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

400 North Fourth Street
Bismarck, ND 58501
(701) 222-7900

October 30, 2015

Mr. Thorvald A. Nelson
Holland & Hart, LLP
6380 South Fiddlers Green Circle, Suite 500
Greenwood Village, Colorado 8011

Re: General Electric Rate Application
Docket No. D2015.6.51

Dear Mr. Nelson:

Enclosed please find Montana-Dakota Utilities Co.'s responses to the Montana Large Customer Group's data requests LCG-049 - LCG-055 dated October 19, 2015.

Sincerely,

Tamie A. Aberle
Director of Regulatory Affairs

Attachments
cc: Service List

Montana-Dakota Utilities Co.
Docket No. D2015.6.51
Service List

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DEPARTMENT OF PUBLIC SERVICE REGULATION
BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MONTANA
*****

IN THE MATTER OF THE APPLICATION OF MONTANA-DAKOTA UTILITIES CO., a Division of MDU Resources Group, Inc., for Authority to Establish Increased Rates for Electric Service in the State of Montana	)))))	REGULATORY DIVISION DOCKET NO. D2015.6.51

MONTANA LARGE CUSTOMER GROUP'S CORRECTED FIFTH SET OF DATA REQUESTS TO MONTANA-DAKOTA UTILITIES CO.

The Montana Large Customer Group ("LCG"), by and through its undersigned counsel, pursuant to applicable rules of procedure, submits the attached Data Requests to Montana-Dakota Utilities Co. ("MDU").

RESPONSE DATE, DEFINITIONS, AND INSTRUCTIONS

Responses to these Date Requests are due within 14 calendar days, *i.e.*, by October 30, 2015. Please refer to the Definitions and Instructions included in LCG's First Set of Data Requests to MDU in this proceeding.

Respectfully submitted this 16th day of October, 2015.

MONTANA LARGE CUSTOMER GROUP

s/ Nikolas S. Stoffel
Thorvald Nelson, # 8666
Nikolas Stoffel, #13485
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DATA REQUESTS

LCG-049 RE: Billing Determinants

Please update the billing determinants for each rate class tab presented in the Excel file Statement M Exh TAA-1_TAA-2, tabs Rate 10 through Rate 52, using the most recent load forecast for calendar year 2015 reflected in Attachment A to MDU's response to Data Request PSC-022. Please provide this update in Excel format with all formulas intact.

LCG-050 RE: Statement M: Projected kWh, billing kW, and monthly customer bills

For each rate class included in Statement M Exh TAA-1_TAA-2, please provide the calendar year 2015 projected kWh, billing kW, and monthly customer bills, corresponding to the most recent calendar year 2015 load forecast reflected in Attachment A to MDU's response to Data Request PSC-022. Please provide this information in Excel format with all formulas intact.

LCG-051 RE: Statement M: Projected Revenues

For each rate class included in Statement M Exh TAA-1_TAA-2, please provide the revenues that would result from the application of current rates to the projected calendar year 2015 billing determinants corresponding to the most recent calendar year 2015 load forecast reflected in Attachment A to MDU's response to Data Request PSC-022. Please separately state the revenues for each rate component: Basic Rate, Energy, Demand, and Fuel Revenue, in Excel format with all formulas intact.

LCG-052 RE: Attachment A to Response to LCG-032

Please update Attachment A to MDU's response to Data Request LCG-032 to reflect the most recent Montana load forecast corresponding to the forecast in Attachment A to MDU's response to Data Request PSC-022.

LCG-053 RE: Projected Growth Rate

Please provide a narrative description of the most recent 2015-2020 projected growth rate for the state of Montana as a whole, and for each Montana sales sector, similar to MDU's response to Data Request PSC-022 regarding the integrated system.

LCG-054 RE: Allocation Factors in Statements A-K.

Please refer to the allocation factors presented on the Factors tab of the Excel file Statements A-K.

a. What calendar year loads do the "2015" allocation factors correspond to? Please provide all source documents for these factors.

b. What calendar year loads do the "2014" allocation factors correspond to? Please provide all source documents for these factors.

c. The 2015 jurisdictional allocation factors provided by MDU in Attachment LCG-018 Cost Alloc Manual – MT Elec consist of pasted values. Please provide the workpapers in Excel format with intact formulas that calculated these pasted values.

d. Do the "2015" allocation factors presented on the Factors tab of the Excel file Statements A-K represent the most recent calendar year 2015 load forecast reflected in Attachment A to MDU's response to Data Request PSC-022? If not, please provide the allocation factors that would result from the calendar year 2015 load forecast provided in Attachment A to MDU's response to Data Request PSC-022. Please provide all workpapers in Excel format with intact formulas that calculated these allocation factors.

e. Do the 2015 jurisdictional allocation factors provided by MDU in Attachment LCG-018 Cost Alloc Manual – MT Elec represent the most recent calendar year 2015 load forecast reflected in Attachment A to MDU's response to Data Request PSC-022? If not, please provide the comparable allocation factors that would result from the calendar year 2015 load forecast provided in Attachment A to MDU's response to Data Request PSC-022. Please provide all workpapers in Excel format with intact formulas that calculated these allocation factors.

f. If the 2015 allocation factors on the Factors tab of the Excel file Statements A-K are updated, would these updated factors flow through to the allocation of each revenue requirement component to the state of Montana? If not, please provide a version of the Excel file Statements A-K that calculates the Montana revenue requirement using the calendar year 2015 allocation factors that would result from the load forecast provided in Attachment A to MDU's response to Data Request PSC-022.

