

State of North Dakota  
Before the North Dakota Public Service Commission

In the Matter of  
Application and Notice of Change in Natural Gas Rates of  
MONTANA-DAKOTA UTILITIES CO.  
Case No. PU-20-379

Surrebuttal Testimony of  
**Scott J. Rubin**

on behalf of  
AARP

February 26, 2021

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**Introduction**

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**Q. Please state your name.**

A. My name is Scott J. Rubin. I previously submitted direct testimony on behalf of AARP.

**Q. What is the purpose of your surrebuttal testimony?**

A. I will respond to some of the statements made in the rebuttal testimonies filed by Montana-Dakota Utilities Company (“MDU” or “Company”). In particular, I will respond to portions of the rebuttal testimony of MDU witnesses Stephanie Bosch and Ronald Amen.

**Q. Do you have any preliminary matters to address?**

A. Yes. In its rebuttal presentation, the Company reduced its proposed revenue increase from \$8.97 million to \$7.71 million. Mr. Amen states that the effect of this change on the cost-of-service study (“COSS”), class revenue allocation, and rate design proposals is minor and has not resulted in the Company proposing any changes in methodology. Amen Surrebuttal pp. 18-19. As a consequence, I will not provide new schedules showing my COSS under the different revenue requirement. As I discuss later in the testimony, however, I have prepared revised exhibits showing my class revenue allocation and residential rate design proposals under the Company’s revised revenue requirement.

Second, portions of the rebuttal testimony discussed issues I addressed at length in my direct testimony. I am not attempting to respond to every assertion made by the Company. Rather, I am focusing on those items where I feel that the record needs to be clarified; particularly areas where my direct testimony has been ignored or misconstrued

1 moved from their current rates (which include a significant per-therm distribution charge)  
 2 to MDU’s current rates. The effect, as shown in Table 8, is an extraordinarily large  
 3 reallocation of distribution revenues – increasing the rates to low-use customers by 242%  
 4 (more than tripling their bills for distribution service) while the bills to high-use  
 5 customers would increase by 29%.

<b>Table 8: Ultimate Effect of Rate Consolidation on Wahpeton Customers if MDU Does Not Have a Per-Therm Distribution Charge</b>			
	<b>Wahpeton Present Annual Distribution Bill</b>	<b>Annual Distribution Bill Under MDU’s Present Rates</b>	<b>Percent Change</b>
Wahpeton low-use customer (29 therms/year)	\$73.07	\$250.00	242%
Wahpeton average-use customer (80 therms/year)	\$124.25	\$250.00	101%
Wahpeton high-use customer (160 therms/year)	\$194.51	\$250.00	29%

6  
 7 Whether these changes occur over one year or 10 years is irrelevant to the  
 8 underlying question: Is it reasonable to put Wahpeton customers on a rate that collects  
 9 all distribution costs through a fixed charge? Moreover, this transition demonstrates the  
 10 gross unfairness of having distribution rates that are the same for each customer  
 11 regardless of the demands placed on the system by that customer.

12 Indeed, Ms. Bosch’s exhibit shows that it is impossible for low-use and high-use  
 13 residential customers to place the same demands on the system. The exhibit shows that a  
 14 low-use customer averages annual gas usage of 29 therms while a high-use customer  
 15 averages gas usage in just one winter month of 30 therms. It is impossible for these  
 16 customers to be placing the same demands on the system, making it grossly unfair and

1 unreasonable to charge them both the same amount for demand-related costs. As I  
2 discuss below in response to Mr. Amen, demand-related costs account for over 20% of  
3 residential class costs and should be collected on a per-therm basis.

4 **Q. Does anything in Ms. Bosch's rebuttal testimony cause you to change any of your**  
5 **conclusions and recommendations?**

6 A. No. In fact, Ms. Bosch's rebuttal testimony highlights the inequities created by MDU's  
7 residential rate design and the Company's proposal to collect the entire residential rate  
8 increase through an increased fixed charge.

