



Minnesota Energy Resources Corporation
2685 145th Street West
Rosemount, MN 55068
www.minnesotaenergyresources.com

July 31, 2020

VIA ELECTRONIC FILING

Will Seuffert
Executive Secretary
Minnesota Public Utilities Commission
121 Seventh Place East, Suite 350
St. Paul, MN 55101

Re: In the Matter Minnesota Energy Resources Corporation's Petition for Approval of a Change in Demand Entitlement for its Consolidated System

Docket No. G011/M-20-____

Dear Mr. Seuffert:

In accordance with Minnesota Rules 7825.2910, subpart 2, please find enclosed Minnesota Energy Resources Corporation's (MERC's or the Company's) request to change demand entitlements for its Consolidated purchased gas adjustment area. Please note that any updated information will be provided with MERC's November 1, 2020 filing. MERC is also filing Excel and PDF versions of the attachments.

Pursuant to Minnesota Rule 7825.2910, subpart 3, a Notice of Availability has been sent to all intervenors in the Company's previous two rate cases.

Please contact me at (414) 221-4208 if you have any questions regarding the information in this filing. Thank you for your attention to this matter.

Sincerely yours,

/s/Joylyn Hoffman Malueg
Joylyn Hoffman Malueg
Project Specialist 3
Minnesota Energy Resources Corporation

Enclosures
cc: Service List

July 31, 2020

To: Service List

RE: Minnesota Energy Resources Corporation-Consolidated Petition for Approval of Change in Demand Entitlement

Notice of Availability

Please take notice that Minnesota Energy Resources Corporation has filed a petition with the Minnesota Public Utilities Commission for approval of a change in demand entitlement for its Consolidated Purchased Gas Adjustment system.

To obtain copies, or if you have any questions, please contact:

Joylyn C. Hoffman Malueg
Minnesota Energy Resources Corporation
2685 145th Street West
Rosemount, MN 55068
(414) 221-4208

Please note that this filing is also available through the eDockets system maintained by the Minnesota Department of Commerce and the Minnesota Public Utilities Commission. You can access this document by going to eDockets through the websites of the Department of Commerce or the Public Utilities Commission or going to the eDockets homepage at:

<https://www.edockets.state.mn.us/EFiling/home.jsp>

Once on the eDockets homepage, this document can be accessed through the Search Documents link and by the date of the filing.

**STATE OF MINNESOTA
BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION**

**Katie J. Sieben
Valerie Means
Matthew Schuerger
Joseph K. Sullivan
John A. Tuma**

**Chair
Commissioner
Commissioner
Commissioner
Commissioner**

In the Matter of the Petition of Minnesota
Energy Resources Corporation for Approval of
a Change in Demand Entitlement for its
Consolidated System

Docket No. G011/M-20-____

SUMMARY OF FILING

Pursuant to Minnesota Rule 7825.2910, subpart 2 (Filing Upon Change in Demand), Minnesota Energy Resources Corporation – Consolidated (MERC or the Company), hereby petitions the Minnesota Public Utilities Commission (Commission) for approval of changes in demand entitlements for MERC customers served off of the Consolidated system. MERC requests the Commission approve the requested changes to be recovered in the Purchased Gas Adjustment (PGA) beginning November 1, 2020.

**STATE OF MINNESOTA
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In the Matter of the Petition of Minnesota
Energy Resources Corporation for Approval of
a Change in Demand Entitlement for its
Consolidated System

Docket No. G011/M-20-____

FILING UPON CHANGE IN DEMAND

Pursuant to Minnesota Rule 7825.2910, subpart 2 (Filing Upon Change in Demand), Minnesota Energy Resources Corporation – Consolidated (MERC or the Company), a subsidiary of WEC Energy Group, hereby petitions the Minnesota Public Utilities Commission (Commission) for approval of changes in demand entitlements for MERC-Consolidated customers served off Centra Pipeline, Viking Gas Transmission, and Great Lakes Gas Transmission (collectively the “Consolidated” pipelines).¹ MERC requests the Commission approve the requested changes to be recovered in the Purchased Gas Adjustment (PGA) beginning November 1, 2020.

This filing includes the following attachments:

- Attachment A:** Notice of Availability.
- Attachment B:** One paragraph summary of the filing in accordance with Minn. R. 7829.1300, subp. 1.
- Attachment C:** Petition for Change in Demand with Attachments.
- Attachment D:** Certificate of Service and Service List.

¹ MERC also serves certain of its Minnesota customers off the Northern Natural Gas (“NNG”) system. MERC requests approval of a demand entitlement change for the 2020-2021 heating season for its MERC-NNG PGA in a separate docket.

The following information is provided in accordance with Minn. R. 7829.1300:

I. Summary of Filing

Pursuant to Minn. R. 7829.1300, subp. 1, a one-paragraph summary of the filing is attached.

II. Service

Pursuant to Minn. R. 7829.1300, subp. 2, MERC has served a copy of this filing on the Department of Commerce, Division of Energy Resources and the Office of the Attorney General — Residential Utilities Division. The summary of filing has been served on all parties on the attached service list. Additionally, pursuant to Minn. R. 7825.2910, subp. 3, a Notice of Availability has been sent to all intervenors in the Company's previous two rate cases.

III. General Filing Information

A. Name, Address, and Telephone Number of the Utility

Minnesota Energy Resources Corporation
2685 145th Street West
Rosemount, MN 55068
(651) 322-8901

B. Name, Address, Electronic Address, and Telephone Number of Attorney for the Utility

Kristin M. Stastny
Taft Stettinius & Hollister LLP
2200 IDS Center
80 South 8th Street
Minneapolis, MN 55402
KStastny@Taftlaw.com
(612) 977-8656

C. Date of the Filing and Proposed Effective Date

Date of filing: July 31, 2020
Proposed Effective Date: November 1, 2020

D. Statute Controlling Schedule for Processing the Filing

Minnesota Statutes and related rules do not provide an explicit time frame for action by the Commission. Under Minn. R. 7829.1400, initial comments are due within 30 days of filing, with reply comments due 10 days thereafter.

E. Signature, Electronic Address, and Title of Utility Employee Responsible for the Filing



Joylyn C. Hoffman Malueg
Project Specialist 3
Joylyn.HoffmanMalueg@wecenergygroup.com
2685 145th Street West
Rosemount, MN 55068
(414) 221-4208

If additional information is required, please contact Joylyn Hoffman Malueg at (414) 221-4208.

DATED: July 31 2020

Respectfully submitted,
MINNESOTA ENERGY RESOURCES
CORPORATION

By: /s/ Joylyn C. Hoffman Malueg
Joylyn C. Hoffman Malueg
2685 145th Street West
Rosemount, MN 55068
Telephone: (414) 221-4208

STATE OF MINNESOTA
BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

Katie J. Sieben
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In the Matter of the Petition of Minnesota
Energy Resources Corporation for Approval of
a Change in Demand Entitlement for its
Consolidated System

Docket No. G011/M-20-____

PETITION OF MINNESOTA ENERGY RESOURCES CORPORATION-CONSOLIDATED FOR
CHANGE IN DEMAND

I. Introduction

Pursuant to Minnesota Rule 7825.2910, subpart 2 (Filing Upon Change in Demand), Minnesota Energy Resources Corporation - Consolidated (MERC or the Company), a subsidiary of WEC Energy Group, hereby petitions the Minnesota Public Utilities Commission (Commission) for approval of changes in demand entitlements for MERC-Consolidated customers served off Centra Pipeline, Viking Gas Transmission, and Great Lakes Gas Transmission (the "Consolidated" pipelines). MERC requests that the Commission approve the requested changes to be recovered in the Purchased Gas Adjustment (PGA) beginning on November 1, 2020.

Included with this filing are the following Attachments:

Attachment 1: Design-Day Demand Summary

Attachment 2: Sales Forecast

Attachment 3: Current and Proposed Entitlement Levels

Attachment 4: Rate Impact of the Proposed Demand Change

Attachment 5: Financial Option Summary

Attachment 6: Winter Plan

Attachment 7: Entitlement History

Attachment 8: Change in Entitlement Levels and Related Demand Costs

Attachment 9: Actual Throughput and Design-Day Forecast Estimated Throughput

Attachment 10: Customer Counts

Attachment 11: Hedging Summary

Attachment 12: Forecast Methodology

II. **Discussion**

A. **MERC's Consolidated Design-Day Requirements**

Minnesota Rule 7825.2910, subpart 2(b) requires that a filing upon change in demand include the utility's Design-Day demand by customer class and the change in Design-Day demand, if any, necessitating the demand revision. The Consolidated Design-Day requirement has increased by 283 dekatherms (dth) since November 1, 2019. This represents a 0.50% increase in Design-Day requirement over the 2019-2020 heating season.

**Table 1: MERC Proposed Consolidated Reserve Margins
For the 2020-2021 Heating Season**

	Reserve Margin 2020-2021 Heating Season	Reserve Margin 2019-2020 Heating Season	Change
Consolidated	2.78%	2.06%	0.72%

For the Demand Entitlement filing effective November 1, 2020, the total Design-Day requirement for MERC – Consolidated is 57,065 dth (Attachment 1). The difference between

the total Design-Day requirement and total Design-Day capacity results in a 2.78% reserve margin (Attachment 3). As required by Order Point 9 of the Commission's Order in Docket No. G011/M-15-722, Attachment 3 reflects separate summer and winter demand entitlements for MERC-Consolidated.

B. Gas Supply

Minnesota Rule 7825.2910, subpart 2, requires a description of Design-Day gas supply from all sources under the new level, allocation, or form of demand. This information is provided in Attachment 3.

C. Forecast Methodology for MERC Demand Entitlement November 1, 2020

See Attachment 12.

III. Additional Filing Requirements

A. Daily Design-Day Estimate to Actual Comparison

In the 2007-2008 demand entitlement dockets,² MERC agreed to include a daily estimate utilizing the Design-Day model, which is calculated in Attachment 9. The daily estimate is compared to actual consumption. The actual volumes are total throughput which includes interruptible and transportation volumes that are located behind MERC citygates. The Design-Day model only calculates firm volumes. MERC does not forecast on a daily/monthly basis utilizing the Design-Day model. The Design-Day model is utilized to calculate the theoretical peak day.

B. Average Customer Counts

In the 2007-2008 demand entitlement dockets, MERC agreed to include average customer counts which are provided in Attachment 10.

² Docket Nos. G007/M-07-1402; G007/M-07-1403; G007/M-07-1404; and G007/M-07-1405.

C. Balancing

Order Point 4 of the Commission's January 21, 2015, Order in MERC's 2010-2011 demand entitlement dockets, Docket Nos. G007/M-10-1166; G007/M-10-1167; G011/M-10-1168; and G011/M-10-1169, required that in future demand entitlement filings, MERC provide a clarification of its statements regarding system balancing and detailed evidence assuring the Commission that the appropriate customer group is paying for any balancing charges or penalties. Additionally, in Docket No. G999/AA-12-756, by Order dated November 14, 2013, the Commission ordered that "prospectively, all regulated natural gas utilities shall recover balancing service costs, and shall credit the utility's penalty revenues and the pipeline's revenue credits, to the commodity portion of the PGA effective with the earliest true-up filing (for revenues) or the earliest monthly PGA (for costs) that can reasonably be implemented."

MERC subsequently revised its monthly PGA filings, beginning November 2013, to recover all balancing costs via the commodity portion of the PGA. MERC's 2014 AAA and true-up filings, as well as the 2014 Demand Entitlement filing, also reflected this change. The current MERC-Consolidated demand entitlement filing includes detailed evidence of the allocation of balancing costs to the commodity portion of the PGA on Attachment 4, page 2 of 3.

D. MERC's Proposed Consolidated System Demand-Related Changes

There are two types of demand entitlement changes. The first type is Design-Day deliverability, which quantifies the amount of firm transportation and storage capacity available to MERC's Consolidated customers during winter peak periods. The second type does not affect Design-Day deliverability levels, but alters the capacity portfolio and the PGA costs recovered from customers.

1. Design-Day Deliverability Changes

As shown in Attachment 3, MERC proposes to increase Design-Day Deliverability by 700 dth/day as compared to 2019-2020 in order to provide additional capacity to meet forecasted peak demand growth and ensure a reasonable reserve margin.

2. Other Demand Entitlement Changes

MERC entered into a four year contract for natural gas storage with ANR Pipeline Storage effective April 1, 2018, to replace the Company's previous contract for natural gas storage with Niska Gas Storage. MERC submitted a request for approval of its ANR Storage Contract on January 8, 2018, in Docket No. G011/M-17-587, which was approved by the Commission by Order dated May 25, 2018. MERC also entered into a four year contract effective November 1, 2018, for ANR Pipeline transportation services to move gas from ANR Storage to the interconnect with Great Lakes Gas Transmission. These contracts are reflected in Attachments 4 (page 2 of 2), 7, and 8. There are no changes to ANR storage or associated withdrawal transport in 2020-2021.

Finally, MERC notes that Viking Gas Transmission filed a rate case with the Federal Energy Regulatory Commission (FERC) on June 28, 2019. On July 1, 2020, FERC approved a settlement with rates effective as of March 1, 2020, and required refunds for rates collected from January 1, 2020 through February 29, 2020. The approved rates are reflected in this filing.³

E. Financial Option Units and Premiums

MERC has partially completed its purchases of future contracts and call options for the 2020-2021 winter period. Current financial hedge volumes and costs are shown in Attachments 5 and 11 (page 1 and 3). The call option premium costs additionally flow through the

³ The change in rates for Viking Gas Transmission had a small impact for MERC. As reflected in this filing, MERC will implement the revised Viking rates with this filing effective November 1, 2020. Additionally, MERC intends to address the impacts of the Viking rate reduction and interim rate refund for the period January 1, 2020 through October 31, 2020 through its annual automatic adjustment and true-up mechanism. The impact of the approved Viking Gas Transmission settlement for the period January 1, 2020 through October 31, 2020 is less than \$5 per customer on the Consolidated PGA.

spreadsheet in Attachment 4, pages 1 and 2, and in Attachment 8. MERC will provide an update with its November 1, 2020 filing.

