

**MONTANA-DAKOTA UTILITIES CO.  
A Division of MDU Resources Group, Inc.**

**Before the South Dakota Public Utilities Commission**

**Docket No. NG12\_\_\_\_**

**Direct Testimony  
of  
Robert C. Morman**

**1 Q. Please state your name and business address.**

**2 My name is Robert C. Morman and my business address is 400  
3 North Fourth Street, Bismarck, North Dakota 58501.**

**4 Q. By whom are you employed and in what capacity?**

**5 A. I am the Director of Gas Supply for Montana-Dakota Utilities Co.  
6 (Montana-Dakota) and Great Plains Natural Gas Co., Divisions of MDU  
7 Resources Group, Inc., as well as Intermountain Gas Company and  
8 Cascade Natural Gas Corp., subsidiaries of MDU Resources Group, Inc.**

**9 Q. Please describe your duties and responsibilities with Montana-  
10 Dakota.**

**11 A. As Director of Gas Supply, I have oversight responsibility for the  
12 day-to-day and long range planning for the purchase of natural gas and  
13 obtaining interstate transportation and storage capacity to meet the  
14 demand of Montana-Dakota's natural gas customers.**

**15 Q. Please outline your educational and professional background.**

**16 A. I hold a Bachelor's Degree in Accounting and Business  
17 Administration from the University of Mary. My work experience includes  
18 eighteen years of experience with Williston Basin Interstate Pipeline**

1           Company, now WBI Energy Transmission, in areas of operations,  
2           measurement accounting and gas control. I also have twelve years of  
3           experience with Montana Dakota in the measurement and gas supply  
4           departments. For the past eight years I have been the Manager/Director  
5           of Gas Supply.

6   **Q.    What is the purpose of your testimony in this proceeding?**

7   A.           The purpose of my testimony is to describe the Billings Landfill  
8           methane gas production facility and how it fits in with Montana-Dakota's  
9           overall gas supply portfolio. I will also address why Montana-Dakota uses  
10          a 60 F degree day base for use in normalizing volumes for weather.

11 **Q.    Would you describe the development of the Billings Landfill project?**

12 A.           Montana-Dakota was approached by Wenck Engineering (Wenck)  
13          to determine if there was interest in partnering in a project(s) capable of  
14          capturing methane gas from landfills located in Montana-Dakota's service  
15          territory. Methane gas is produced in landfills, along with carbon dioxide  
16          (CO<sub>2</sub>) and other gases, as the garbage breaks down once it is covered.  
17          The amount of methane produced varies with each landfill dependent on  
18          the age of the landfill, the makeup of the garbage as well as the moisture  
19          content of the garbage. Depending on the amount of methane produced  
20          from a landfill, it may be required to capture and destroy the methane  
21          according to Environmental Protection Agency (EPA) regulatory  
22          requirements. The Billings Landfill has been studied and does not  
23          currently require methane capture. Landfills throughout the U.S. have

1 conducted reviews accordingly to environmental regulations and if they  
2 are not required to capture and destroy methane, they may choose to  
3 capture the methane voluntarily. The cities of Billings, Montana and Rapid  
4 City, South Dakota were approached by Montana-Dakota to gauge the  
5 interest in pursuing such a project because of the size, age and future  
6 expansion of their respective landfills. Montana-Dakota was in  
7 discussions with the city of Rapid City to determine their interest in  
8 pursuing a methane recovery project similar to the facility constructed in  
9 Billings, Montana. After a series of meetings Montana-Dakota was  
10 informed by Rapid City that they were not interested in moving forward  
11 with a methane recovery system.

12 When Montana-Dakota approached the City of Billings (City) to  
13 gauge its interest in partnering with Montana-Dakota to develop its landfill  
14 methane, the City confirmed that methane capture was not required.  
15 However, it was determined that a gas production facility solution would  
16 serve both the City and Montana-Dakota well as the landfill gases would  
17 be captured and destroyed and Montana-Dakota would be able to extract  
18 the methane and use the gas to generate electricity, direct the raw  
19 methane gas to an end user for consumption in a boiler or dryer, or  
20 condition the gas to pipeline quality gas where it could be injected into a  
21 distribution system for customer use.