### 9 **Response to Mr. Amen**

10 **Q. Have you reviewed the rebuttal testimony submitted by MDU witness Ronald**  
11 **Amen?**

12 A. Yes.

13 **Q. Attached to Mr. Amen's rebuttal as Exhibit \_\_\_ (RJA-1R) is a schedule showing the**  
14 **Company's revised revenue allocation proposal. In your opinion, is there anything**  
15 **unusual in this schedule?**

16 A. Yes. In Mr. Amen's rebuttal testimony (pages 18-19), he states there was little change in  
17 the COSS (except for reflecting the lower revenue requirement now advocated by MDU).  
18 From this, I would have expected the change in revenue increase from each customer  
19 class to be approximately proportional to the increases proposed in the Company's initial  
20 filing. That, however, is not the case. Table 9 shows the differences for each class.

21

1

Customer Class	MDU Original Target	MDU Rebuttal Target	Percent Change
Residential	\$7,232,601	\$6,400,429	-11.5%
Residential - Wahpeton	111,423	98,603	-11.5%
Firm General	800,551	668,631	-16.5%
Firm General - Wahpeton	22,990	19,202	-16.5%
Large Firm General	635,910	376,753	-40.8%
Lg. Firm Gen. - Wahpeton	7,486	4,435	-40.8%
Air Force Delivery	29,292	28,327	-3.3%
Small Interruptible	87,045	74,797	-14.1%
Small Interrupt - Wahpeton	10,026	8,615	-14.1%
Large Interruptible	35,100	30,161	-14.1%
<b>Total</b>	<b>\$8,972,424</b>	<b>\$7,709,953</b>	<b>-14.1%</b>

2

3 In particular, the change in the amount of overall revenue increase is  
4 approximately 14%, but the rebuttal proposal for the Large Firm General class is  
5 approximately 40% less than originally proposed, while the Residential class's reduction  
6 is only 11.5%. Mr. Amen does not explain why this customer class has been singled out  
7 to receive a much larger benefit from MDU's proposal, and I cannot find any justification  
8 for such a result.

9 **Q. How do you propose to allocate revenue responsibility to the customer classes?**

10 A. I have prepared Exhibit \_\_\_ (SJR-5) which allocates revenues to each customer class  
11 approximately in proportion to the revenue allocation proposal in my direct testimony.  
12 Whether my approach to revenue allocation or the Company's original approach is  
13 adopted, however, there is absolutely no justification for giving the Large Firm General  
14 class an out-sized reduction in the revenue increase as compared to other customer

1 classes. Schedule SJR-5 shows that, under my proposal, every customer class (except the  
2 Large Interruptible class) would receive an increase between 9.3% (one-half of the  
3 system-average percentage increase) and 25.3% (1.5 times the system-average percentage  
4 increase). This is much more reasonable than the Company's rebuttal proposal.

5 **Q. Have you revised your residential rate design proposal to reflect the Residential**  
6 **class's revenue allocation under MDU's rebuttal revenue requirement?**

7 A. Yes. My revised residential rate design proposal is provided as Exhibit \_\_\_ (SJR-6).

8 **Q. On pages 9-17 of his rebuttal, Mr. Amen discusses the zero-intercept method and**  
9 **attempts to rebut your findings that a properly performed zero-intercept analysis**  
10 **for MDU shows that there is zero customer-related cost for mains. Did you find any**  
11 **inaccuracies in this portion of Mr. Amen's testimony?**