In accordance with the Commission's May 8, 2017, Order in Docket No. G011/M-17-85 approving MERC's variance extension request to recover the costs of financial instruments through the PGA, MERC provides the following information:

- i. a list of all financial instruments purchased for the upcoming heating season (see Attachment 11);
- ii. the cost premium associated with each contract (see Attachment 5);
- iii. the size (in dth) of each contract (see Attachments 5 and 11);
- iv. the contract date (see Attachment 5);
- v. the contract price (see Attachment 11);
- vi. an attachment that details the projected total system sales estimates for the upcoming heating season, including all supporting data and assumptions used when calculating the sales forecast, and the total number of volumes hedged using financial instruments for the upcoming heating season (see Attachment 2 and Attachment 6, page 1 of 2); and
- vii. a detailed discussion of the anticipated benefits to ratepayers related to MERC's financial instrument contracts, discussed below.

The Consolidated 2020-2021 Winter Portfolio Hedging Plans - Minnesota Energy Resources Corporation for Great Lakes Gas Transmission, Viking Gas Transmission, and Centra Pipeline gas supply purchases are shown on Attachment 6. MERC's hedging strategy covers up to 60% of normal winter volumes; up to 30% through physical storage; and 30% through financial instruments. The weighted average price of currently purchased futures contracts of natural gas for the 2020-2021 winter is \$2.8120/dth. Please see Attachment 11, page 1 of 3. As shown in Attachment 11, page 2 of 3, MERC projects the ANR storage

WACOG to be \$1.6679/dth. MERC has purchased call options at an average strike price of \$5.1556/dth, which means if NYMEX contract(s) settle above that price, the options are exercised and MERC customer gas cost is capped at the average strike price. Please see Attachment 11, page 3 of 3. The remaining winter volumes are purchased at index or market prices. All numbers reflected are natural gas costs only and do not include any transportation, storage, hedge premium, or margin costs.

F. PGA Cost Recovery

MERC proposes to begin recovering the costs associated with the change in demand-related costs in its monthly PGA effective November 1, 2020. Rate impacts associated with this change can be found in Attachment 4.

G. Impacts of Telemetry

Throughout the course of the year, a number of customers request to switch from interruptible to firm service. MERC evaluates these requests to determine the impact to its system and upstream entitlement levels. MERC's process requires an evaluation of the system capability before a customer is allowed to switch to firm. As a result, the firm volumes associated with a customer switch fall within the Design-Day parameters and do not impact demand entitlement levels.

IV. Conclusion

MERC respectfully requests that the Commission approve the requested changes to be recovered in the Purchased Gas Adjustment (PGA) beginning November 1, 2020.

DATED: July 31, 2020

Respectfully submitted,

MINNESOTA ENERGY RESOURCES
CORPORATION

By: /s/ Joylyn C. Hoffman Malueg

Joylyn C. Hoffman Malueg

2685 145th Street West

Rosemount, MN 55068

Telephone: (414) 221-4208

MINNESOTA ENERGY RESOURCES - Consolidated
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DESIGN-DAY DEMAND SUMMARY

November 1, 2020

Design Day Requirement		57,065
Total Peak Day Entitlement		58,649
2019/20 Firm Peak Day Actual Sendout	2/13/2020	43,960
Firm Annual Throughput - Minnesota		5,428,877
No. of Firm Customers		36,580
Department Load Factor Calculation		33.83%

MINNESOTA ENERGY RESOURCES - Consolidated

CONSOLIDATED DESIGN DAY REQUIREMENTS

November 1, 2020

Consolidated

Pipeline Group	2019/20 Customer Count	1/20 Design DDD	Regression Factors		Regression Total	Regression Adjustment	1/20 Requirements Regression Load	Estimated Contract Demand Units	Total
			Intercept	Slope					

VGT									
Peak		109	349	109	16,446	969	17,415	7	17,422
Off Peak		57	349	109	9,420	969	10,389	7	10,396

GLGT									
Peak		107	557	208	28,763	1,465	30,228	51	30,279
Off Peak		57	557	208	16,086	1,465	17,551	51	17,602

Centra									
Peak		107	289	65	8,986	378	9,364	0	9,364
Off Peak		57	289	65	4,925	378	5,303	0	5,303

Total Consolidated									
Peak	36,580	107	1,195	382	54,195	2,812	57,007	58	57,065
Off Peak	36,580	57	1,195	382	30,431	2,812	33,243	58	33,301

MINNESOTA ENERGY RESOURCES - Consolidated

DESIGN-DAY DEMAND PER CUSTOMER

November 1, 2020

Consolidated

<u>Heating Season</u>	<u>No. of Firm Customers</u>	<u>Design Day Requirements</u>	<u>MMBtu /Customer /Day</u>
20/21	36,580	57,065	1.56
19/20	35,981	56,782	1.58
18/19	35,653	56,470	1.58
17/18	35,965	56,266	1.56
16/17	35,499	55,528	1.56
15/16	34,799	53,075	1.53
14/15	34,397	48,706	1.42
13/14	34,007	50,048	1.47
12/13	33,630	52,289	1.55
11/12	33,384	50,366	1.51

MINNESOTA ENERGY RESOURCES - Consolidated

SUMMER/WINTER USAGE - Dth
PROJECTED 12 MONTHS ENDING JUNE 2021

Consolidated

<u>Class</u>	<u>Summer Apr-Oct</u>	<u>Winter Nov-Mar</u>	<u>Total</u>
General Service	1,523,365	3,879,760	5,403,125
Interruptible	325,598	610,364	935,961
Firm/Interruptible	8,959	16,794	25,752
Total	1,857,921	4,506,918	6,364,839

MINNESOTA ENERGY RESOURCES - Consolidated

ENTITLEMENT LEVELS

November 1, 2020

Consolidated

<u>Capacity Type</u>	<i>Summer</i>			<i>April/October</i>			<i>Winter</i>		
	<u>2019/20</u> <u>MMBtu</u>	<u>Change</u> <u>MMBtu</u>	<u>Proposed</u> <u>MMBtu</u>	<u>2019/20</u> <u>MMBtu</u>	<u>Change</u> <u>MMBtu</u>	<u>Proposed</u> <u>MMBtu</u>	<u>2019/20</u> <u>MMBtu</u>	<u>Change</u> <u>MMBtu</u>	<u>Proposed</u> <u>MMBtu</u>
FT Western Zone FT19131	10,130	0	10,130	10,130	0	10,130	0	0	0
FT Western Zone FT18528	12,600	0	12,600	12,600	0	12,600	12,600	0	12,600
FT Western Zone (5) FT18528 (5)	0	0	0	0	0	0	3,728	0	3,728
FT Western Zone (5) FT19129 (5)	0	0	0	0	0	0	15,030	0	15,030
ANR (5) * 130504	0	0	0	0	0	0	15,000	0	15,000
FT-A ZONE 1 - 1 AF0012	14,493	600	15,093	14,493	600	15,093	15,591	600	16,191
FT-A ZONE 1 - 1 AF0321	0	0	0	0	0	0	1,500	0	1,500
CENTRA FT-1	9,500	100	9,600	9,500	100	9,600	9,500	100	9,600
Total Entitlement	46,723	700	47,423	46,723	700	47,423	57,949	700	58,649
Forecasted Design Day-Adjusted				33,169	132	33,301	56,782	283	57,065
Capacity Surplus/Shortage				13,554	568	14,122	1,167	417	1,584
Reserve Margin				40.86%	1.54%	42.41%	2.06%	0.72%	2.78%

MINNESOTA ENERGY RESOURCES - CONSOLIDATED

RATE IMPACT OF THE PROPOSED DEMAND CHANGE

November 1, 2020

Consolidated

All costs in \$/Dth	Base Cost of Gas G011/MR-17-564 1-Jul-19	Demand Charge Demand Filing Nov 1, 2019	Most Recent PGA July 1, 2020	Proposed Effective Nov 1, 2020	Result of Proposed Change			
					Change from Last Rate Case	Change from Nov 1, 2019 Demand Filing	Change from Last PGA %	Change from Last PGA \$

1) General Service Residential Avg. Annual Use:					86	Dth			
Commodity Cost	\$2.8746	\$2.7837	\$1.5633	\$1.6199	-43.65%	-41.81%	3.62%	\$0.0566	
Demand Cost	\$0.7527	\$0.8229	\$0.8229	\$0.8137	8.11%	-1.12%	-1.12%	(\$0.0092)	
Commodity Margin	\$2.4686	\$2.4686	\$2.4686	\$2.4686	0.00%	0.00%	0.00%	\$0.0000	
Total Cost of Gas	\$6.0959	\$6.0752	\$4.8548	\$4.9022	-19.58%	-19.31%	0.98%	\$0.0474	
Avg Annual Cost	\$523.09	\$521.31	\$416.59	\$420.66	-19.58%	-19.31%	0.98%	\$4.07	
Effect of proposed commodity change on average annual bills:								\$4.86	
Effect of proposed demand change on average annual bills:								(\$0.79)	

2) Large C&I Firm, Class 2: Avg. Annual Use:					608	Dth			
Commodity Cost	\$2.8746	\$2.7837	\$1.5633	\$1.6199	-43.65%	-41.81%	3.62%	\$0.0566	
Demand Cost	\$0.7527	\$0.8229	\$0.8229	\$0.8137	8.11%	-1.12%	-1.12%	(\$0.0092)	
Commodity Margin	\$1.6857	\$1.6857	\$1.6857	\$1.6857	0.00%	0.00%	0.00%	\$0.0000	
Total Cost of Gas	\$5.3130	\$5.2923	\$4.0719	\$4.1193	-22.47%	-22.16%	1.16%	\$0.0474	
Avg Annual Cost	\$3,231.42	\$3,218.84	\$2,476.57	\$2,505.42	-22.47%	-22.16%	1.16%	\$28.85	
Effect of proposed commodity change on average annual bills:								\$34.44	
Effect of proposed demand change on average annual bills:								(\$5.59)	

3) Small C&I Interruptible, Class 2: Avg. Annual Use:					5,627	Dth			
Commodity Cost	\$2.8746	\$2.7837	\$1.5633	\$1.6199	-43.65%	-41.81%	3.62%	\$0.0566	
Commodity Margin	\$1.0453	\$1.0453	\$1.0453	\$1.0453	0.00%	0.00%	0.00%	\$0.0000	
Total Cost of Gas	\$3.9199	\$3.8290	\$2.6086	\$2.6652	-32.01%	-30.39%	2.17%	\$0.0566	
Avg Annual Cost	\$22,058.36	\$21,546.95	\$14,679.31	\$14,997.93	-32.01%	-30.39%	2.17%	\$318.62	
Effect of proposed commodity change on average annual bills:								\$318.62	

4) Large C&I Interruptible, Class 3: Avg. Annual Use:					31,604	Dth			
Commodity Cost	\$2.8746	\$2.7837	\$1.5633	\$1.6199	-43.65%	-41.81%	3.62%	\$0.0566	
Commodity Margin	\$0.9453	\$0.9453	\$0.9453	\$0.9453	0.00%	0.00%	0.00%	\$0.0000	
Total Cost of Gas	\$3.8199	\$3.7290	\$2.5086	\$2.5652	-32.85%	-31.21%	2.26%	\$0.0566	
Avg Annual Cost	\$120,724.44	\$117,852.29	\$79,282.00	\$81,071.45	-32.85%	-31.21%	2.26%	\$1,789.45	
Effect of proposed commodity change on average annual bills:								\$1,789.45	

Note: Average Annual Use based on new class structure found in 2018 MERC Gas Rate Design in Docket GR-17-56:

MINNESOTA ENERGY RESOURCES - CONSOLIDATED

RATE IMPACT OF THE PROPOSED DEMAND CHANGE

November 1, 2020

Consolidated

A. ANNUAL SALES -- As approved in Docket No. G011/MR-17-564

Total MERC Consolidated Annual Sales	57,893,756
Total MERC Consolidated Firm Sales	48,386,934

B. MERC-Consolidated'S CURRENT COST OF GAS EFFECTIVE:

01-Nov-20

Contract #(s)	Season	Monthly Entitlements (Dth)	Months	Rate (\$/Dth)	Contract Costs	Total MERC Consolidated Firm Sales	Rate/Therm
1. Consolidated-GS							
<u>Viking (VGT)</u>							
FT-A ZONE 1 - 1	AF0012	Annual	15,093	12	\$ 3.8583 =	\$698,800	48,386,934 \$ 0.01444
FT-A ZONE 1 - 1	AF0012	Winter	1,098	3	\$ 3.8583 =	\$12,709	48,386,934 \$ 0.00026
FT-A ZONE 1 - 1	AF0321	Winter	1,500	3	\$ 3.8583 =	\$17,362	48,386,934 \$ 0.00036
(a) VGT Demand						\$728,871	\$ 0.01506
<u>Great Lakes (GLGT)</u>							
FT Western Zone	FT19131	Summer	10,130	7	\$ 2.8100 =	\$199,257	48,386,934 \$ 0.00412
FT Western Zone	FT18528	Annual	12,600	12	\$ 2.8100 =	\$424,872	48,386,934 \$ 0.00878
FT Western Zone	FT18528 (5)	Winter	3,728	5	\$ 2.8100 =	\$52,378	48,386,934 \$ 0.00108
FT Eastern to Western Zone	FT19129 (5)	Winter	15,030	5	\$ 6.1000 =	\$458,415	48,386,934 \$ 0.00947
ANR Upstream	130504	Winter	15,000	5	\$ 0.9110 =	\$68,325	48,386,934 \$ 0.00141
(b) GLGT Demand						\$1,203,247	\$ 0.02487
<u>Centra</u>							
CENTRA TRANSMISSION		Annual	9,600	12	\$ 14.1070	\$1,625,126	48,386,934 \$ 0.03359
CENTRA MINNESOTA PIPELINES		Annual	9,600	12	\$ 3.2990	\$380,045	48,386,934 \$ 0.00785
(c) Centra Demand						\$2,005,171	\$ 0.04144
Total Demand Cost						\$3,937,289	\$ 0.08137
(I.e. Sum of Costs from Sections B. 1. (a), (b), and (c))							
Consolidated-GS Demand Current Cost of Gas/therm							\$ 0.08137
Consolidated-GS Commodity Current Cost of Gas/therm							\$ 0.16199
Total Consolidated-GS Current Cost of Gas/therm							\$ 0.24336

2. Consolidated - General Service, Interruptible, Firm/Interruptible - Commodity

Season	Monthly Entitlement (Dth)	Months	Rate (\$/Dth)	Contract Costs	Total MERC Consolidated Annual Sales	Rate (\$/therm)
ANR Storage	Annual	63,008	12	\$ 0.7000 =	\$529,270	\$57,893,756 \$ 0.00914
(a) Firm Deferred Delivery Storage Contracts						\$ 0.00914

Per Docket No. G-007/M-07-1402-05 dated August 6, 2014, storage demand charges will be allocated through the commodity charge effective 11/1/2014.