22 Montana-Dakota worked with Wenck Engineering, who had  
23 experience in the development of landfill methane, and researched the

1 different methods to capture and produce methane gas from the landfill.  
2 There were no industrial or commercial facilities near the Billings landfill to  
3 utilize a direct burn of the raw gas in a boiler, dryer or other commercial  
4 usage. During the time of the evaluation, the commodity cost of natural  
5 gas was in excess of \$6.00 and the monthly index price at Henry Hub had  
6 averaged approximately \$7.45 for the previous five years. As a result of  
7 the past high prices and apparent continuation of such pricing, Montana-  
8 Dakota explored the option of conditioning the landfill methane and using  
9 the resultant pipeline quality gas in the gas distribution system where it  
10 would be blended with natural gas and consumed by sales customers. A  
11 series of wells were drilled and flow tested to determine the amount of gas  
12 in the landfill and the results indicated adequate gas was present to  
13 pursue a project.

14 Montana-Dakota and Wenck personnel visited a molecular gate  
15 facility to gain a better understanding of the process to condition the gas to  
16 a pipeline quality product. It was determined that the process was  
17 legitimate and a study was completed to determine the cost effectiveness  
18 of moving forward with this project.

19 **Q. How did you determine that the project was beneficial to customers?**

20 At the time the project was studied in 2008-2009, the monthly  
21 commodity price of natural gas had reached highs in excess of \$10 per dkt  
22 and there were concerns nationally and in our region of long term natural  
23 gas supply and price volatility. The Henry Hub twelve month average

1 index cost of gas in 2008 was \$9.04 with the monthly indexes ranging  
2 from a low of \$6.47 to a high of \$13.11. The Billings landfill project was  
3 determined to be a long term supply of natural gas as the facility is a  
4 regional landfill and would continue to receive garbage for the next 40-50  
5 years. As the landfill increases in size and additional collection wells are  
6 installed, the molecular gate facility would be able to expand to capture  
7 the methane as it is produced. The studies indicated the gas could initially  
8 be developed for around \$6 per dkt and the cost of production would  
9 decrease as the size of the landfill grew and produced more methane and  
10 efficiencies of scale were realized. The supply of methane gas from the  
11 landfill would be at a cost that would reduce exposure to the volatile price  
12 swings we were seeing throughout the United States. It would serve as a  
13 physical hedge as the price would remain relatively stable and known.

14 Because of the volatility of natural gas prices, Montana-Dakota did  
15 not complete a detailed study for the use of methane for power generation  
16 although a portion of the lower BTU tailgas from the molecular gate facility  
17 is used to generate electricity which supplies power to the site.

18 In addition to being a benefit to Montana-Dakota's natural gas  
19 customers, the City of Billings also benefits from the installation of the  
20 landfill facility. We entered into a long term agreement with the City of  
21 Billings to capture and produce the methane which makes this an  
22 environmentally friendly project. Montana-Dakota reimburses the City of

1 Billings an amount similar to a royalty payment for the amount of natural  
2 gas that is delivered to natural gas customers.

3 Montana-Dakota is also identifying the value of carbon credits,  
4 environmental attributes and/or renewable energy credits that are  
5 associated with this facility. By capturing the greenhouse gases that are  
6 naturally emitted from the landfill, the Company may be able to market  
7 these credits or attributes and obtain a monetary value that will be shared  
8 by Montana-Dakota's customers and the City of Billings.

9 **Q. Would you describe the current operations at the landfill production  
10 site?**

11 **A.** Yes. The facility commenced producing methane gas in December  
12 2010 and approximately 129,200 dkt of gas were extracted from the  
13 landfill and delivered into Montana-Dakota's distribution system for use by  
14 its sales customers in 2011. There are currently one and one-half full time  
15 equivalent employees assigned to operate the plant. Initially, 63 wells  
16 were drilled and gas is currently being extracted from these wells. In June  
17 of 2012 Montana-Dakota installed additional piping in the area of the  
18 landfill that is currently receiving garbage and began drawing methane in  
19 August from this new area. As more cover is added to this new section  
20 Montana-Dakota will draw additional methane which will increase the  
21 throughput and efficiency of the methane recovery facility. To date  
22 Montana-Dakota has invested approximately \$11 million in the facility.