LCG-055 RE: PLEXOS Fuel and Purchased Power Report

Please provide a PLEXOS fuel and purchased power report prepared using the calendar year 2015 load forecast provided in Attachment A to MDU's response to Data Request PSC-022. In developing this report, please use the commercial operation dates provided in MDU's response to Data Request LCG-023 (i.e. do not annualize the production from these new large generation projects).

CERTIFICATE OF SERVICE

I hereby certify that on the 16th day of October, 2015, the **MONTANA LARGE CUSTOMER GROUP'S CORRECTED FIFTH SET OF DATA REQUESTS TO MONTANA-DAKOTA UTILITIES CO.** was e-filed with the Commission and served via U.S. mail and e-mail, unless otherwise noted, to the following:

Sandy Scherer Montana PSC 1701 Prospect Avenue PO Box 202601 Helena, MT 59620-2601 sscherer@mt.gov **via UPS on 10/19/15**	Robert Nelson Monica Tranel Montana Consumer Counsel 111 N. Last Chance Gulch P.O. Box 201703 Helena, MT 59620 robnelson@mt.gov mtranel@mt.gov
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s/ Patti Penn

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MONTANA-DAKOTA UTILITIES CO.
MONTANA LARGE CUSTOMER GROUP
FIFTH DATA REQUEST
DATED OCTOBER 19, 2015
DOCKET NO. D2015.6.51

LCG-049 RE: Billing Determinants

Please update the billing determinants for each rate class tab presented in the Excel file Statement M Exh TAA-1_TAA-2, tabs Rate 10 through Rate 52, using the most recent load forecast for calendar year 2015 reflected in Attachment A to MDU's response to Data Request PSC-022. Please provide this update in Excel format with all formulas intact.

Response:

Please see Response No. LCG-033.

MONTANA-DAKOTA UTILITIES CO.
MONTANA LARGE CUSTOMER GROUP
FIFTH DATA REQUEST
DATED OCTOBER 19, 2015
DOCKET NO. D2015.6.51

LCG-050 RE: **Statement M: Projected kWh, billing kW, and monthly customer bills**

For each rate class included in Statement M Exh TAA-1_TAA-2, please provide the calendar year 2015 projected kWh, billing kW, and monthly customer bills, corresponding to the most recent calendar year 2015 load forecast reflected in Attachment A to MDU's response to Data Request PSC-022. Please provide this information in Excel format with all formulas intact.

Response:

Please see Response No. LCG-033.

MONTANA-DAKOTA UTILITIES CO.
MONTANA LARGE CUSTOMER GROUP
FIFTH DATA REQUEST
DATED OCTOBER 19, 2015
DOCKET NO. D2015.6.51

LCG-051 RE: Statement M: Projected Revenues

For each rate class included in Statement M Exh TAA-1_TAA-2, please provide the revenues that would result from the application of current rates to the projected calendar year 2015 billing determinants corresponding to the most recent calendar year 2015 load forecast reflected in Attachment A to MDU's response to Data Request PSC-022. Please separately state the revenues for each rate component: Basic Rate, Energy, Demand, and Fuel Revenue, in Excel format with all formulas intact.

Response:

Please see Response No. LCG-033.

MONTANA-DAKOTA UTILITIES CO.
MONTANA LARGE CUSTOMER GROUP
FIFTH DATA REQUEST
DATED OCTOBER 19, 2015
DOCKET NO. D2015.6.51

LCG-052 RE: Attachment A to Response to LCG-032

Please update Attachment A to MDU's response to Data Request LCG-032 to reflect the most recent Montana load forecast corresponding to the forecast in Attachment A to MDU's response to Data Request PSC-022.

Response:

Please see Response No. LCG-033.

MONTANA-DAKOTA UTILITIES CO.
MONTANA LARGE CUSTOMER GROUP
FIFTH DATA REQUEST
DATED OCTOBER 19, 2015
DOCKET NO. D2015.6.51

LCG-053 RE: Projected Growth Rate

Please provide a narrative description of the most recent 2015-2020 projected growth rate for the state of Montana as a whole, and for each Montana sales sector, similar to MDU's response to Data Request PSC-022 regarding the integrated system.

Response:

Please see Response No. LCG-033 Attachment A for the updated forecasted volumes for Montana and Response No. LCG-053 Attachment A for a narrative description regarding the development of the residential and small commercial customer classes in Montana. Forecasted sales for select customers within the large commercial and industrial customer class were reduced based on the latest information available to Company personnel.

1.1. Residential

The residential sales forecast is derived by developing a forecast of residential use per customer and a forecast of number of residential customers.