Commodity	Season	Annual Sales (Dth)	Rate (\$/Dth)	Commodity Cost	Rate Case Sales (therm)	Rate (\$/therm)
(b) Remaining Costs to be Recovered via Commodity						
		5,789,376	x \$1.4719	\$8,521,382	57,893,756	\$ 0.14719
Viking Balancing	Annual	89,580	x \$1.0000	\$89,580	57,893,756	\$ 0.00155
Centra Balancing	Annual	120,000	x \$0.4500	\$54,000	57,893,756	\$ 0.00093
Physical Forward Start Premium				\$145,083	57,893,756	\$ 0.00251
Call Option Premium				\$39,007	57,893,756	\$ 0.00067
(c) Consolidated-General Service, Interruptible, Firm/Interruptible: Total Commodity Current Cost of Gas/therm						\$ 0.16199
(I.e. Sum of Costs from Sections B. 2. (a) and (b))						

MINNESOTA ENERGY RESOURCES - CONSOLIDATED

Financial Options
Heating Season 2020-2021

Units - Gas Daily Peaker Packages (Physical)

<u>November</u>		<u>December</u>		<u>January</u>		<u>February</u>		<u>March</u>		<u>Daily</u> <u>Total</u>	<u>Term</u> <u>Total</u>
<u>Contract</u> <u>Date</u>	<u>Daily</u> <u>Volume</u>	<u>Contract</u> <u>Date</u>	<u>Daily</u> <u>Volume</u>	<u>Contract</u> <u>Date</u>	<u>Daily</u> <u>Volume</u>	<u>Contract</u> <u>Date</u>	<u>Daily</u> <u>Volume</u>	<u>Contract</u> <u>Date</u>	<u>Daily</u> <u>Volume</u>		
N/A		N/A		N/A		N/A		N/A			

Premium - Gas Daily Peaker (Monthly Cost)

<u>November</u>		<u>December</u>		<u>January</u>		<u>February</u>		<u>March</u>		<u>Option</u> <u>Premium</u>	<u>Total</u> <u>Premium</u>
<u>Option</u> <u>Premium</u>	<u>Premium</u> <u>Cost</u>	<u>Option</u> <u>Premium</u>	<u>Premium</u> <u>Cost</u>	<u>Option</u> <u>Premium</u>	<u>Premium</u> <u>Cost</u>	<u>Option</u> <u>Premium</u>	<u>Premium</u> <u>Cost</u>	<u>Option</u> <u>Premium</u>	<u>Premium</u> <u>Cost</u>		
N/A		N/A		N/A		N/A		N/A			

Units - Futures (Dth)

	<u>November</u>		<u>December</u>		<u>January</u>		<u>February</u>		<u>March</u>		<u>Term</u> <u>Total</u>
	<u>Contract</u> <u>Date</u>	<u>Daily</u> <u>Volume</u>	<u>Contract</u> <u>Date</u>	<u>Daily</u> <u>Volume</u>	<u>Contract</u> <u>Date</u>	<u>Daily</u> <u>Volume</u>	<u>Contract</u> <u>Date</u>	<u>Daily</u> <u>Volume</u>	<u>Contract</u> <u>Date</u>	<u>Daily</u> <u>Volume</u>	
1	05/05/20	353	05/14/20	53	05/19/20	636	05/07/20	564	05/12/20	452	61,825
2	06/09/20	353	05/14/20	421	06/23/20	636	06/11/20	395	06/16/20	401	66,706
3	07/07/20	353	06/18/20	474	01/00/00	-	06/11/20	169	07/09/20	351	40,675
4	01/00/00	-	07/13/20	369	01/00/00	-	07/08/20	564	01/00/00	-	27,659
5	01/00/00	-	07/13/20	53	01/00/00	-	01/00/00	-	01/00/00	-	1,627
6	01/00/00	-	01/00/00	-	01/00/00	-	01/00/00	-	01/00/00	-	-
7	01/00/00	-	01/00/00	-	01/00/00	-	01/00/00	-	01/00/00	-	-
8	01/00/00	-			01/00/00	-					-
9					01/00/00	-					-
10											-
Total		1,059		1,369		1,271		1,692		1,204	198,492

Units - Call Options (Dth)

	<u>November</u>		<u>December</u>		<u>January</u>		<u>February</u>		<u>March</u>		<u>Term</u> <u>Total</u>
	<u>Contract</u> <u>Date</u>	<u>Daily</u> <u>Volume</u>	<u>Contract</u> <u>Date</u>	<u>Daily</u> <u>Volume</u>	<u>Contract</u> <u>Date</u>	<u>Daily</u> <u>Volume</u>	<u>Contract</u> <u>Date</u>	<u>Daily</u> <u>Volume</u>	<u>Contract</u> <u>Date</u>	<u>Daily</u> <u>Volume</u>	
1	05/05/20	706	05/12/20	942	05/07/20	600	05/14/20	1,180	05/19/20	851	128,388
2	06/09/20	706	06/16/20	942	05/19/20	655	06/18/20	1,121	06/23/20	851	128,427
3	07/07/20	647	07/09/20	942	06/11/20	600	07/13/20	1,121	01/00/00	-	98,598
4	01/00/00	-	01/00/00	-	06/23/20	655	01/00/00	-	01/00/00	-	20,294
5	01/00/00	-	01/00/00	-	07/08/20	600	01/00/00	-	01/00/00	-	18,603
6	01/00/00	-	01/00/00	-	01/00/00	-	01/00/00	-	01/00/00	-	-
7					01/00/00	-					-
8											-
Total		2,059		2,825		3,110		3,422		1,702	394,311

Premium - Call Option (Monthly Cost)

	<u>November</u>		<u>December</u>		<u>January</u>		<u>February</u>		<u>March</u>		<u>Option</u> <u>Premium</u>	<u>Total</u> <u>Premium</u>
	<u>Option</u> <u>Premium</u>	<u>Premium</u> <u>Cost</u>	<u>Option</u> <u>Premium</u>	<u>Premium</u> <u>Cost</u>	<u>Option</u> <u>Premium</u>	<u>Premium</u> <u>Cost</u>	<u>Option</u> <u>Premium</u>	<u>Premium</u> <u>Cost</u>	<u>Option</u> <u>Premium</u>	<u>Premium</u> <u>Cost</u>		
1	\$ 0.0950	\$ 2,012	\$ 0.1000	\$ 2,919	\$ 0.0980	\$ 1,823	\$ 0.1000	\$ 3,304	\$ 0.1000	\$ 2,637	\$ 0.0989	\$ 12,696
2	\$ 0.0950	\$ 2,012	\$ 0.0980	\$ 2,861	\$ 0.1000	\$ 2,029	\$ 0.1000	\$ 3,139	\$ 0.1000	\$ 2,637	\$ 0.0987	\$ 12,678
3	\$ 0.0940	\$ 1,825	\$ 0.1000	\$ 2,919	\$ 0.1000	\$ 1,860	\$ 0.1000	\$ 3,139	\$ -	\$ -	\$ 0.0988	\$ 9,743
4	\$ -	\$ -	\$ -	\$ -	\$ 0.1000	\$ 2,029	\$ -	\$ -	\$ -	\$ -	\$ 0.1000	\$ 2,029
5	\$ -	\$ -	\$ -	\$ -	\$ 0.1000	\$ 1,860	\$ -	\$ -	\$ -	\$ -	\$ 0.1000	\$ 1,860
6	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
7	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
8	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ 0.0947	\$ 5,848	\$ 0.0993	\$ 8,699	\$ 0.0996	\$ 9,603	\$ 0.1000	\$ 9,583	\$ 0.1000	\$ 5,275	\$ 0.0989	\$ 39,007

Units - Collar Floor (put)

No Puts were purchased.

MINNESOTA ENERGY RESOURCES - CONSOLIDATED
20/21 Winter Portfolio Plan - MERC Hedging Plan

System	Purchase Month	Nov-20		Dec-20		Jan-21		Feb-21		Mar-21		Total		Percent of Requirements
		Number Contracts	Contract Volume	Number Contracts	Contract Volume	Number Contracts	Contract Volume	Number Contracts	Contract Volume	Number Contracts	Contract Volume	Number Contracts	Contract Volume	
MN Requirements			605,967		851,868		1,155,547		975,115		788,963		4,377,460	4,377,460
Daily Average			20,199		27,480		37,276		34,826		25,450		28,799	
10%	Futures		60,597		85,187		115,555		97,512		78,896		437,746	
20%	Call		121,193		170,374		231,109		195,023		157,793		875,492	
0%	Storage		0		0		0		0		0		0	
70%	Index		424,177		596,308		808,883		682,581		552,274		3,064,222	
Contracts	May-20	1	10,000	2	20,000	2	20,000	2	20,000	2	20,000	9	90,000	
	Jun-20	1	10,000	2	20,000	2	20,000	2	20,000	1	10,000	8	80,000	
	Jul-20	1	10,000	1	10,000	2	20,000	2	20,000	1	10,000	7	70,000	
	Aug-20	1	10,000	1	10,000	2	20,000	1	10,000	1	10,000	6	60,000	
	Sep-20	1	10,000	1	10,000	2	20,000	1	10,000	1	10,000	6	60,000	
	Oct-20	1	10,000	1	10,000	1	10,000	1	10,000	1	10,000	5	50,000	
	Total	6	60,000	8	80,000	11	110,000	9	90,000	7	70,000	41	410,000	9.37%
Call Options	May-20	2	20,000	3	30,000	4	40,000	4	40,000	3	30,000	16	160,000	
	Jun-20	2	20,000	3	30,000	4	40,000	3	30,000	3	30,000	15	150,000	
	Jul-20	2	20,000	3	30,000	4	40,000	3	30,000	3	30,000	15	150,000	
	Aug-20	2	20,000	3	30,000	4	40,000	3	30,000	2	20,000	14	140,000	
	Sep-20	2	20,000	3	30,000	4	40,000	3	30,000	2	20,000	14	140,000	
	Oct-20	2	20,000	2	20,000	3	30,000	3	30,000	2	20,000	12	120,000	
	Total	12	120,000	17	170,000	23	230,000	19	190,000	15	150,000	86	860,000	19.65%
Collars	May-20	0	0	0	0	0	0	0	0	0	0	0	0	
	Jun-20	0	0	0	0	0	0	0	0	0	0	0	0	
	Jul-20	0	0	0	0	0	0	0	0	0	0	0	0	
	Aug-20	0	0	0	0	0	0	0	0	0	0	0	0	
	Sep-20	0	0	0	0	0	0	0	0	0	0	0	0	
	Oct-20	0	0	0	0	0	0	0	0	0	0	0	0	
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0.00%
Index (back financial)	Total		180,000		250,000		340,000		280,000		220,000		1,270,000	29.01%
Physical Hedges			0		0		0		0		0		0	
Storage			96,000		189,100		189,100		196,000		86,000		756,200	17.27%
Prepaid Obl			0		0		0		0		0		0	0.00%
Term Index	Aug-20	0	45.55%	0	51.55%	0	45.79%	0	48.81%	0	38.79%	0	46.29%	46.29%
	Sep-20	0	0	0	0	0	0	0	0	0	0	0	0	0.00%
	Oct-20	0	0	0	0	0	0	0	0	0	0	0	0	0.00%
Total NNG MN													410,000	9.37%
Contracts													410,000	9.37%
Call Options													860,000	19.65%
Costing Collar													0	0.00%
Storage													756,200	17.27%
Prepaid Obl													0	0.00%
Term Index													0	0.00%
Month/Daily													2,351,260	53.71%
Total													4,377,460	100.00%

MINNESOTA ENERGY RESOURCES - CONSOLIDATED

**CONSOLIDATED - WINTER PLAN
 NOVEMBER 2020 THROUGH MARCH 2021**

<u>PHYSICAL FIXED PRICE HEDGES</u>	<u>Deal #</u>	<u>Trigger Locked</u>	<u>Trigger Exercised</u>	<u>Receipt Point</u>	<u>Nov</u>	<u>Dec</u>	<u>Daily Volumes</u>			<u>Monthly Total</u>
							<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	
No Physical Fixed Price Hedges										-
										-
										-
				Total Actual Fixed/Option Physical	-	-	-	-	-	-