1           The production facility, as well as the gas from the facility are  
2 considered part of Montana-Dakota's integrated system and as such, are  
3 allocated to the four jurisdictions that make up the integrated gas system.

4 **Q. How does the gas from the Billings landfill fit into the gas supply  
5 portfolio?**

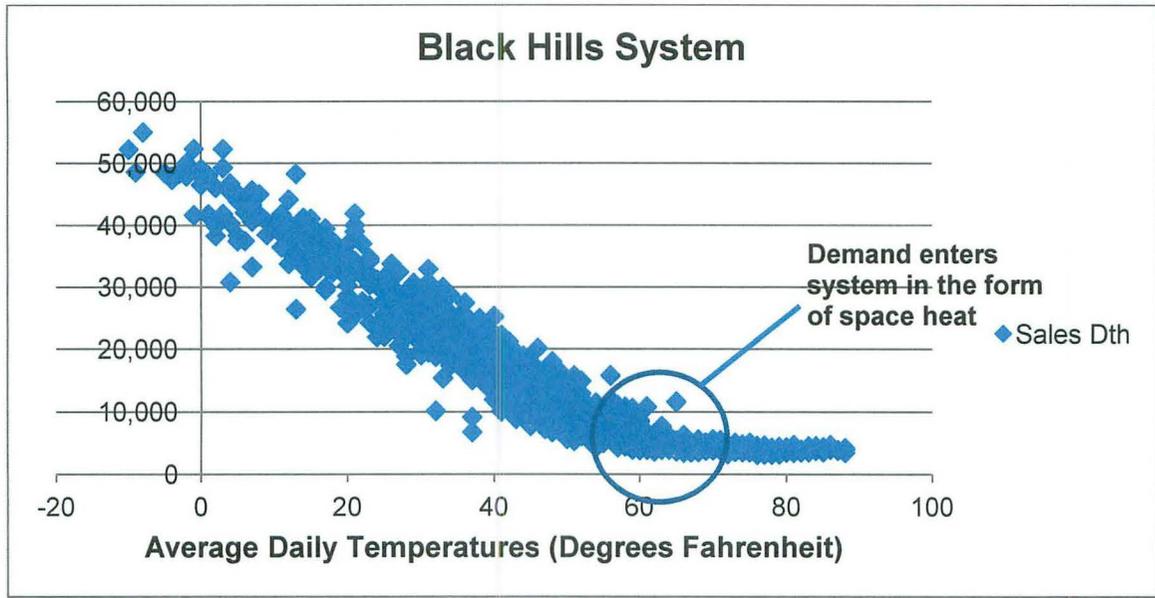
6 **A. As noted above, the Billings landfill currently produces  
7 approximately 130,000 dk annually, which represents 0.5 percent of  
8 Montana-Dakota's total system requirements. As additional phases of the  
9 landfill are developed Montana-Dakota expects the production to provide  
10 1.5 – 2.0 percent of total system requirements. The addition of the Billings  
11 landfill provides supply diversity, a cost competitive gas supply, and an  
12 environmentally friendly fuel source.**

13 **Q. Would you discuss Montana-Dakota's use of 60 degree days as a  
14 base when normalizing volumes for weather?**

15 **A. Yes. I first will explain the concept of heating degree days. A  
16 heating degree (HD) is a measure of the coldness of the air temperature.  
17 It is calculated by subtracting the air temperature from a predetermined  
18 base degree temperature which is usually 60 or 65 degrees Fahrenheit(F).  
19 For example, if using a base of 60 degrees (HD60) and the average air  
20 temperature is 43 degrees F, the total heating degrees for that given day  
21 would equal 17 Heating Degree Days(HDD). All air temperatures greater  
22 than the base temperature are assigned zero (0) heating degrees.**