RESIDENTIAL USE PER CUSTOMER

Higher electricity prices and lower income may result in less electricity use, while higher alternate fuel prices as well as colder than normal winters (more heating degree days) and hotter than normal summers (more cooling degree days) may result in more electricity consumption. Historical and forecasted values for these variables are available and were tested for statistical significance when developing the residential econometric equations for each state in previous years. The historical values for these variables are given in Appendix B.

North Dakota and Montana – The econometric process used in previous years allowed residential sales to depend on variables such as the residential price of electricity, alternate fuel prices for residential customers (natural gas), personal income per household, heating degree days, cooling degree days, number of households, and year. However, in Montana and North Dakota, use per customer increased at a faster rate than expected despite the many gains in efficiency being made in lighting and other electric devices. The Electric Power Research Institute projects that demand is expected to decline by about 0.5% per year for the next ten years. Therefore, for the forecast developed for the last three years, a modification was made to Montana and North Dakota use per residential customer to reflect the residential power use that is expected. The final residential use per customer models for Montana and North Dakota have use per customer growing at 0.25% per year through 2021 and then remaining flat for the remainder of the forecast.

South Dakota – The econometric process used in previous years allowed residential sales to depend on variables such as the residential price of electricity, alternate fuel prices for residential customers (natural gas), personal income per household, heating degree days, cooling degree days, number of households, and year. The forecast for South Dakota residential use per customer is now held flat.

NUMBER OF RESIDENTIAL CUSTOMERS

The model initially developed for the number of customers (bills) for each state is as follows:

$$\ln(res\_bills_t) = a + b^{hhld} \times \ln(hholds_t) + e_t$$

In this equation, *a* and b^{hhld} are estimated parameters; e_t is the error term, the dependent variable is the natural log of the number of bills and the only explanatory variable is the natural log of the number of households.

The forecast for number of customers by state was initially developed as described above. However, adjustments were made to the residential customer forecasts for North Dakota and Montana to reflect the higher rate of growth being experienced in parts of North Dakota and Montana due to the Bakken oil field activity.

In North Dakota, customer growth for 2015 and 2016 was set to the actual residential customer growth seen as of mid-2015 when compared to 2014 as well as the growth seen in 2013 and 2014. In the following years, residential customer growth was allowed to gradually taper off to growth levels experienced prior to the development of the Bakken oil field.

For Montana where the Bakken development lags the development in North Dakota, customer growth for 2015 through 2023 was set to the approximate residential customer growth seen from 2013 to 2014. Residential customer growth for 2024 and beyond was allowed to gradually decline to the growth levels experienced prior to the Bakken development.

In South Dakota, the residential customer forecast continues to be based on the household forecast from W&P.

1.2. Small Commercial & Industrial

Small commercial & industrial (SC&I) sales could potentially depend on variables such as the SC&I price of electricity, alternate fuel prices for SC&I customers (natural gas), employment, heating degree days, cooling degree days, and year. Higher electricity prices may result in less electricity use, while higher alternate fuel prices and higher employment as well as colder than normal winters (more heating degree days) and hotter than normal summers (more cooling degree days) may result in more electricity consumption. Historical and forecasted values for these variables are available and were tested for statistical significance in developing the SC&I econometric equations by state. The historical and forecasted values for these variables are given in Appendix B.

In contrast to the residential sales forecast which uses two models for each state to project residential sales (a use per residential customer model and a residential customer numbers model), a single model for each state is used to forecast small commercial & industrial (SC&I) sales. The final models by state are as follows:

North Dakota:

$$\ln(sci\_kwh_t) = a + b^{Emp} \times \ln(emp\_no\_farm\_mining_t) + e_t$$

where:

ln	= natural logarithm;
sci_kwh$_t$	= small comm & industrial sales; and
emp_no_farm_mining$_t$	= total employment, excluding farm and mining.

In this equation, a and the b's are estimated parameters; e_t is the error term.

Montana:

$$\ln(sci\_kwh_t) = a + b^{CDD} \times CDD_t + b^{Emp} \times \ln(emp\_no\_farm\_mining_t) + b^{Yr} \times year_t + e_t$$

where:

ln	= natural logarithm;

sci_kwh_t	= small commercial & industrial sales;
CDD_t	= cooling degree days;
$emp\_no\_farm\_mining_t$	= total employment, excluding farm and mining; and
$year_t$	= year (1990-2014), which serves as a time trend variable.

In this equation, *a* and the *b*'s are estimated parameters; e_t is the error term.

South Dakota:

$$\ln(sci\_kwh_t) = a + b^{HDD} \times HDD_t + b^{Yr} \times year_t + e_t$$

where:

ln	= natural logarithm;
sci_kwh_t	= small commercial & industrial sales;
HDD_t	= heating degree days; and
$year_t$	= year (1990-2014), which serves as a time trend variable.

In this equation, *a* and the *b*'s are estimated parameters; e_t is the error term.

The Personal Consumption Expenditure Deflator, whose values are given on Appendix B-5, was used to place small commercial and industrial electricity prices and firm natural gas prices into real dollar terms.