INDEX

<u>Contract Number</u>	<u>Date</u>	<u>Receipt Point</u>	<u>Nov</u>	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Total</u>
85652	4/24/2020	VGT Emerson 1	4,000	4,000	4,000	4,000	4,000	604,000
85653	4/24/2020	VGT Emerson 1		4,000	4,000	4,000		360,000
85654	4/24/2020	GLGT Emerson 2	7,500	7,500	7,500	7,500	7,500	1,132,500
85655	4/24/2020	GLGT Emerson 2		3,500	3,500	3,500		315,000
85629	4/24/2020	CTHI-Spruce	2,500	2,500	2,500	2,500	2,500	377,500
85631	4/24/2020	CTHI-Spruce		2,000	2,000	2,000		180,000
		Total Actual Seasonal Index	14,000	23,500	23,500	23,500	14,000	2,969,000

GAS DAILY PACKAGES

Physical Call Option	85651	4/24/2020	VGT Emerson 1	8,000	8,000	8,000	8,000	8,000
Physical Call Option	85632	4/24/2020	CTHI-Spruce	2,500	2,500	2,500	2,500	2,500
Physical Call Option	85633	4/24/2020	CTHI-Spruce		2,500	2,500	2,500	
Physical Call Option	85656	4/24/2020	GLGT Emerson 2	5,000	5,000	5,000	5,000	5,000

STORAGE

<u>Injection Month</u>	<u>Contract # ANR Volume Injected</u>	<u>Total Volume Injected</u>
May - balance forward	216,029	216,029
June	108,014	108,014
July	108,014	108,014
August	108,014	108,014
Sept	108,014	108,014
Oct	108,014	108,014
Total	756,100	756,100

MINNESOTA ENERGY RESOURCES - CONSOLIDATED

	2016-2017 Consolidated	2017-2018 Consolidated	2018-2019 Consolidated	2019-2020 Consolidated	2020-2021 Consolidated	Proposed Change
Viking Gas Transmission (VGT)						
FT-A ZONE 1 - 1	14,493	14,493	14,493	14,493	15,093	600
FT-A ZONE 1 - 1 Winter Only	1,098	1,098	1,098	1,098	1,098	0
FA-A ZONE 1 - 1 Winter Only	0	1,500	1,500	1,500	1,500	0
Great Lakes Gas Transmission (GLGT)						
FT Western Zone- Summer Only	10,130	10,130	10,130	10,130	10,130	0
FT Western Zone- Annual	12,600	12,600	12,600	12,600	12,600	0
FT Western Zone- Winter Only	3,728	3,728	3,728	3,728	3,728	0
FT Western Zone- Winter Only*	13,480	15,030	15,030	15,030	15,030	0
ANR Upstream	0	0	15,000	15,000	15,000	0
Centra Transmission Holding/Centra Minnesota Pipelines (CTHI/CPMI)						
Centra FT-1	9,500	9,500	9,500	9,500	9,600	100
Total VGT Transportation	15,591	17,091	17,091	17,091	17,691	600
Total GLGT Transportation	29,808	31,358	31,358	31,358	31,358	0
Total CTHI/CPMI Transportation	9,500	9,500	9,500	9,500	9,600	100
Total Transportation	54,899	57,949	57,949	57,949	58,649	700
Total Seasonal Transportation	8,176	11,226	11,226	11,226	11,226	0
Total Seasonal Transportation %	14.89%	19.37%	19.37%	19.37%	19.14%	-0.23%
<u>Other Entitlements not included in Peak Day Deliverability</u>						
AECO Storage	947,820	0	0	0	0	0
AECO/Emerson Swap	758,254	0	0	0	0	0
ANR Storage	0	0	756,100	756,100	756,100	0

*GLGT Summer only capacity was not held previously, so the highlighted values have had 10,130 dth/day added for consistent comparison with the new contract structure. GLGT capacity has not changed. See Attachment 3 for additional detail.

MINNESOTA ENERGY RESOURCES - CONSOLIDATED

Change in Costs due to November 1, 2020 Change in Entitlement Levels and Related Demand Costs

	2019/20 Entitlements	2020/21 Entitlements	Entitlement Change	2020/21 Rate	Months	2019/20 Total Annual Cost	2020/21 Total Annual Cost	Total Annual Cost Change
Costs Assigned in Demand Charge								
<u>Viking Pipeline</u>								
FT-A ZONE 1 - 1 - AF0012	14,493	15,093	600	\$ 3.8583	12	\$760,117	\$698,800	-\$61,317
FT-A ZONE 1 - 1 - AF0012	1,098	1,098	0	\$ 3.8583	3	\$14,397	\$12,709	-\$1,688
FT-A ZONE 1 - 1 - AF0321	1,500	1,500	0	\$ 3.8583	3	\$19,668	\$17,362	-\$2,306
<u>GLGTPipeline</u>								
FT Western Zone - FT19131	10,130	10,130	0	\$ 2.8100	7	\$199,257	\$199,257	\$0
FT Western Zone - FT18528	12,600	12,600	0	\$ 2.8100	12	\$424,872	\$424,872	\$0
FT Western Zone - FT18528 (5)	3,728	3,728	0	\$ 2.8100	5	\$52,378	\$52,378	\$0
FT Eastern to Western Zone - FT19129 (5)	15,030	15,030	0	\$ 6.1000	5	\$458,415	\$458,415	\$0
ANR Upstream - 130504	15,000	15,000	0	\$ 0.9110	5	\$68,325	\$68,325	\$0
<u>CENTRA Pipeline</u>								
CENTRA TRANSMISSION	9,500	9,600	100	\$ 14.1070	12	\$1,608,198	\$1,625,126	\$16,928
CENTRA MINNESOTA PIPELINES	9,500	9,600	100	\$ 3.2990	12	\$376,086	\$380,045	\$3,959
Total Costs Assigned to Demand Charge						\$3,981,713	\$3,937,289	-\$44,424
Costs Assigned in Commodity Charge								
<u>Storage Service</u>								
Niska Storage (AECO)	0	0	0	\$ -	0	\$0	\$0	\$0
Niska Storage Assignment	0	0	0	\$ -	0	\$0	\$0	\$0
ANR Storage	756,100	756,100	0	\$ 0.7000	12	\$529,270	\$529,270	\$0
<u>Balancing</u>								
VGT Balancing Agreement	7,465	7,465	0	\$ 1.0000	12	\$89,580	\$89,580	\$0
Union Balancing	10,000	10,000	0	\$ 0.4500	12	\$54,000	\$54,000	\$0
Physical Forward Start Premium						\$140,135	\$145,083	\$4,948
Call Options Premium						\$78,042	\$39,007	-\$39,035
Total Costs Assigned to Commodity Charge						\$891,027	\$856,940	-\$34,087

MINNESOTA ENERGY RESOURCES - Consolidated

Daily Total Throughput Data - July 1, 2019 through June 30, 2020
 Consolidated

Design Day:

Base	1,195
Variable	382

Date	28.53% Bemidji Adjusted HDD	13.34% Cloquet Adjusted HDD	35.13% Fargo Adjusted HDD	23.00% Intl. Falls Adjusted HDD	100.00% Weighted Adjusted HDD	Actual Total Through- Put *	Estimated Firm Through- Put **
7/1/19	0	0	0	2	0	20,093	1,336
7/2/19	0	0	0	0	0	19,064	1,195
7/3/19	0	0	0	0	0	15,659	1,195
7/4/19	0	0	0	1	0	10,056	1,239
7/5/19	5	0	0	3	2	10,863	1,988
7/6/19	3	6	0	9	4	10,621	2,671
7/7/19	0	0	0	0	0	12,817	1,195
7/8/19	0	0	0	0	0	21,290	1,195
7/9/19	0	0	0	0	0	23,093	1,195
7/10/19	3	1	0	4	2	26,272	1,894
7/11/19	0	0	0	0	0	27,941	1,195
7/12/19	0	0	0	2	0	19,042	1,380
7/13/19	0	0	0	0	0	17,221	1,195
7/14/19	0	0	0	0	0	17,570	1,195
7/15/19	0	0	0	0	0	23,293	1,195
7/16/19	0	0	0	0	0	23,205	1,195
7/17/19	0	0	0	0	0	23,870	1,195
7/18/19	0	0	0	0	0	25,288	1,195
7/19/19	0	0	0	0	0	27,126	1,195
7/20/19	1	0	0	0	0	16,490	1,249
7/21/19	5	5	1	4	3	16,251	2,529
7/22/19	0	0	0	0	0	23,455	1,195
7/23/19	0	0	0	0	0	21,654	1,195
7/24/19	0	0	0	0	0	23,043	1,195
7/25/19	0	0	0	0	0	22,137	1,195
7/26/19	0	0	0	0	0	21,353	1,195
7/27/19	0	0	0	0	0	17,144	1,195
7/28/19	1	0	0	0	0	18,494	1,249
7/29/19	13	8	7	15	10	24,927	5,162
7/30/19	5	5	0	6	3	24,539	2,521
7/31/19	0	0	0	0	0	23,080	1,195
8/1/19	0	0	0	0	0	23,404	1,195
8/2/19	0	0	0	0	0	17,780	1,195
8/3/19	0	0	0	0	0	15,379	1,195
8/4/19	0	0	0	0	0	17,945	1,195
8/5/19	0	0	0	3	1	24,941	1,423
8/6/19	0	0	0	0	0	27,161	1,195
8/7/19	4	1	4	5	4	21,978	2,640
8/8/19	6	2	3	7	5	22,495	2,938

MINNESOTA ENERGY RESOURCES - Consolidated

Daily Total Throughput Data - July 1, 2019 through June 30, 2020
 Consolidated

Design Day:

Base	1,195
Variable	382

Date	28.53% Bemidji Adjusted HDD	13.34% Cloquet Adjusted HDD	35.13% Fargo Adjusted HDD	23.00% Intl. Falls Adjusted HDD	100.00% Weighted Adjusted HDD	Actual Total Through- Put *	Estimated Firm Through- Put **
8/9/19	1	2	0	5	2	17,917	1,798
8/10/19	0	0	0	0	0	15,394	1,195
8/11/19	2	0	0	5	2	16,623	1,826
8/12/19	8	1	3	4	4	23,426	2,768
8/13/19	3	7	2	1	3	23,736	2,232
8/14/19	3	3	0	4	2	23,507	2,046
8/15/19	1	0	2	2	1	21,645	1,605
8/16/19	0	0	0	0	0	21,213	1,195
8/17/19	0	0	0	0	0	17,491	1,195
8/18/19	4	2	1	4	2	18,027	2,133
8/19/19	0	0	0	0	0	24,237	1,195
8/20/19	8	0	3	7	5	23,658	3,116
8/21/19	8	3	5	5	6	23,051	3,326
8/22/19	8	8	0	10	6	25,008	3,427
8/23/19	2	4	0	4	2	23,096	1,919
8/24/19	0	1	0	1	0	17,057	1,295
8/25/19	0	0	1	0	0	19,567	1,276
8/26/19	5	5	2	4	4	25,491	2,663
8/27/19	13	5	9	12	10	27,727	5,126
8/28/19	5	5	2	7	4	26,822	2,788
8/29/19	12	10	9	13	11	28,132	5,355
8/30/19	8	10	3	11	7	21,458	3,919
8/31/19	3	4	0	5	2	17,556	2,146
9/1/19	11	5	3	12	8	16,965	4,120
9/2/19	10	8	1	11	6	18,245	3,656
9/3/19	19	9	12	13	13	25,786	6,318
9/4/19	7	7	3	7	6	23,398	3,398
9/5/19	8	8	2	10	6	25,777	3,566
9/6/19	10	5	3	10	7	22,023	3,814
9/7/19	16	14	15	14	15	21,625	6,902
9/8/19	12	12	7	15	11	21,831	5,407
9/9/19	12	11	6	9	9	27,648	4,646
9/10/19	10	3	4	11	7	26,535	3,913
9/11/19	13	16	8	15	12	28,619	5,869
9/12/19	16	16	12	15	14	27,784	6,688
9/13/19	20	16	11	23	17	24,205	7,548
9/14/19	9	6	5	12	8	20,379	4,203
9/15/19	0	4	0	0	0	19,768	1,378
9/16/19	0	4	0	0	1	25,015	1,409

MINNESOTA ENERGY RESOURCES - Consolidated

Daily Total Throughput Data - July 1, 2019 through June 30, 2020
 Consolidated

Design Day:

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Variable	382

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9/17/19	0	2	0	0	0	24,642	1,277
9/18/19	1	0	0	0	0	26,313	1,249
9/19/19	0	0	0	4	1	25,631	1,564
9/20/19	0	6	0	0	1	19,789	1,496
9/21/19	2	2	1	0	1	19,317	1,568
9/22/19	13	12	6	12	10	21,690	5,095
9/23/19	2	5	0	4	2	25,039	2,010
9/24/19	8	3	3	9	6	30,659	3,444
9/25/19	18	15	12	19	16	27,977	7,126
9/26/19	13	11	11	14	12	27,036	5,825
9/27/19	26	20	20	23	23	30,609	9,856
9/28/19	21	16	14	20	17	27,183	7,821
9/29/19	18	17	12	18	16	29,190	7,214
9/30/19	18	13	18	19	18	31,905	7,935
10/1/19	27	16	25	22	24	35,122	10,203
10/2/19	29	23	27	25	27	37,246	11,364
10/3/19	27	25	26	25	26	34,764	11,099
10/4/19	25	24	21	24	23	31,027	9,992
10/5/19	23	19	19	23	21	28,587	9,200
10/6/19	22	19	18	22	20	29,077	8,947
10/7/19	15	13	11	15	13	32,848	6,309
10/8/19	7	8	5	4	6	30,769	3,378
10/9/19	10	3	16	4	10	29,407	4,958
10/10/19	24	20	36	11	25	33,591	10,588
10/11/19	36	35	41	28	36	38,999	14,769
10/12/19	36	34	36	32	35	40,608	14,416
10/13/19	34	32	30	31	31	43,478	13,157
10/14/19	28	25	24	27	26	46,542	11,024
10/15/19	30	26	28	28	28	48,691	11,922
10/16/19	30	28	26	29	28	48,169	11,968
10/17/19	25	22	18	24	22	41,570	9,558
10/18/19	15	15	15	12	14	31,675	6,627
10/19/19	23	18	21	21	21	28,511	9,139
10/20/19	20	17	21	19	20	25,928	8,714
10/21/19	27	24	28	22	26	37,607	11,044
10/22/19	37	31	32	31	33	40,915	13,838
10/23/19	39	29	36	33	35	43,169	14,531
10/24/19	33	32	31	32	32	39,856	13,396
10/25/19	24	26	22	22	23	31,209	10,102

MINNESOTA ENERGY RESOURCES - Consolidated

Daily Total Throughput Data - July 1, 2019 through June 30, 2020
 Consolidated

Design Day:

Base	1,195
Variable	382

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10/26/19	24	24	21	20	22	29,376	9,532
10/27/19	39	34	39	37	38	39,677	15,583
10/28/19	42	40	40	43	41	50,257	16,977
10/29/19	48	41	46	46	46	54,346	18,722
10/30/19	45	43	46	44	45	54,668	18,301
10/31/19	38	38	39	38	38	45,140	15,815
11/1/19	39	35	34	39	37	42,345	15,288
11/2/19	43	41	34	39	39	41,601	15,976
11/3/19	36	35	32	34	34	41,634	14,157
11/4/19	51	45	45	45	47	54,302	18,999
11/5/19	53	45	46	53	49	51,805	20,053
11/6/19	56	51	54	52	54	57,714	21,746
11/7/19	57	53	50	57	54	58,099	21,781
11/8/19	45	43	41	47	44	47,258	18,001
11/9/19	49	38	46	51	47	46,822	19,228
11/10/19	64	53	59	61	60	60,224	24,155
11/11/19	69	62	65	69	67	72,128	26,676
11/12/19	60	58	56	61	58	64,417	23,535
11/13/19	54	46	54	51	52	61,324	21,121
11/14/19	48	45	39	49	45	54,896	18,247
11/15/19	44	43	36	45	41	48,783	16,815
11/16/19	34	29	31	31	32	40,400	13,321
11/17/19	41	36	36	39	38	46,940	15,768
11/18/19	34	37	31	39	34	53,627	14,359
11/19/19	32	32	29	33	31	51,410	13,053
11/20/19	40	33	42	38	39	56,069	16,279
11/21/19	56	47	55	53	54	63,930	21,696
11/22/19	46	46	39	45	43	45,642	17,752
11/23/19	37	32	32	37	34	49,906	14,342
11/24/19	33	27	29	30	30	48,685	12,656
11/25/19	36	33	35	37	35	51,961	14,744
11/26/19	41	42	42	43	42	54,308	17,242
11/27/19	48	51	46	47	47	56,668	19,280
11/28/19	46	44	44	46	45	49,033	18,402
11/29/19	42	40	39	41	40	46,182	16,569
11/30/19	47	46	49	51	49	49,826	19,777
12/1/19	59	60	62	54	59	59,175	23,701
12/2/19	50	54	54	50	52	56,869	21,071
12/3/19	45	45	44	43	44	52,109	17,985

MINNESOTA ENERGY RESOURCES - Consolidated

Daily Total Throughput Data - July 1, 2019 through June 30, 2020
 Consolidated

Design Day:

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Variable	382

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12/4/19	46	39	42	43	43	54,102	17,592
12/5/19	51	49	51	51	51	57,922	20,598
12/6/19	53	51	55	53	53	57,519	21,563
12/7/19	41	41	48	43	44	49,319	17,899
12/8/19	56	48	73	58	61	57,926	24,590
12/9/19	77	70	79	70	75	77,316	29,912
12/10/19	82	79	83	80	81	84,360	32,324
12/11/19	74	71	75	74	74	79,331	29,466
12/12/19	61	53	58	64	59	65,256	23,905
12/13/19	61	54	70	60	63	60,881	25,164
12/14/19	82	75	77	79	78	72,877	31,120
12/15/19	65	69	59	74	65	67,573	26,213
12/16/19	56	53	58	62	58	65,260	23,166
12/17/19	78	69	73	83	76	79,507	30,169
12/18/19	66	72	65	75	69	75,971	27,381
12/19/19	61	56	55	55	57	65,938	22,861
12/20/19	50	43	52	47	49	56,589	19,857
12/21/19	37	42	43	41	41	48,879	16,769
12/22/19	36	36	42	38	38	46,505	15,859
12/23/19	47	40	48	49	47	46,734	19,053
12/24/19	38	37	49	38	42	41,520	17,232
12/25/19	39	36	47	36	41	40,434	16,774
12/26/19	48	40	50	41	46	52,845	18,841
12/27/19	48	44	52	46	48	54,026	19,684
12/28/19	45	43	42	47	44	42,510	18,029
12/29/19	48	34	55	49	49	43,882	19,828
12/30/19	62	47	66	59	61	54,338	24,370
12/31/19	60	53	60	61	59	57,447	23,742
1/1/20	47	46	42	50	45	47,921	18,566
1/2/20	47	44	39	48	44	52,246	17,988
1/3/20	46	47	50	44	47	52,829	19,171
1/4/20	43	43	50	42	45	51,008	18,403
1/5/20	53	48	50	50	50	53,802	20,482
1/6/20	49	44	51	51	49	59,383	20,079
1/7/20	82	69	74	85	78	75,720	30,983
1/8/20	79	65	68	76	72	75,768	28,858
1/9/20	63	50	61	59	60	65,173	24,015
1/10/20	86	72	79	85	82	74,534	32,331
1/11/20	81	63	71	81	75	68,399	29,898

MINNESOTA ENERGY RESOURCES - Consolidated

Daily Total Throughput Data - July 1, 2019 through June 30, 2020
 Consolidated

Design Day:

Base	1,195
Variable	382

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1/12/20	59	53	54	63	57	62,558	23,089
1/13/20	50	46	56	50	51	61,548	20,799
1/14/20	62	52	71	61	63	67,739	25,419
1/15/20	83	72	86	80	82	77,929	32,435
1/16/20	82	73	78	82	79	76,859	31,466
1/17/20	59	55	63	63	61	63,227	24,468
1/18/20	69	55	79	54	67	62,804	26,916
1/19/20	73	56	76	73	72	65,549	28,617
1/20/20	67	58	78	73	71	74,355	28,335
1/21/20	56	61	56	51	56	68,811	22,486
1/22/20	46	39	50	46	47	59,885	18,968
1/23/20	43	43	43	46	44	56,044	17,926
1/24/20	43	42	41	45	43	52,711	17,490
1/25/20	43	39	46	43	43	50,211	17,767
1/26/20	48	43	50	50	48	53,867	19,697
1/27/20	54	52	57	53	54	63,715	21,991
1/28/20	62	50	56	51	56	64,792	22,545
1/29/20	56	45	52	48	51	63,150	20,811
1/30/20	50	45	46	46	47	58,186	19,153
1/31/20	49	43	49	44	47	50,070	19,060
2/1/20	42	37	38	38	39	44,732	16,088
2/2/20	48	37	43	47	44	50,967	18,160
2/3/20	70	59	64	70	66	66,633	26,505
2/4/20	66	61	59	67	63	69,423	25,321
2/5/20	52	50	51	45	50	62,151	20,222
2/6/20	62	48	72	64	64	62,035	25,584
2/7/20	74	58	77	77	73	66,512	29,198
2/8/20	57	59	59	65	60	56,632	23,935
2/9/20	56	56	51	62	55	52,760	22,388
2/10/20	49	51	48	51	49	57,309	20,011
2/11/20	51	48	61	54	55	56,728	22,209
2/12/20	86	71	93	88	87	85,924	34,360
2/13/20	81	78	84	82	82	85,944	32,452
2/14/20	66	71	61	64	64	61,916	25,793
2/15/20	66	55	58	72	63	61,944	25,170
2/16/20	66	58	59	69	63	61,718	25,282
2/17/20	55	48	55	53	54	66,089	21,733
2/18/20	76	69	76	78	76	79,546	30,106
2/19/20	77	74	76	77	76	83,372	30,303

MINNESOTA ENERGY RESOURCES - Consolidated

Daily Total Throughput Data - July 1, 2019 through June 30, 2020
 Consolidated

Design Day:

Base	1,195
Variable	382

Date	28.53% Bemidji Adjusted HDD	13.34% Cloquet Adjusted HDD	35.13% Fargo Adjusted HDD	23.00% Intl. Falls Adjusted HDD	100.00% Weighted Adjusted HDD	Actual Total Through- Put *	Estimated Firm Through- Put **
2/20/20	62	67	66	63	64	68,551	25,788
2/21/20	46	44	45	42	45	52,165	18,211
2/22/20	32	35	42	34	36	45,237	15,073
2/23/20	48	37	46	45	45	49,568	18,361
2/24/20	42	40	48	43	44	55,594	18,083
2/25/20	54	46	60	57	56	61,809	22,441
2/26/20	62	57	59	66	61	66,712	24,547
2/27/20	62	62	56	68	61	65,815	24,559
2/28/20	54	56	51	57	54	56,165	21,691
2/29/20	40	48	40	39	41	47,071	16,847
3/1/20	43	33	43	38	40	48,823	16,633
3/2/20	44	37	42	40	41	54,335	16,978
3/3/20	51	44	44	51	48	57,803	19,423
3/4/20	43	40	40	45	42	53,466	17,202
3/5/20	52	48	47	59	51	55,191	20,693
3/6/20	42	39	44	45	43	47,439	17,674
3/7/20	32	27	31	29	30	40,434	12,696
3/8/20	33	27	50	36	39	42,552	16,008
3/9/20	48	41	56	47	50	61,607	20,228
3/10/20	41	39	47	48	44	56,969	18,121
3/11/20	34	35	36	42	37	52,019	15,241
3/12/20	44	38	41	44	42	52,403	17,241
3/13/20	58	50	53	58	55	56,348	22,173
3/14/20	49	48	52	50	50	53,374	20,346
3/15/20	45	42	43	46	44	49,401	18,173
3/16/20	48	42	47	50	47	59,375	19,178
3/17/20	41	38	41	48	42	49,944	17,267
3/18/20	35	36	41	41	39	51,149	16,051
3/19/20	56	44	66	52	57	57,302	23,041
3/20/20	60	52	56	61	58	57,453	23,299
3/21/20	51	45	46	54	49	51,699	19,985
3/22/20	38	36	37	41	38	47,145	15,767
3/23/20	33	31	35	34	34	47,598	14,050
3/24/20	35	31	32	29	32	48,984	13,425
3/25/20	46	35	43	41	42	51,578	17,326
3/26/20	37	35	38	36	37	43,842	15,209
3/27/20	32	28	27	32	30	36,920	12,518
3/28/20	29	31	31	27	29	36,785	12,460
3/29/20	32	28	30	30	30	39,464	12,775

MINNESOTA ENERGY RESOURCES - Consolidated

Daily Total Throughput Data - July 1, 2019 through June 30, 2020
 Consolidated

Design Day:

Base	1,195
Variable	382

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3/30/20	26	32	25	30	27	42,187	11,697
3/31/20	26	34	24	29	27	42,076	11,467
4/1/20	27	32	26	30	28	41,861	11,916
4/2/20	35	27	49	29	38	45,668	15,556
4/3/20	58	44	56	53	55	54,577	22,045
4/4/20	41	37	45	38	41	43,156	16,971
4/5/20	22	25	29	25	26	38,111	10,956
4/6/20	20	24	22	23	22	42,369	9,535
4/7/20	28	19	24	23	24	40,925	10,455
4/8/20	34	30	33	33	33	45,962	13,703
4/9/20	45	41	36	43	41	51,186	16,718
4/10/20	28	30	27	32	29	40,687	12,146
4/11/20	36	25	35	36	34	43,367	14,279
4/12/20	47	42	43	44	44	44,782	18,117
4/13/20	54	46	49	49	50	54,891	20,208
4/14/20	53	49	46	49	49	53,822	20,028
4/15/20	44	41	39	43	41	43,154	17,030
4/16/20	38	36	32	43	37	37,550	15,246
4/17/20	28	28	26	29	27	32,296	11,646
4/18/20	35	27	27	32	31	33,633	12,875
4/19/20	35	31	27	35	31	34,910	13,203
4/20/20	42	34	30	43	37	45,868	15,279
4/21/20	36	33	30	37	34	42,661	14,019
4/22/20	25	32	15	33	24	35,856	10,398
4/23/20	22	29	15	25	21	30,521	9,259
4/24/20	19	19	15	19	17	27,466	7,877
4/25/20	15	21	13	21	16	25,009	7,440
4/26/20	14	22	11	15	14	24,040	6,660
4/27/20	14	14	6	16	12	32,171	5,633
4/28/20	18	27	11	17	16	29,989	7,443
4/29/20	23	17	17	26	21	25,279	9,047
4/30/20	8	9	4	9	7	17,231	3,934
5/1/20	11	11	6	9	9	18,665	4,503
5/2/20	25	12	18	27	21	20,036	9,202
5/3/20	31	27	24	33	29	25,156	12,082
5/4/20	22	29	19	23	22	26,442	9,521
5/5/20	21	22	25	23	23	25,353	9,970
5/6/20	23	18	20	22	21	24,765	9,076
5/7/20	31	28	29	31	30	28,132	12,574