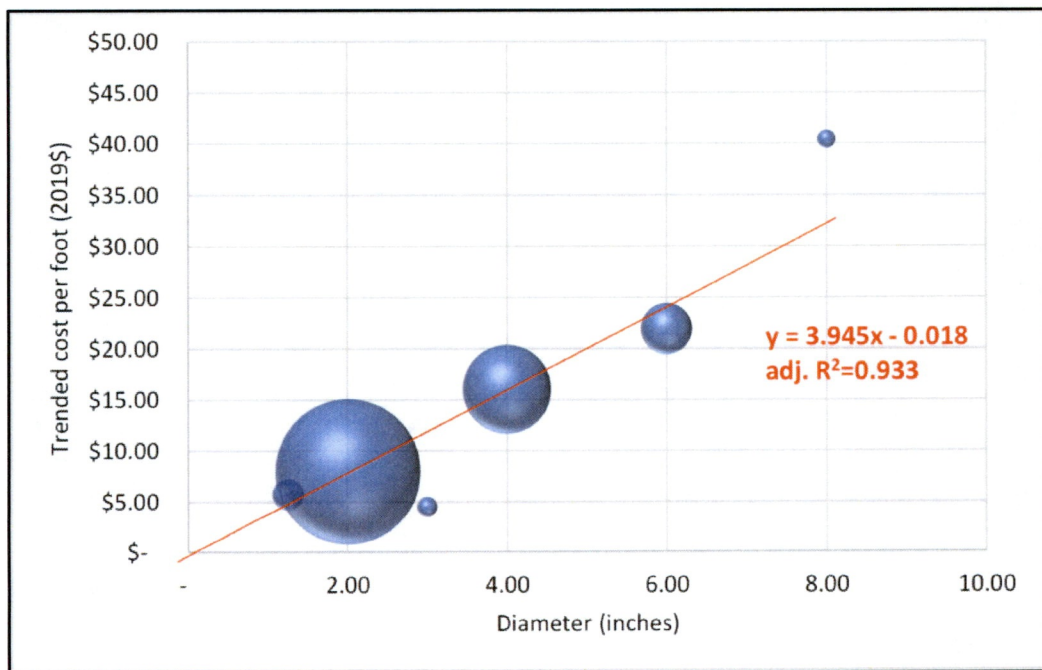
12 A. Yes. This portion of Mr. Amen's testimony is seriously misleading, incorrect, and in  
13 some instances internally inconsistent.

14 **Q. At the top of page 12, Mr. Amen provides a graph of total gas plant investment over**  
15 **time. Does this graph have any bearing on the zero-intercept studies performed by**  
16 **Mr. Amen or you?**

17 A. No. The graph apparently shows total investment in gas plant for the entire natural gas  
18 utility industry between 1990 and 2020. I have no idea what relevance this has to the  
19 proper way to perform a zero-intercept analysis for MDU in this case.

1 **Q. On pages 12-13, Mr. Amen attempts to support his use of the square of the diameter**  
 2 **of installed gas mains, instead of the simple diameter of the mains, in a zero-**  
 3 **intercept analysis. Is he correct?**

4 A. No, he is not correct. Using the square of the diameter distorts what otherwise would be  
 5 a straightforward linear relationship between the diameter of pipe and the cost to install it  
 6 – even if his trending methodology is used. I explained in my direct testimony that the  
 7 relationship between size and cost is very strong (an R-squared of 0.93 when Mr. Amen’s  
 8 trended costs are used), and it shows that the zero intercept (the point at which the curve  
 9 crosses the y (or cost) axis is negative. I illustrate this in Figure 1, below.<sup>1</sup>