Employment numbers are available from W&P for the historical time period from the U.S. Department of Commerce, Bureau of Economic Analysis. Employment projections for the counties served by Montana-Dakota are made by W&P. However, due to the Bakken oil field activity in North Dakota and Montana, it is anticipated that employment will grow faster than what was projected by W&P.

Since residential customer number forecasts had been developed for North Dakota and Montana reflecting the higher rate of growth due to the Bakken activity as described in Section 1.1, it was decided that a relationship between residential customer numbers and employment should be established in order that the SC&I sales forecast would correspond to the residential customer number forecast and the growth in employment and residential customers would then be directly correlated. Regressions were run on 25-year ratios of historical

employment (total employment less farming and mining) to residential customers. The forecasted ratio produced from this regression was applied to the adjusted residential customer forecasts for both North Dakota and Montana to arrive at the adjusted employment forecasts for each state. Historical employment as well as employment as forecasted by W&P and as adjusted is given on Appendix B-7.

Montana-Dakota Utilities Co.
Historical and Forecasted
Residential Sales, Customers, and Use per Customer
Integrated System
with DSM Reductions

Year	Sales (MWh)	% Change	Avg Custs	Cust No Inc/(Dec)	Avg Use Per Cust (kWh/Yr)	% Change
2004	680,614		85,498		7,961	
2005	737,106	8.30%	85,791	293	8,592	7.93%
2006	768,952	4.32%	86,150	359	8,926	3.89%
2007	793,914	3.25%	86,575	425	9,170	2.74%
2008	814,895	2.64%	87,262	687	9,338	1.83%
2009	846,289	3.85%	87,887	625	9,629	3.11%
2010	874,598	3.35%	88,944	1,057	9,833	2.12%
2011	946,595	8.23%	90,681	1,737	10,439	6.16%
2012	957,183	1.12%	93,695	3,014	10,216	-2.13%
2013	1,044,088	9.08%	97,155	3,460	10,747	5.19%
2014	1,088,204	4.23%	100,406	3,251	10,838	0.85%
2015	1,127,022	3.57%	103,711	3,305	10,867	0.27%
2016	1,165,895	3.45%	107,014	3,303	10,895	0.26%
2017	1,195,639	2.55%	109,517	2,503	10,917	0.21%
2018	1,225,522	2.50%	112,020	2,503	10,940	0.21%
2019	1,255,541	2.45%	114,523	2,503	10,963	0.21%
2020	1,274,540	1.51%	116,026	1,503	10,985	0.20%
2021	1,293,607	1.50%	117,528	1,502	11,007	0.20%
2022	1,310,124	1.28%	119,030	1,502	11,007	0.00%
2023	1,322,154	0.92%	120,131	1,101	11,006	-0.01%
2024	1,333,673	0.87%	121,182	1,051	11,006	0.00%
2025	1,344,072	0.78%	122,133	951	11,005	-0.01%
2026	1,353,961	0.74%	123,034	901	11,005	0.00%
2027	1,363,849	0.73%	123,935	901	11,005	0.00%
2028	1,372,705	0.65%	124,735	800	11,005	0.00%
2029	1,381,560	0.65%	125,535	800	11,005	0.00%
2030	1,390,415	0.64%	126,335	800	11,006	0.00%
2031	1,399,270	0.64%	127,135	800	11,006	0.00%
2032	1,408,114	0.63%	127,934	799	11,007	0.00%
2033	1,416,458	0.59%	128,684	750	11,007	0.01%
2034	1,424,790	0.59%	129,433	749	11,008	0.01%
2035	1,433,134	0.59%	130,183	750	11,009	0.01%

	Sales	Custs	Use/Cust
2004-2014 Average Yearly Growth (10 Years History)	4.48%	1.53%	2.91%
2009-2014 Average Yearly Growth (5 Years History)	5.28%	2.79%	2.42%
2015-2020 Average Yearly Growth (5 Years)	2.49%	2.27%	0.21%
2015-2025 Average Yearly Growth (10 Years)	1.73%	1.59%	0.13%
2015-2035 Average Yearly Growth (20 Years)	1.06%	1.01%	0.05%

Montana-Dakota Utilities Co.
Historical and Forecasted
Residential Sales, Customers, and Use per Customer
Reflecting DSM Reductions