MINNESOTA ENERGY RESOURCES - Consolidated

Daily Total Throughput Data - July 1, 2019 through June 30, 2020
 Consolidated

Design Day:

Base	1,195
Variable	382

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5/8/20	32	31	24	34	29	27,968	12,364
5/9/20	28	25	32	25	28	29,583	11,965
5/10/20	35	31	31	34	33	32,491	13,726
5/11/20	35	30	32	36	33	36,079	13,916
5/12/20	22	22	20	27	22	27,777	9,726
5/13/20	22	19	17	20	19	25,914	8,623
5/14/20	14	11	16	12	14	25,069	6,511
5/15/20	18	14	11	18	15	23,370	6,760
5/16/20	14	15	9	13	12	26,754	5,804
5/17/20	12	20	7	14	12	24,813	5,632
5/18/20	5	11	0	12	6	23,439	3,337
5/19/20	1	14	0	2	3	26,462	2,172
5/20/20	0	7	1	0	1	19,566	1,653
5/21/20	2	3	0	0	1	11,559	1,513
5/22/20	7	7	0	2	3	14,057	2,465
5/23/20	8	5	0	4	4	15,413	2,626
5/24/20	4	2	4	0	3	12,814	2,179
5/25/20	1	4	0	0	1	11,085	1,458
5/26/20	9	2	1	6	5	17,645	2,933
5/27/20	0	0	0	3	1	21,096	1,423
5/28/20	11	4	10	8	9	19,238	4,562
5/29/20	21	16	11	20	17	16,805	7,575
5/30/20	19	17	9	19	15	19,658	6,996
5/31/20	0	2	0	3	1	17,463	1,505
6/1/20	0	0	0	0	0	19,964	1,195
6/2/20	0	0	0	0	0	22,035	1,195
6/3/20	0	3	0	2	1	24,040	1,468
6/4/20	0	0	0	0	0	20,628	1,195
6/5/20	11	5	0	9	6	17,486	3,484
6/6/20	7	11	0	10	6	16,601	3,441
6/7/20	0	12	0	10	4	18,114	2,660
6/8/20	0	0	0	0	0	26,740	1,195
6/9/20	3	2	6	0	3	28,584	2,360
6/10/20	11	7	2	13	8	22,485	4,219
6/11/20	8	8	0	13	6	19,068	3,652
6/12/20	9	15	1	14	8	16,388	4,260
6/13/20	5	15	0	12	6	14,193	3,583
6/14/20	0	7	0	0	1	11,931	1,526
6/15/20	0	3	0	0	0	16,561	1,333

MINNESOTA ENERGY RESOURCES - Consolidated

Daily Total Throughput Data - July 1, 2019 through June 30, 2020
 Consolidated

Design Day:

Base	1,195
Variable	382

Date	28.53% Bemidji Adjusted HDD	13.34% Cloquet Adjusted HDD	35.13% Fargo Adjusted HDD	23.00% Intl. Falls Adjusted HDD	100.00% Weighted Adjusted HDD	Actual Total Through- Put *	Estimated Firm Through- Put **
6/16/20	0	0	0	0	0	15,966	1,195
6/17/20	0	0	0	0	0	15,552	1,195
6/18/20	4	0	1	1	2	12,376	1,801
6/19/20	4	2	0	8	3	13,866	2,472
6/20/20	5	8	0	4	3	13,427	2,526
6/21/20	10	0	0	6	4	14,929	2,760
6/22/20	7	3	2	6	4	27,005	2,831
6/23/20	5	2	0	5	3	28,405	2,320
6/24/20	6	4	0	5	3	31,154	2,462
6/25/20	0	0	0	0	0	22,138	1,195
6/26/20	1	0	0	0	0	21,279	1,249
6/27/20	0	0	0	0	0	20,968	1,195
6/28/20	0	0	0	0	0	19,752	1,195
6/29/20	0	0	0	0		24,425	1,195
6/30/20	0	0	0	0	0	25,984	1,195
Totals	10,753	9,821	10,162	10,745	10,419	14,351,333	4,417,373

* Volumes include interruptible and transportation volumes

** Design Model numbers are used to calculate firm volumes only

MINNESOTA ENERGY RESOURCES - Consolidated

Customer Counts by PGAC Class - July 1, 2019 through June 30, 2020

Tariff Rate Class	Rate Designation	Jul-19 Average Customers	Aug-19 Average Customers	Sep-19 Average Customers	Oct-19 Average Customers	Nov-19 Average Customers	Dec-19 Average Customers	Jan-20 Average Customers	Feb-20 Average Customers	Mar-20 Average Customers	Apr-20 Average Customers	May-20 Average Customers	Jun-20 Average Customers	Annual Average Customers
Residential	MERC000002	30,686	29,979	30,049	30,313	30,689	31,223	31,617	30,982	31,029	31,168	31,258	31,247	30,853
Firm Class 1	MERC000006	2,160	2,089	2,108	2,222	2,183	2,210	2,236	2,241	2,231	2,224	2,231	2,207	2,195
Firm Class 2	MERC002221	3	2,670	3,176	3,215	3,182	3,225	3,238	3,165	3,200	3,203	3,205	3,177	2,888
Firm Class 3	MERC002231		9	13	15	15	14	14	14	14	13	15	14	14
Firm Class 4	MERC002241													0
Firm Class5	MERC002251													0
Agricultural Grain Dryer Class 1	MERC002217		9	9	9	9	9	20	11	12	11	11	9	11
Agricultural Grain Dryer Class 2	MERC002227		3	2	4	3	8	24	6	6	6	11	6	7
Agricultural Grain Dryer Class 3	MERC002237													0
Interruptible Class 2	MERC002222		48	50	49	46	43	85	41	46	47	42	44	49
Interruptible Class 3	MERC002232	1	11	11	11	11	11	22	11	11	11	10	11	11
Interruptible Class 4	MERC002242		2	2	2	2	2	4	2	2	2	2	2	2
Interruptible Class 5	MERC002252													0
Firm/Interruptible Class 2	MERC002223		1	3	3	3	3	6	3	3	3	2	4	3
Firm/Interruptible Class 3	MERC002233													0
Firm/Interruptible Class 4	MERC002243													0
Firm/Interruptible Class 5	MERC002253													0
Interruptible Electric Generation Class 1	MERC002218		3	2	2	2	2	2	2	2	2	2	2	2
Interruptible Electric Generation Class 2	MERC002228													0
GS-C&I >1,500 therms/yr (Large)	MERC000010	3,233	531	-18	2	40							-40	625
Small Volume Interruptible (SVI)	MERC000017	61	1											31
Small Volume Interruptible w/Joint (SVJ)	MERC000021	1	3											2
Large Volume Interruptible (LVI)	MERC000024	5												5
Total		32,848	34,747	35,347	35,764	36,069	36,671	37,105	36,401	36,474	36,608	36,709	36,646	36,698

MINNESOTA ENERGY RESOURCES - Consolidated
 Hedged Cost - November 2020 through March 2021

Futures Contracts WACOC

10,000 Dth/contract														Nov-20														Jan-21														
Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	LDS Settle*	LDS Settle Cost	Over/Under Market	Premium Per Unit	Premium Cost	Total Cost	Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	LDS Settle*	LDS Settle Cost	Over/Under Market	Premium Per Unit	Premium Cost	Total Cost	Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	LDS Settle*	LDS Settle Cost	Over/Under Market	Premium Per Unit	Premium Cost	Total Cost				
1	05/05/20	85854	6	60,000	\$ 2,750	\$ 165,240	\$ 2,3480	\$ 140,880	\$ 24,360		\$ -	\$ 165,240	1	05/14/20	86142	1	10,000	\$ 2,8100	\$ 28,100	\$ 2,750	\$ 27,500	\$ 560	\$ -	\$ 28,100	1	05/19/20	86236	12	120,000	\$ 3,0170	\$ 362,040	#####	\$ 346,080	\$ 15,960	\$ -	\$ 362,040						
2	06/09/20	86580	6	60,000	\$ 2,3750	\$ 142,500	\$ 2,3480	\$ 140,880	\$ 1,440		\$ -	\$ 142,500	2	06/14/20	86143	8	80,000	\$ 2,8110	\$ 224,880	\$ 2,750	\$ 220,320	\$ 4,560	\$ -	\$ 224,880	2	06/23/20	86927	12	120,000	\$ 2,8700	\$ 344,400	#####	\$ 346,080	\$ (1,680)	\$ -	\$ 344,400						
3	07/07/20	87088	6	60,000	\$ 2,3050	\$ -	\$ 2,3480	\$ 140,880	\$ 400		\$ -	\$ 141,200	3	06/19/20	86904	9	90,000	\$ 2,7920	\$ 251,280	\$ 2,750	\$ 247,890	\$ 3,400	\$ -	\$ 251,280	3																	
4						\$ -	\$ 2,3480	\$ -	\$ -		\$ -	\$ -	4	07/13/20	87244	7	70,000	\$ 2,7320	\$ 191,240	\$ 2,750	\$ 192,780	\$ (1,540)	\$ -	\$ 191,240	4																	
5						\$ -	\$ 2,3480	\$ -	\$ -		\$ -	\$ -	5	07/13/20	87245	1	10,000	\$ 2,7310	\$ 27,310	\$ 2,750	\$ 27,540	\$ (230)	\$ -	\$ 27,310	5																	
6						\$ -	\$ 2,3480	\$ -	\$ -		\$ -	\$ -	6						\$ 2,750	\$ -	\$ -	\$ -	\$ -	\$ -	6																	
7						\$ -	\$ 2,3480	\$ -	\$ -		\$ -	\$ -	7						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	7																	
8						\$ -	\$ 2,3480	\$ -	\$ -		\$ -	\$ -	8						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	8																	
9						\$ -	\$ 2,3480	\$ -	\$ -		\$ -	\$ -	9						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	9																	
10						\$ -	\$ 2,3480	\$ -	\$ -		\$ -	\$ -	10						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	10																	
11						\$ -	\$ 2,3480	\$ -	\$ -		\$ -	\$ -	11						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	11																	
12						\$ -	\$ 2,3480	\$ -	\$ -		\$ -	\$ -	12						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	12																	
13						\$ -	\$ 2,3480	\$ -	\$ -		\$ -	\$ -	13						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	13																	
14						\$ -	\$ 2,3480	\$ -	\$ -		\$ -	\$ -	14						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	14																	
15						\$ -	\$ 2,3480	\$ -	\$ -		\$ -	\$ -	15						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	15																	
Total			18	180,000		\$ 448,860	\$ 2,4937	\$ 2,3480	\$ 0,1467		\$ -	\$ 448,860	Total			26	260,000		\$ 722,810	\$ 2,7800	\$ 716,040	\$ 6,770	\$ -	\$ 722,810	Total			24	240,000		\$ 706,440	\$ 2,9459	\$ 692,160	\$ 14,280	\$ -	\$ 706,440						
Other-Cons	28	82.35%	15	148,235	\$ 2,4937	\$ 369,649	\$ 2,3480	\$ 348,056	\$ 21,593	\$ -	\$ -	\$ 369,649	Other-Cons	41	83.67%	22	217,551	\$ 2,7800	\$ 604,800	\$ 2,750	\$ 599,136	\$ 5,665	\$ -	\$ -	\$ 604,800	Other-Cons	56	83.58%	20	200,587	\$ 2,9435	\$ 590,487	#####	\$ 578,522	\$ 11,966	\$ -	\$ 590,457					
Other-Cons	6	17.65%	3	31,765	\$ 2,4937	\$ 79,211	\$ 2,3480	\$ 74,584	\$ 4,627	\$ -	\$ -	\$ 79,211	Other-Cons	8	16.33%	4	42,448	\$ 2,7800	\$ 118,010	\$ 2,750	\$ 116,904	\$ 1,105	\$ -	\$ -	\$ 118,010	Other-Cons	11	16.42%	4	39,403	\$ 2,9435	\$ 115,983	#####	\$ 113,638	\$ 2,344	\$ -	\$ 115,983					
Total	34	100.0%	18	180,000	\$ 2,4937	\$ 448,860	\$ 2,3480	\$ 422,640	\$ 26,220	\$ -	\$ -	\$ 448,860	Total	49	100.0%	26	260,000	\$ 2,7800	\$ 722,810	\$ 2,750	\$ 716,040	\$ 6,770	\$ -	\$ -	\$ 722,810	Total	67	100.0%	24	240,000	\$ 2,9435	\$ 706,440	#####	\$ 692,160	\$ 14,280	\$ -	\$ 706,440					