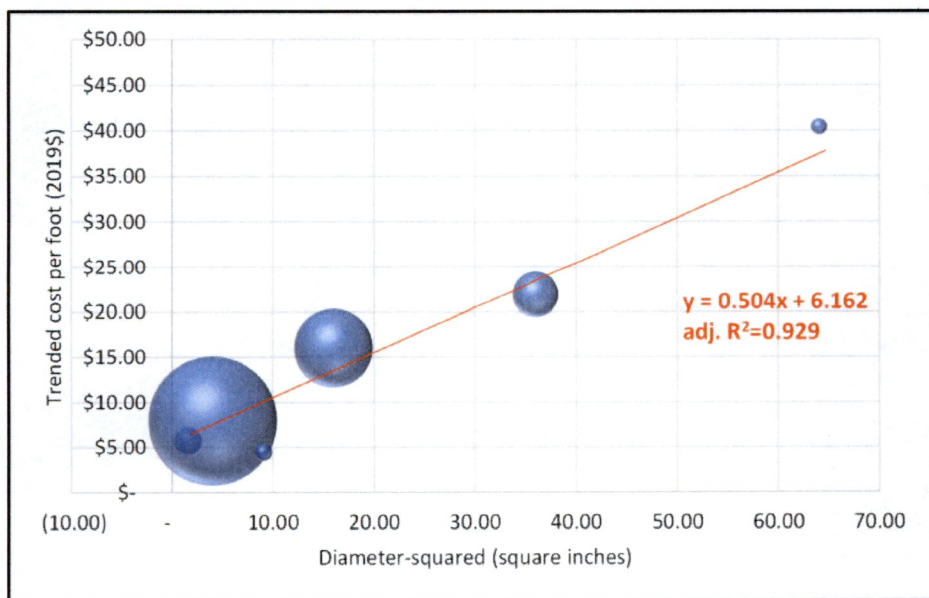
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11 **Figure 1: MDU’s Trended Cost per Foot of Main as a Function of Pipe Diameter**

<sup>1</sup> Figure 1 is known as a bubble chart. The size of each bubble represents the installed feet of mains of each diameter. The trendline (in red) is based on a statistical weighting of each size of main, weighted on the number of feet. For example, there are approximately 8 times more feet of 2-inch mains than 6-inch mains, so the trendline is calculated as if there were 8 2-inch points for every 6-inch point.

1           These are the actual data for mains, with costs as trended by Mr. Amen, taken  
 2           directly from his workpapers. It can be seen that a linear trendline does an excellent job  
 3           of representing the data, explaining more than 93% of the variance in the data. The result  
 4           is that a 1-inch increase in the diameter of the main leads to a \$3.95 increase in the cost  
 5           per foot of the main. The zero intercept (the statistical cost for a zero-inch main) is  
 6           slightly negative (\$-0.018); that is, there is no customer-related cost. All mains costs are  
 7           demand-related.

8           Figure 2 shows exactly the same costs, but instead of comparing them to the  
 9           diameter of the main, the curve is distorted by using the square of the diameter. That is,  
 10          at the high end instead of an 8-inch main (four times the size of a 2-inch main), it now  
 11          appears as a 64 square-inch main (16 times the size of a 2-inch main which becomes a 4  
 12          square-inch main).



13  
 14   **Figure 2: MDU’s Trended Cost per Foot of Main as a Function of Pipe Diameter Squared**

1           That is, the costs have not changed, but the entire curve is bent upward -- over-  
2           emphasizing the costs of the few 8-inch mains and doing a poorer job of representing the  
3           costs of more prevalent, smaller mains. Indeed, this relationship still can be represented  
4           by a line, but the line now has nothing to do with the actual relationship between pipe  
5           size and cost. And, magically, the new, distorted line intersects the y (cost) axis at a  
6           positive number (\$6.162).

7   **Q.    On pages 13-14, Mr. Amen explains how the installation of larger-diameter mains is**  
8           **more complex and costly than the installation of smaller-diameter mains. Do you**  
9           **agree?**

10   A.    I do not have Mr. Amen's experience in the field, so I have no basis for agreeing or  
11           disagreeing with his description of construction techniques. What is important, however,  
12           is that if Mr. Amen is correct, then this directly contradicts his statement on the bottom of  
13           page 12 and the top of page 13 that his use of diameter square "captures the economies of  
14           scale" in pipeline construction. In fact, what he demonstrates is that it could be  
15           considerably more costly to install a large-diameter main than it would be to install  
16           smaller diameter mains. He explains the need for wider trenches, more sophisticated  
17           (and expensive) trenching equipment, enhanced safety precautions, a large workforce,  
18           and a more skilled workforce. Rather than proving that there are customer-related costs  
19           in gas mains, Mr. Amen actually proves that it is much more expensive to serve large gas  
20           demands than it is to serve smaller gas demands.