North Dakota

Year	Sales (MWh)	% Change	Avg Custs	Cust No Inc/(Dec)	Avg Use Per Cust (kWh/Yr)	% Change
2004	482,828		60,279		8,010	
2005	525,133	8.76%	60,641	362	8,660	8.11%
2006	550,071	4.75%	61,026	385	9,014	4.09%
2007	568,710	3.39%	61,451	425	9,255	2.67%
2008	585,609	2.97%	62,068	617	9,435	1.95%
2009	609,179	4.02%	62,631	563	9,726	3.09%
2010	632,068	3.76%	63,619	988	9,935	2.15%
2011	687,465	8.76%	65,196	1,577	10,545	6.13%
2012	700,451	1.89%	67,888	2,692	10,318	-2.15%
2013	774,916	10.63%	70,949	3,061	10,922	5.86%
2014	812,654	4.87%	73,909	2,960	10,995	0.67%
2015	847,691	4.31%	76,909	3,000	11,022	0.24%
2016	882,994	4.16%	79,909	3,000	11,050	0.25%
2017	909,604	3.01%	82,109	2,200	11,078	0.25%
2018	936,336	2.94%	84,309	2,200	11,106	0.25%
2019	963,191	2.87%	86,509	2,200	11,134	0.25%
2020	979,009	1.64%	87,709	1,200	11,162	0.25%
2021	994,892	1.62%	88,909	1,200	11,190	0.25%
2022	1,008,320	1.35%	90,109	1,200	11,190	0.00%
2023	1,017,272	0.89%	90,909	800	11,190	0.00%
2024	1,026,224	0.88%	91,709	800	11,190	0.00%
2025	1,034,057	0.76%	92,409	700	11,190	0.00%
2026	1,041,890	0.76%	93,109	700	11,190	0.00%
2027	1,049,723	0.75%	93,809	700	11,190	0.00%
2028	1,057,556	0.75%	94,509	700	11,190	0.00%
2029	1,065,389	0.74%	95,209	700	11,190	0.00%
2030	1,073,222	0.74%	95,909	700	11,190	0.00%
2031	1,081,055	0.73%	96,609	700	11,190	0.00%
2032	1,088,888	0.72%	97,309	700	11,190	0.00%
2033	1,096,721	0.72%	98,009	700	11,190	0.00%
2034	1,104,554	0.71%	98,709	700	11,190	0.00%
2035	1,112,387	0.71%	99,409	700	11,190	0.00%

	Sales	Custs	Use/Cust
2004-2014 Average Yearly Growth (10 Years History)	4.97%	1.94%	2.98%
2009-2014 Average Yearly Growth (5 Years History)	6.10%	3.47%	2.53%
2015-2020 Average Yearly Growth (5 Years)	2.93%	2.67%	0.25%
2015-2025 Average Yearly Growth (10 Years)	1.94%	1.77%	0.16%
2015-2034 Average Yearly Growth (20 Years)	1.17%	1.11%	0.06%

South Dakota

Year	Sales (MWh)	% Change	Avg Custs	Cust No Inc/(Dec)	Avg Use Per Cust (kWh/Yr)	% Change
2004	56,536		6,681		8,462	
2005	61,267	8.37%	6,648	(33)	9,216	8.91%
2006	61,676	0.67%	6,620	(28)	9,317	1.09%
2007	63,018	2.18%	6,593	(27)	9,558	2.59%
2008	67,104	6.48%	6,612	19	10,149	6.18%
2009	69,689	3.85%	6,619	7	10,529	3.74%
2010	70,868	1.69%	6,609	(10)	10,723	1.85%
2011	73,977	4.39%	6,602	(7)	11,205	4.50%
2012	69,097	-6.60%	6,616	14	10,444	-6.79%
2013	74,265	7.48%	6,590	(26)	11,269	7.90%
2014	75,462	1.61%	6,580	(10)	11,468	1.77%
2015	75,716	0.34%	6,584	4	11,500	0.28%
2016	75,751	0.05%	6,587	3	11,500	0.00%
2017	75,785	0.04%	6,590	3	11,500	0.00%
2018	75,820	0.05%	6,593	3	11,500	0.00%
2019	75,854	0.04%	6,596	3	11,500	0.00%
2020	75,889	0.05%	6,599	3	11,500	0.00%
2021	75,912	0.03%	6,601	2	11,500	0.00%
2022	75,935	0.03%	6,603	2	11,500	0.00%
2023	75,946	0.01%	6,604	1	11,500	0.00%
2024	75,958	0.02%	6,605	1	11,500	0.00%
2025	75,969	0.01%	6,606	1	11,500	0.00%
2026	75,981	0.02%	6,607	1	11,500	0.00%
2027	75,992	0.01%	6,608	1	11,500	0.00%
2028	75,992	0.00%	6,608	-	11,500	0.00%
2029	75,992	0.00%	6,608	-	11,500	0.00%
2030	75,992	0.00%	6,608	-	11,500	0.00%
2031	75,992	0.00%	6,608	-	11,500	0.00%
2032	75,981	-0.01%	6,607	(1)	11,500	0.00%
2033	75,981	0.00%	6,607	-	11,500	0.00%
2034	75,969	-0.02%	6,606	(1)	11,500	0.00%
2035	75,969	0.00%	6,606	-	11,500	0.00%

	Sales	Custs	Use/Cust
2004-2014 Average Yearly Growth (10 Years History)	2.70%	-0.10%	2.80%
2009-2014 Average Yearly Growth (5 Years History)	1.35%	-0.10%	1.46%
2015-2020 Average Yearly Growth (5 Years)	0.05%	0.05%	0.00%
2015-2025 Average Yearly Growth (10 Years)	0.03%	0.03%	0.00%
2015-2034 Average Yearly Growth (20 Years)	0.02%	0.02%	0.00%