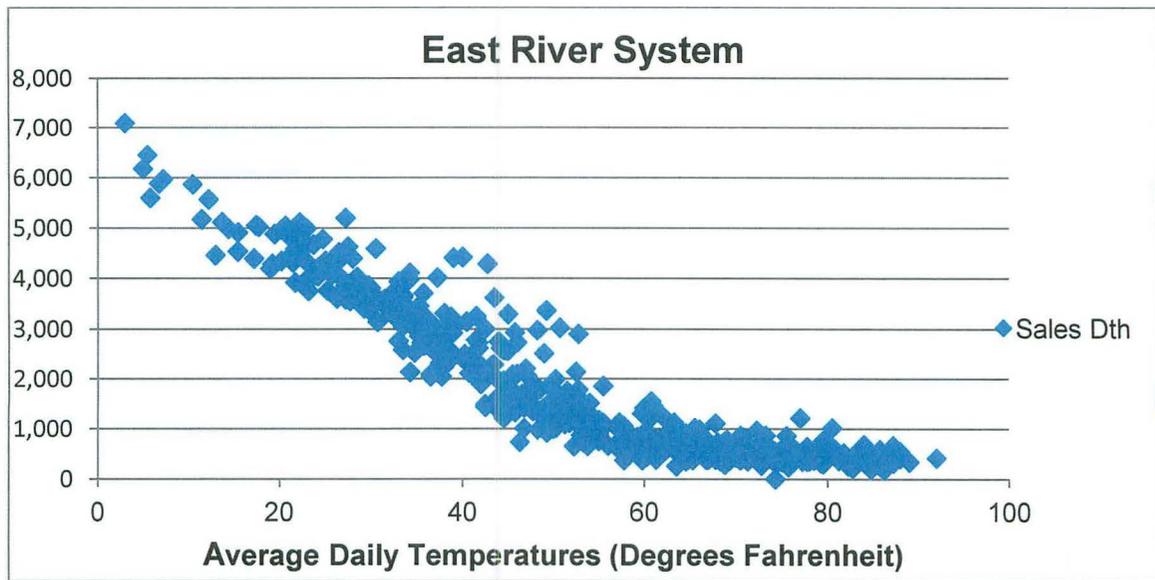
1 **Q. What temperature base does the Company use for determining HDDs**  
2 **and why is that base used?**

3 **A. Throughout the Montana-Dakota service area, a base temperature of**  
4 **60 degrees F is used when estimating the space heating demand for**  
5 **residential and commercial sales customers. This means that for each**  
6 **degree below 60 degrees demand for natural gas will increase**  
7 **incrementally as weather gets colder. While a base temperature of 65**  
8 **HDDs may be more accurate for other areas of the country, Montana-**  
9 **Dakota has found that a base of 60 HDDs more accurately forecasts the**  
10 **usage for sales customers in its service territory. Montana-Dakota has**  
11 **determined that the base used for calculating HDD is 60 degrees based**  
12 **on the actual usage of its sales customers. The Scatter Plot Graph below**  
13 **plots the total demand relative to the average daily temperature identified**  
14 **in HDD for the Montana-Dakota Black Hills system for 36 months ending**  
15 **October 31, 2012. As the graph indicates, the usage begins to increase**  
16 **around 60 HDD rather at the 65 HDD that some companies in the industry**  
17 **use as their base temperature. We believe the building standards and**  
18 **technological advances which include insulating products was a**  
19 **contributing factor and have changed the usage characteristic to a point at**  
20 **a base of 60 degrees is more accurate for estimating demand in than the**  
21 **65 which was used in the 1990s.**



1

2 The East River area chart below is very similar to the Black Hills area chart.



3

4 **Q. Has Montana-Dakota used the 60 degree day base in the calculation**  
 5 **of its normalized sales volumes?**

6 **A. Yes, it has.**

7 **Q. Does this complete your direct testimony?**

8 **A. Yes, it does.**