21   **Q.    At the bottom of page 14 and the top of page 15, Mr. Amen criticizes your zero-**  
22           **intercept analysis as being "a blatant example of a results driven analysis meant to**

1           **reduce the customer-related component of mains to shift cost away from the**  
2           **customers that [your] client represents.” How do you respond?**

3    A.    Mr. Amen is not correct and I do not appreciate his questioning my professionalism. Mr.  
4           Amen has used an incorrect methodology to perform a zero-intercept analysis.  
5           Interestingly, I am currently working on gas rate case in West Virginia where the utility’s  
6           witness initially submitted testimony that indicated he used the square of the diameter of  
7           mains in his zero-intercept analysis. In response to a discovery request (attached as  
8           Exhibit \_\_\_ (SJR-7)), however, the witness acknowledged that the statement was in error  
9           and that he performed the study using the appropriate factor – the diameter of mains, not  
10          the square of the diameter. This is from a consultant with a national consulting firm,  
11          Black & Veatch, that works primarily for utility companies.

12                 I would be happy to debate the appropriateness of the assumption that there is any  
13          customer-related portion of mains. As Mr. Amen notes on page 16 of his rebuttal, in at  
14          least 18 states the utility commissions have rejected this notion and found that all mains  
15          costs should be allocated to customer classes based on some measure of gas demand or  
16          usage. But if a commission recognizes a demand-related portion of mains (as does this  
17          Commission), then the analyses must be performed properly. I am not challenging this  
18          Commission’s practice of recognizing a customer-related portion of mains (even though I  
19          disagree with that practice). If an analyst is going to perform a zero-intercept analysis,  
20          however, it must be performed properly. And a proper analysis does not distort the  
21          relationship between cost and diameter by squaring the diameter of gas mains. My  
22          analysis is not “results driven.” I performed the analysis correctly and Mr. Amen did not.

1 **Q. On pages 21-23 of his rebuttal, Mr. Amen attempts to defend the Company's**  
2 **proposed residential rate design. You already addressed this issue at length in your**  
3 **direct testimony, but do you have anything to add on this issue?**

4 A. Yes, Mr. Amen's testimony demonstrates that there are substantial demand-related costs  
5 incurred to distribute natural gas to residential customers. On pages 22-23, he quantifies  
6 these amounts under the Company's revised revenue requirement -- \$6.91 per customer  
7 per month, or \$82.92 per year. The average residential customer uses approximately 88  
8 therms per year.<sup>2</sup> This means that the demand-related cost is approximately \$0.94 per  
9 therm for residential customers. As I discussed above in response to Ms. Bosch's  
10 testimony, this cost is definitely not the same for each and every customer. The  
11 Company has high-use customers who use twice as much gas as the average customer,  
12 and it has low-use customers who use less than half the amount of gas of an average  
13 customer. These customers do not all cause MDU to incur the same demand-related cost,  
14 and the rates should reflect that fact.

15 **Q. Is it typical for a natural gas utility's residential rates to have a separate customer**  
16 **charge and per-therm charge for gas distribution?**

17 A. Yes, it is. In my experience, MDU is one of the few gas utilities in the country that  
18 collects all residential distribution costs (including demand-related costs) through a fixed  
19 charge. To verify this, I looked at the rates charged by every investor-owned gas utility  
20 serving more than 50,000 residential customers in this region of the country. MDU's  
21 existing customer charge of \$20.48 per month already is the highest amount charged by  
22 any comparable gas utility in the region. I show the data in Table 10 and illustrate the

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<sup>2</sup> From MDU Statement L, there are 96,225 Rate 60 customers using 8,467,441 therms annually, or an average of 88 therms per customer per year.