Montana

Year	Sales (MWh)	% Change	Avg Custs	Cust No Inc/(Dec)	Avg Use Per Cust (kWh/Yr)	% Change
2004	141,249		18,539		7,619	
2005	150,706	6.70%	18,502	(37)	8,145	6.91%
2006	157,206	4.31%	18,505	3	8,495	4.30%
2007	162,186	3.17%	18,531	26	8,752	3.02%
2008	162,182	0.00%	18,582	51	8,728	-0.28%
2009	167,421	3.23%	18,636	54	8,984	2.93%
2010	171,661	2.53%	18,716	80	9,172	2.09%
2011	185,153	7.86%	18,883	167	9,805	6.91%
2012	187,635	1.34%	19,191	308	9,777	-0.29%
2013	194,907	3.88%	19,616	425	9,936	1.63%
2014	200,088	2.66%	19,918	302	10,046	1.10%
2015	203,615	1.76%	20,218	300	10,071	0.25%
2016	207,150	1.74%	20,518	300	10,096	0.25%
2017	210,699	1.71%	20,818	300	10,121	0.25%
2018	214,263	1.69%	21,118	300	10,146	0.25%
2019	217,842	1.67%	21,418	300	10,171	0.25%
2020	221,437	1.65%	21,718	300	10,196	0.25%
2021	225,046	1.63%	22,018	300	10,221	0.25%
2022	228,112	1.36%	22,318	300	10,221	0.00%
2023	231,179	1.34%	22,618	300	10,221	0.00%
2024	233,734	1.11%	22,868	250	10,221	0.00%
2025	236,289	1.09%	23,118	250	10,221	0.00%
2026	238,333	0.87%	23,318	200	10,221	0.00%
2027	240,377	0.86%	23,518	200	10,221	0.00%
2028	241,400	0.43%	23,618	100	10,221	0.00%
2029	242,422	0.42%	23,718	100	10,221	0.00%
2030	243,444	0.42%	23,818	100	10,221	0.00%
2031	244,466	0.42%	23,918	100	10,221	0.00%
2032	245,488	0.42%	24,018	100	10,221	0.00%
2033	245,999	0.21%	24,068	50	10,221	0.00%
2034	246,510	0.21%	24,118	50	10,221	0.00%
2035	247,021	0.21%	24,168	50	10,221	0.00%

	Sales	Custs	Use/Cust
2004-2014 Average Yearly Growth (10 Years History)	3.35%	0.68%	2.65%
2009-2014 Average Yearly Growth (5 Years History)	3.74%	1.41%	2.30%
2015-2020 Average Yearly Growth (5 Years)	1.69%	1.44%	0.25%
2015-2025 Average Yearly Growth (10 Years)	1.52%	1.36%	0.16%
2015-2034 Average Yearly Growth (20 Years)	0.97%	0.91%	0.06%

Log(small commercial kwh estimated w/1990-2014 sample

The AUTOREG Procedure

Maximum Likelihood Estimates			
SSE	0.01020893	DFE	20
MSE	0.0005104	Root MSE	0.02259
SBC	-108.04034	AIC	-114.13472
MAE	0.01594413	AICC	-110.97682
MAPE	0.08631236	HQC	-112.4444
Log Likelihood	62.0673598	Regress R-Square	0.9798
Durbin-Watson	1.9155	Total R-Square	0.9781
		Observations	25

Durbin-Watson Statistics			
Order	DW	Pr < DW	Pr > DW
1	1.9155	0.2556	0.7444

Note: Pr<DW is the p-value for testing positive autocorrelation, and Pr>DW is the p-value for testing negative autocorrelation.

Parameter Estimates					
Variable	DF	Estimate	Standard Error	t Value	Approx Pr > |t|
Intercept	1	-6.9330	1.6362	-4.24	0.0004
cdd	1	0.0000738	0.0000326	2.27	0.0347
lemp_no_farm_mining	1	1.3444	0.1431	9.40	<.0001
year	1	0.005695	0.001427	3.99	0.0007
AR1	1	0.0506	0.2358	0.21	0.8322

Autoregressive parameters assumed given					
Variable	DF	Estimate	Standard Error	t Value	Approx Pr > |t|
Intercept	1	-6.9330	1.6319	-4.25	0.0004
cdd	1	0.0000738	0.0000319	2.31	0.0317
lemp_no_farm_mining	1	1.3444	0.1431	9.40	<.0001
year	1	0.005695	0.001426	3.99	0.0007

Bismarck, ND and Aberdeen, SD
Heating Degree Days (HDD)
and
Cooling Degree Days (CDD)
(Annual)

