PUBLIC DOCUMENT
TRADE SECRET DATA EXCISED

Marcia A. Podratz
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November 2, 2016

VIA E-FILING
Daniel P. Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101-2147

Re: *In the Matter of the Petition of Minnesota Power for Approval of a New Base Cost of Fuel and Purchased Energy*
Docket No. E015/MR-16-709

Dear Mr. Wolf:

Minnesota Power hereby submits its Petition for Approval of a New Base Cost of Fuel and Purchased Energy ("the Petition"). This filing is made in conjunction with Minnesota Power's Application for Authority to Increase Electric Service Rates in Minnesota, Docket No. E015/GR-16-664, also filed today. This Petition and a Summary of Filing have been served as indicated on the attached service list.

Portions of Attachment 1 to this Petition contain Non-Public information as defined by Minn. Stat. § 13.37 and have been marked accordingly pursuant to Minn. R. 7829.0500. A justification for the identification of the Trade Secret information is included within the Petition.

Sincerely,

Marcia A. Podratz
Director of Rates

MAP:sr
cc: Attached Service List

TRADE SECRET JUSTIFICATION

Pursuant to the Minnesota Public Utilities Commission's Revised Procedures for Handling Trade Secret and Privileged Data in furtherance of Minn. Stat. § 13.37 and Minn. Rule 7829.0500, Minnesota Power has designated portions of the exhibits to this Petition for Approval of a New Base Cost of Fuel and Purchased Energy ("Petition") as Trade Secret.

The information designated as Trade Secret in the Petition relates to the methods, techniques, and processes for obtaining and managing fuel supply resources for its generating facilities, including fuel supply, contract terms and conditions, as well as fuel cost projections. Designated exhibits to the Application also contain confidential financial and energy procurement information that is materially sensitive and commercially valuable to Minnesota Power. Minnesota Power follows strict internal procedures to maintain the secrecy of all of this information in order to capitalize on the economic value of the information. Public availability would cause Minnesota Power and its customers to suffer severe competitive implications, including a detrimental effect on energy costs paid by Minnesota Power's customers.

Minnesota Power believes that this statement provides the appropriate justification as to why the information excised from the Petition should remain a trade secret under Minn. Stat. § 13.37. Minnesota Power respectfully requests the opportunity to provide additional justification in the event of a challenge to the trade secret designation provided herein.

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

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In the Matter of the Petition of Minnesota Power for Approval of a New Base Cost of Fuel and Purchased Energy	Docket No. E015/MR-16-709 **PETITION**

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SUMMARY OF FILING

On November 2, 2016, Minnesota Power filed with the Minnesota Public Utilities Commission ("Commission") its Petition for Approval of a New Base Cost of Fuel and Purchased Energy. This Petition was filed in conjunction with Minnesota's Power's Notice of Change in Rates and Petition for Interim Rates, Docket No. E015/GR-16-664, filed the same day pursuant to Minn. Stat. § 216B.16, subds. 1 and 3. Minnesota Power proposes to maintain the base cost of fuel and purchased energy 1.018 cents per kilowatt-hour ("kWh") in base rates during the interim rate period.

With the implementation of General Rates, Minnesota Power requests the Commission approve a new base cost of fuel and purchased energy of 2.137 cents per kWh. In addition to proposing this new base cost of fuel and purchased energy, Minnesota Power also proposes:

- to adopt a forecasted fuel clause adjustment ("FCA") methodology with a true-up mechanism beginning with the implementation of General Rates in our current rate proceeding in order to provide more accurate price signals to customers regarding the actual costs of fuel and purchased energy;
- to recover total fuel and purchased energy costs through the FCA rather than reflecting a base cost of fuel and purchased energy in Company base rates; and
- recovery through the FCA of: (1) chemicals and reagents for environmental compliance; (2) business interruption insurance; (3) nitrogen oxide allowances; and (4) recovery of Independent Electricity System Operator, Southwestern Power Pool, and PJM Interconnection LLC market charges in the same manner as is currently used for Midcontinent Independent System Operator, Inc. ("MISO") costs.

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

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Docket No. E015/MR-16-709

In the Matter of the Petition of Minnesota Power for Approval of a New Base Cost of Fuel and Purchased Energy

PETITION

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Minnesota Power hereby submits to the Minnesota Public Utilities Commission ("Commission") this Petition, in which it proposes changes to its current Rider for Fuel and Purchased Energy ("FCA")[1] in conjunction with the Company's general electric rate case filing (Docket No. E015/GR-16-664).

During the Interim Rate period Minnesota Power proposes to maintain the current base cost of fuel and purchased energy of 1.018 cents per kilowatt-hour ("kWh") in base rates. In the information supporting this Petition, the Company compares the test year average cost of fuel and purchased energy with the existing base cost, thereby determining the test year average FCA rate to be 1.085 cents per kWh. The test year average FCA is then included in the calculation of present and proposed revenues in Minnesota Power's general rate case filing, Docket No. E015/GR-16-664.

To provide more accurate price signals to customers regarding the actual costs of fuel and purchased energy, Minnesota Power proposes to adopt a forecasted FCA methodology beginning with the implementation of final rates in the general rate case filing. This methodology would involve utilizing a forecasted fuel and purchased energy adjustment amount with a corresponding true-up mechanism to be applied to customer bills in the month following the calculation of the true-up amount. To further improve the price signals regarding the true total cost of fuel and purchased energy, Minnesota Power also proposes to recover total fuel and purchased energy costs through the FCA

[1] "FCA" is the general term used by the Company and the Commission when referring to the Company's Rider for Fuel and Purchased Energy Adjustment ("FPE Rider").

rather than reflecting a base cost of fuel and purchased energy in the Company's base rates.

Finally, Minnesota Power proposes recovery through the FPE Rider for certain related costs that are highly volatile by their nature: (1) chemicals and reagents necessary for environmental compliance; (2) business interruption insurance; (3) nitrogen oxide ("NOx") allowances; and (4) recovery of Independent Electricity System Operator ("IESO"), Southwestern Power Pool ("SPP") and PJM Interconnection LLC ("PJM") market charges in the same manner as is currently used for MISO costs.

I. CONTENT OF FILING.

This Petition contains the following information in accordance with Minn. R. 7829.1300, subp. 3.

A. Name, address, and telephone number of the utility:

Minnesota Power
30 West Superior Street
Duluth, Minnesota 55802
218-722-2641

B. Name, address and telephone number of utility attorneys:

David Moeller
Senior Attorney
Minnesota Power
30 West Superior Street
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dmoeller@allete.com
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612-977-8624

C. Date of filing and modified rates are effective:

The date of this filing is November 2, 2016, and the proposed changes to the base cost of fuel and purchased energy would be effective upon Commission approval.

D. Statute that controls the time frame for processing the filing:

When an electric utility files an application for an increase in general rates, it also typically proposes a change in its base cost of fuel and purchased energy. Pursuant to Minn. Stat. § 216B.16, subd. 1, such a proposed rate change requires sixty days notice to the Commission before it can become effective. Minn. R. 7829.1400, subpts. 1 and 4, permit comments in response to a miscellaneous tariff filing within 30 days of filing, with reply comments due 10 days thereafter. Minnesota Power is requesting the Commission approve a change in its base cost of fuel and purchased energy, a new FCA calculation methodology, and changes to the FPE Rider concurrent with its general rate request but does not request implementation of any of these changes until the implementation of final rates.

E. Utility Employee Responsible for Filing:

Marcia A. Podratz
Director of Rates
Minnesota Power
30 West Superior Street
Duluth, Minnesota 55802
218-723-3570

F. Effect of Changes

The Company's proposal to retain the current base cost of fuel and purchased energy for purposes of interim rates does not affect the Company's revenues. The Company's proposal to reflect all fuel and purchased energy costs in the FCA, rather than include a portion in base rates, will likewise have no impact on the Company's revenues, as this change merely represents a shift in where fuel and purchased energy costs are recovered.

If approved, the Company's proposal to utilize a forecasted FCA methodology will reasonably correct the current disconnect between the Company's incurred fuel and

purchased energy costs and the amounts charged to customers. Company witness Ms. Leann Oehlerking-Boes provides additional analysis of this current disconnect in her Direct Testimony in our concurrent rate filing, which is attached to this filing. The forecasted FCA methodology will more appropriately reflect the actual costs of fuel and purchased energy, providing a better basis for customers to consider conservation or energy efficiency options. Finally, the Company's proposal to include emission control chemical costs, business interruption insurance costs and proceeds, NOx allowances, and Independent System Operator ("ISO") market costs into the FPE Rider, will likewise reflect actual revenues and expenses incurred over time and provide a mechanism to return any revenues received in these areas to Minnesota Power customers expeditiously and efficiently.

II. SUPPORTING INFORMATION AND SCHEDULES

A. Average Cost of Fuel and Purchased Energy per Budgeted Test Year

On November 2, 2016, Minnesota Power filed a Notice for Change of Rates and Petition for Interim Rates, requesting that interim rates become effective January 1, 2017 (Docket No. E015/GR-16-664). The current base cost of fuel and purchased energy remains at the amount originally approved by the Commission in 1994 of 1.018 cents per kWh and was the result of a Stipulation and Settlement Agreement approved by the Commission in a prior Minnesota Power rate case, Docket No. E015/GR-08-415. Minnesota Power is not proposing to change its base cost of fuel and purchased energy for purposes of interim rates, but proposes to include an adder of 1.162 cents per kWh to reflect the changes in the average cost of fuel and purchased energy.

Pursuant to Minn. R. 7825.2900, Minnesota Power has attached the exhibits identified below to this Petition, which provide the costs and rate calculations in support of its current fuel cost adjustment. On Exhibit B the Company calculates the test year average cost of fuel and purchased energy (2.103 cent per kWh)[2] and compares it to the existing base cost (1.018 cents per kWh), thereby determining the test year average Fuel

[2] This calculation does not reflect the four expenses/revenues the Company requests to include in the FCA: NO_x allowances, business interruption insurance premiums or proceeds, reagent/chemical costs, and ISO costs.

and Purchased Energy Adjustment ("FPE Adjustment") rate to be 1.085 cents per kWh. The test year average FPE Adjustment is then included in the calculation of present and proposed revenues (applied to all kWh of energy subject to the FPE Adjustment) in Minnesota Power's general rate filing, Docket No. E015/GR-16-664, adjusted by each rate class's appropriate E8760 Allocator Factor to reflect the appropriate total revenues.

B. Average Cost of Fuel and Purchased Energy with Additional Costs

In addition to changing its base cost of fuel and purchased energy methodology, Minnesota Power proposes to include reagent costs for environment compliance, business interruption insurance premiums or proceeds, ISO market costs, and NO_x allowances in its calculation of the average cost of fuel and purchased energy. Minnesota Power has attached exhibits also identified below to this Petition, which provide the costs and rate calculations in support for its proposed fuel costs adjustment. Exhibit B, FC 1-2 provides the calculation of the average cost of FPE including reagents, business interruption insurance, ISO market costs, and NO_x allowances to be 2.137 cents per kWh.[3]

Exhibit A:	Average Fuel and Purchase Energy Cost - Monthly Change in Revenues
Exhibit B:	Average Fuel and Purchased Energy Cost for 2017 Test Year
	Average Fuel and Purchase Energy Cost Including Reagents and Business Interruption Insurance
	Supporting Calculations

Minnesota Power also proposes to update its tariff pages to reflect the ability to account for future NOx allowances and ISO market costs in its FPE Rider; however, Minnesota Power is not forecasting any immediate revenues or costs associated with these changes in the test year, such that no calculation information is initially available under this proposal.

[3] Although Minnesota Power is requesting these four costs or revenues be included in the base cost of fuel and purchased energy, the amounts for NO_x allowances and ISO market costs, besides MISO costs, are estimated to be $0 for the 2017 test year.

C. Proposed Change in FCA Methodology Coincident with Final Rates

As discussed in more detail in the attached testimony of Ms. Leann Oehlerking-Boes, Minnesota Power proposes to modify its FCA methodology to use forecasted information to calculate the monthly FCA on customers' bills, then correct for any mismatch between forecasted and actual costs (applied to actual sales levels) with a rolling true-up mechanism. The Company also proposes to move all fuel and purchased energy costs to the FPE Rider concurrent with the implementation of final rates in our current rate proceeding, such that no base cost of fuel and purchased energy would reside in base rates. Ms. Oehlerking-Boes explains that this process will improve price signals to customers in terms of both the amount of fuel and purchased energy costs the Company incurs to provide electric service, and the timing of the costs – which will provide in turn provide better signals as to when the Company's fuel costs are highest.

D. Proposed Tariff Sheets

Exhibits C (page 1 to 8) to this Petition consists of redlined and cleaned versions of the proposed FPE Rider tariff pages showing the requested base cost of fuel and purchased energy. Our Petition for Interim Rates contains schedules of proposed interim rates that reflect the requested base cost of fuel and purchased energy for each customer class for purposes of Interim Rates in our current rate proceeding.

The attached FPE Rider tariff updates also reflect our proposed changes to the FPE Rider for purposes of General Rates. Ms. Leann Oehlerking-Boes provides additional support for these tariff page changes in her attached rate filing testimony.

E. Variance for Change in FCA Methodology

Consistent with Minn. R. 7829.3200, Minnesota Power seeks a variance to the extent needed to establish an FCA methodology that is based on a forecasted methodology rather than the "kilowatt-hour sales" and the "current period" defined in Minn. R. 7825.2400, subds. 13 and 15. Minnesota Power also seeks a variance to Minn. R. 7825.2600, to the extent needed to reflect the true-up between the forecasted and actual month's fuel and purchased energy, and any other variances that may be needed to

implement a forecasted FCA methodology and include all fuel and purchased energy costs in the FPE Rider.

Minn. R. 7829.3200 provides that the Commission "shall grant a variance to its rules when it determines that the following requirements are met: (A) enforcement of the rule would impose an excessive burden upon the applicant or others affected by the rule; (B) granting the variance would not adversely affect the public interest; and (C) granting the variance would not conflict with standards imposed by law."

Minnesota Power requests the change in FCA methodology concurrent with the implementation of General, rather than Interim, Rates in its current rate proceeding, and therefore believes the changed FCA methodology will be addressed during the concurrent rate proceeding. For purposes of this initial Petition, we note that the proposed methodology is consistent with the FCA methodology approved for Xcel Energy in Docket E002/M-00-420, and therefore necessarily does not conflict with standards imposed by law. More specifically, the Commission is authorized by Minn. Stat. § 216B.16, subd. 7, to allow for the automatic adjustment of charges and determine the appropriate FCA recovery mechanism for Minnesota Power.

Further, as described in more detail by Ms. Oehlerking-Boes, the proposed change would benefit customers and support the public interest by providing improved price signals regarding the timing of highest and lowest fuel and purchased energy costs, and regarding the true amount of fuel and purchased energy the Company incurs. These changes would, in turn, enable customers to make more informed decisions regarding energy usage, serving state policy encouraging the conservation of energy. Minnesota Power anticipates further discussion of these principles in our general rate proceeding.

III. SUMMARY OF FILING

In accordance with Minn. R. 7829.1300, subp. 1, a Summary of Filing accompanies this Petition to apprise interested stakeholders of its nature and general content.

IV. SERVICE OF FILING

Pursuant to Minn. R. 7829.1300, subp. 2, copies of this Petition have been served on the Minnesota Department of Commerce and the Office of the Attorney General – Residential Utilities and Antitrust Division. Copies of the Summary of Filing have been served on persons on Minnesota Power's miscellaneous electric service list and general rate case service list.

V. SERVICE LIST

Pursuant to Minn. R. 7829.0700, Minnesota Power requests that the following persons be placed on the Commission's official service list for this matter:

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VI. CONCLUSION

For the foregoing reasons, Minnesota Power respectfully submits this Petition for Approval of a New Base Cost of Fuel and Purchased Energy.

Respectfully submitted,

MINNESOTA POWER

Marcia A. Podratz

Marcia A. Podratz
Director of Rates
30 West Superior Street
Duluth, MN 55802
(218) 723-3570

Subscribed to before me
this 2nd day of November, 2016.