Feb-21														Mar-21														Total													
Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	LDS Settle*	LDS Settle Cost	Over/Under Market	Premium Per Unit	Premium Cost	Total Cost	Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	LDS Settle*	LDS Settle Cost	Over/Under Market	Premium Per Unit	Premium Cost	Total Cost	Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	LDS Settle*	LDS Settle Cost	Over/Under Market	Premium Per Unit	Premium Cost	Total Cost			
1	05/07/20	85948	10	100,000	\$ 3,0030	\$ 300,300	\$ 2,8500	\$ 285,000	\$ 15,300		\$ -	\$ 300,300	1	05/12/20	86994	9	90,000	\$ 2,8370	\$ 255,330	\$ 2,750	\$ 247,590	\$ 7,740	\$ -	\$ 255,330	1			38	380,000	\$ 2,9237	\$ 1,111,010	#####	#####	\$ 63,920	\$ -	\$ -	\$ 1,111,010				
2	06/11/20	86647	7	70,000	\$ 2,9480	\$ 206,320	\$ 2,8500	\$ 195,500	\$ 6,720		\$ -	\$ 206,320	2	06/16/20	86742	8	80,000	\$ 2,7960	\$ 223,680	\$ 2,750	\$ 220,080	\$ 3,600	\$ -	\$ 223,680	2			41	410,000	\$ 2,7841	\$ 1,141,500	#####	#####	\$ 14,640	\$ -	\$ -	\$ 1,141,500				
3	06/11/20	86648	3	30,000	\$ 2,9480	\$ 88,470	\$ 2,8500	\$ 85,500	\$ 2,970		\$ -	\$ 88,470	3	07/09/20	87196	7	70,000	\$ 2,7420	\$ 191,940	\$ 2,750	\$ 192,570	\$ (630)	\$ -	\$ 191,940	3			25	250,000	\$ 2,6820	\$ 672,990	#####	\$ 666,810	\$ 6,180	\$ -	\$ -	\$ 672,990				
4	07/08/20	87121	10	100,000	\$ 2,8660	\$ 286,600	\$ 2,8500	\$ 285,000	\$ 1,600		\$ -	\$ 286,600	4						\$ -	\$ 2,750	\$ -	\$ -	\$ -	\$ -	4			17	170,000	\$ 2,8108	\$ 477,840	#####	\$ 477,780	\$ 60	\$ -	\$ -	\$ 477,840				
5						\$ -	\$ 2,8500	\$ -	\$ -		\$ -	\$ -	5						\$ -	\$ 2,750	\$ -	\$ -	\$ -	\$ -	5			1	10,000	\$ 2,7910	\$ 27,910	#####	\$ 27,540	\$ (370)	\$ -	\$ -	\$ 27,910				
6						\$ -	\$ 2,8500	\$ -	\$ -		\$ -	\$ -	6						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	6			0	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
7						\$ -	\$ 2,8500	\$ -	\$ -		\$ -	\$ -	7						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	7			0	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
8						\$ -	\$ 2,8500	\$ -	\$ -		\$ -	\$ -	8						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	8			0	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
9						\$ -	\$ 2,8500	\$ -	\$ -		\$ -	\$ -	9						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	9			0	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
10						\$ -	\$ 2,8500	\$ -	\$ -		\$ -	\$ -	10						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	10			0	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
11						\$ -	\$ 2,8500	\$ -	\$ -		\$ -	\$ -	11						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	11			0	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
12						\$ -	\$ 2,8500	\$ -	\$ -		\$ -	\$ -	12						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	12			0	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
13						\$ -	\$ 2,8500	\$ -	\$ -		\$ -	\$ -	13						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	13			0	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
14						\$ -	\$ 2,8500	\$ -	\$ -		\$ -	\$ -	14						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	14			0	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
15						\$ -	\$ 2,8500	\$ -	\$ -		\$ -	\$ -	15						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	15			0	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
Total			30	300,000		\$ 881,580	\$ 2,9386	\$ 2,8500	\$ 26,590		\$ -	\$ 881,580	Total			24	240,000		\$ 670,950	\$ 2,7956	\$ 660,240	\$ 10,710	\$ -	\$ 670,950	Total			122	1,220,000		\$ 3,430,650	\$ 2,8120	#####	\$ 2,7427	\$ 84,570	\$ 0.0993	\$ -	\$ -	\$ 3,430,650		
Other-Cons	48	84.21%	25	252,632	\$ 2,9386	\$ 742,392	\$ 2,8500	\$ 720,000	\$ 22,392	\$ -	\$ -	\$ 742,392	Other-Cons	38	84.44%	20	202,667	\$ 2,7956	\$ 566,580	\$ 2,750	\$ 557,536	\$ 9,044	\$ -	\$ -	\$ 566,580	Other-Cons	211	83.73%	102	#####	\$ 2,8120	\$ 2,872,489	#####	#####	\$ 70,811	\$ -	\$ -	\$ 2,872,489			
Other-Cons	9	15.79%	5	47,368	\$ 2,9386	\$ 139,198	\$ 2,8500	\$ 130,000	\$ 4,198	\$ -	\$ -	\$ 139,198	Other-Cons																												

MINNESOTA ENERGY RESOURCES - Consolidated

Projected Storage Cost - November 2020 through March 2021

Month/ Year	K#118657 NNG Storage (Dth)	LS Power K#132024 NNG Storage (Dth)	LS Power K#133736 NNG Storage (Dth)	Total NNG Storage (Dth)	Projected NNG WACOG	K#118657 NNG Storage Cost	K#132024 NNG Storage Cost	K#133736 NNG Storage Cost	Total NNG Storage Cost	ANR Storage GLGT/VGT (Dth)	ANR Storage GLGT/VGT WACOG	ANR Storage GLGT/VGT Cost
Nov-20	489,384	48,750	97,500	635,634	\$ 1.7134	\$ 838,494	\$ 83,527	\$ 167,053	\$ 1,089,074	96,000	\$ 1.6679	\$ 160,122
Dec-20	1,229,734	122,500	245,000	1,597,234	\$ 1.7134	\$ 2,106,984	\$ 209,887	\$ 419,775	\$ 2,736,646	189,100	\$ 1.6679	\$ 315,406
Jan-21	1,229,734	122,500	245,000	1,597,234	\$ 1.7134	\$ 2,106,984	\$ 209,887	\$ 419,775	\$ 2,736,646	189,100	\$ 1.6679	\$ 315,406
Feb-21	1,229,734	122,500	245,000	1,597,234	\$ 1.7134	\$ 2,106,984	\$ 209,887	\$ 419,775	\$ 2,736,646	196,000	\$ 1.6679	\$ 326,915
Mar-21	489,384	48,750	97,500	635,634	\$ 1.7134	\$ 838,494	\$ 83,527	\$ 167,053	\$ 1,089,074	85,900	\$ 1.6679	\$ 143,275
Total	4,667,969	465,000	930,000	6,062,969		\$ 7,997,940	\$ 796,715	\$ 1,593,431	\$ 10,388,086	756,100		\$ 1,261,124

Month/ Year	NNG Storage Volume (Dth)	NNG Index Price	NNG Index Cost	Month/ Year	ANR Storage Volume (Dth)	Emerson Index Price	Emerson Market Cost
Nov-20	635,634	\$ 2.3950	\$ 1,522,343	Nov-20	96,000	\$ 2.2625	\$ 217,200
Dec-20	1,597,234	\$ 3.2220	\$ 5,146,287	Dec-20	189,100	\$ 2.7295	\$ 516,148
Jan-21	1,597,234	\$ 3.8450	\$ 6,141,363	Jan-21	189,100	\$ 2.8975	\$ 547,917
Feb-21	1,597,234	\$ 3.8405	\$ 6,134,176	Feb-21	196,000	\$ 2.8655	\$ 561,638
Mar-21	635,634	\$ 2.9375	\$ 1,867,174	Mar-21	85,900	\$ 2.7475	\$ 236,010
Total	6,062,969		\$ 20,811,343	Total	756,100		\$ 2,078,914
Storage Savings (Cost):			\$ 10,423,257				\$ 817,790

*Indexes and projected WACOG based on 7/8/20 market prices:

MINNESOTA ENERGY RESOURCES - Consolidated
Hedged Cost - November 2020 through March 2021

CallPut Options WACOD

CallPut Options 10,000 DivisorCost

Nov20															Dec20															Jan21														
Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	Option Price	Option Cost	Par Settlement	Over/Under Market	Premium Per Unit	Premium Cost	Total Cost	Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	Option Price	Option Cost	Par Settlement	Over/Under Market	Premium Per Unit	Premium Cost	Total Cost	Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	Option Price	Option Cost	Par Settlement	Over/Under Market	Premium Per Unit	Premium Cost	Total Cost			
1	06/02/20	8883	12	120,000	\$ 2,840.00	\$ 336,000	\$ 2,840.00	\$ 336,000	\$ 281,760	\$ -	\$ 0.0950	\$ 11,400	\$ 347,400	1	06/10/20	8693	17	170,000	\$ 4,800.00	\$ 816,000	\$ 2,750.00	\$ 468,180	\$ -	\$ -	\$ 0.1000	\$ 17,000	\$ 833,180	1	06/10/20	8694	11	110,000	\$ 6,400.00	\$ 704,000	\$ 2,880.00	\$ 317,240	\$ 2,880.00	\$ 317,240	\$ -	\$ 0.0000	\$ 0.00	\$ 317,240		
2	06/09/20	8679	12	120,000	\$ 3,000.00	\$ 360,000	\$ 2,340.00	\$ 281,760	\$ 281,760	\$ -	\$ 0.0950	\$ 11,400	\$ 293,160	2	06/10/20	8674	17	170,000	\$ 4,000.00	\$ 680,000	\$ 2,750.00	\$ 468,180	\$ -	\$ -	\$ 0.0900	\$ 16,600	\$ 684,780	2	06/10/20	8624	12	120,000	\$ 5,360.00	\$ 643,200	\$ 2,880.00	\$ 346,080	\$ 2,880.00	\$ 346,080	\$ -	\$ 0.1000	\$ 12,000	\$ 358,080		
3	07/01/20	8797	11	110,000	\$ 3,000.00	\$ 330,000	\$ 2,340.00	\$ 258,240	\$ 258,240	\$ -	\$ 0.0940	\$ 10,340	\$ 268,580	3	07/09/20	8719	17	170,000	\$ 3,800.00	\$ 646,000	\$ 2,750.00	\$ 468,180	\$ -	\$ -	\$ 0.1000	\$ 17,000	\$ 665,180	3	06/10/20	8664	11	110,000	\$ 5,000.00	\$ 550,000	\$ 2,880.00	\$ 317,240	\$ 2,880.00	\$ 317,240	\$ -	\$ 0.1000	\$ 11,000	\$ 328,240		
4	-	-	-	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	4	-	-	-	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	4	06/23/20	8625	12	120,000	\$ 4,800.00	\$ 576,000	\$ 2,880.00	\$ 346,080	\$ 2,880.00	\$ 346,080	\$ -	\$ 0.1000	\$ 12,000	\$ 358,080			
5	-	-	-	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	5	-	-	-	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	5	07/08/20	8710	11	110,000	\$ 4,900.00	\$ 539,000	\$ 2,880.00	\$ 317,240	\$ 2,880.00	\$ 317,240	\$ -	\$ 0.1000	\$ 11,000	\$ 328,240			
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Total	-	-	35	350,000	\$ 1,152,000	\$ 3,204	\$ 821,800	\$ 821,800	\$ -	\$ -	\$ 33,140	\$ 854,940	Total	51	510,000	\$ 2,142,000	\$ 4,200	\$ 1,404,540	\$ 1,404,540	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 50,660	\$ 1,455,200	Total	57	570,000	\$ 3,100,000	\$ 5,436	\$ 1,643,880	\$ 1,643,880	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 66,780	\$ 1,700,660		
NNG	96	82.30%	29	288,235	\$ 3,2914	\$ 948,706	\$ 2,340	\$ 676,776	\$ 676,776	\$ -	\$ 0.0947	\$ 27,202	\$ 704,068	NNG	82	82.83%	42	422,424	\$ 4,200	\$ 1,774,182	\$ 2,750	\$ 1,163,356	\$ 2,750	\$ -	\$ -	\$ 0.0903	\$ 41,961	\$ 1,205,317	NNG	113	83.00%	47,363	473,603	\$ 4,436	\$ 2,075,735	\$ 2,880	\$ 1,365,871	\$ 2,880	\$ 1,365,871	\$ -	\$ 0.0906	\$ 47,178	\$ 1,413,048	
Other-Costs	12	17.69%	6	61,765	\$ 3,2914	\$ 203,294	\$ 2,340	\$ 145,024	\$ 145,024	\$ -	\$ 0.0947	\$ 5,948	\$ 150,972	Other-Costs	17	17.17%	9	87,376	\$ 4,200	\$ 367,818	\$ 2,750	\$ 241,184	\$ 2,750	\$ -	\$ -	\$ 0.0993	\$ 8,699	\$ 249,883	Other-Costs	23	16.91%	9,937	96,397	\$ 4,436	\$ 438,265	\$ 2,880	\$ 278,000	\$ 2,880	\$ 278,000	\$ -	\$ 0.0906	\$ 9,603	\$ 287,603	
Total	68	100.0%	35	350,000	\$ 3,2914	\$ 1,152,000	\$ 2,340	\$ 821,800	\$ 821,800	\$ -	\$ 0.0947	\$ 33,140	\$ 854,940	Total	99	100.0%	51	510,000	\$ 4,200	\$ 2,142,000	\$ 2,750	\$ 1,404,540	\$ 2,750	\$ -	\$ -	\$ 0.0993	\$ 50,660	\$ 1,455,200	Total	136	100.0%	67	670,000	\$ 4,436	\$ 3,100,000	\$ 2,880	\$ 1,643,880	\$ 2,880	\$ 1,643,880	\$ -	\$ 0.0906	\$ 66,780	\$ 1,700,660	