	HDD		CDD	
	MT & ND	SD	MT & ND	SD
1990	8,061	7,652	611	610
1991	8,052	7,650	709	826
1992	8,162	7,771	255	289
1993	9,144	8,650	217	415
1994	8,866	8,474	432	612
1995	9,027	8,926	522	622
1996	10,027	9,875	480	475
1997	8,450	8,854	609	540
1998	7,765	7,502	633	645
1999	7,710	7,401	457	507
2000	8,412	8,436	549	554
2001	8,039	8,348	668	727
2002	8,532	8,369	745	788
2003	8,493	8,319	737	601
2004	8,183	8,035	379	341
2005	7,792	7,871	555	659
2006	7,525	7,437	793	704
2007	8,345	8,465	666	698
2008	8,946	9,022	524	499
2009	9,108	8,847	331	327
2010	8,643	8,255	507	661
2011	8,750	8,668	425	729
2012	7,612	7,342	599	764
2013	9,133	9,445	555	580
2014	8,887	9,087	457	342
NORMAL	8,558	8,534	520	525

Integrated System
Employment Data
Total Employment less Farming and Mining Employment

	Montana				North Dakota				South Dakota			
Year	Number of Employees	Growth Rate	Adjusted Employment	Growth Rate	Number of Employees	Growth Rate	Adjusted Employment	Growth Rate	Number of Employees	Growth Rate	Adjusted Employment	Growth Rate
1990	28,504				97,640				11,527			
1991	28,958	1.59%			99,995	2.41%			11,331	-1.70%		
1992	28,648	-1.07%			101,201	1.21%			11,320	-0.10%		
1993	29,167	1.81%			104,053	2.82%			11,378	0.51%		
1994	30,507	4.59%			108,828	4.59%			12,272	7.86%		
1995	30,226	-0.92%			109,439	0.56%			12,012	-2.12%		
1996	30,143	-0.27%			111,682	2.05%			12,240	1.90%		
1997	30,496	1.17%			113,490	1.62%			12,138	-0.83%		
1998	30,954	1.50%			116,143	2.34%			12,235	0.80%		
1999	30,714	-0.78%			117,348	1.04%			12,180	-0.45%		
2000	30,750	0.12%			119,269	1.64%			12,282	0.84%		
2001	30,271	-1.56%			119,690	0.35%			12,484	1.64%		
2002	30,282	0.04%			121,206	1.27%			12,340	-1.15%		
2003	30,688	1.34%			122,755	1.28%			12,142	-1.60%		
2004	30,735	0.15%			125,396	2.15%			12,303	1.33%		
2005	30,692	-0.14%			128,199	2.24%			12,461	1.28%		
2006	30,984	0.95%			132,092	3.04%			12,546	0.68%		
2007	31,765	2.52%			135,004	2.20%			12,575	0.23%		
2008	32,534	2.42%			138,431	2.54%			12,846	2.16%		
2009	32,833	0.92%			140,911	1.79%			13,001	1.21%		
2010	33,358	1.60%			145,085	2.96%			13,349	2.68%		
2011	34,873	4.54%			156,657	7.98%			13,488	1.04%		
2012	35,932	3.04%			173,128	10.51%			13,593	0.78%		
2013	36,633	1.95%			183,148	5.79%			13,782	1.39%		
2014	37,217	1.59%			187,484	2.37%			13,906	0.90%		
2015	37,809	1.59%	37,369	0.41%	191,917	2.36%	192,915	2.90%	14,025	0.86%	14,131	1.62%
2016	38,393	1.54%	38,191	2.20%	196,337	2.30%	203,048	5.25%	14,142	0.83%	14,360	1.62%
2017	38,945	1.44%	39,020	2.17%	200,702	2.22%	211,318	4.07%	14,255	0.80%	14,592	1.62%
2018	39,497	1.42%	39,858	2.15%	205,115	2.20%	219,731	3.98%	14,364	0.76%	14,828	1.62%
2019	40,054	1.41%	40,703	2.12%	209,595	2.18%	228,288	3.89%	14,466	0.71%	15,068	1.62%
2020	40,608	1.38%	41,556	2.10%	214,137	2.17%	234,317	2.64%	14,567	0.70%	15,241	1.15%
2021	41,155	1.35%	42,417	2.07%	218,785	2.17%	240,424	2.61%	14,659	0.63%	15,416	1.15%
2022	41,695	1.31%	43,286	2.05%	223,489	2.15%	246,609	2.57%	14,750	0.62%	15,593	1.15%
2023	42,240	1.31%	44,162	2.02%	228,222	2.12%	251,765	2.09%	14,835	0.58%	15,772	1.15%
2024	42,774	1.26%	44,948	1.78%	232,990	2.09%	256,974	2.07%	14,915	0.54%	15,953	1.15%
2025	43,305	1.24%	45,741	1.76%	237,813	2.07%	261,951	1.94%	15,001	0.58%	16,061	0.68%
2026	43,828	1.21%	46,440	1.53%	242,654	2.04%	266,973	1.92%	15,084	0.55%	16,170	0.68%
2027	44,346	1.18%	47,145	1.52%	247,552	2.02%	272,042	1.90%	15,155	0.47%	16,280	0.68%
2028	44,853	1.14%	47,653	1.08%	252,457	1.98%	277,156	1.88%	15,218	0.42%	16,390	0.68%
2029	45,351	1.11%	48,164	1.07%	257,410	1.96%	282,315	1.86%	15,288	0.46%	16,501	0.68%
2030	45,851	1.10%	48,677	1.07%	262,398	1.94%	287,521	1.84%	15,343	0.36%	16,613	0.68%
2031	46,326	1.04%	49,193	1.06%	267,418	1.91%	292,772	1.83%	15,396	0.35%	16,726	0.68%
2032	46,805	1.03%	49,712	1.06%	272,485	1.89%	298,069	1.81%	15,451	0.36%	16,839	0.68%
2033	47,280	1.01%	50,129	0.84%	277,583	1.87%	303,411	1.79%	15,498	0.30%	16,953	0.68%
2034	47,740	0.97%	50,547	0.83%	282,726	1.85%	308,799	1.78%	15,538	0.26%	17,068	0.68%
2035	48,190	0.94%	50,967	0.83%	287,919	1.84%	314,233	1.76%	15,574	0.23%	17,184	0.68%