Susan Romans
Notary Public

SUSAN ROMANS
NOTARY PUBLIC - MINNESOTA
My Commission Expires Jan. 31, 2020

Minnesota Power
Average Fuel and Purchased Energy Costs- Monthly Change in Revenues
Test Year Ending 12/31/2017
E015/MR-16-709

Exhibit A
Docket 015/MR-16-709

Line No.		Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Total
1	Sales Subject to Energy Adj MWH	725,714	675,681	695,773	650,220	680,799	652,329	697,802	690,179	675,679	654,631	679,735	729,110	8,207,652
2														
3	Present Rates													
4	FPEA Rate (¢/kWh)	0.954	1.030	1.159	1.168	1.077	0.912	0.855	0.998	1.200	1.275	1.208	1.061	
5	Revenue from FPEA ($)	$692,461	$695,771	$806,318	$759,487	$732,920	$595,244	$596,824	$688,750	$811,131	$834,552	$821,408	$773,753	$8,808,618
6	(Line 1 x Line 4)													
7														
8	Rates with Change of Base Cost of Fuel Forward Looking													
9	FPEA Rate (¢/kWh)	2.201	2.170	2.021	1.833	1.912	2.125	2.305	2.281	2.171	1.985	1.974	2.228	
10	Revenue from FPEA ($)	$1,597,140	$1,466,301	$1,405,975	$1,192,171	$1,301,475	$1,385,895	$1,608,420	$1,573,974	$1,466,739	$1,299,727	$1,341,982	$1,624,232	$17,264,032
11	(Line 1 x Line 9)													
12														
13	Change in FPEA Revenues Increase/Decrease ($)													$8,455,414

The purpose of this page is to show revenue under the present rate with two month lag and part of the base cost of fuel in the general base rate compared to total cost of fuel without lag on one billing line item

Exhibit B
Docket 015/MR-16-709
FC-1.0

Minnesota Power
Average Fuel and Purchased Energy Cost
Test Year Ending 12/31/2017
E015/MR-16-709

Line No		Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Total
1	Fuel Cost ($000)													
2	All Stations - Total Burned for Generation	13,348	11,331	11,247	7,767	10,325	10,474	11,860	11,756	10,332	7,381	10,795	12,393	129,010
3	Plus: Other Energy Component of Purchased & Interchange	11,955	10,979	10,799	11,437	10,518	11,370	12,675	12,121	12,053	13,484	10,512	12,496	140,399
4	Plus: Young 2 Purchased Energy	3,180	2,506	3,149	3,098	3,189	2,697	3,164	3,195	3,099	2,788	3,077	3,189	36,330
5	Less: Fuel Cost recovered thru Inter-System Sales	8,899	6,985	8,161	7,973	8,531	8,020	8,205	8,013	7,815	7,960	8,206	8,317	97,085
6	Less: Fuel Costs Recovered thru Incr. Prod. Service	147	106	143	71	91	83	130	174	195	96	92	102	1,431
7	Total Monthly Fuel Cost	19,436	17,724	16,891	14,258	15,410	16,438	19,364	18,885	17,474	15,596	16,087	19,659	207,224
8														
9														
10	MWh Sales													
11	Total Sales of Electricity	1,260,707	1,112,231	1,184,250	1,110,129	1,165,977	1,099,434	1,182,490	1,165,459	1,134,636	1,115,268	1,156,663	1,229,412	13,916,655
12	Less: Inter-System Sales	372,759	291,854	342,578	329,448	356,022	322,569	338,451	331,805	322,615	325,959	338,096	343,331	4,015,487
13	Less: Incremental Production Sales	4,789	3,627	5,795	3,014	3,837	3,140	3,948	5,570	7,072	3,766	3,741	3,576	51,875
14	Total Monthly MWH Sales	883,159	816,750	835,877	777,667	806,118	773,725	840,091	828,084	804,948	785,543	814,826	882,504	9,849,293
15														
16	FUEL AND PURCHASED ENERGY ADJUSTMENT													
17	Average Cost of Fuel (line7/line14)	2.201	2.170	2.021	1.833	1.912	2.125	2.305	2.281	2.171	1.985	1.974	2.228	
18	Base Cost of Fuel (Present Rate)													
19														
20	BILLING MONTHS	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	
21														
22	2017 Budget Average Cost of Fuel (¢/kWh)													2.103

Minnesota Power
Retail Fuel and Purchased Energy Adjustment - Billing Month
Proposed Interim Rate - 1.018¢/kWh Base
Test Year Ending 12/31/2017
E015/MR-16-709

AVERAGE CALCULATED INTERIM RATES
Base = 1.018

Line No		Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17
1	**COST OF FUEL ($000)**															
2	Fuel Consumed in Company Generating Stations	8,281	11,016	12,149	13,348	11,331	11,247	7,767	10,325	10,474	11,860	11,756	10,332	7,381	10,795	12,393
3	Plus: Other Energy Component of Purchased & Interchange	11,714	8,805	11,055	11,955	10,979	10,799	11,437	10,518	11,370	12,675	12,121	12,053	13,484	10,512	12,496
4	Plus: Young 2 Purchased Energy	1,663	2,819	3,010	3,180	2,506	3,149	3,098	3,189	2,697	3,164	3,195	3,099	2,788	3,077	3,189
5	Less : Fuel Cost recovered thru Inter-System Sales	6,714	7,735	7,750	8,899	6,985	8,161	7,973	8,531	8,020	8,205	8,013	7,815	7,960	8,206	8,317
6	Less: Fuel Costs Recovered thru Incr. Prod. Service	159	162	161	147	106	143	71	91	83	130	174	195	96	92	102
7	Total Monthly Fuel Cost	14,785	14,742	18,303	19,436.42	17,724	16,891	14,258	15,410	16,438	19,364	18,885	17,474	15,596	16,087	19,659
8	Current 2-Month Total Cost of Fue		29,526	33,045	37,740	37,161	34,615	31,149	29,669	31,849	35,802	38,249	36,358	33,070	31,683	35,746
9																
10	**MWH SALES**															
11	Total Sales of Electricity	1,027,198	1,099,091	1,188,892	1,260,707	1,112,231	1,184,250	1,110,129	1,165,977	1,099,434	1,182,490	1,165,459	1,134,636	1,115,268	1,156,663	1,229,412
12	Less: Inter-System Sales	289,321	331,916	334,607	372,759	291,854	342,578	329,448	356,022	322,569	338,451	331,805	322,615	325,959	338,096	343,331
13	Less: Incremental Production Sales	3,966	3,941	3,776	4,789	3,627	5,795	3,014	3,837	3,140	3,948	5,570	7,072	3,766	3,741	3,576
14	Total Monthly MWH Sales	733,911	763,234	850,509	883,159	816,750	835,877	777,667	806,118	773,725	840,091	828,084	804,948	785,543	814,826	882,504
15	Current 2-Month Total MWH Sales		1,497,145	1,613,743	1,733,668	1,699,909	1,652,627	1,613,544	1,583,785	1,579,843	1,613,816	1,668,175	1,633,033	1,590,491	1,600,369	1,697,330
16																
17																
18	**FUEL AND PURCHASED ENERGY ADJUSTMENT**															
19	Average Cost of Fuel (Line 8/Line 15)*100		1.972	2.048	2.177	2.186	2.095	1.930	1.873	2.016	2.218	2.293	2.226	2.079	1.980	2.106
20	Base Cost of Fuel (Present Rate)		1.018	1.018	1.018	1.018	1.018	1.018	1.018	1.018	1.018	1.018	1.018	1.018	1.018	1.018
21																
22	Fuel and Purchased Energy Adjustment (Line 16 - Line 17)		0.954	1.030	1.159	1.168	1.077	0.912	0.855	0.998	1.200	1.275	1.208	1.061	0.962	1.088
23																
24	**BILLING MONTH**		**Jan-17**	**Feb-17**	**Mar-17**	**Apr-17**	**May-17**	**Jun-17**	**Jul-17**	**Aug-17**	**Sep-17**	**Oct-17**	**Nov-17**	**Dec-17**		
25	Annual Average Jan - Dec 2017															1.075

Minnesota Power
Average Fuel and Purchased Energy Cost Including Reagents and Business Interruption Insurance
Test Year Ending 12/31/2017
E015/MR-16-709

Line No		Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Total
1	Fuel Cost ($000)													
2	All Stations - Total Burned for Generation	13,348	11,331	11,247	7,767	10,325	10,474	11,860	11,756	10,332	7,381	10,795	12,393	129,010
3	Plus: Other Energy Component of Purchased & Interchange	11,955	10,979	10,799	11,437	10,518	11,370	12,675	12,121	12,053	13,484	10,512	12,496	140,399
4	Plus: Young 2 Purchased Energy	3,180	2,506	3,149	3,098	3,189	2,697	3,164	3,195	3,099	2,788	3,077	3,189	36,330
5	Plus: Reagents	333	333	333	333	333	333	333	333	333	333	333	333	4,001
6	Plus: Business Interruption Insurance	25	25	25	25	25	25	25	25	25	25	25	25	300
7	Less: Fuel Cost recovered thru Inter-System Sales	8,899	6,985	8,161	7,973	8,531	8,020	8,205	8,013	7,815	7,960	8,206	8,317	97,085
8	Less: Fuel Costs Recovered thru Incr. Prod. Service	147	106	143	71	91	83	130	174	195	96	92	102	1,431
9	Less: Reagent/BII Costs recovered thru Inter-System Sales	80	69	76	77	81	77	73	73	74	78	77	72	907
10	Total Monthly Fuel Cost	19,715	18,014	17,174	14,540	15,688	16,719	19,649	19,170	17,758	15,877	16,369	19,946	210,617
11														
12														
13	MWh Sales													
14	Total Sales of Electricity	1,260,707	1,112,231	1,184,250	1,110,129	1,165,977	1,099,434	1,182,490	1,165,459	1,134,636	1,115,268	1,156,663	1,229,412	13,916,655
15	Less: Inter-System Sales	372,759	291,854	342,578	329,448	356,022	322,569	338,451	331,805	322,615	325,959	338,096	343,331	4,015,487
16	Less: Incremental Production Sales	4,789	3,627	5,795	3,014	3,837	3,140	3,948	5,570	7,072	3,766	3,741	3,576	51,875
17	Total Monthly MWH Sales	883,159	816,750	835,877	777,667	806,118	773,725	840,091	828,084	804,948	785,543	814,826	882,504	9,849,293
18														
19	2017 Budget Average Cost of Fuel (¢/kWh)	2.232	2.206	2.055	1.870	1.946	2.161	2.339	2.315	2.206	2.021	2.009	2.260	2.137

The purpose of this is to calculate the new base cost including reagents, and business interruption insurance

PUBLIC DOCUMENT
TRADE SECRET DATA EXCISED

Minnesota Power **FC-1.3**
Determination of MWh Subject to Retail Fuel and Purchased Energy Adjustment
Test Year Ending 12/31/2017
E015/MR-16-709

Line No			Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Total
1	Total Company - MWh		**1,260,707**	**1,112,231**	**1,184,250**	**1,110,129**	**1,165,977**	**1,099,434**	**1,182,490**	**1,165,459**	**1,134,636**	**1,115,268**	**1,156,663**	**1,229,412**	**13,916,655**
2															
3															
4	Less MWh Not Subject to FPEA														
5	Sales for Resale		**488,462**	**398,468**	**440,703**	**413,501**	**435,980**	**400,432**	**435,290**	**424,968**	**408,564**	**414,118**	**431,440**	**454,181**	**5,146,107**
6															
7	IPS / RFPS														
8															
9	Mesabi Nugget														
10	Mittal IPS														
11	Blandin IPS														
12	Boise IPS														
13	Boise RFPS														
14	Cliffs (United Taconite/NMS Babb														
15	Hibbing Taconite IPS														
16	Blandin RFPS														
17	Verso (New Page) IPS														
18															
19		Total	4,789	3,627	5,795	3,014	3,837	3,140	3,948	5,570	7,072	3,766	3,741	3,576	51,875
20	Non-Firm, Economy & Other Increm.Sales														
21															
22	Boise Economy														
23	Blandin Non-firm														
24	Sappi Economy														
25	Silver Bay power Fixed PPA														
26	Mesabi Nugget EMSS														
27															
28		Total	42,700	35,700	43,450	45,200	47,400	45,600	47,700	46,800	44,950	44,300	42,600	43,300	529,700
29															
30	Solar MWh's - Reduction to Load		(958)	(1,245)	(1,471)	(1,806)	(2,039)	(2,067)	(2,250)	(2,058)	(1,630)	(1,547)	(853)	(756)	(18,679)
31															
32	Subtotal		534,993	436,550	488,477	459,909	485,178	447,105	484,688	475,280	458,957	460,637	476,928	500,302	5,709,003
33															
34	01/01- 12/31/17 Total MWh Subject to FPEA		**725,714**	**675,681**	**695,773**	**650,220**	**680,799**	**652,329**	**697,802**	**690,179**	**675,679**	**654,631**	**679,735**	**729,110**	**8,207,652**

FPE Calculation
Test Year Ending 12/31/2017
E015/MR-16-709

	From May 2016 Projected Year															
Generation Costs	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Total 2017
Company Generating Stations	8,281,014	11,015,558	12,149,112	13,348,004	11,330,939	11,246,641	7,767,300	10,324,923	10,474,081	11,860,112	11,756,071	10,332,337	7,380,897	10,795,224	12,393,330	129,009,860
Purchased Steam-TG5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Generation	**8,281,014**	**11,015,558**	**12,149,112**	**13,348,004**	**11,330,939**	**11,246,641**	**7,767,300**	**10,324,923**	**10,474,081**	**11,860,112**	**11,756,071**	**10,332,337**	**7,380,897**	**10,795,224**	**12,393,330**	**129,009,860**
Square Butte Energy	**1,663,160**	**2,818,635**	**3,009,805**	**3,179,585**	**2,505,920**	**3,148,565**	**3,098,260**	**3,189,120**	**2,697,425**	**3,163,960**	**3,194,775**	**3,098,775**	**2,787,775**	**3,077,200**	**3,189,120**	**36,330,480**
Purchases																
Purchases excl MISO charges	10,228,767	6,685,526	9,477,793	10,516,522	10,177,743	9,640,044	9,897,284	9,286,594	9,142,055	11,546,143	11,234,254	11,109,906	12,221,824	9,052,872	11,219,166	125,044,407
MISO Charges	1,605,984	2,241,678	1,702,380	1,491,619	858,922	1,214,083	1,594,022	1,284,440	2,282,400	1,184,814	943,037	998,179	1,315,944	1,513,600	1,333,579	16,014,640
Admin in MISO Charge not allocated to Ret	(120,584)	(122,121)	(124,806)	(53,320)	(57,805)	(54,885)	(54,386)	(52,648)	(54,235)	(55,901)	(55,858)	(55,528)	(54,134)	(54,495)	(56,409)	(659,604)
Subtotal Purchases	**11,714,167**	**8,805,083**	**11,055,367**	**11,954,821**	**10,978,860**	**10,799,242**	**11,436,919**	**10,518,387**	**11,370,220**	**12,675,056**	**12,121,433**	**12,052,557**	**13,483,634**	**10,511,977**	**12,496,335**	**140,399,442**
Inter-System Sales																
IPS and RFPS	159,379	162,478	160,853	146,721	106,339	142,647	71,484	91,437	83,286	130,175	174,111	195,140	95,597	91,805	102,321	1,431,063
Economy	296,370	289,910	277,142	1,237,835	1,028,119	1,224,484	1,253,703	1,313,862	1,286,498	1,406,411	1,366,727	1,281,297	1,249,718	1,198,022	1,243,097	15,089,775
Mesabi Nugget	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LT Firm	3,278,034	3,167,870	3,291,352	3,159,351	2,870,085	3,189,692	3,101,371	3,197,593	3,104,381	3,227,130	3,244,078	3,153,125	3,282,394	3,160,238	3,264,895	37,954,333
Unidentified Market Sales	1,252,344	2,302,726	2,311,248	4,194,108	2,927,453	3,503,644	3,308,180	3,748,176	3,191,460	3,346,045	3,218,386	3,180,816	3,166,850	3,551,072	3,557,031	40,893,221
Generation Correction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WPPI Station Serv	3,892	3,892	7,783	3,892	3,892	7,783	3,892	3,892	7,783	3,892	3,892	7,783	3,892	3,892	7,783	62,268
MISO recovered thru IPS, INT, ECON, NON	19,074	24,751	16,200	14,097	5,226	14,516	20,441	18,158	30,291	17,074	14,659	16,753	14,950	15,730	12,234	194,128
MISO recovered thru Polymet, Mesabi Nugg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MISO recovered thru Power Mktg Sales	8,464	21,734	9,769	76,068	18,529	31,426	34,259	46,322	47,874	18,584	11,881	14,938	27,689	47,993	33,767	409,330
MISO recovered thru LTFS	245,398	322,811	232,325	203,871	122,638	179,330	240,994	192,481	342,383	175,841	143,784	150,570	204,728	219,045	188,137	2,363,801
Released Firm Sales	1,610,699	1,601,406	1,604,163	0	0	0	0	0	0	0	0	0	0	0	0	0
Released Energy Sales	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Liquidation	0	0	0	10,044	9,072	10,044	9,720	10,044	9,720	10,044	10,044	9,720	10,044	9,720	10,044	118,260
Total IS-S	**6,873,653**	**7,897,577**	**7,910,836**	**9,045,987**	**7,091,353**	**8,303,566**	**8,044,044**	**8,621,965**	**8,103,677**	**8,335,195**	**8,187,561**	**8,010,143**	**8,055,861**	**8,297,518**	**8,419,309**	**98,516,180**
Monthly Cost of Fuel	**14,784,687**	**14,741,699**	**18,303,449**	**19,436,423**	**17,724,365**	**16,890,883**	**14,258,435**	**15,410,464**	**16,438,049**	**19,363,933**	**18,884,718**	**17,473,526**	**15,596,445**	**16,086,884**	**19,659,477**	**207,223,602**
Two Month Costs		**29,526,386**	**33,045,148**	**37,739,872**	**37,160,789**	**34,615,248**	**31,149,318**	**29,668,900**	**31,848,514**	**35,801,982**	**38,248,651**	**36,358,244**	**33,069,970**	**31,683,328**	**35,746,361**	**413,091,176**
Total Sales of Electricity (net of solar)	**1,027,198**	**1,099,091**	**1,188,892**	**1,260,707**	**1,112,231**	**1,184,250**	**1,110,129**	**1,165,977**	**1,099,434**	**1,182,490**	**1,165,459**	**1,134,636**	**1,115,268**	**1,156,663**	**1,229,412**	**13,916,655**
Inter-System Sales																
IPS	3,966	3,941	3,776	4,789	3,627	5,795	3,014	3,837	3,140	3,948	5,570	7,072	3,766	3,741	3,576	51,875
LT Firm	148,800	144,000	148,800	148,800	134,400	148,800	144,000	148,800	144,000	148,800	148,800	144,000	148,800	144,000	148,800	1,752,000
Unidentified Market Sales	58,396	108,691	104,558	181,134	121,629	150,078	140,123	159,697	132,719	141,826	136,080	133,416	132,734	151,371	150,982	1,731,788
WPPI Station Service	125	125	250	125	125	250	125	125	250	125	125	250	125	125	250	1,998
Economy	7,600	7,100	6,600	42,700	35,700	43,450	45,200	47,400	45,600	47,700	46,800	44,950	44,300	42,600	43,300	529,700
EMSS (Polymet, Mesabi Nugget)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Released Firm Sales	74,400	72,000	74,400	0	0	0	0	0	0	0	0	0	0	0	0	0
Released Energy Sales	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total IS-S	**293,287**	**335,857**	**338,383**	**377,548**	**295,481**	**348,373**	**332,462**	**359,859**	**325,709**	**342,399**	**337,375**	**329,687**	**329,725**	**341,837**	**346,907**	**4,067,362**
Sales for FAC Calc	**733,911**	**763,234**	**850,509**	**883,159**	**816,750**	**835,877**	**777,667**	**806,118**	**773,725**	**840,091**	**828,084**	**804,948**	**785,543**	**814,826**	**882,504**	**9,849,293**
Two Month Sales		**1,497,145**	**1,613,743**	**1,733,668**	**1,699,909**	**1,652,627**	**1,613,544**	**1,583,785**	**1,579,843**	**1,613,816**	**1,668,175**	**1,633,033**	**1,590,491**	**1,600,369**	**1,697,330**	**19,666,591**