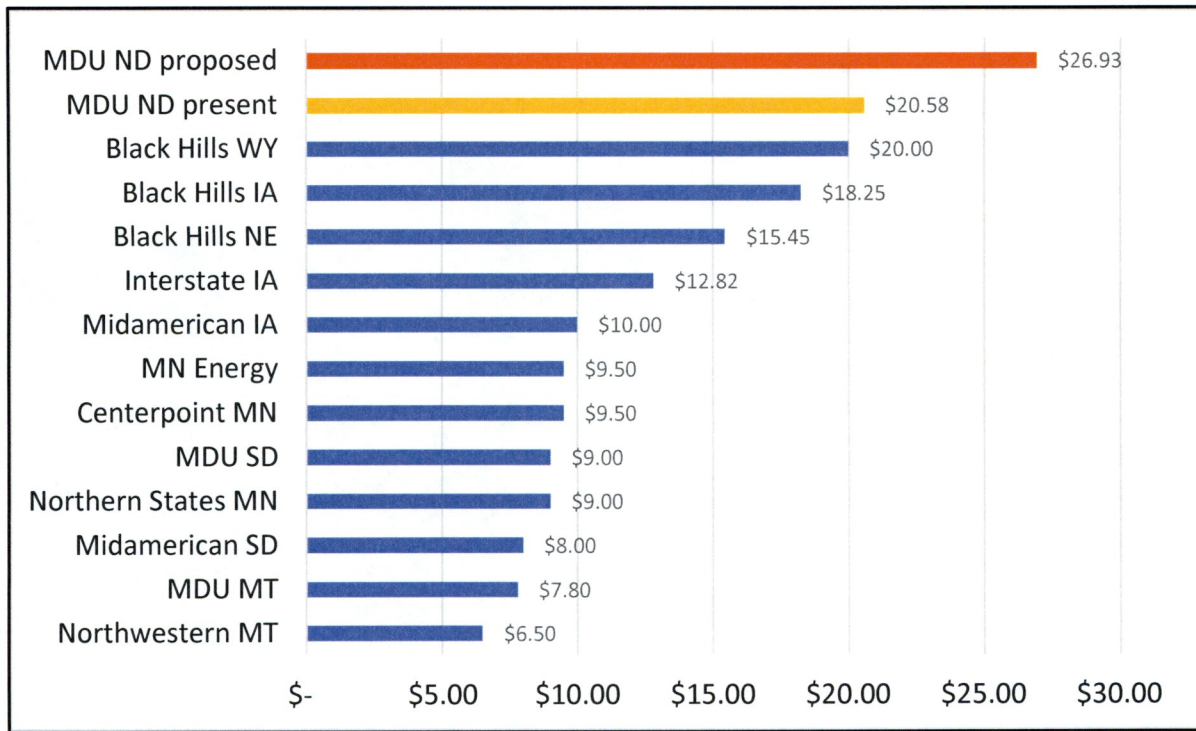
1 magnitude of the difference between MDU’s North Dakota rates and other utilities in the  
 2 region in Figure 3. The Company’s proposed charge of \$26.93 would make it an outlier  
 3 by a huge margin – more than 33% higher than the next highest customer charge in the  
 4 region. This further highlights the unreasonableness of Mr. Amen’s proposal to include  
 5 all demand-related costs (amounting to \$0.94 per therm) in the customer charge,  
 6 requiring low-use customers to subsidize the large demands placed on the system by  
 7 higher-use customers.

