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<sup>18</sup> MDU Data Response No. 2, Attachment A, Page 2.

<sup>19</sup> MDU's 2013 IRP, Volume II, Page 5 (Case No. PU-13-510).

<sup>20</sup> Comparison of Data Response 11, Attachment A to 2013 IRP, Volume II, Page 26.

<sup>21</sup> Heating Degree Day Information, Data Response 22.

<sup>22</sup> Data Response 21.

<sup>23</sup> Annual Reports filed with the commission.

<sup>24</sup> Data Response 11, Attachment A

<sup>25</sup> 2013 IRP, Volume II, Page 26.

1 A: Staff believes that the TSW is a very cost effective resource for meeting  
2 MDU's energy needs. The TSW will lock down low cost energy. It will lessen  
3 MDU's large reliance on market energy and therefore provide rate stability in  
4 the future. The TSW is the lowest cost resource available to meet the needs  
5 of MDU's consumers.

6

7 Q: Does this conclude your testimony?

8 A: Yes it does.