Minnesota Power

FC-1.5

Reagent Components for Boswell Units

Test Year Ending12/31/2017

E015/MR-16-709

Line No.		Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Total
1	**Boswell**													
2	Unit 1 &2													
3	Urea	$28,000	$28,000	$28,000	$28,000	$28,000	$28,000	$28,000	$28,000	$28,000	$28,000	$28,000	$28,000	$336,000
4														
5	Unit 3													
6	Ammonia	$44,594	$44,594	$44,594	$44,594	$44,594	$44,594	$44,594	$44,594	$44,594	$44,594	$44,594	$44,594	$535,132
7	Carbon	$4,741	$4,741	$4,741	$4,741	$4,741	$4,741	$4,741	$4,741	$4,741	$4,741	$4,741	$4,741	$56,892
8	Limestone	$49,344	$49,344	$49,344	$49,344	$49,344	$49,344	$49,344	$49,344	$49,344	$49,344	$49,344	$49,344	$592,130
9														
10	Unit 4													
11	Urea	$20,067	$20,067	$20,067	$20,067	$20,067	$20,067	$20,067	$20,067	$20,067	$20,067	$20,067	$20,067	$240,800
12	Carbon	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$240,000
13	Lime	$166,667	$166,667	$166,667	$166,667	$166,667	$166,667	$166,667	$166,667	$166,667	$166,667	$166,667	$166,667	$2,000,000
14														
15	Total	$333,413	$333,413	$333,413	$333,413	$333,413	$333,413	$333,413	$333,413	$333,413	$333,413	$333,413	$333,413	$4,000,954

Minnesota Power
Business Interruption - Converter Stations and Bison Wind
Test Year ending 12/31/2017
E015/MR-16-709

Line No.		Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Total
1	Converter Station Time Element	$18,676	$18,676	$18,676	$18,676	$18,676	$18,676	$18,676	$18,676	$18,676	$18,676	$18,676	$18,676	$224,112
2	Bison Time Element	$6,306	$6,306	$6,306	$6,306	$6,306	$6,306	$6,306	$6,306	$6,306	$6,306	$6,306	$6,306	$75,673
3														
4	Total	$24,982	$24,982	$24,982	$24,982	$24,982	$24,982	$24,982	$24,982	$24,982	$24,982	$24,982	$24,982	$299,785

MINNESOTA POWER
Reconciliation of MWh
Fuel and Purchased Energy Adjustment Data vs. COS Budget Data
Test Year Ending 12/31/2017
E015/MR-16-709

Line No.	Cost of Service			Retail Subject to FPEA
1	Retail Sales of Elec.		1/	
2		(Unbilled Subj to FPEA)		0
3		Residential Services		985,494
4		General Service		641,438
5		Large Light & Power		1,494,916
6		All Energy		
7		Gerdau		
8		Rider for School		
9		ME Global		
10		Intermet		
11		Large Power (Firm)		
12		Blandin		
13		Boise		
14		New Page		
15		Sappi		
16		Hibbing		
17		Mittal Steel		
18		United Taconite		
19		USS Combined		
20		Messabi Nugget LP		
21		Municipal Pumping		17,074
22		Lighting		22,464
23		Res Dual Fuel		101,014
24		C/I Dual Fuel		27,854
25		LP Excess (@ Firm Rate)		0
26				
27	Total MWh subject to FPEA		2/	8,207,652
28				
29		FPEA		8,207,652
30		Schedule E		8,207,652
31		Difference		0
32				
33				Resale
34	SWLP			814,412
35	Municipals			845,908
36	Market Sales			
37				1,660,320
38	Grand Total			9,867,972
39		Source		
40	1/	Schedule E-1: Rate Schedules (esched sum.gen)		
41	2/	Notice Base of Fuel Change: Exhibit A, line 1		

PUBLIC DOCUMENT
TRADE SECRET DATA EXCISED

Minnesota Power - Docket No. E-015/MR-16-664 FC-1.8
Fuel and Purchased Energy with 2.013¢/kWh Base
Reconciliation Fuel and Purchased Energy to Income Statement Expense
Test Year Ending 12/31/2017
Non-Public Document All Highlighted Data is Trade Secret Customer Data

Line No.		Account No	Fuel and Purchased Energy Adjustment		Income Statement		Difference	Explanation
			[a]		[b]		[c]	
7	Fuel	501	**129,009,860**	[1]	137,912,510	[8]	(8,902,650)	
8	Generation Cost							
9								
10	[redacted]		1	[2]	[redacted]	[9]	0	rounding
11				[3]		[10]	0	rounding
12							-	rounding
13							-	included in account 503 in Income Statement
14				[4]		[11]	(0)	
15	TRADE SECRET DATA ENDS		TRADE SECRET DATA ENDS					
16								
17	Natural Gas for Heating and Misc		-					
18							-	items not
19	**Labor/Labor OH**						-	included
21	O&M					[12]	(8,902,650)	in FAC
22							-	
23					TRADE SECRET DATA ENDS			
24	Total Generation Cost		129,009,860		137,912,510		(8,902,650)	
25								
26	Steam from Other Sources	503	-		-			
27							-	
28								
29	Purchased Power	555	176,865,809	[5]	177,389,520	[13]		
30								
31	MISO Schedule 16 & 17 Retail				1,185,025	[14]	1,185,025	items not
32	MISO Schedule 24 Retail				(500,872)	[15]	(500,872)	included
33	MISO 24 Inter-System not included in FAC				(160,442)	[16]	(160,442)	in FAC
34	Square Butte		36,330,480	[6]			523,711	
35	Other P&I Energy		140,535,329	[7]				
36								
37								
38	**Grand Total**		**305,875,669**		**315,302,030**		**(9,426,361)**	
39							(9,426,361)	check

Minnesota Power
Amortized Fuel Lag Adjustment
E015/GR-16-664
Test Year Ending 12/31/2017

Line No.	Rate Class		kWh	Three Year Total Targeted Funds Amount
1				
2	Residential		985,494,000	$2,257,408.22
3	Residential Dual Fuel		101,014,000	$231,386
4	C/I Dual Fuel		27,854,000	$63,803
5	General Service		641,438,000	$1,469,301
6	Large Light & Power		1,494,916,000	$3,424,309
7	Large Power		4,780,286,000	$10,949,896
8	Municipal Pumping		17,074,000	$39,110
9	Lighting		22,464,000	$51,457
10		Total	8,070,540,000	$18,486,671

Line No.	Rate Class		kWh	Rate/kWh	Annual Targeted Funds Amount	Number of Customers	Average Cost/Cust per Year	Average Cost/Cust per Month
11				**$0.00076**				
12	Residential		985,494,000		$752,469.41	112,252	$6.70	$0.56
13	Residential Dual Fuel		101,014,000		$77,128.77	7,520	$10.26	$0.85
14	C/I Dual Fuel		27,854,000		$21,267.79	543	$39.17	$3.26
15	General Service		641,438,000		$489,767.03	20,057	$24.42	$2.03
16	Large Light & Power		1,494,916,000		$1,141,436.23	449	$2,542.17	$211.85
17	Large Power		4,780,286,000		$3,649,965.37	9	$405,551.71	$33,795.98
18	Municipal Pumping		17,074,000		$13,036.77	229	$56.93	$4.74
19	Lighting		22,464,000		$17,152.28	5,142	$3.34	$0.28
20		Total	8,070,540,000		$6,162,223.67	146,201	408,235	34,020

RIDER FOR FUEL AND PURCHASED ENERGY ~~ADJUSTMENT~~

FUEL AND PURCHASED ENERGY COST~~ADJUSTMENT~~

Applicable to electric service under all Company's Retail Rate Schedules except Competitive Rate Schedules Rate Codes 73 and 79 and Erie Mine Site Service Schedule - Rate Code 72.

There shall be added to ~~or deducted from~~ the monthly bill ~~an amount~~a Fuel and Purchased Energy (FPE) Cost per kilowatt-hour determined as the ~~amount by which the~~ Forecasted ~~Fuel and Purchased Energy~~ FPE Cost~~s~~ divided by the ~~actual~~ Forecasted Kilowatt-Hour Sales ~~is greater than or less than the Base Cost of Energy as specified below~~.

There shall also be added to or deducted from the monthly bill a True-up FPE Cost per kilowatt-hour determined as the amount by which the Forecasted FPE Cost per kWh is greater than or less than the actual calculated FPE Cost per kWh.

The Forecasted System Average ~~Fuel and Purchased Energy~~ FPE Cost shall be the Forecasted FPE Cost divided by the Forecasted Kilowatt-Hour Sales. The True-up FPE Cost~~System Average FPE Adjustment~~ shall be the Actual System Average FPE Cost less the Forecasted System Average ~~Base Cost of Energy~~FPE costs. The applicable True-up FPE Cost ~~Adjustment~~ applied to the Forecasted Kilowatt-Hour Sales for the billing month will be included monthly on each customer's bill according to customer's rate class.

FORECASTED AVERAGE FUEL AND PURCHASED ENERGY COST

The Forecasted ~~Fuel and Purchased Energy~~FPE Cost shall be the **sum** of the following forecasted amounts~~during the first two of the preceding three~~ for the billing month~~s~~:

(a) ~~t~~The fossil and nuclear fuel consumed in Company's generating stations,
(b) ~~t~~The net energy cost of energy purchases, exclusive of capacity or demand charges (irrespective of the designation assigned to such transaction) when such energy is purchased on an economic dispatch basis, this encompasses energy being purchased to substitute for Company's own higher cost energy,
(c) ~~t~~The ~~actual~~ identifiable fossil and nuclear fuel costs associated with energy purchased for reasons other than identified in (b) above,
(d) ~~t~~The cost of steam from other sources used in the generation of electricity at the Company's generating stations,
(e) ~~t~~The cost of the Released Energy Credit paid to Customer(s) for avoided energy purchases under the Rider for Released Energy,

RIDER FOR FUEL AND PURCHASED ENERGY ~~ADJUSTMENT~~

(f) ~~t~~The cost of the Buyback Energy Credit paid to Customer(s) for avoided energy purchases under the Rider for Voluntary Energy Buyback,

(g) ~~f~~Fuel ~~-~~and purchased energy expenses incurred by the Company over the duration of any Commission approved contract, as provided for by Minnesota Statutes, Section 216B.1645, to satisfy the renewable energy obligations set forth in Minnesota Statutes, Section 216B.1691,

(h) A~~a~~ll ~~MISO~~ RTO (Regional Transmission Organization) market costs net of revenues ~~allowed to flow through the FPE Adjustment by Commission's December 20, 2006 Order in Docket No. E-015/M-05-277, excluding the MISO Day 2 costs that are recovered under provision (b) of the FPE Rider, and~~

(i) ~~t~~The cost of the purchase of SO_2 and NOx allowances,

(j) Reagents and chemicals for environmental compliance,

(k) Premiums related to business interruption insurance,

(l) Amortization of the FPE transition cost recovery amount

and **less**

(~~j~~m) ~~r~~Revenues from the sale of SO_2 allowances and NOx allowances,

(n~~k~~) Proceeds from recoveries under business interruption insurance

(o) ~~t~~The cost of fossil and nuclear fuel and the cost of steam from other sources recovered through inter-system sales including the fuel and steam costs related to economy energy sales and other energy sold on an economic dispatch basis and

(~~l~~p) N~~n~~et revenues from the sale of environmental attributes from any Commission approved contract.

The Kilowatt-Hour Sales shall be Company's total kilowatt-hour Sales of Electricity, excluding inter-system sales referred to in (o~~k~~) above; all for the billing~~first two of the preceding three~~ month~~s~~.

ACTUAL FUEL AND PURCHASED ENERGY COST

The FPE Cost shall be the **sum** of the actual costs for the following for the billing month:

(a) The fossil and nuclear fuel consumed in Company's generating stations,

(b) The net energy cost of energy purchases, exclusive of capacity or demand charges (irrespective of the designation assigned to such transaction) when such energy is purchased on an economic dispatch basis, this encompasses energy being purchased to substitute for Company's own higher cost energy,

(c) The actual identifiable fossil and nuclear fuel costs associated with energy purchased for reasons other than identified in (b) above,

(d) The cost of steam from other sources used in the generation of electricity at the Company's generating stations,

RIDER FOR FUEL AND PURCHASED ENERGY ~~ADJUSTMENT~~

(e) The cost of the Released Energy Credit paid to Customer(s) for avoided energy purchases under the Rider for Released Energy.

~~(a)~~(f) The cost of the Buyback Energy Credit paid to Customer(s) for avoided energy purchases under the Rider for Voluntary Energy Buyback.

RIDER FOR FUEL AND PURCHASED ENERGY ~~ADJUSTMENT~~

(g) Fuel and purchased energy expenses incurred by the Company over the duration of any Commission approved contract, as provided for by Minnesota Statutes, Section 216B.1645, to satisfy the renewable energy obligations set forth in Minnesota Statutes, Section 216B.1691,
(h) All RTO market costs net of revenues
(i) The cost of the purchase of SO_2 and NOx allowances,
(j) Reagents and chemicals for environmental compliance,
(k) Premiums related to business interruption insurance
(l) Amortization of the FPE transition cost recovery amount,

and **less**

(m) Revenues from the sale of SO_2 allowances and NOx allowances,
(n) Proceeds from recoveries under business interruption insurance
(o) The cost of fossil and nuclear fuel and the cost of steam from other sources recovered through inter-system sales including the fuel and steam costs related to economy energy sales and other energy sold on an economic dispatch basis and
(p) Net revenues from the sale of environmental attributes from any Commission approved contract.

The Kilowatt-Hour Sales shall be Company's total kilowatt-hour Sales of Electricity, excluding inter-system sales referred to in (o) above; all for the billing month.

CLASS COST FACTORS

A separate Class Cost Factor shall be applied to calculate the ~~Base Cost of Energy and~~ FPE Cost ~~Adjustment~~ for each Rate Class.

Rate Class	Class Cost Factor
Residential	~~1.07076~~1.01356
General Service	~~1.07093~~1.03467
Large Light & Power	~~1.00424~~1.00932
Large Power	~~0.97769~~0.98975
Municipal Pumping	~~0.98103~~1.01522
Lighting	~~0.74029~~0.82532

BASE COST OF ENERGY

The System Average Base Cost of Energy is ~~1.018~~2.103¢/kWh. The class-specific Base Cost of Energy for each rate class is obtained by multiplying ~~1.018~~2.103¢/kWh by the applicable Class Cost Factor.

RIDER FOR FUEL AND PURCHASED ENERGY ~~ADJUSTMENT~~

Rate Class	Base Cost of Energy
Residential	~~1.090~~2.132¢/kWh
General Service	~~1.090~~2.176¢/kWh
Large Light and Power	~~1.022~~2.123¢/kWh
Large Power	~~0.995~~2.081¢/kWh
Municipal Pumping	~~0.999~~2.135¢/kWh
Lighting	~~0.754~~1.736¢/kWh

FORECASTED FUEL AND PURCHASED ENERGY COST ~~ADJUSTMENT~~

The Forecasted FPE Cost ~~Adjustment~~ for each rate class shall be determined by multiplying the Forecasted System Average FPE Cost ~~Adjustment~~ by the applicable Class Cost Factor.

TRUE-UP FUEL AND PURCHASED ENERGY COST

The True-up FPE Cost for each rate class shall be determined by multiplying the True-up System Average FPE Cost by the applicable Class Cost Factor.

RIDER FOR FUEL AND PURCHASED ENERGY

FUEL AND PURCHASED ENERGY COST

Applicable to electric service under all Company's Retail Rate Schedules except Competitive Rate Schedules Rate Codes 73 and 79 and Erie Mine Site Service Schedule - Rate Code 72.

There shall be added to the monthly bill a Fuel and Purchased Energy (FPE) Cost per kilowatt-hour determined as the Forecasted FPE Cost divided by the Forecasted Kilowatt-Hour Sales.

There shall also be added to or deducted from the monthly bill a True-up FPE Cost per kilowatt-hour determined as the amount by which the Forecasted FPE Cost per kWh is greater than or less than the actual calculated FPE Cost per kWh.

The Forecasted System Average FPE Cost shall be the Forecasted FPE Cost divided by the Forecasted Kilowatt-Hour Sales. The True-up FPE Cost shall be the Actual System Average FPE Cost less the Forecasted System Average FPE costs. The applicable True-up FPE Cost applied to the Forecasted Kilowatt-Hour Sales for the billing month will be included monthly on each customer's bill according to customer's rate class.