**Table 10: Natural Gas Utility Residential Customer Charges in North Central U.S.<sup>3</sup>**

Gas Distribution Utility	State	Customers (Count)	Customer Charge
<b>MDU (proposed)</b>	<b>ND</b>	<b>96,662</b>	<b>\$26.93</b>
<b>MDU (present permanent)</b>	<b>ND</b>	<b>96,662</b>	<b>\$20.58</b>
Black Hills Energy	WY	115,185	\$20.00
Black Hills Energy	IA	141,056	\$18.25
Black Hills Energy	NE	251,599	\$15.45
Interstate Power & Light	IA	199,056	\$12.82
Midamerican Energy	IA	541,399	\$10.00
Centerpoint Energy	MN	800,336	\$9.50
Minnesota Energy Resources	MN	214,292	\$9.50
Northern States Power	MN	428,517	\$9.00
Montana Dakota Utilities	SD	54,610	\$9.00
Midamerican Energy	SD	89,292	\$8.00
Montana Dakota Utilities	MT	76,353	\$7.80
Northwestern Energy	MT	174,861	\$6.50

<sup>3</sup> Customer counts from Energy Information Administration Form 176 data for 2019. Customer charges from utility permanent base-rate tariffs, excluding any surcharges, surcredits, riders, or discounts. If the rate is a daily rate, it is multiplied by 30 for purposes of this comparison.

1



2

3 **Figure 3: Natural Gas Utility Residential Customer Charges in North Central U.S.**

4

5 **Q. Does anything in Mr. Amen’s rebuttal testimony cause you to change any of the**  
6 **conclusions or recommendations in your direct testimony?**

7 A. No, nothing in Mr. Amen’s rebuttal causes me to change any of my conclusions or  
8 recommendations to the Commission. I have updated my recommended class revenue  
9 allocation and residential rate design to reflect the Company’s revisions to its rate  
10 increase claims on rebuttal, but I have not made any changes in the methodology I  
11 described in my direct testimony.

1

## **Conclusion**

2 **Q. In conclusion, other than the changes in class revenue allocation and residential rate**  
3 **design you described above, does anything in the Company's rebuttal case lead you**  
4 **to change any conclusions or recommendations?**

5 A. No. I continue to make the same recommendations to the Commission I made in my  
6 direct testimony.

7 **Q. Does this conclude your surrebuttal testimony?**

8 A. Yes, it does.

**AARP proposed revenue increase by class under MDU's rebuttal revenue requirement**

	COSS	Distrib. Revs.	Target	
			Increase	% Increase
Residential	\$ 31,073,693	\$ 24,093,777	\$ 5,203,843	21.6%
Residential - Wahpeton		230,901	58,425	25.3%
Firm General	5,442,643	4,448,897	704,936	15.8%
Firm General - Wahpeton		68,526	17,339	25.3%
Large Firm General	10,788,876	8,875,137	1,417,568	16.0%
Lg. Firm Gen. - Wahpeton		72,444	18,331	25.3%
Air Force Delivery	139,658	110,373	22,810	20.7%
Small Interruptible	2,044,810	1,562,795	220,047	14.1%
Small Interrupt - Wahpeton		180,012	16,750	9.3%
Large Interruptible	1,150,177	1,786,509	29,904	1.7%
<b>Total</b>	<b>\$ 50,639,857</b>	<b>\$ 41,429,371</b>	<b>\$ 7,709,953</b>	<b>18.6%</b>

**AARP proposed residential rate design under MDU's revised revenue requirement using AARP Revenue Allocation**  
 From Statement L, p. 4 (Rates 60 & 90) and p. 11 (Rate 63)