SOURCES:
Number of Employees:
1990-2013: U.S. Department of Commerce
2014-2035: Woods & Poole Economics Inc.
Adjusted Employment:
2015-2035: Employment was tied to the growth in residential customers by running a regression on the historical (1990-2014) ratio of actual residential customer numbers to employees. Those regression results were then applied on a forecasted basis to the adjusted forecast of residential customer numbers to arrive an adjusted forecast of number of employees.

NOTE: The number of employees used for the forecast is total employment less farming and mining employment (most farms are not served by Montana-Dakota and the mining sector (oil fields and coal mining) is forecasted separately).

MONTANA-DAKOTA UTILITIES CO.
MONTANA LARGE CUSTOMER GROUP
FIFTH DATA REQUEST
DATED OCTOBER 19, 2015
DOCKET NO. D2015.6.51

LCG-054 RE: Allocation Factors in Statements A-K.

Please refer to the allocation factors presented on the Factors tab of the Excel file Statements A-K.

a. What calendar year loads do the "2015" allocation factors correspond to? Please provide all source documents for these factors.

b. What calendar year loads do the "2014" allocation factors correspond to? Please provide all source documents for these factors.

c. The 2015 jurisdictional allocation factors provided by MDU in Attachment LCG-018 Cost Alloc Manual – MT Elec consist of pasted values. Please provide the workpapers in Excel format with intact formulas that calculated these pasted values.

d. Do the "2015" allocation factors presented on the Factors tab of the Excel file Statements A-K represent the most recent calendar year 2015 load forecast reflected in Attachment A to MDU's response to Data Request PSC-022? If not, please provide the allocation factors that would result from the calendar year 2015 load forecast provided in Attachment A to MDU's response to Data Request PSC-022. Please provide all workpapers in Excel format with intact formulas that calculated these allocation factors.

e. Do the 2015 jurisdictional allocation factors provided by MDU in Attachment LCG-018 Cost Alloc Manual – MT Elec represent the most recent calendar year 2015 load forecast reflected in Attachment A to MDU's response to Data Request PSC-022? If not, please provide the comparable allocation factors that would result from the calendar year 2015 load forecast provided in Attachment A to MDU's response to Data Request PSC-022. Please provide all workpapers in Excel format with intact formulas that calculated these allocation factors.

f. If the 2015 allocation factors on the Factors tab of the Excel file Statements A-K are updated, would these updated factors flow through to the allocation of each revenue requirement component to the state of Montana? If not, please provide a version of the Excel file Statements A-K that calculates the Montana revenue requirement using the calendar year 2015 allocation factors that

would result from the load forecast provided in Attachment A to MDU's response to Data Request PSC-022.

Response:

a. Factor 15, 16 and 271 are based on 2014 actual system peak demand and system sales by state. See Attached Excel File titled LCG-054 – Factors. See the Excel files in the folder titled LCG-054 – Factors on the attached CD.
b. Factor 15, 16 and 271 are based on 2013 actual system peak demand and system sales by state. See the Excel files in the folder titled LCG-054 – Factors on the attached CD.
c. See the Excel files in the folder titled LCG-054 – Factors on the attached CD.
d. No, as noted in a above, the 2015 factors are based on the 2014 actual results. As noted in the Response to LCG-033, the forecast provided in PSC-022 has proven to be too strong and would not represent the 2015 volumes.
e. No, the factors shown in LCG-018 do not reflect the 2015 load forecast provided in Data Request PSC-022. Please see Response No. LCG-033.
f. Yes, any change in factors will flow throughout the revenue requirement file provided.

MONTANA-DAKOTA UTILITIES CO.
MONTANA LARGE CUSTOMER GROUP
FIFTH DATA REQUEST
DATED OCTOBER 19, 2015
DOCKET NO. D2015.6.51

LCG-055 RE: PLEXOS Fuel and Purchased Power Report

Please provide a PLEXOS fuel and purchased power report prepared using the calendar year 2015 load forecast provided in Attachment A to MDU's response to Data Request PSC-022. In developing this report, please use the commercial operation dates provided in MDU's response to Data Request LCG-023 (i.e. do not annualize the production from these new large generation projects).

Response:

Please see Response No. LCG-033.