FORECASTED AVERAGE FUEL AND PURCHASED ENERGY COST

The Forecasted FPE Cost shall be the **sum** of the following forecasted amounts for the billing month:

(a) The fossil and nuclear fuel consumed in Company's generating stations,
(b) The net energy cost of energy purchases, exclusive of capacity or demand charges (irrespective of the designation assigned to such transaction) when such energy is purchased on an economic dispatch basis, this encompasses energy being purchased to substitute for Company's own higher cost energy,
(c) The identifiable fossil and nuclear fuel costs associated with energy purchased for reasons other than identified in (b) above,
(d) The cost of steam from other sources used in the generation of electricity at the Company's generating stations,
(e) The cost of the Released Energy Credit paid to Customer(s) for avoided energy purchases under the Rider for Released Energy,

RIDER FOR FUEL AND PURCHASED ENERGY

(f) The cost of the Buyback Energy Credit paid to Customer(s) for avoided energy purchases under the Rider for Voluntary Energy Buyback,
(g) Fuel and purchased energy expenses incurred by the Company over the duration of any Commission approved contract, as provided for by Minnesota Statutes, Section 216B.1645, to satisfy the renewable energy obligations set forth in Minnesota Statutes, Section 216B.1691,
(h) All RTO (Regional Transmission Organization) market costs net of revenues
(i) The cost of the purchase of SO_2 and NOx allowances,
(j) Reagents and chemicals for environmental compliance,
(k) Premiums related to business interruption insurance,
(l) Amortization of the FPE transition cost recovery amount

and **less**

(m) Revenues from the sale of SO_2 allowances and NOx allowances,
(n) Proceeds from recoveries under business interruption insurance
(o) The cost of fossil and nuclear fuel and the cost of steam from other sources recovered through inter-system sales including the fuel and steam costs related to economy energy sales and other energy sold on an economic dispatch basis and
(p) Net revenues from the sale of environmental attributes from any Commission approved contract.

The Kilowatt-Hour Sales shall be Company's total kilowatt-hour Sales of Electricity, excluding inter-system sales referred to in (o) above; all for the billing month.

ACTUAL FUEL AND PURCHASED ENERGY COST

The FPE Cost shall be the **sum** of the actual costs for the following for the billing month:
(a) The fossil and nuclear fuel consumed in Company's generating stations,
(b) The net energy cost of energy purchases, exclusive of capacity or demand charges (irrespective of the designation assigned to such transaction) when such energy is purchased on an economic dispatch basis, this encompasses energy being purchased to substitute for Company's own higher cost energy,
(c) The actual identifiable fossil and nuclear fuel costs associated with energy purchased for reasons other than identified in (b) above,
(d) The cost of steam from other sources used in the generation of electricity at the Company's generating stations,
(e) The cost of the Released Energy Credit paid to Customer(s) for avoided energy purchases under the Rider for Released Energy,
(f) The cost of the Buyback Energy Credit paid to Customer(s) for avoided energy purchases under the Rider for Voluntary Energy Buyback,

RIDER FOR FUEL AND PURCHASED ENERGY

(g) Fuel and purchased energy expenses incurred by the Company over the duration of any Commission approved contract, as provided for by Minnesota Statutes, Section 216B.1645, to satisfy the renewable energy obligations set forth in Minnesota Statutes, Section 216B.1691,
(h) All RTO market costs net of revenues
(i) The cost of the purchase of SO_2 and NOx allowances,
(j) Reagents and chemicals for environmental compliance,
(k) Premiums related to business interruption insurance
(l) Amortization of the FPE transition cost recovery amount,

and **less**

(m) Revenues from the sale of SO_2 allowances and NOx allowances,
(n) Proceeds from recoveries under business interruption insurance
(o) The cost of fossil and nuclear fuel and the cost of steam from other sources recovered through inter-system sales including the fuel and steam costs related to economy energy sales and other energy sold on an economic dispatch basis and
(p) Net revenues from the sale of environmental attributes from any Commission approved contract.

The Kilowatt-Hour Sales shall be Company's total kilowatt-hour Sales of Electricity, excluding inter-system sales referred to in (o) above; all for the billing month.

CLASS COST FACTORS

A separate Class Cost Factor shall be applied to calculate the FPE Cost for each Rate Class.

Rate Class	Class Cost Factor
Residential	1.01356
General Service	1.03467
Large Light & Power	1.00932
Large Power	0.98975
Municipal Pumping	1.01522
Lighting	0.82532

BASE COST OF ENERGY

The System Average Base Cost of Energy is 2.103¢/kWh. The class-specific Base Cost of Energy for each rate class is obtained by multiplying 2.103¢/kWh by the applicable Class Cost Factor.

RIDER FOR FUEL AND PURCHASED ENERGY

Rate Class	Base Cost of Energy
Residential	2.132¢/kWh
General Service	2.176¢/kWh
Large Light and Power	2.123¢/kWh
Large Power	2.081¢/kWh
Municipal Pumping	2.135¢/kWh
Lighting	1.736¢/kWh

FORECASTED FUEL AND PURCHASED ENERGY COST

The Forecasted FPE Cost for each rate class shall be determined by multiplying the Forecasted System Average FPE Cost by the applicable Class Cost Factor.

TRUE-UP FUEL AND PURCHASED ENERGY COST

The True-up FPE Cost for each rate class shall be determined by multiplying the True-up System Average FPE Cost by the applicable Class Cost Factor.

Direct Testimony and Schedules
Leann S. Oehlerking-Boes

Before the Minnesota Public Utilities Commission

State of Minnesota

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

Docket No. E015/GR-16-664

Exhibit _____

FUEL CLAUSE ADJUSTMENT

November 2, 2016

Table of Contents

I. INTRODUCTION AND QUALIFICATIONS

Q. Please state your name and business address.

A. My name is Leann S. Oehlerking-Boes and my business address is 30 West Superior Street, Duluth, Minnesota 55802.

Q. By whom are you employed and in what position?

A. I am employed by ALLETE, Inc., doing business as Minnesota Power ("Minnesota Power" or the "Company"). My current position is Manager – Energy Pricing & Billing.

Q. Please summarize your qualifications and experience.

A. I have 27 years of experience at Minnesota Power, 12 years in Internal Audit and 15 years in Energy Pricing & Billing. While in Internal Audit, I audited various aspects of the Company, including the generation facilities, coal inventory, marketing, and the fuel clause adjustment ("FCA").[1] I joined the Energy Pricing & Billing department in 2001 as an Analyst and currently am the Manager of the department. Energy Pricing & Billing is responsible for Large Power billing, Municipal billing, calculation and oversight of the Fuel Clause, Midcontinent Independent System Operators, Inc. ("MISO") settlements, billings to other utilities for energy purchases and sales, and regulatory reporting related to departmental activities.

Q. What is the purpose of your testimony?

A. I will address the Company's base cost of fuel, FCA methodology, and potential changes to the costs to be recovered through the FCA.

Q. Are you sponsoring any exhibits in this proceeding?

A. Yes. I am sponsoring the following exhibits:

[1] "FCA" is the general term used by the Company and the Minnesota Public Utilities Commission ("Commission") when referring to the Company's Rider for Fuel and Purchased Energy Adjustment ("FPE Rider").

- Exhibit ___ (LSO), Schedule 1 – Current Fuel Clause Calculation.
- Exhibit ___ (LSO), Schedule 2 – Forecasted Fuel Clause Calculation.
- Exhibit ___ (LSO), Schedule 3 – Actual Versus Billed Fuel Costs.
- Exhibit ___ (LSO), Schedule 4 – Graph of History of Actual Fuel Costs.
- Exhibit ___ (LSO), Schedule 5 – Over- and Under-Recovery of Fuel Costs.
- Exhibit ___ (LSO), Schedule 6 – Projected Fuel Cost Recovery Delay Amount.

Redlined and clean versions of the Rider for Fuel and Purchased Energy, Minnesota Power Electric Rate Book, Section V, Page No. 50, that reflect the proposed changes are provided in the Tariff Pages for Change in Rates in Volume IV.

II. FUEL CLAUSE ADJUSTMENT

Q. What is the purpose of this section of your testimony?

A. The purpose of this portion of my testimony is to discuss the FCA cost recovery methodology.

Q. What are the key costs included in the fuel clause?

A. Key costs in the FCA include fuel and its related transportation costs, energy costs of bilateral purchases made to cover firm load, Day Ahead and Real Time MISO market purchases, and associated MISO market costs.

Q. What is the relationship between the fuel clause and this rate case?

A. The fuel clause is the mechanism through which the Company is able to account for any over- or under-recovery associated with providing energy to our customers. The FCA mechanism is an integral part of the Company's current cost recovery. By addressing both the FCA and the base cost of fuel in the rate case, instead of addressing the base cost of fuel in the rate case and the FCA in a separate docket, the Commission is able to evaluate all components of Minnesota Power's cost of fuel in

one docket. In this rate case, we propose to recalculate the base cost of fuel. In addition, we are proposing some changes to the FCA methodology to better align costs with customer usage and to provide more clear price signals to our customers regarding their usage.

A. Base Cost of Fuel

Q. What is the base cost of fuel as calculated for this rate case?

A. The current base cost of fuel is 1.018 cents per kilowatt-hour ("kWh"), which is the amount approved in our 1994 rate proceeding and affirmed in our 2008 and 2009 rate proceedings. Minnesota Power has proposed no change to the base cost of fuel for interim rates. Minnesota Power has calculated a base cost of fuel for the 2017 test year (Docket No. E015/MR-16-709) of 2.103 cents per kWh without incorporating any of the changes proposed in Section II.D of my Direct Testimony and 2.137 cents per kWh incorporating the proposed changes outlined in Section II.D.

Q. How does Minnesota Power propose to include this base cost of fuel on customer bills after final rates are approved?

A. Minnesota Power proposes to include the base cost of fuel in the FCA line item on customer bills and remove the base cost of fuel from base rates for final rates. This is consistent with the way Northern States Power Company d/b/a Xcel Energy ("Xcel Energy") accounts for their base cost of fuel on customer bills.

Q. Has the Company included any changes to the base cost of fuel in its proposed interim rates in this rate case?

A. No, we have not. We have also not proposed any changes to our FCA calculation methodology in interim rates. Because we are proposing changes in methodology that we anticipate will be discussed throughout this proceeding, and because our base cost of fuel has remained the same since our 1994 rate proceeding, we propose to implement changes with final rates rather than with interim rates.

B. Fuel Clause Adjustment Methodology

Q. What is the source of the current FCA methodology used by Minnesota Power?

A. Minnesota Power administers its FCA under the currently-approved FPE Rider, as approved in Docket No. E015/GR-09-1151. A clean version of the Rider for Fuel and Purchased Energy, Minnesota Power Electric Rate Book, Section V, Page No. 50, is provided in the Tariff Pages for Change in Rates in Volume IV of the filing. Exhibit ___ (LSO), Schedule 1 to my Direct Testimony shows the current fuel clause calculation methodology utilized by Minnesota Power. This is the same information that is also reported to the Minnesota Department of Commerce ("Department") monthly as part of Form 3722, as required by Minnesota Rule 7825.2900, Subpart 1.

Q. Please describe the current methodology by which Minnesota Power calculates its FCA and flows costs and revenues through its fuel clause.

A. First, the monthly cost of fuel is calculated. Each month, Minnesota Power utilizes fuel costs from its generating stations, plus any purchased steam, plus purchased energy costs, including from renewables and the MISO Day 2 Market from the first two of the preceding three months. For example, in September, these costs would be totaled for the months of July and August. This cost is then reduced by the MISO Schedule 16 and Schedule 17 administration charges, as well as MISO Schedule 24 control area charges and the Resource Adequacy Auction Amount for the same period. Next, the fuel cost recovered through inter-system sales and other non-fuel clause sales is subtracted to obtain the total cost of fuel to be recovered through the fuel clause for the same period. The general calculation is shown in Figure 1.

Figure 1. Monthly Calculation for Total Cost of Fuel under Current Methodology

$$\begin{aligned}&(\text{Actual Cost of Used Fuel} + \text{Purchased Steam} + \text{Purchased Energy})\\ &-(\text{MISO Schedule 16, 17, and 24 charges})\\ &-(\text{Resource Adequacy Auction Amount})\\ &-(\text{Fuel Cost Recovered})\\ &= \text{Monthly Total Cost of Fuel to be Recovered}\end{aligned}$$

The fuel clause kilowatt hours ("kWh") are determined monthly by starting with the total sales of electricity and subtracting inter-system sales and other non-fuel clause sales for the first two of the previous three months. The general calculation is shown in Figure 2.

Figure 2. Monthly Calculation for Total Fuel Clause kWhs under Current Methodology

$$\begin{aligned}&(\text{Monthly Total kWh of Electricity Sales})\\&\quad -(\text{Inter-System Sales kWhs})\\&\quad -(\text{Other Non-Fuel Clause Sales kWhs})\\&\qquad\qquad = \text{Monthly Total kWhs}\end{aligned}$$

The two monthly total cost of fuel to be recovered totals are then added together and divided by the sum of the monthly kWh sales (subtracting the inter-system sales and other non-fuel clause sales) for the same two-month period to get the current FCA Factor. The current FCA Factor calculation is shown in Figure 3.

Figure 3. Calculation of Current FCA Factor

$$\frac{(\text{Month1 Total Cost of Fuel to be Recovered} + \text{Month2 Total Cost of Fuel to be Recovered})}{(\text{Month1 Total kWhs} + \text{Month2 Total kWhs})}$$

The current base cost of fuel of 1.018 cents per kWh is subtracted from the current billing month's calculated cost of fuel to obtain the fuel adjustment for the current billing period.

This current FCA Factor is then applied to Minnesota Power's customer bills in the following month.

Q. Is Minnesota Power proposing to change its FCA calculation methodology as part of this rate proceeding?

A. Yes. Minnesota Power is proposing to make a change to its FCA methodology to achieve better price signals for customers and a better matching of cost recovery with cost incurrence.

Q. Please describe how Minnesota Power is proposing to change its fuel clause methodology.

A. Minnesota Power is proposing a fuel and related costs recovery approach that would adopt a forecasted FCA methodology. This would involve utilizing a forecasted FCA amount with a related true-up mechanism to be applied to customer bills in the month following the calculation of the true-up amount. The Company is also proposing to recover total fuel costs through the FCA and not reflect any base cost of fuel in base rates.

Q. Is this change reflected in interim rates?

A. No, it is not.

Q. Why not?

A. Minnesota Power is bringing this proposal to change the FCA methodology for Commission consideration. This proposal requires Commission review and approval before implementation. Therefore, Minnesota Power has retained its current methodology for interim rates.

Q. How does Minnesota Power propose to implement the forecasted FCA methodology?

A. The Company proposes to utilize the fuel clause budget for the year as the forecast for calculation purposes. The forecast will be updated during the year for any material known changes, such as changes in market conditions, loss of a generating unit, or additions/losses of load. If the forecast is updated, the new forecasted amount

would be used for FCA billing and calculation of any necessary true-up and filed with the Commission with the monthly Form 3722.

As a supplement to the first full Annual Automatic Adjustment filing period following implementation of the forecasted FCA methodology, Minnesota Power proposes to provide:

- What the monthly FCA would have been under the prior calculation methodology;
- What the monthly FCA was under the forecasted FCA;
- A comparison of over- and under-recovery, by month, under the approved forecasted FCA and what it would have been under the prior calculation methodology;
- How closely the forecasted FCA follows the one-month actual fuel costs;
- Whether any forecasted FCA anomalies were identified during the year that may warrant further consideration or adjustments to the forecasted methodology; and
- Any other information the Commission may require.

Q. Please explain how the forecasted FCA would be calculated.

A. First, Minnesota Power would forecast monthly fuel costs for the next twelve months from its generation stations, plus any purchased steam, plus purchased power costs, including from renewables and the MISO Day 2 Market. These costs would not include any current MISO market costs not otherwise allowed to be recovered through the FCA, i.e., Schedule 16 and Section 17 administration charges, Schedule 24 (local balancing authority costs), Resource Adequacy Auction Amount (capacity related), and Real Time Multi-Value Project distribution amounts (from MISO held MVP ARRs – these charges/credits are included in the Transmission Cost Recovery Rider). The forecasted fuel costs would be based on market signals, trends in market performance, and known contract changes.

Next, the forecasted fuel cost recovered through inter-system sales fuel costs and other non-fuel clause sales would be subtracted to obtain the total cost of fuel to be recovered through the fuel clause.

Then, the forecasted monthly kWh sales would be determined by starting with the total forecasted sales of electricity and subtracting forecasted inter-system sales and other non-fuel clause sales kWh resulting in forecasted monthly kWh subject to the fuel clause. Total forecasted costs to be recovered through the fuel clause would be divided by the forecasted kWh subject to the fuel clause to get the forecasted cost per kWh for the current forward-looking fuel clause billing month. All kWh forecast inputs would be consistent with the overall forecasting methodology the Company employs that is discussed in the Direct Testimony of Company witness Ms. Julie Pierce.

These calculations are demonstrated in Exhibit ____(LSO), Schedule 2 (Forecasted Fuel Clause Calculation) to my Direct Testimony. A redlined version of the Rider for Fuel and Purchased Energy, Minnesota Power Electric Rate Book, Section V, Page No. 50, that reflects the proposed changes is provided in the Tariff Pages for Change in Rates in Volume IV of this rate proceeding filing.

Q. How will Minnesota Power forecast the FCA for customer bills?

A. Minnesota Power will utilize its annual fuel clause budget as the forecast of the FCA factor. The budget inputs include generation availability and costs, committed purchases and sales, forecasted load, scheduled outages and forced outage rates, and market price which provides a monthly fuel cost. Minnesota Power has an analysis group consisting of personnel from generation operations, fuels, energy supply, budgeting, marketing, and energy pricing and billing. This group meets monthly to discuss fuel clause costs, issues, and projections. Minnesota Power will task this group with updating the forecast as necessary.

Q. How is the cost proposed to be applied to customer bills?

A. The forecasted cost per kWh for the current fuel clause billing month would be applied to the customer bills for the month related to the forecast.