	Units	Present		MDU Rebuttal Proposed				AARP Proposed Under AARP COSS			
		Rate	Revenue	Rate	Revenue	\$ Increase	% Increase	Rate	Revenue	\$ Increase	% Increase
<b>Rates 60 &amp; 90</b>											
Basic service charge	35,122,125	\$ 0.6860	\$ 24,093,778	\$ 0.8977	\$ 31,527,961	\$ 7,434,183	30.9%	\$ 0.6860	\$ 24,093,778	\$ -	0.0%
Delivery charge	8,467,441	\$ -	-	\$ -	-	-		\$ 0.6172	5,226,105	5,226,105	
Subtotal Rates 60 & 90			\$ 24,093,778		\$ 31,527,961	\$ 7,434,183	30.9%		\$ 29,319,882	\$ 5,226,105	21.7%
<b>Rate 63 (Wahpoten)</b>											
Basic service charge	693,500	\$ 0.1151	\$ 79,800	\$ 0.2500	\$ 173,375	\$ 93,575	117.3%	\$ 0.2500	\$ 173,375	\$ 93,575	117.3%
Delivery charge											
First 10 Dk	104,506	\$ 1.0720	112,030	\$ 1.0280	107,432	(4,598)	-4.1%	\$ 0.6172	64,501	(47,529)	-42.4%
Over 10 Dk	47,532	\$ 0.8220	39,071	\$ 1.0280	48,863	9,792	25.1%	\$ 0.6172	29,337	(9,735)	-24.9%
Subtotal Rate 63			\$ 230,902		\$ 329,670	\$ 98,768	42.8%		\$ 267,213	\$ 36,311	15.7%
<b>Total Residential</b>			\$ 24,324,679		\$ 31,857,631	\$ 7,532,951	31.0%		\$ 29,587,095	\$ 5,262,416	21.6%

Hope Gas, Inc., dba Dominion Energy West Virginia  
Case Nos. 20-0746-G-42T and 20-0745-G-D  
Response to Data Request

Requesting Party: CAD  
Data Request Set: 3

Question Number: F-8                      Subpart: a, b

**Question:**

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Reference: Direct Testimony of John Taylor (Exh. JDT-D), pp. 16-17.

- a. Why is the diameter squared used in the zero-intercept calculation?
  - b. Please provide copies of relevant pages from any publication known to or relied upon by the witness in which the zero-intercept analysis is described as being performed using the diameter squared of mains.
- 

**Answer:**

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- a. The Direct Testimony of John Taylor (Company Exhibit JDT-D), pp. 16-17 incorrectly cited the specification of the equation used to develop the customer component of mains for DEWV. The actual specification used is as follows:  
$$y = mx + b$$

Where: y = average cost per installed foot of DEWV's distribution mains  
m = cost per installed foot, per inch of pipe diameter  
x = diameter of distribution mains  
b = minimum cost per installed foot (the zero-intercept)

The diameter squared was also reviewed in the development of the customer component of mains and is within the workpaper *DEWV Mains Zero Intercept Study.xlsx* provided in response to CAD Set 3 Request No. F-1.
  - b. Please see the response above to subpart a. The zero-intercept analysis using the diameter squared of mains was not used.
- 

Preparer: John D. Taylor

Date: 02/16/2021

STATE OF NORTH DAKOTA  
PUBLIC SERVICE COMMISSION

Montana-Dakota Utilities Co., a Division of )  
MDU Resources Group, Inc. )  
2017 Natural Gas Rate Increase Application )

Case No. PU-20-379

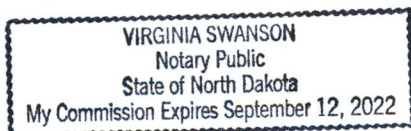
STATE OF NORTH DAKOTA )  
 ) ss.  
COUNTY OF BURLEIGH )

AFFIDAVIT OF SERVICE

I hereby certify that the eight (8) copies of the transcript of the surrebuttal testimony of Scott J. Rubin, were hand delivered to the Secretary of the North Dakota Public Service Commission on February 26, 2021, with a complete copy thereof e-mailed and mailed to **Paul R. Sanderson**, 1100 College Drive, Suite 5, Bismarck, ND 58501; [psanderson@esattorneys.com](mailto:psanderson@esattorneys.com) on this 26<sup>th</sup> day of February 2021.

\_\_\_\_\_  
David A. Tschider

Subscribed and sworn to before me this 26<sup>th</sup> day of February, 2021 by David A. Tschider.



\_\_\_\_\_  
Virginia Swanson, Notary Public