Q. How are forecasted and actual costs trued up?

A. In the subsequent month, once actual costs and usage are known, the calculation would be repeated using actuals. The forecasted cost would be subtracted from the actual cost to determine the true-up cost per kWh to apply to the customers' bills in the following month. Minnesota Power would then apply the calculated true-up cost per kWh to the customers usage in the following month.

For example, for the billing month of June, the June forecast would be applied to the usage on the June bill. In July, when actuals are known, the true-up cost per kWh for June would be calculated based on June actual usage and June actual costs. The true-up cost per kWh for June calculated in July would be applied to the usage on the August bill.

Q. Does this methodology remove all differences between forecasted fuel costs and costs actually recovered from customers?

A. No, the application of the true-up in this method still creates an over- and under-recovery, but to a significantly lesser degree than the current FCA methodology.

Q. Why is Minnesota Power proposing this change to the fuel clause methodology?

A. This methodology would provide better price signals to all our customers and reduce over- and under-recovery of fuel clause costs by better matching the recovery of costs with the actual costs in the period in which the costs were incurred. For example:

- August and September 2015 had two-month average fuel costs over 2.00 cents per kWh. Under the current methodology, the impact of these higher costs would be

shown on the customer bills for the months of October and November, when their usage and associated actual fuel costs were lower.

- Customers who started service in October or November of 2015 would have paid fuel costs in excess of what it actually cost to serve them.
- Any large industrial customers who might have been shut down, or down for maintenance during August and September, but were running strong during October and/or November would pay the higher costs associated with the August and September fuel costs and not the lower costs associated with the time frame they were actually running.

In addition, Minnesota Power's current methodology has, over time, resulted in very significant differences between actual fuel costs and the fuel cost amounts charged to customers. Exhibit ____(LSO), Schedule 3 to my Direct Testimony (Actual Versus Billed Fuel Costs) illustrates a comparison of Minnesota Power's actual fuel costs as compared to the fuel costs included in the customers' bills for the periods of January 2015 through July 2016. As illustrated, the current FCA methodology does not adequately account for actual fuel costs incurred.

Q. Has Minnesota Power previously proposed adopting a forecasted FCA calculation methodology?

A. Yes. In Minnesota Power's 2008 rate proceeding (Docket No. E015/GR-08-415), Minnesota Power proposed adopting a forecasted FCA calculation. In contrast to our proposal in the 2008 rate proceeding, the monthly true-up would not be included in the total cost of fuel to be recovered in the following forecast month. Instead, the monthly true-up is proposed to be a separate factor calculation applied to the following forecast month. Additionally, because Minnesota Power is proposing, in this rate proceeding to not include the base cost of fuel in base rates, all fuel costs will be recovered through the FCA.

Q. How was Minnesota Power's proposal addressed in the Company's 2008 rate case?

A. In Direct Testimony in Minnesota Power's rate proceeding in Docket No. E015/GR-08-415, Department witness Mr. Samir Ouanes objected to the change in methodology because Minnesota Power did not show "that its proposal would provide for better current price signals to its customers" and that "enforcement of the [existing FCA] would not impose excessive burden on" Minnesota Power.

During the evidentiary hearing in the 2008 rate proceeding, Minnesota Power, the Department, and three other parties reached a Settlement Agreement,[2] by which Minnesota Power voluntarily withdrew the proposed forecasted FCA methodology. The Commission accepted the proposed Settlement Agreement, and did not address Minnesota Power's initial proposal to change its FCA methodology.

Q. In the 2008 rate case, the Department testified that the Company had not shown that the forecasted FCA would provide for better current price signals to its customers. Please explain why a forecasted FCA provides more current price signals and, therefore, a benefit to customers.

A. The current methodology used by Minnesota Power includes costs and kWhs from two of the previous three months. This methodology ignores the billing month and provides a non-current price signal to our customers. If the costs in the first two months of the previous three were low, the FCA could be low. But the current month could actually have high costs because of system considerations, like a plant outage and higher market prices. Despite the conditions in the current month, a customer, in particular, a large power customer, could look at the FCA and incorrectly conclude that it would be in that customer's interest to increase usage. This would result in an increase in overall energy costs for that customer and all other customers for that month based on the backward-looking methodology used currently. In other words,

[2] The Office of the Attorney General and Energy CENTS were not parties to the agreement.

the current methodology does not provide a customer with the best information that customer could be using to make critical business and operational decisions.

Q. Does a forecasted FCA methodology provide adequate incentives for the utility to contain fuel costs?

A. Yes, for several reasons. First, Minnesota Power continually strives to keep its costs low for all customers. As Minnesota Power has noted before, the majority of our energy sales are to customers who are price sensitive and subject to global pressures. To support our customers and maintain the utility's own stability, Minnesota Power continually monitors costs and cost drivers to ensure that customers receive the lowest possible costs. Exhibit ____(LSO), Schedule 4 to my Direct Testimony illustrates that Minnesota Power's fuel costs have stayed fairly consistent since 2010 with the exception of 2013-2014 during the Polar Vortex.

Second, there are elements of costs in the fuel clause that are beyond Minnesota Power's control. These elements include MISO market costs because Minnesota Power makes up only approximately 1.5 percent of the MISO footprint, resulting in Minnesota Power operations having minimal impact on the overall MISO costs. Minnesota Power also has no control over MISO market prices, although the Company has some control over the megawatt-hours ("MWhs") purchased if there are other resources available at the time they are needed for our customers. Therefore, any FCA methodology can only have a limited impact on the Company's ability to minimize costs.

Third, FCA cost recovery is always subject to Department and Commission review. The forecasted methodology provides stakeholders with a further opportunity to review fuel costs by providing both an annual forecast as well as the monthly true-up process. Minnesota Power is aware that fuel cost recovery could be called into question at any time if costs are not adequately controlled. As such, Minnesota Power's current FCA methodology, or a methodology with an even greater time

differential between when fuel costs are incurred versus when they are recovered, undermines good customer price signals with little or no incremental cost control benefits.

Q. Does the disassociation between actual fuel costs and fuel cost recovery under the current FCA methodology potentially affect the determination of just and reasonable rates?

A. Yes. Utilizing a rolling two-of-three-month proxy to establish fuel costs does not directly tie the fuel costs recovered to actual costs forecasted or incurred. The result is not only poor price signals to the customer, but also risk to the Company that it will under- or over-recover its fuel costs. Exhibit ____(LSO), Schedule 5 to my Direct Testimony, which is also filed as Attachment 3 in the 2016 Annual Automatic Adjustment ("AAA") filing (Docket No. E015/AA-16-523), shows that for the prior reporting period (July 2015 through June 2016), Minnesota Power under-recovered fuel costs from its customers by approximately $2.5 million. A true-up mechanism significantly closes that gap going forward, ensuring that there is a better connection between customer bills and actual costs incurred.

It is important, however, for the mechanism to occur close in time to when costs are incurred. A forecasted methodology with significant differences between the times when costs were incurred and when costs are recovered could mean that the customers for whom the costs were incurred are no longer on the system when the actual bill arrives. This can be unnecessarily inequitable, as the customers would not be paying for the actual costs incurred to produce the energy they consumed.

Q. Does any other Minnesota utility use a forecasted FCA methodology similar to the methodology Minnesota Power is proposing?

A. Yes. Xcel Energy currently utilizes a forecasted FCA methodology, although Minnesota Power understands it is slightly different from the one that Minnesota Power is proposing. Xcel Energy utilizes a month-ahead forecast using budgeted

sales and fuel costs, month-ahead purchases already made, and forecasted changes in market conditions. A monthly true-up mechanism is used to correct for any mismatch (positive or negative) between costs and actual recovery. Based on our review, Xcel Energy's current methodology includes the true-up amount in the monthly fuel cost, whereas Minnesota Power's proposal would calculate a separate monthly true-up FCA in addition to the monthly forecasted FCA.

Q. Has any party addressed Xcel Energy's current fuel clause methodology in Xcel Energy's current rate case?

A. Yes. In Docket No. E002/GR-15-826, Department witness Catherine O'Connell proposed a pilot program for the length of Xcel Energy's multi-year rate case that would move the company away from a forecast FCA. Under the pilot program, fuel and related costs would be set in base rates for each month and the monthly FCA would be suspended. Under the program, Xcel Energy would be "allowed to track any changes in fuel costs" each year (with no carrying charge) and would report on those costs, showing how actual costs each month deviated from the set amount in base rates. Each year, Xcel Energy would be required to refund any over-collection through a true-up mechanism and if the company experienced an under-recovery from customers, Xcel Energy would have the opportunity to show the reasonableness of its costs and request recovery for approval by the Commission.

The methodology proposed by the Department in Xcel Energy's current rate case would not create an incentive for the billing utility to "minimize overall costs." In addition, using an amount set in Xcel Energy's rate case may not be indicative of normal and necessary operations in the future.

Q. Does Minnesota Power agree that the Department's proposed changes to Xcel Energy's fuel cost recovery present a sound FCA methodology generally?

A. No. Minnesota Power disagrees with the position taken by the Department in Xcel Energy's rate case. Minnesota Power continues to support that a forecasted FCA

provides more current price signals to the customers by better matching costs to megawatt hours of usage. The Department's proposal, while it does provide for a true-up, would create a delay in recovery of any over- or under-recovered amounts by approximately one year, as any of these amounts would need to be tracked and then annually reported and reviewed for reasonableness before the Company could apply a recovery mechanism to customer bills.

Q. Why would after-the-fact fuel cost recovery, with a lengthy lag between when costs are incurred and when they are recovered, be inappropriate for Minnesota Power?

A. Just as or more important than cost recovery to Minnesota Power is the cost impact to the customers of paying next year for this year's actual costs. Usage by any customer, in particular the large power customers, can change significantly from one year to the next. Charging or crediting a customer additional costs next year for costs incurred to produce their energy used this year is not just and reasonable. It would be like a gas station charging a customer a surcharge related to costs they incurred in 2016 on the miles to be driven in 2017. There is no direct correlation between usage and cost when this happens – especially when considering impacts to customers whose usage can vary widely from season to season, let alone year over year.

In contrast, a forecasted FCA methodology, as described above, would significantly reduce or eliminate over- and under-recovery of fuel costs from our customers, which benefits both the Company and the customer. Customers would pay actual costs and the Company recovers their actual costs.

Q. Are there other reasons why it would not make sense to treat the FCA like other riders?

A. Yes. Other riders apply a fixed rate to the usage of the customer and these costs are not necessarily related to the actual production of the energy used by the customer. For the fuel clause, there is a direct correlation between when and how much energy

was used and the cost. Under our proposed methodology, the cost to produce the energy will be charged to the customers that used that energy. Waiting a year to charge the customer for costs related to their energy usage undermines the concept of improving price signals to customers.

Additionally, while fuel costs can encounter periods of relative stability, these costs tend to be highly variable overall such that a period of stability is not indicative of future stability. The energy markets are changing with the introduction of more renewable resources and the potential for more environmental regulations and related costs. Further, utilities need to purchase fuel regularly and at all times to operate, differentiating fuel costs from other, individual large projects. As such, the FCA is an appropriately unique mechanism.

Q. Please explain what impact the settlement agreement in Xcel Energy's current rate case has on its FCA methodology.

A. While the Xcel Energy settlement is still under regulatory review, the settling parties, including the Department, agreed that the issue of the FCA mechanism will be addressed pursuant to the Commission's Order in Docket Nos. E999/AA-12-757, E999/AA-13-599, and E999/AA-14-579 dated June 2, 2016. This Order directed the Department to prepare a complete proposal for the recovery of energy costs delivered to customers, including possible reform of the fuel clause mechanism, with all the details necessary to fully implement such a proposal. The Department's proposal must be filed within nine months of the date of the Order, i.e., by March 2, 2016.

Q. If the Department has proposed an alternative to Xcel Energy's methodology and is expected to propose possible reform in Docket Nos. E999/AA-12-757, E999/AA-13-599, and E999/AA-14-579, why is Minnesota Power requesting the Commission consider a forecasted methodology for the Company in this rate proceeding

A. Minnesota Power believes that our proposed forecasted FCA methodology is sound and, as noted, provides more current price signals to our customers and provides for better matching of costs charged to the customers and their related recovery by the Company. Minnesota Power, therefore, seeks to make this proposal affirmatively, rather than waiting for the Department's proposal.

In addition, Minnesota Power proposes a revised FCA methodology in this rate proceeding rather than waiting for a separate docket because by addressing the FCA methodology, changes to what is included in the FCA, and the base cost of fuel in the rate case, instead of addressing the base cost of fuel in the rate case and the FCA methodology in separate dockets, the Commission is able to evaluate all components of Minnesota Power's cost of fuel in one docket.

Q. Please summarize Minnesota Power's request related to fuel cost recovery in this rate proceeding.

A. Minnesota Power is proposing a fuel and related cost recovery approach that would adopt a forecasted FCA methodology. This would involve utilizing a forecasted FCA amount with a related true-up mechanism to be applied to customer bills in the month following the calculation of the true-up amount. The Company would commit to submitting a forecast for the Department, Commission, and customers to review prior to the start of the calendar year, with sufficient time to enable regulatory review.

This methodology would provide better price signals to all customers and reduce over- and under-recovery of fuel clause costs, as compared to the methodology currently in place for Minnesota Power and its customers.

C. Fuel Clause Transition Cost Recovery

Q. Has the current FCA methodology resulted in any impacts to Minnesota Power's cost recovery?

A. Yes. The current methodology requires that Minnesota Power use actual costs from the first two of the previous three months to develop the FCA amount on customer bills. This creates a delay between when costs are incurred and when they are included in cost recovery requests. Additionally, this creates an over- or under-recovery because the sales volume fluctuates and by the time Minnesota Power is recovering costs, the sales volume has changed from the cost months (two of the previous three months) to the billing month. The actual cost of fuel is then billed and recovered 2.5 months later.

Q. What impact would the change to a forecasted fuel clause methodology have on Minnesota Power?

A. The Company's proposal to change to a forecasted FCA, as described in detail above, would create a fuel cost recovery delay that Minnesota Power proposes to recover over a 36-month period. This recovery delay amount reflects the difference between Minnesota Power's actual cost of fuel and what Minnesota Power bills to and collects from customers at the time the transition between methodologies occurs. This difference changes monthly, and can only be projected or estimated at this time based on fuel clause forecasting. For purposes of this testimony, were the new method implemented on August 1, 2016, the difference for the 2.5 months ending July 31, 2016, equated to approximately $15.9 million in unrecovered fuel costs due to the transition. At the time final rates are projected to be placed in effect by the end of 2017, this 2.5-month difference is projected to be $18.5 million. Please see Exhibit ____(LSO), Schedule 6 (Projected Fuel Cost Recovery Delay Amount) to my Direct Testimony.

Q. Does Minnesota Power propose to recover the $18.5 million fuel cost recovery delay amount in this rate case?

A. Yes. Minnesota Power proposes to recover this amount through the FCA by amortizing the total over a 36-month period beginning with the effective date of final rates. We propose this amortization period to reflect a reasonable time frame for recovery – longer than the 2.5 months over which the difference is incurred – while recognizing the potential intergenerational inequities of amortizing the total over a lengthy period. However, we are also willing to discuss other amortization periods that the parties may prefer.

Q. Why should Minnesota Power be allowed to recover this fuel cost recovery delay amount?

A. This fuel cost recovery delay amount represents actual fuel and purchased power costs incurred by Minnesota Power to provide electric service to our customers. Our customers received benefit for the energy produced and purchased, and the Company should have the opportunity to recover its reasonable costs of service. If the methodology changes to a forward-looking fuel clause, the amount of the difference due to the delay will essentially be frozen in time at that point. Absent the proposed mechanism for recovery, Minnesota Power will not have recovered the costs of providing this energy to our customers.

Q. Has the Commission allowed other utilities to recover fuel and purchased power cost recovery delay amounts?

A. Yes. In 2000, the Commission granted Northern States Power Company's ("NSP") request to recover a 2.5-month billing delay, identical in structure to Minnesota Power's, in the amount of $16.99 million at that time (Docket No. E002/M-00-420). The Commission allowed NSP to immediately recover that amount by netting the delay amount against its refund obligation for over-collection of its Conservation Improvement Program tracker (Docket No. E,G002/M-00-448).

Q. Is there anything distinguishable between the NSP fuel cost recovery delay amount approved for recovery in 2000 and Minnesota Power's fuel cost recovery delay amount for which it is requesting recovery in this rate proceeding?

A. No. NSP moved to a forward-looking forecasted FCA with a zero base, and Minnesota Power is proposing a very similar methodology as noted above.

Q. If Minnesota Power is allowed to recover this fuel cost recovery delay amount, will a new fuel cost recovery delay amount accrue over time?

A. With the new proposed, forecasted FCA methodology, the delay in cost recovery goes away. Under the proposed methodology, there would still be over- and under-recovered fuel amounts related to the difference between forecasted and actual amounts, but the true-up would resolve this difference on an ongoing basis. The delay in recovering the costs goes away since forward forecasts are being used, and not an average of prior months' actuals, to calculate the FCA rate.

Q. Is there any other accounting mechanism by which Minnesota Power can recover this fuel cost recovery delay amount from customers?

A. No. If the Commission does not approve Minnesota Power's recovery of the fuel cost recovery delay amount through the FCA, Minnesota Power will be required to write off the amount of $18.5 million and incur that amount in reduced cash flow. This would be a very substantial write-off for the Company, which we hope to avoid in light of the fact that it reflects costs actually incurred directly to provide electricity to our customers.

Q. Is this a new issue for Minnesota Power?

A. No, Minnesota Power raised this issue in its 2008 rate proceedings (Docket No. E015/GR-08-415), where it first proposed moving to a forward-looking fuel clause methodology.

Q. How did Minnesota Power propose to recover the FCA recovery amount in its 2008 rate case?

A. Minnesota Power proposed to recover what was then a $19.1 million fuel cost recovery delay amount through the FCA over a 12-month period beginning with the effective date of final rates for the 2008 rate proceeding.

Q. Did Minnesota Power recover the fuel cost recovery delay at that time?

A. No. In that proceeding, the Department argued that Minnesota Power's proposal was different than the NSP situation in 2000 because NSP had filed a request with the Commission to change its FCA methodology, whereas Minnesota Power's fuel cost recovery amount resulted from a unilateral change in accounting prior to proposing a change to a forward-looking FCA methodology.

Q. Does Minnesota Power agree with the Department's position in the 2008 rate proceeding?

A. No. Minnesota Power's books and records do reflect the costs associated with the rolling 2.5-month delay, but the fact of the delay is not driven by an accounting change; rather, it is driven by an FCA methodology that required Minnesota Power to recognize the difference between its actual costs and the costs recovered through the 2.5-month rolling averaging FCA methodology.

This amount would exist regardless of accounting procedures and is reflected on the Company's books and records because the Company also previously concluded in good faith that it was necessary to account for it in conformance with FAS 71 accounting standards. Further, resolution of this issue is now necessary because Minnesota Power believes that moving to a forecasted FCA is in the best interest of its customers and will reflect more accurate and current price signals for customers to use when evaluating and making energy usage decisions.

Q. How was the issue resolved in Minnesota Power's 2008 rate proceeding?

A. During the evidentiary hearing in that rate case, Minnesota Power, the Department, and three other parties reached a Settlement Agreement[3] that Minnesota Power would withdraw the proposed fuel cost recovery delay and its proposed forecast fuel clause methodology. The Commission accepted the proposed Settlement Agreement. Minnesota Power agreed to forego recovery at that time but to continue with the current methodology and accounting for the amount and tracking the fuel cost recovery delay.

Q. As a result of the 2008 rate proceeding settlement agreement, the Company committed to addressing this issue in a tariff filing. Was this issue presented to the Commission?

A. Yes. The Company filed a request for an annual FCA true-up mechanism in Docket No. E015/AA-10-933 on August 27, 2010. After comments were filed, Minnesota Power, the Department, and the Large Power Intervenors met. Subsequent to that meeting, Minnesota Power requested that the Docket be withdrawn without prejudice because the parties agreed that the true-up mechanism may not provide the desired result, as proposed. Staff Briefing Papers in that Docket recommended that the Commission direct Minnesota Power to "file testimony and exhibits in the first rate case filed after the Order in this docket that clearly explains why the Commission should allow the unapproved accounting change and the resulting deferral of fuel and purchased power costs." Although this requirement did not appear in the Commission's Order in Docket No. E015/AA-10-933, I am providing this information in my Direct Testimony as this is our first rate proceeding filed since the Commission's Order in that Docket was issued.

[3] The Office of the Attorney General and Energy CENTS were not parties to the agreement.

Q. Please summarize why it is reasonable for Minnesota Power to recover the amount associated with the fuel cost recovery delay in its FCA.

A. The balance of $15.9 million as of July 2016 (projected to be $18.5 million by the end of 2017) represents costs that Minnesota Power incurred to provide electricity to our customers and is an amount that the Company has not yet recovered from its customers. While there may be disagreement about the Company's overall view of these costs, the unrecovered amount does represent costs Minnesota Power has actually incurred in order to provide electric service to its customers.

The proper place to recover costs associated directly with the generation of energy is to flow these costs through the FCA. Our goal is to resolve a long-standing issue in an equitable manner, balancing the need for recovery of these costs with a fair mechanism of recovery over a longer period of time. The FCA appears to be the logical choice for recovery of these fuel-related costs.

D. Additional Changes to Fuel Clause

Q. What other changes to the fuel clause is Minnesota Power seeking as part of this rate case?

A. Minnesota Power proposes changes to its fuel clause associated with the following areas of our services to customers: (1) chemicals and reagents for environmental compliance; (2) business interruption insurance; (3) NO_X allowances; and (4) recovery of Independent Electricity System Operator ("IESO"), Southwestern Power Pool ("SPP"), and PJM Interconnection LLC ("PJM") market charges in the same manner as is currently used for MISO costs.

Q. Why is the Company proposing these changes in this rate case, rather than in a fuel clause-specific proceeding?

A. Our goal is to align fuel clause-specific cost recovery with our test year rates. Introducing a methodology change in recovery of these costs during a rate case proceeding helps to ensure that these costs are not included both in the fuel clause on

the one hand, and in operations and maintenance ("O&M") expenses and thus in base rates on the other hand at the same time.

1. Reagents and Chemicals for Environmental Compliance

Q. How does Minnesota Power currently recover costs associated with its purchase of reagents and chemicals for environmental compliance at generation facilities?

A. Reagents and chemicals for environmental compliance are currently recovered through base rates at a level set during the last rate case as part of O&M. Our test year forecast for reagents and chemicals is discussed in the Direct Testimony of Mr. Joshua Skelton.

Q. How is Minnesota Power proposing to recover those costs going forward?

A. Minnesota Power proposes including reagents and chemicals for environmental compliance in the fuel clause. These costs would be allocated between retail, resale, and wholesale (asset backed) sales based on MWhs of sales volume in the month.

Q. Why is this the most appropriate method for cost recovery of these reagents?

A. The level of usage of reagents and chemicals for environmental compliance are directly related to and vary with the level of fuel burned at our generating facilities. As Mr. Skelton explains, these needs can vary widely.

Q. What is the 2017 test year impact of this proposal?

A. Reagents for Boswell station (removing WPPI's share) were budgeted in the 2017 test year to be $4,000,954 Total Company.[4] No other thermal unit reagent costs are budgeted for 2017 for environmental compliance purposes.

If recovery of reagents and chemicals for environmental compliance is allowed in the fuel clause, O&M costs in base rates would decrease and the total fuel clause costs

[4] "Total Company" refers to total Minnesota Power regulated, without Minnesota Power's non-regulated entities.

would increase by the same amount, for a neutral net impact on the test year. After the 2017 test year, the fuel clause would reflect the actual costs of chemicals and reagents incurred.

Q. What Minnesota Statute allows for possible commission approval of recovery of reagent costs through the FCA?

A. Minnesota Statues section 216B.16, subdivision 7(4) gives the Commission the ability to allow for the recovery of prudent costs incurred for sorbents, reagents, or chemicals used to control emissions provided that these costs are not recovered elsewhere in rates. This statute was enacted after Minnesota Power's 2009 rate proceeding.[5]

Q. Has Minnesota Power previously asked to recover the costs of reagents and chemicals for environmental compliance through the rate case?

A. No.

Q. Why not?

A. The costs of chemicals for environmental compliance have not previously accounted for a large portion of O&M expenses and have also been fairly consistent. As Mr. Skelton explains, due to recent Minnesota Power generation plant refurbishments and to market conditions, over the most recent years these costs have become more volatile and would be more appropriately accounted for through the fuel clause. The Company's reagent costs for 2010 through 2016 are shown below in Table 1. The forecasted amount for 2016 is significantly higher than in prior years as it represents the first full year of Boswell Unit 4 reagents due to the environmental retrofit. The budgeted 2017 test year reagent costs are lower than the 2016 budget due to the retirement of Taconite Harbor Unit 3 and the idling of Taconite Harbor Units 1 and 2.

[5] S. 1197, 87th Leg., Reg. Sess. (Minn. 2011)

Table 1. 2010 through 2016 Reagent Costs

Year	Reagent Cost
2010	$4,646,557
2011	$3,031,765
2012	$2,074,686
2013	$2,932,220
2014	$3,843,395
2015	$3,624,692
2016 (Forecast)	$7,292,723

Q. Is the use of the fuel clause for these costs consistent with how other utilities account for these costs?

A. Minnesota Power proposes to recover these costs through the fuel clause as they are directly related to, and vary with, the fuel burned at our generating stations. In its current rate case (Docket No. E017/GR-15-1033), Otter Tail Power Company is requesting that the Commission approve including its cost of reagents in its fuel clause rider.

2. Business Interruption Insurance

Q. Does Minnesota Power carry business interruption insurance?

A. Yes.

Q. Please explain what Minnesota Power's business interruption insurance covers.

A. Minnesota Power currently has business interruption insurance coverage on the transformers and converters on the DC line, as well as coverage to help offset the replacement cost of energy for the Bison wind farm and lost value of production tax credits ("PTCs") on the Bison wind farm. These insurance premiums have historically been included in the Company's O&M costs. Minnesota Power did not have business interruption insurance prior to 2013.

Q. Has Minnesota Power been asked to analyze the need for additional business interruption insurance?

A. Yes. The Department recommended in Docket No. E999/AA-13-599 that utilities discuss their efforts to obtain Business Interruption Insurance due to any factor that causes an unplanned outage or longer-than-expected planned outages. The Department also recommended that if the utilities have not obtained business interruption insurance, they should provide a full explanation as to why not. As a result of this recommendation, Minnesota Power will continue to analyze the cost/benefit of additional business interruption insurance beyond the level it currently carries.

Q. Has Minnesota Power added any additional business interruption insurance as a result of the Department's recommendations?

A. No, not at this time. Although, Minnesota Power's risk department continues to perform ongoing analysis of risk and costs associated with adding additional business interruption insurance consistent with the Department recommendation.

Q. How is Minnesota Power seeking to recover premiums associated with business interruption insurance?

A. Minnesota Power is asking to recover the premiums related to business interruption insurance related to the Company's Bison generating assets and DC line through the fuel clause. Premiums related to the business interruption portion of insurance were budgeted in the 2017 test year at $299,875. These costs would be allocated between retail, resale, and wholesale (asset backed) sales based on MWhs of sales volume in the month. Minnesota Power further proposes to include any additional future business interruptions insurance premiums in the fuel clause as well.

Q. Does Minnesota Power likewise propose to refund business insurance proceeds through the fuel clause?

A. Yes, should there be an event for which Minnesota Power receives proceeds from a business interruption insurance claim, the applicable proceeds would flow through the fuel clause.

Q. Why does Minnesota Power believe it is appropriate to include business interruption premiums and proceeds in the fuel clause?

A. Minnesota Power is proposing to include business interruption insurance in the fuel clause so both premiums and proceeds are accounted for symmetrically in a mechanism that would allow proceeds to be credited to customers if received.

3. Nitrogen Oxides Allowance Sale

Q. Is Minnesota Power requesting any changes to how it accounts for emissions allowances?

A. Yes. Minnesota Power is requesting the ability to debit and credit the purchase and sale, respectively, of nitrogen oxides ("NO_X") allowances through the fuel clause, similar to the way that sulfur dioxide ("SO_2") allowances are currently handled. As is currently done with sales proceeds from SO_2 allowances, all proceeds would be returned to customers.

Q. Is the sale or purchase of other emissions allowances accounted for in the fuel clause now ?

A. Yes. Minnesota Power currently accounts for debits and credits to our customers for the purchase and sale of SO_2 emissions credits through the fuel clause. This was approved by the Commission in Docket No. E015/GR-08-415.

Q. Did Minnesota Power previously seek to include NO_x allowances in the fuel clause?

A. Yes. Minnesota Power proposed to include theses allowances in the 2009 rate case (Docket No. E015/GR-09-1151). At the time, Minnesota Power did not have any costs or sales associated with NO_x allowances and the Commission did not make any decision on how NO_x allowance sales should be handled when they occur.

Q. Has Minnesota Power had the opportunity to sell any NO_x credits to date?

A. Yes. In 2015, Minnesota Power sold NO_X allowances for about $105,000. At this time, I do not anticipate any NO_x allowance sales or purchases in future years, but the Company requests the Commission approve the ability to debit and credit the purchase and sale of these allowances so we can efficiently return any proceeds to ratepayers.

Q. Why is it reasonable to include NO_X credits in the fuel clause?

A. Sale of NO_X allowances should be treated the same as the sale of SO_2 allowances. NO_X produced at a generating station is directly related to the fuel burned at the stations. Further, unused NO_x credits are associated with process improvements the Company has made at its generating assets. Because the sale of NO_x allowances are difficult to predict, it would be unreasonable to build a specific amount of anticipated credit into base rates but it would be appropriate to allow any sales to be credited quickly to Minnesota Power's customers through the fuel clause.

4. IESO, SPP, and PJM market charges

Q. What changes to the fuel clause is Minnesota Power proposing for IESO, SPP, and PJM market charges/revenues and expenses?

A. Minnesota Power is proposing to include market charges related to the IESO, SPP, and PJM markets in the fuel clause in a manner similar to that of the MISO market charges.

Q. Are certain Regional Transmission Operator ("RTO") market changes, revenues, and expenses currently accounted for through the fuel clause?

A. Yes. Consistent with the Commission's Order in Docket No. E015/M-08-528, the current language of the FPE Rider allows for the accounting of RTO revenues and expenses associated with "MISO" through the fuel clause.

Q. What change is Minnesota Power proposing?

A. Minnesota Power proposes to change the reference in the FPE Rider from "MISO" to "RTO" market charges, revenues, and expenses, such that revenues and expenses associated with the Company's participation in each of these organizations flows through the fuel clause.

Q. What amount of additional cost and revenue amounts associated with RTO participation does Minnesota Power anticipate incurring in 2016 and 2017?

A. Anticipated net MISO revenues and expenses reflected in the retail FCA are anticipated to be $12.3 million and $9.5 million in 2016 and 2017, respectively. Apart from MISO amounts, Minnesota Power anticipates incurring less than $100,000 per year in total of net SPP, PJM, and IESO revenues and expenses in 2016 and 2017.

Q. Why is Minnesota Power proposing this change?

A. Minnesota Power currently operates within the MISO footprint and has market participation status in PJM, which operates in the eastern United States, and the IESO in Canada. Minnesota Power has also completed the paperwork necessary to become a market participant in the SPP market. While Minnesota Power's operation in these markets is more limited than in the MISO market, the ability to operate in these markets gives the Company another option to provide low-cost energy to our customers.

III. CONCLUSION

Q. Does this complete your testimony?

A. Yes.

MINNESOTA POWER
CALCULATION OF RETAIL FUEL ADJUSTMENT CLAUSE

(1) All Stations – Total Burned for Generation

Represents the cost of Coal, Natural Gas and Fuel Oil burned in Minnesota Power's generating stations for the purpose of generating electricity.

A report is run out of Oracle for Account 50100 cost types 7120 (Coal), 7130 (Fuel Oil), 7140 (Natural Gas) and 7155 (Wood).

(2) Fuel Component of Purchased & Interchange (Excl. Young 2)

Represents the fuel cost of Purchased and Interchange power, generally equal to the purchase price since the cost of production between utilities is not shared.

Fuel cost is taken from "Fuel Cost and Sales Price Data for Fuel Adjustment" spreadsheet prepared by Energy Pricing and Billing

(2a) Deferred Schedule 16 & 17 and other non-recoverable MISO charges

Represents the amount of Administrative and Schedule 24 Charges not allowed for recovery in the Retail FAC as a result of the MISO Day 2 market.

(3) Young 2 Purchases

Represents Minnesota Power's share of the cost of fuel consumed at the Square Butte generating station for unit Young 2.

Fuel cost is taken from "Fuel Cost and Sales Price Data for Fuel Adjustment" spreadsheet prepared by Energy Pricing and Billing

(4) Purchased Steam

Represents the cost of steam power purchased from the Hibbard generating station.

A report is run out of Oracle for Account 50300, cost type 7260 (Purchased Steam)

(5) Fuel Cost recovered thru Inter-System Sales

Represents Minnesota Power's fuel costs used to generate energy that was sold to Pool customers, non-control area customers, and for certain sales (to control area customers) that are not subject to the Fuel Clause.

Fuel cost is taken from "Fuel Cost and Sales Price Data for Fuel Adjustment" spreadsheet prepared by Energy Pricing and Billing

(6) Fuel Cost recovered thru Large Power Excess Energy Sales (none of these sales exist at the current moment)

Represents Minnesota Power's fuel costs used to generate energy that was sold control area customers under Excess Energy pricing.

Fuel cost is taken from "Fuel Cost and Sales Price Data for Fuel Adjustment" spreadsheet prepared by Energy Pricing and Billing

(7) Fuel Cost recovered thru Interruptible Power

Represents Minnesota Power's fuel costs used to generate energy that was sold control area customers under Interruptible energy pricing.

Fuel cost is taken from "Fuel Cost and Sales Price Data for Fuel Adjustment" spreadsheet prepared by Energy Pricing and Billing

(8) Fuel Cost recovered thru Incr. Prod Service

Represents Minnesota Power's fuel costs used to generate energy that was sold control area customers under Incremental Production energy pricing.

Fuel cost is taken from "Fuel Cost and Sales Price Data for Fuel Adjustment" spreadsheet prepared by Energy Pricing and Billing

(9) Total Monthly Fuel Cost

Represents the total of items (1) through (8)

(10) Current 2-Month Total Cost of Fuel

Represents the total of the current and prior months fuel costs. A two-month total is used to lessen the impact of large changes on the retail customers.

(11) Total Sales of Electricity

Represents the total kWh sales of electricity to Minnesota Power customers.

Total is carried forward from (29).

(12) Inter-System Sales

Represents kWh sold to Minnesota Power's Pool customers, non-control area customers, and for certain sales (to control area customers) that are not subject to the Fuel Clause.

The kWh is taken from "Fuel Cost and Sales Price Data for Fuel Adjustment" spreadsheet prepared by Energy Pricing and Billing

(13) Large Power Excess Energy Sales (not currently applicable)

Represents kWh sold to Minnesota Power's control area customers under Excess Energy pricing.

The kWh is taken from "Fuel Cost and Sales Price Data for Fuel Adjustment" spreadsheet prepared by Energy Pricing and Billing

(14) Interruptible Power

Represents kWh sold to Minnesota Power's control area customers under Interruptible energy pricing.

The kWh is taken from "Fuel Cost and Sales Price Data for Fuel Adjustment" spreadsheet prepared by Energy Pricing and Billing

(15) Incremental Production Sales

Represents kWh sold to Minnesota Power's control area customers under Incremental Production energy pricing.

The kWh is taken from "Fuel Cost and Sales Price Data for Fuel Adjustment" spreadsheet prepared by Energy Pricing and Billing

(16) Total Monthly kWh Sales

Represents the total of items (11) through (15)

(17) Current 2-Month Total kWh Sales

Represents the total of the current and prior months kWh. A two-month total is used to lessen the impact of large changes on the retail customers.

(18) Fuel Cost – cents/kWh

Represents the average fuel cost per kWh. It is calculated by taking the "Current 2-Month Total Cost of Fuel" (10) and dividing that by the "Current 2-Month Total kWh Sales" (17). The result is expressed in cents per kWh.

(19) Base Cost of Fuel – cents/kWh

Represents the base cost of fuel that was approved in Minnesota Power's 1994 rate case.

(20) Calculated Fuel Adjustment – cents/kWh

Represents the difference between (18) and (19).

(21) Fuel Adjustment – cents/kWh

Represents the Fuel Adjustment that will be applied to retail customer accounts. Carried forward from (20).

(22) Billing Month

Represents the billing month to which the Fuel Adjustment is to be applied.

(23) – (28) Residential, Commercial, Industrial, Street Lighting, Other Public, and Resale

Represents sales to the different classes of customers for Minnesota Power.

Information is taken from the "Unbilled kWh to use in FAC Calculation" prepared in Energy Pricing and billing. The kWh per the general ledger is taken from the operating statement. Unbilled kWh information is received from General Accounting.

(29) Total kWh Sales

Represents the total of (23) through (28). Carried upward to (11)

FUEL ADJUSTMENT CLAUSE - RETAIL

Line	COST OF FUEL	June 2016	July 2016
1	All Stations - Total Burned for Generation	12,579,670	14,028,570
2	Plus : Fuel Component of Purchased & Interchange (Excl. Young 2)	9,246,974	9,485,753
2a	Less: Deferred Schedule 16 & 17 and other nonrecoverable MISO cl	52,776	(126,401)
3	Plus: Young 2 Purchases	2,611,459	2,851,233
4	Plus : Purchased Steam	217,900	10,227
5	Less : Fuel Cost recovered thru Inter-System Sales	10,015,442	10,183,102
6	Less : Fuel Cost recovered thru Large Power Excess Energy Sales	0	0
7	Less: Fuel Cost recovered thru Interruptible Power	0	0
8	Less: Fuel Costs Recovered thru Incr. Prod. Service	174,398	163,557
9	Total Monthly Fuel Cost	14,413,387	16,155,525
10	Current 2-Month Total Cost of Fuel	29,341,555	30,568,912
	KWH SALES		
11	Total Sales of Electricity	1,174,183,410	1,224,301,489
12	Less: Inter-System Sales	454,158,651	451,409,377
13	Less: Large Power Excess Energy Sales	0	0
14	Less: Interruptible Power	0	0
15	Less: Incremental Production Sales	3,766,370	3,511,146
16	Total Monthly KWH Sales	716,258,389	769,380,966
17	Current 2-Month Total KWH Sales	1,459,703,618	1,485,639,355
	FUEL CLAUSE # 16 & 17		
18	**Fuel Cost - cents/kWh**	**2.010**	**2.058**
19	Less : Base Cost of Energy - cents/kWh - for Fuel Cost Month	1.018	1.018
20	**CALCULATED FUEL ADJUSTMENT - cents/kWh**	0.992	1.040
21	**BILLED FUEL ADJUSTMENT - cents/kWh**	**0.992**	**1.040**
	FUEL ADJUSTMENT - cents/kWh		
22	**BILLING MONTH:**	August 2016	September 2016
23	Residential	69,457,069	75,261,699
24	Commercial	99,118,800	105,934,040
25	Industrial	473,458,285	488,018,945
26	Street Lighting	971,536	959,536
27	Other Public	4,588,816	4,593,296
28	Resale	526,588,904	549,533,973
29	TOTAL KWH SALES	1,174,183,410	1,224,301,489

BUDGETED TRUE UP (Based on 2016 Actuals)

FUEL ADJUSTMENT CLAUSE - RETAIL

Line	COST OF FUEL	January 2016	February 2016	March 2016	April 2016	May 2016	June 2016	July 2016
1	All Stations - Total Burned for Generation	12,003,833	11,489,531	10,800,425	8,904,541	11,718,966	12,579,670	14,028,570
2	Plus : Fuel Component of Purchased & Interchange (Excl. Young 2)	8,658,569	7,351,770	8,065,581	8,479,391	8,304,771	9,246,974	9,485,753
2a	Less: Deferred Schedule 16 & 17 and other nonrecoverable MISO cha	59,919	65,113	46,006	40,756	43,784	52,776	(126,401)
3	Plus: Young 2 Purchases	2,673,757	2,395,903	2,758,683	2,410,032	2,823,193	2,611,459	2,851,233
4	Plus : Purchased Steam	318,861	324,773	347,594	206,824	255,481	217,900	10,227
5	Less : Fuel Cost recovered thru Inter-System Sales	7,762,683	6,837,296	8,001,370	6,837,021	7,889,644	10,015,442	10,183,102
6	Less : Fuel Cost recovered thru Large Power Excess Energy Sales	0	0	0	0	0	0	0
7	Less: Fuel Cost recovered thru Interruptible Power	0	0	0	0	0	0	0
8	Less: Fuel Costs Recovered thru Incr. Prod. Service	183,966	206,376	284,333	167,363	240,815	174,398	163,557
9	Total Monthly Fuel Cost	15,648,452	14,453,192	13,640,574	12,955,648	14,928,168	14,413,387	16,155,525
	KWH SALES							
10	Total Sales of Electricity	1,260,605,667	1,163,470,893	1,237,610,464	1,103,175,733	1,167,519,446	1,174,183,410	1,224,301,489
11	Less: Inter-System Sales	417,174,717	362,552,147	428,625,333	389,389,550	418,448,572	454,158,651	451,409,377
12	Less: Large Power Excess Energy Sales	0	0	0	0	0	0	0
13	Less: Interruptible Power	0	0	0	0	0	0	0
14	Less: Incremental Production Sales	4,039,217	4,539,410	5,803,730	4,048,844	5,625,645	3,766,370	3,511,146
15	Total Monthly KWH Sales	839,391,733	796,379,336	803,181,401	709,737,339	743,445,229	716,258,389	769,380,966
16	**Fuel Cost - cents/kWh**	**1.864**	**1.815**	**1.698**	**1.825**	**2.008**	**2.012**	**2.100**
17	Less : Billed Budgeted Cost of Fuel - cents/kWh - for Fuel Cost Month	1.827	1.877	1.882	1.765	1.814	1.898	2.203
18	**CALCULATED FUEL ADJUSTMENT TRUE UP - cents/kWh**	0.037	(0.062)	(0.184)	0.060	0.194	0.114	(0.103)
19	**BILLED FUEL ADJUSTMENT TRUE UP - cents/kWh**	**0.037**	**(0.062)**	**(0.184)**	**0.060**	**0.194**	**0.114**	**(0.103)**
20	**BILLING MONTH:**	March 2016	April 2016	May 2016	June 2016	July 2016	August 2016	September 2016
21	Residential	111,130,835	107,829,039	96,875,922	86,367,823	73,471,507	69,457,069	75,261,699
22	Commercial	108,522,537	108,126,755	104,219,941	99,907,134	94,742,252	99,118,800	105,934,040
23	Industrial	486,271,701	461,039,221	491,444,318	432,921,021	464,330,488	473,458,285	488,018,945
24	Street Lighting	1,907,739	1,527,898	1,390,950	1,309,680	1,070,952	971,536	959,536
25	Other Public	4,242,011	4,488,515	4,350,702	3,894,886	4,104,457	4,588,816	4,593,296
26	Resale	548,530,844	480,459,465	539,328,631	478,775,189	529,799,790	526,588,904	549,533,973
27	TOTAL KWH SALES	1,260,605,667	1,163,470,893	1,237,610,464	1,103,175,733	1,167,519,446	1,174,183,410	1,224,301,489

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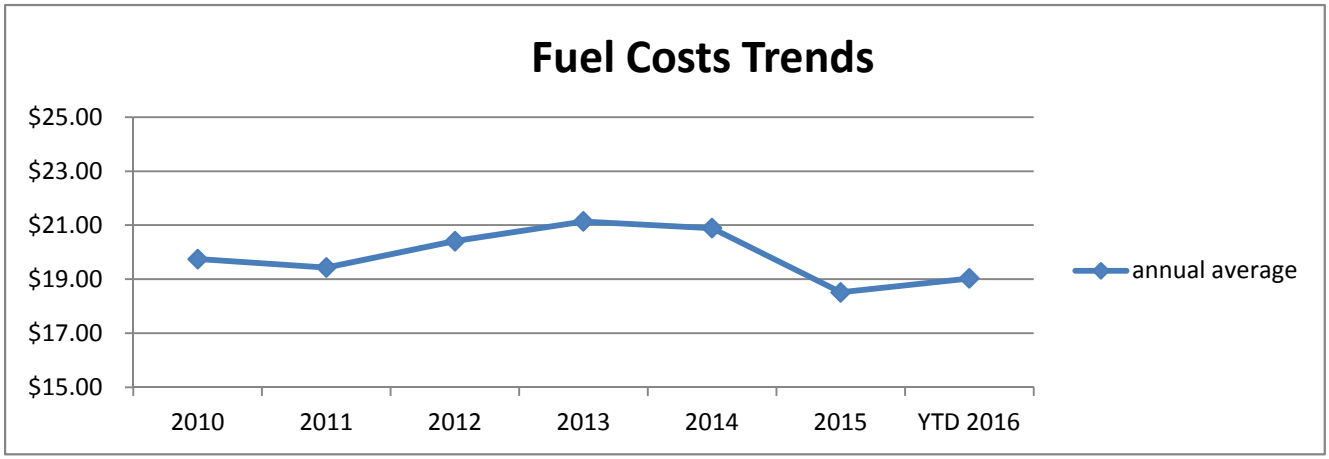
Fuel Cost Month	One-month Actual fuel Cost ($/MWh)	Billed Actual (FAC Factor plus 10.18) ($/MWh)	Difference positive = overbilled	Difference
Jan-15	17.66	20.85	3.19	18%
Feb-15	19.74	18.59	-1.15	-6%
Mar-15	17.29	17.35	0.06	0%
Apr-15	18.66	18.67	0.01	0%
May-15	16.73	18.49	1.76	11%
Jun-15	18.65	17.94	-0.71	-4%
Jul-15	17.87	17.75	-0.12	-1%
Aug-15	22.41	17.63	-4.78	-21%
Sep-15	20.15	18.23	-1.92	-10%
Oct-15	19.80	20.14	0.34	2%
Nov-15	16.56	21.29	4.73	29%
Dec-15	16.68	19.97	3.29	20%
Jan-16	18.64	18.18	-0.46	-2%
Feb-16	18.15	16.62	-1.53	-8%
Mar-16	16.98	17.69	0.71	4%
Apr-16	18.25	18.4	0.15	1%
May-16	20.08	17.56	-2.52	-13%
Jun-16	20.12	17.58	-2.54	-13%
Jul-16	21.00	19.19	-1.81	-9%

one month fuel cost	annual average	
2010	$	19.75
2011	$	19.43
2012	$	20.41
2013	$	21.14
2014	$	20.89
2015	$	18.52
YTD 2016	$	19.03



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A. Summary - Automatic Adjustment Charges:

Line No.	Revenue/Accounting Month	May 2015	Jun 2015	Jul 2015	Aug 2015	Sep 2015	Oct 2015	Nov 2015	Dec 2015	Jan 2016	Feb 2016	Mar 2016	Apr 2016	May 2016	Jun 2016
	Cost of Fuel														
1	Company's Generating Stations (A/C 151)	$11,423,019	$10,090,425	$10,850,053	$7,442,177	$6,579,591	$6,697,717	$9,874,010	$10,921,211	$12,003,833	$11,489,531	$10,800,425	$8,904,541	$11,718,966	$12,579,670
2	Plus: Purchased Energy	9,495,602	10,168,512	11,168,964	16,667,947	16,244,000	17,027,580	11,537,137	11,007,043	11,651,187	10,072,446	11,171,858	11,096,247	11,383,445	12,076,333
2	Less: MISO Schedules 16 & 17 & 24	144,856	(62,786)	37,538	23,905	31,319	48,999	54,464	55,406	59,919	65,113	46,006	40,756	43,784	52,776
3	Less: Fuel Cost Recovered Through Inter-System Sales	7,974,580	7,742,676	8,082,373	6,659,616	7,304,300	8,591,829	8,805,610	8,656,978	7,946,649	7,043,672	8,285,703	7,004,384	8,130,459	10,189,840
4	Total Monthly Cost of Fuel	$12,799,185	$12,579,047	$13,899,106	$17,426,603	$15,487,972	$15,084,469	$12,551,073	$13,215,870	$15,648,452	$14,453,192	$13,640,574	$12,955,648	$14,928,168	$14,413,387
5	2-Month Total Cost of Fuel	$28,573,108	$25,378,232	$26,478,153	$31,325,709	$32,914,575	$30,572,441	$27,635,542	$25,766,943	$28,864,322	$30,101,644	$28,093,766	$26,596,222	$27,883,816	$29,341,555
	KWh Sales														
6	Total Sales of Electricity	1,219,227,239	1,064,498,303	1,171,796,576	1,118,213,024	1,153,579,765	1,189,621,289	1,216,109,453	1,235,300,763	1,260,605,667	1,163,470,893	1,237,610,464	1,103,175,733	1,167,519,446	1,174,183,410
7	Less: Inter-System Sales	454,310,609	390,009,967	393,914,476	340,642,917	384,813,472	427,662,693	457,990,789	443,219,663	421,213,934	367,091,557	434,429,063	393,438,394	424,074,217	457,925,021
8	Total Monthly kWh Sales	764,916,630	674,488,336	777,882,100	777,570,107	768,766,293	761,958,596	758,118,665	792,081,100	839,391,733	796,379,336	803,181,401	709,737,339	743,445,229	716,258,389
9	2-Month Total kWh Sales	1,610,103,738	1,439,404,966	1,452,370,436	1,555,452,207	1,546,336,400	1,530,724,889	1,520,077,261	1,550,199,765	1,631,472,833	1,635,771,069	1,599,560,737	1,512,918,740	1,453,182,568	1,459,703,618
	Fuel Adjustment Charge - Fuel Clause 16 (¢/KWh)														
10	2-Month Average Cost of Fuel (¢/kWh)	1.775	1.763	1.823	2.014	2.129	1.997	1.818	1.662	1.769	1.840	1.756	1.758		
11	Base Cost of Fuel (¢/kWh)	1.018	1.018	1.018	1.018	1.018	1.018	1.018	1.018	1.018	1.018	1.018	1.018		
12	Fuel Adjustment Charge (lines 10 - line 11) (¢/kWh)	0.757	0.745	0.805	0.996	1.111	0.979	0.800	0.644	0.751	0.822	0.738	0.740		
13	Applicable During **Billing Month** of:	Jul 2015	Aug 2015	Sep 2015	Oct 2015	Nov 2015	Dec 2015	Jan 2016	Feb 2016	Mar 2016	Apr 2016	May 2016	Jun 2016		

2-Month Average Cost of Fuel by Energy Type (¢/kWh)

	Billing Month:	**Jul-15**	**Aug-15**	**Sep-15**	**Oct-15**	**Nov-15**	**Dec-15**	**Jan-16**	**Feb-16**	**Mar-16**	**Apr-16**	**May-16**	**Jun-16**
14	Generation - Coal	0.782	1.013	1.094	1.083	0.997	0.773	0.768	0.880	0.941	1.031	0.951	0.744
15	Generation - Gas	0.016	0.019	0.018	0.017	0.019	0.019	0.017	0.017	0.016	0.016	0.014	0.012
16	Generation - BioFuel	0.016	0.027	0.025	0.017	0.019	0.020	0.018	0.017	0.016	0.016	0.014	0.012
17	Purchased Power - Coal	0.162	0.002	0.217	0.428	0.413	0.333	0.248	0.276	0.286	0.339	0.337	0.312
18	Purchased Power - Biomass	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
19	Purchased Power - Hydro	0.088	0.103	0.072	0.045	0.064	0.048	0.024	0.034	0.026	0.014	0.012	0.016
20	Purchased Power - Gas	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
21	Purchased Power - Wind	0.135	0.114	0.093	0.081	0.090	0.137	0.164	0.129	0.120	0.124	0.123	0.142
22	Purchased Power - Diesel	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
23	Purchased Power - Unknown	1.042	0.871	0.497	0.422	0.453	0.757	0.844	0.506	0.329	0.327	0.398	0.556
24	Total Two-Month Average Cost	2.240	2.149	2.018	2.094	2.056	2.086	2.085	1.859	1.735	1.867	1.849	1.794

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B. Summary - Revenue Collected From Retail Customers Through Fuel Adjustment Charges:

Line No.		Jul 2015	Aug 2015	Sep 2015	Oct 2015	Nov 2015	Dec 2015	Jan 2016	Feb 2016	Mar 2016	Apr 2016	May 2016	Jun 2016
1	Total Monthly Cost of Fuel (line 4, section A)	$13,899,106	$17,426,603	$15,487,972	$15,084,469	$12,551,073	$13,215,870	$15,648,452	$14,453,192	$13,640,574	$12,955,648	$14,928,168	$14,413,387
2	Total Monthly KWH Sales (line 8, section A)	777,882,100	777,570,107	768,766,293	761,958,596	758,118,665	792,081,100	839,391,733	796,379,336	803,181,401	709,737,339	743,445,229	716,258,389
3	Actual Monthly Cost of Fuel (¢/kWh) (line 1/ line 2)	1.787	2.241	2.015	1.980	1.656	1.668	1.864	1.815	1.698	1.825	2.008	2.012
4	Retail kWh Sales Subject to FAC (line 5 + line 13+ line 20+ line 27+ line 34+ line 41+ line 48+ line 55)	637,422,906	638,073,336	637,235,169	632,575,218	623,934,062	644,583,741	682,718,250	654,339,373	664,182,613	605,255,384	618,276,468	595,284,605
	Retail Fuel Clause No. 16												
	KWh Sales												
5	Retail kWh Sales Subject to Fuel Clause No. 16	0	0	0	0	0	0	0	0	0	0	0	0
6	KWh Sales Under Competitive Rate Schedules	0	0	0	0	0	0	0	0	0	0	0	0
7	Total (line 5 + line 6)	0	0	0	0	0	0	0	0	0	0	0	0
	Fuel Cost Recovery (¢/KWh)												
8	Base Cost of Fuel (¢/kWh) (line 11, section A)	1.018	1.018	1.018	1.018	1.018	1.018	1.018	1.018	1.018	1.018	1.018	1.018
9	Fuel Adjustment Charge (¢/kWh) (line 12, section A)	0.757	0.745	0.805	0.996	1.111	0.979	0.800	0.644	0.751	0.822	0.738	0.740
	Fuel Cost Recovery (Total $)												
10	Base Cost of Fuel (line 7 x line 8)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
11	Fuel Adjustment Charge (line 5 x line 9)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
12	Subtotal (line 10 + line 11)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Retail Fuel Clause -RESIDENTIAL												
	KWh Sales												
13	Retail kWh Sales Subject to Fuel Clause	73,825,075	81,412,514	78,109,469	67,598,574	76,158,158	88,688,337	110,884,121	107,647,033	96,705,471	86,204,841	73,347,379	69,343,832
	Fuel Cost Recovery (¢/KWh)												
14	Class Cost Factor (RIDER FOR FUEL AND PURCHASED ENERGY ADJUSTMENT June 1, 2011)	1.07076	1.07076	1.07076	1.07076	1.07076	1.07076	1.07076	1.07076	1.07076	1.07076	1.07076	1.07076
15	Base Cost of Fuel (¢/kWh) (line 11, section A x line 14)	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090
16	Fuel Adjustment Charge (¢/kWh) (line 12, section A x line 14)	0.811	0.798	0.862	1.066	1.190	1.048	0.857	0.690	0.804	0.880	0.790	0.792
	Fuel Cost Recovery (Total $)												
17	Base Cost of Fuel (line 13 x line 15)	$804,693	$887,396	$851,393	$736,824	$830,124	$966,703	$1,208,637	$1,173,353	$1,054,090	$939,633	$799,486	$755,848
18	Fuel Adjustment Charge (line 13 x line 16)	$598,721	$649,672	$673,304	$720,601	$906,282	$929,454	$950,277	$742,765	$777,512	$758,603	$579,444	$549,203
19	Subtotal (line 17 + line 18)	$1,403,415	$1,537,068	$1,524,697	$1,457,425	$1,736,406	$1,896,157	$2,158,914	$1,916,117	$1,831,602	$1,698,235	$1,378,931	$1,305,051
	Retail Fuel Clause -GENERAL SERVICE	Jul 2015	Aug 2015	Sep 2015	Oct 2015	Nov 2015	Dec 2015	Jan 2016	Feb 2016	Mar 2016	Apr 2016	May 2016	Jun 2016
	KWH SALES												
20	Retail kWh Sales Subject to Fuel Clause	54,924,934	57,511,907	56,001,469	50,213,714	50,505,075	52,767,582	60,669,129	59,139,446	57,763,062	53,335,164	49,554,737	51,704,010
	FUEL COST RECOVERY (¢/KWH)												
21	Class Cost Factor (RIDER FOR FUEL AND PURCHASED ENERG'	1.07093	1.07093	1.07093	1.07093	1.07093	1.07093	1.07093	1.07093	1.07093	1.07093	1.07093	1.07093
22	Base Cost of Fuel (¢/kWh) (line 11, section A x line 21)	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090
23	Fuel Adjustment Charge (¢/kWh)(line 12, section A x line 21)	0.811	0.798	0.862	1.067	1.190	1.048	0.857	0.690	0.804	0.880	0.790	0.792
	FUEL COST RECOVERY ($)												
24	Base Cost of Fuel (line 20 x line 22)	$598,682	$626,880	$610,416	$547,329	$550,505	$575,167	$661,294	$644,620	$629,617	$581,353	$540,147	$563,574
25	Fuel Adjustment Charge (line 20 x line 23)	$445,441	$458,945	$482,733	$535,780	$601,010	$553,004	$519,934	$408,062	$464,415	$469,349	$391,482	$409,496
26	Subtotal (line 24 + line 25)	$1,044,123	$1,085,825	$1,093,149	$1,083,110	$1,151,516	$1,128,171	$1,181,228	$1,052,682	$1,094,032	$1,050,703	$931,629	$973,069

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Retail Fuel Clause -LARGE LIGHT AND POWER													
	KWH SALES												
27	Retail kWh Sales Subject to Fuel Clause	124,469,688	130,058,501	126,651,959	120,642,582	113,299,351	120,572,375	121,382,639	118,783,758	118,037,746	112,488,465	105,589,167	112,019,485
	FUEL COST RECOVERY (¢/KWH)												
	Class Cost Factor (RIDER FOR FUEL AND PURCHASED												
28	ENERGY ADJUSTMENT Nov 2, 2009)	1.00424	1.00424	1.00424	1.00424	1.00424	1.00424	1.00424	1.00424	1.00424	1.00424	1.00424	1.00424
29	Base Cost of Fuel (¢/kWh) (line 11, section A x line 28)	1.022	1.022	1.022	1.022	1.022	1.022	1.022	1.022	1.022	1.022	1.022	1.022
30	Fuel Adjustment Charge (¢/kWh)(line 12, section A x line 28)	0.760	0.748	0.808	1.000	1.116	0.983	0.803	0.647	0.754	0.825	0.741	0.743
	FUEL COST RECOVERY ($)												
31	Base Cost of Fuel (line 27 x line 29)	$1,272,080	$1,329,198	$1,294,383	$1,232,967	$1,157,919	$1,232,250	$1,240,531	$1,213,970	$1,206,346	$1,149,632	$1,079,121	$1,144,839
32	Fuel Adjustment Charge (line 27 x line 30)	$945,970	$972,838	$1,023,348	$1,206,426	$1,264,421	$1,185,226	$974,703	$768,531	$890,005	$928,030	$782,416	$832,305
33	Subtotal (line 31 + line 32)	$2,218,050	$2,302,035	$2,317,731	$2,439,393	$2,422,340	$2,417,476	$2,215,233	$1,982,501	$2,096,350	$2,077,662	$1,861,537	$1,977,144
Retail Fuel Clause -LARGE POWER													
	KWH SALES												
34	Retail kWh Sales Subject to Fuel Clause	381,368,564	366,193,841	373,726,137	391,253,909	380,800,606	379,367,137	386,034,037	365,584,135	388,502,770	350,216,790	387,127,192	359,760,169
	FUEL COST RECOVERY (¢/KWH)												
	Class Cost Factor (RIDER FOR FUEL AND PURCHASED												
35	ENERGY ADJUSTMENT Nov 2, 2009)	0.97769	0.97769	0.97769	0.97769	0.97769	0.97769	0.97769	0.97769	0.97769	0.97769	0.97769	0.97769
36	Base Cost of Fuel (¢/kWh) (line 11, section A x line 35)	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
37	Fuel Adjustment Charge (¢/kWh)(line 12, section A x line 35)	0.740	0.728	0.787	0.974	1.086	0.957	0.782	0.630	0.734	0.804	0.722	0.723
	FUEL COST RECOVERY ($)												
38	Base Cost of Fuel (line 34 x line 36)	$3,794,617	$3,643,629	$3,718,575	$3,892,976	$3,788,966	$3,774,703	$3,841,039	$3,637,562	$3,865,603	$3,484,657	$3,851,916	$3,579,614
39	Fuel Adjustment Charge (line 34 x line 37)	$2,822,127	$2,665,891	$2,941,225	$3,810,813	$4,135,495	$3,630,544	$3,018,786	$2,303,180	$2,851,610	$2,815,743	$2,795,058	$2,601,066
40	Subtotal (line 38 + line 39)	$6,616,745	$6,309,520	$6,659,800	$7,703,789	$7,924,461	$7,405,247	$6,859,825	$5,940,742	$6,717,213	$6,300,400	$6,646,974	$6,180,680
Retail Fuel Clause -MUNICIPAL PUMPING		Jul 2015	Aug 2015	Sep 2015	Oct 2015	Nov 2015	Dec 2015	Jan 2016	Feb 2016	Mar 2016	Apr 2016	May 2016	Jun 2016
	KWH SALES												
41	Retail kWh Sales Subject to Fuel Clause	1,521,266	1,463,850	1,156,579	1,066,904	1,053,412	1,057,562	1,175,557	1,133,790	1,287,759	1,233,761	1,230,844	1,165,167
	FUEL COST RECOVERY (¢/KWH)												
	Class Cost Factor (RIDER FOR FUEL AND PURCHASED												
42	ENERGY ADJUSTMENT Nov 2, 2009)	0.98103	0.98103	0.98103	0.98103	0.98103	0.98103	0.98103	0.98103	0.98103	0.98103	0.98103	0.98103
43	Base Cost of Fuel (¢/kWh) (line 11, section A x line 42)	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999	0.999
44	Fuel Adjustment Charge (¢/kWh)(line 12, section A x line 42)	0.743	0.731	0.790	0.977	1.090	0.960	0.785	0.632	0.737	0.806	0.724	0.726
	FUEL COST RECOVERY ($)												
45	Base Cost of Fuel (line 41 x line 43)	$15,197	$14,624	$11,554	$10,658	$10,524	$10,565	$11,744	$11,327	$12,865	$12,325	$12,296	$11,640
46	Fuel Adjustment Charge (line 41 x line 44)	$11,303	$10,701	$9,137	$10,424	$11,482	$10,153	$9,228	$7,166	$9,491	$9,944	$8,911	$8,459
47	Subtotal (line 45 + line 46)	$26,500	$25,325	$20,691	$21,082	$22,006	$20,718	$20,972	$18,492	$22,355	$22,269	$21,207	$20,099

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Retail Fuel Clause -LIGHTING													
	KWH SALES												
48	Retail kWh Sales Subject to Fuel Clause	1,313,379	1,432,723	1,589,556	1,799,535	2,117,460	2,130,748	2,572,767	2,051,211	1,885,805	1,776,363	1,427,149	1,291,942
	FUEL COST RECOVERY (¢/KWH)												
	Class Cost Factor (RIDER FOR FUEL AND PURCHASED												
49	ENERGY ADJUSTMENT Nov 2, 2009)	0.74029	0.74029	0.74029	0.74029	0.74029	0.74029	0.74029	0.74029	0.74029	0.74029	0.74029	0.74029
50	Base Cost of Fuel (¢/kWh) (line 11, section A x line 49)	0.754	0.754	0.754	0.754	0.754	0.754	0.754	0.754	0.754	0.754	0.754	0.754
51	Fuel Adjustment Charge (¢/kWh)(line 12, section A x line 49)	0.560	0.552	0.596	0.737	0.822	0.725	0.592	0.477	0.556	0.609	0.546	0.548
	FUEL COST RECOVERY ($)												
52	Base Cost of Fuel (line 48 x line 50)	$9,903	$10,803	$11,985	$13,568	$15,966	$16,066	$19,399	$15,466	$14,219	$13,394	$10,761	$9,741
53	Fuel Adjustment Charge (line 48 x line 51)	$7,355	$7,909	$9,474	$13,263	$17,406	$15,448	$15,231	$9,784	$10,485	$10,818	$7,792	$7,080
54	Subtotal (line 52 + line 53)	$17,258	$18,711	$21,459	$26,831	$33,371	$31,514	$34,629	$25,250	$24,704	$24,212	$18,553	$16,821
	Total Fuel Cost Recovery From Retail Sales:	Jul 2015	Aug 2015	Sep 2015	Oct 2015	Nov 2015	Dec 2015	Jan 2016	Feb 2016	Mar 2016	Apr 2016	May 2016	Jun 2016
61	Base Cost of Fuel (line 10+line 17+ line 24+ line 31+ line 38+ line 45+ line 52 + line 58)	$6,495,173	$6,512,529	$6,498,307	$6,434,324	$6,354,004	$6,575,453	$6,982,642	$6,696,297	$6,782,739	$6,180,994	$6,293,727	$6,065,256
62	Fuel Adjustment Charge (line 11+ line 18+ line 25+ line 32+ line 39+ line 46+ line 53 + line 59)	$4,830,918	$4,765,955	$5,139,220	$6,297,306	$6,936,096	$6,323,828	$5,488,159	$4,239,487	$5,003,518	$4,992,487	$4,565,104	$4,407,609
63	Total Fuel Cost Recovery (line 12+ line 19+ line 26+ line 33+ line 40+ line 47+ line 54 + line 60)	$11,326,090	$11,278,484	$11,637,526	$12,731,631	$13,290,099	$12,899,282	$12,470,801	$10,935,785	$11,786,257	$11,173,481	$10,858,831	$10,472,864

C. Summary - Over (Under) Recovery From Automatic Adjustment Charges:

Line No.		Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16
1	Total Retail Fuel Cost Recovery (line 63, section B)	$11,326,090	$11,278,484	$11,637,526	$12,731,631	$13,290,099	$12,899,282	$12,470,801	$10,935,785	$11,786,257	$11,173,481	$10,858,831	$10,472,864
2	Retail kWh Sales Subject to FAC (line 4, section B)	637,422,906	638,073,336	637,235,169	632,575,218	623,934,062	644,583,741	682,718,250	654,339,373	664,182,613	605,255,384	618,276,468	595,284,605
3	KWh Sales Under Competitive Rates / (line 6, section B)	0	0	0	0	0	0	0	0	0	0	0	0
4	Subtotal (line 2 + line 3)	637,422,906	638,073,336	637,235,169	632,575,218	623,934,062	644,583,741	682,718,250	654,339,373	664,182,613	605,255,384	618,276,468	595,284,605
5	Actual Monthly Cost of Fuel (¢/kWh) (line 3, section B)	1.787	2.241	2.015	1.980	1.656	1.668	1.864	1.815	1.698	1.825	2.008	2.012
6	Actual Monthly Cost of Fuel for Retail kWh (line 4 x line 5)	$11,390,747	$14,299,223	$12,840,289	$12,524,989	$10,332,348	$10,751,657	$12,725,868	$11,876,260	$11,277,821	$11,045,911	$12,414,991	$11,977,126
7	Total Over (Under) Recovery - Monthly (line 1- line 6)	($64,657)	($3,020,739)	($1,202,762)	$206,641	$2,957,751	$2,147,625	($255,067)	($940,475)	$508,436	$127,571	($1,556,160)	($1,504,262)
8	Cumulative Over (Under) Recovery (Based on line 7)	($64,657)	($3,085,396)	($4,288,158)	($4,081,517)	($1,123,766)	$1,023,859	$768,792	($171,683)	$336,753	$464,324	($1,091,836)	($2,596,098)

NOTES:

Fuel Adjustment Clause 16 is applicable to all retail schedules except Competitive Rates, Industrial Economy, Excess Energy, Replacement Firm Power Service, Interruptible Power and Incremental Production Service. KWH Sales under Competitive Rate Schedules are not subject to the Fuel Clause but the Competitive Rate does recover the base cost of fuel.

Beginning Nov. 1, 2009 with final rates, the company began applying the Fuel Adjustment Clause based (Fuel and Purchased Energy Adjustment) on Class Cost Factors for each different rate class such as Residential, General Service, Large Light and Power, Large Power, Municipal Pumping and Lighting

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FCA Billing Lag

			October	November	December
a.	Fuel and Purchased Energy Costs		$ 15,596,443	$ 16,086,884	$ 19,659,477
b.	Total System Sales - MWh		785,543	814,826	882,504
c.	Monthly Cost Per MWh		$ 19.85	$ 19.74	$ 22.28
d.	Current Base Cost of Energy per MWh		$ 10.18	$ 10.18	$ 10.18
e.	MN Monthly Retail Sales - MWh		654,631	679,735	729,110
	Month FCA Billed and Costs Recovered		Dec/Jan	Jan/Feb	Feb/Mar
g.	Fuel and Purchased Energy Costs Incurred	c * e	$ 12,997,271	$ 13,419,820	$ 16,242,330
	Cost Recovery				
	Total Billed and collected in Current Base	d * e	$ 6,664,144	$ 6,919,702	$ 7,422,340
	FCA Recovery of Current Months Costs	(c-d)/2*e	$ 3,166,564		
h.	Total Actual Recovery of October - December costs		$ 3,166,564	$ 6,500,118	$ 8,819,990
i.	Total Unrecovered		$ 18,486,671		

STATE OF MINNESOTA	)	AFFIDAVIT OF SERVICE VIA
	) ss	ELECTRONIC FILING
COUNTY OF ST. LOUIS	)	

SUSAN ROMANS of the City of Duluth, County of St. Louis, State of Minnesota, says that on the **2nd day of November, 2016**, she served Minnesota Power's Petition for Approval of a New Base Cost of Fuel and Purchase Energy in **Docket No. E015/MR-16-709** via electronic filing. Parties on the attached Service Lists were served as requested. Paper copies were sent via U.S. Mail.

Susan Romans

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