Feb21															Mar21															Total														
Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	Option Price	Option Cost	Par Settlement	Over/Under Market	Premium Per Unit	Premium Cost	Total Cost	Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	Option Price	Option Cost	Par Settlement	Over/Under Market	Premium Per Unit	Premium Cost	Total Cost	Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	Option Price	Option Cost	Par Settlement	Over/Under Market	Premium Per Unit	Premium Cost	Total Cost			
1	05/14/20	6199	20	200,000	\$ 6,400.00	\$ 1,280,000	\$ 2,850.00	\$ 570,000	\$ 570,000	\$ -	\$ 0.1000	\$ 20,000	\$ 590,000	1	05/19/20	8628	16	160,000	\$ 7,650.00	\$ 1,224,000	\$ 2,750.00	\$ 440,160	\$ 2,750.00	\$ -	\$ -	\$ 0.1000	\$ 16,000	\$ 456,160	1	05/19/20	8628	16	160,000	\$ 7,650.00	\$ 1,224,000	\$ 2,750.00	\$ 440,160	\$ 2,750.00	\$ -	\$ -	\$ 0.1000	\$ 16,000	\$ 456,160	
2	09/18/20	8693	19	190,000	\$ 6,000.00	\$ 1,140,000	\$ 2,850.00	\$ 541,500	\$ 541,500	\$ -	\$ 0.1000	\$ 19,000	\$ 560,500	2	06/25/20	8626	16	160,000	\$ 6,650.00	\$ 1,064,000	\$ 2,750.00	\$ 440,160	\$ 2,750.00	\$ -	\$ -	\$ 0.1000	\$ 16,000	\$ 456,160	2	06/25/20	8626	16	160,000	\$ 6,650.00	\$ 1,064,000	\$ 2,750.00	\$ 440,160	\$ 2,750.00	\$ -	\$ -	\$ 0.1000	\$ 16,000	\$ 456,160	
3	07/13/20	8743	19	190,000	\$ 5,750.00	\$ 1,092,500	\$ 2,850.00	\$ 541,500	\$ 541,500	\$ -	\$ 0.1000	\$ 19,000	\$ 560,500	3	-	-	-	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	3	-	-	-	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
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13	-	-	-	-																																								

**Attachment 12: Forecast Methodology for MERC Demand Entitlement Effective
 November 1, 2020**

1. Peak-day

a. Purpose

Gather data and perform analysis used in the “Petition for Change in Demand” for MERC, otherwise known as the “MERC Demand Entitlement Filings.”

b. Background

MERC customers are served by four pipelines¹

1. VGT - Viking Gas Transmission system
2. NNG - Northern Natural Gas pipeline
3. GLGT - Great Lakes Gas Transmission pipeline
4. Centra - Centra pipeline

Weather data is obtained from eight weather stations: International Falls, Bemidji, Cloquet, Fargo, Minneapolis, Rochester, Worthington, and Ortonville.

For analytical purposes, data is subdivided, analyzed, and regressed by the following nine demand areas:

	Pipeline	PGA	Weather Station(s)
1	Centra	MERC Consolidated	International Falls
2	GLGT	MERC Consolidated	Bemidji
3	GLGT	MERC Consolidated	Cloquet
4	VGT	MERC Consolidated	Fargo
5	NNG	MERC NNG	Cloquet
6	NNG	MERC NNG	Minneapolis
7	NNG	MERC NNG	Ortonville
8	NNG	MERC NNG	Rochester
9	NNG	MERC NNG	Worthington

¹ MERC acquired Interstate Power & Light Company’s Minnesota natural gas operations and customers in 2015. The Commission’s Order Approving Sale Subject to Conditions in Docket No. G001,011/PA-14-107 required MERC to maintain the transitioned customers on a separate PGA (MERC – NNG – Albert Lea). Pursuant to the Commission’s Order in Docket No. G011/GR-15-736, the NNG and NNG – Albert Lea PGAs were consolidated effective July 1, 2017, MERC now submits only two demand entitlement petitions (NNG and Consolidated) each heating season.

2. Analytical Approach

a. Summary

1. Obtain daily weather data for each weather station.
2. Obtain daily total throughput volumes by pipeline and by weather station.
3. Obtain daily large volume transportation, interruptible, and joint interruptible volumes by pipeline and by weather station (Data A).
4. Obtain daily small volume interruptible volumes by pipeline and by weather station (Data B).
5. Calculate daily "firm" volumes by subtracting both Data A and Data B from total throughput volumes.
6. Perform quality control on volumetric data (e.g., identify missing or bad reads, and, to the extent possible, fix missing or bad reads).
7. Perform firm peak day regressions. In response to comments from the Minnesota Department of Commerce, Division of Energy Resources (Department):
 - a. Incorporate a methodology to mitigate the impact of autocorrelation.
 - b. Provide a reasonable explanation whenever a regression model is selected that does not have an intercept.
8. Add back Daily Firm Capacity (DFC) customer selections.

3. Process

The Peak Day Process consisted of:

- I. Data Preparation
- II. Regression Generation of Net Daily Metered Volumes
- III. Volume Risk Adjustments
- IV. Adjusting the Regression Results to a Firm Peak Day Estimate

- i. The **Data Preparation** consisted of:
- Identify the coldest Adjusted Heating Degree Day (AHDD) since January 1996 for each weather station. Note, this is a change in practice from prior analysis that used a rolling 20-year period. The change was included because many weather stations experienced historically cold weather in the January/February 1996 time period and without inclusion of that additional data from January/February 1996, AHDD were materially lower and not reflective of MERC's capacity needs.
 - Determine the most recent three years of December through February daily total metered throughput by pipeline and by weather station.
 - Determine the most recent three years of December through February daily large volume transportation, interruptible, and joint interruptible volumes by pipeline and by weather station (Data A).
 - Determine the most recent three years of December through February daily small volume interruptible volumes by pipeline and by weather station (Data B).
 - Review daily total metered throughput, Data A, and Data B, and identify missing or bad reads, and to the extent possible, fix missing or bad reads. To the extent that the data could not be fixed, it was not included in the regressions.
 - Subtract both Data A and Data B daily meter readings for all three December through February years from the total throughput for each pipeline and each weather station. Use the resulting net daily metered volumes for regressions. Examples of transportation, interruptible, and joint interruptible meter readings subtracted are paper mills, direct-connects, taconites, and off-system end users. See "Adjusting the Regression Results to a Firm Peak Day Estimate" below.

Each daily weather station data file was searched to find the coldest Adjusted Heating Degree Day (AHDD65) since January 1996. Many weather stations experienced historically cold weather in the January/February 1996 time period: without inclusion of that additional data from January/February 1996, AHDD65 were materially lower and not reflective of MERC's capacity needs. The coldest AHDD65 data since 1996 is included in the table below, along with the AHDD65 conditions on the day prior ("AHDD65-1").

<u>Station</u>	<u>Date</u>	<u>Avg. Temp</u>	<u>Avg. Wind</u>	<u>HDD65</u>	<u>AHDD65</u>	<u>AHDD65-1</u>
Bemidji	1/29/2019	-32	14	97	110	84
Cloquet	1/29/2019	-24	16	89	103	74
Fargo	1/18/1996	-16	34	81	109	85
International Falls	2/2/1996	-34	8	99	107	107
Minneapolis	1/29/2019	-20	17	85	100	71
Rochester	1/29/2019	-20	21	85	104	76
Worthington	1/29/2019	-20	21	85	103	81
Ortonville	1/29/2019	-23	14	88	101	77

This data by weather station was then compared to the AHDD65 data used in the previous demand entitlement filing:

<u>Station</u>	<u>Date</u>	<u>Avg. Temp</u>	<u>Avg. Wind</u>	<u>HDD65</u>	<u>AHDD65</u>	<u>AHDD65-1</u>
Bemidji	2/1/1996	-34	8	99	107	94
Cloquet	2/2/1996	-31	7	96	103	100
Fargo	1/18/1996	-16	34	81	109	85
International Falls	2/2/1996	-34	8	99	107	107
Minneapolis	2/2/1996	-25	8	90	97	92
Rochester	2/2/1996	-27	10	92	101	94
Worthington	1/18/1996	-8	32	73	96	74
Ortonville	1/14/2009	-21	11	86	96	86

While the January, 2019 cold weather outbreak was significant, it was not considered to be as severe as the weather conditions experienced in 1996. With the exception of Worthington, the 1996 weather conditions overall were colder when considering both the current day and the prior day weather conditions. Following is the data by weather station that was ultimately used in MERC's current analysis:

<u>Station</u>	<u>Date</u>	<u>Avg. Temp</u>	<u>Avg. Wind</u>	<u>HDD65</u>	<u>AHDD65</u>	<u>AHDD65-1</u>
Bemidji	2/1/1996	-34	8	99	107	94
Cloquet	2/2/1996	-31	7	96	103	100
Fargo	1/18/1996	-16	34	81	109	85
International Falls	2/2/1996	-34	8	99	107	107
Minneapolis	2/2/1996	-25	8	90	97	92
Rochester	2/2/1996	-27	10	92	101	94
Worthington	1/29/2019	-20	21	85	103	81
Ortonville	1/14/2009	-21	11	86	96	86

ii. The **Regression Generation of Net Daily Metered Volumes** consisted of:

- For each of the pipelines and weather stations:
 1. Gather the net daily metered volumes and weather station data including AHDD65.2
 2. Add indicator variables for day-type and month. Day-type variables are used to isolate load that changes by day of the week, such as commercial or industrial customers who may change their consumption on weekends when they run fewer shifts. Month indicator variables are used to isolate load that changes based on winter months, such as businesses that are open extra hours in December and resume normal operating hours in January.
 3. Perform ordinary least squares linear regressions for the 3-year time frame using the AHDD65 weather variable and the significant indicator variables.
 4. In response to comments from the Department, the regression methodology incorporates a process to mitigate the impact of autocorrelation. See section below on autocorrelation.
 5. In response to comments from the Department, provide an explanation whenever we choose to use a regression model that does not have an intercept.

² Temperature and weather data were obtained from DTN (formerly Schneider Electric) via DataMaxx then converted to HDD65 and AHDD65 in an Excel spreadsheet by MERC – Gas Supply. Temperature and wind data is the 24-hour average based on the 9am to 9am gas day.

6. Summarize the Baseload and Use/AHDD65 and Use/Prior Day AHDD65 from each regression.
7. Calculate a point estimate from each regression based on the baseload value plus the Use/AHDD65 coefficient times the coldest AHDD65 since January 1996 and the Use/Prior Day AHDD65 coefficient times the AHDD65 on the day prior to the coldest AHDD65 since January 1996.

iii. **Volume Risk Adjustments**

Volume risk adjustments were incorporated into the forecast to provide a confidence level that the daily metered load under design conditions would not exceed the daily metered regression estimate. An appropriate volume risk adjustment was determined for each regression group by multiplying the standard error of each regression analysis (sigma) by a factor needed to attain a desired confidence level. The desired confidence level chosen was 97.5%.

iv. **Adjusting the Regression Results to a Firm Peak Day Estimate** consisted of:

1. **Add back DFC customer selections**

While transportation, interruptible, and joint interruptible customer volumes were removed (as described above), in order to determine firm peak day load, daily firm capacity volumes needed to be added back. Reporting from the billing system provided historical monthly DFC data for the joint service customers from the prior winter that showed the volume that each customer has selected to receive as firm service from MERC each month. Based on direction from the Company's Gas Supply department, the Joint Firm/ Interruptible customers who were relying on MERC to provide peak day firm supply were identified and their daily firm capacity volumes were summed by month for each pipeline. The total volumes were then added back to the regression results.

Exhibit 1
Pipeline and Weather Station Regression Notes

A. Large Volume Transportation, Interruptible, and Joint Interruptible Customers

GLGT Paper Mills =

- Blandon mapped to Bemidji
- Sappi and USG mapped to Cloquet

VGT Lamb Weston mapped to Fargo

NNG Taconites / Direct Connects =

- CCI EMPIRE IND DEL PT 2 TILDEN mapped to Cloquet
- CCI NORTHSORE mapped to Cloquet
- UNITED TACONITE (was EVELETH TACONITE) mapped to Cloquet
- HIBBING TACONITE CO. mapped to Cloquet
- U.S. STEEL #1 & #2 mapped to Cloquet
- NATIONAL STEEL PELLET mapped to Cloquet
- COTTAGE GROVE TBS LS POWER mapped to Minneapolis
- INLAND STEEL mapped to Cloquet
- HANNA MINING mapped to Cloquet

NNG OSEU (End Users) =

- ARKEMA INC. mapped to Rochester
- MAYO Clinic 1 Fairmount mapped to Worthington
- MAYO Clinic 2 (Franklin Htg) mapped to Rochester
- MAYO Clinic 3 (St Mary's) mapped to Rochester
- ARCHER DANIELS MIDLAND, CO. mapped to Minneapolis
- ASSOCIATED MILK PRODUCTS, INC. mapped to Rochester
- Hawkins Inc. mapped to Minneapolis
- CORRECTIONAL CTR mapped to Minneapolis
- DAIRY FARMERS OF AMERICA mapped to Rochester
- Dick's Sanitation mapped to Minneapolis
- KEMPS LLC mapped to Rochester
- KERRY BIO-SCIENCE mapped to Rochester
- LAKESIDE mapped to Rochester
- MILK SPECIALTIES mapped to Worthington
- LAND OF LAKES mapped to Rochester
- PRO-CORN mapped to Rochester
- SWIFT mapped to Worthington
- SENECA FOODS-ROCHESTER mapped to Rochester
- ENGINEERED POLYMERS mapped to Cloquet
- SANDSTONE FEDERAL CORRECTIONAL INSTITUTE mapped to Cloquet
- Agra Resources(Exol) mapped to Rochester
- Halcon Corporation mapped to Rochester
- REG ALBERT LEA, LLC mapped to Rochester

- Zinpro North Branch mapped to Minneapolis

B. Daily Firm Capacity

VGT

- DETROIT LAKES MIDDLE SCHOOL
- ROSSMAN SCHOOL

GLGT

-
- NORTHLAND APTS

NNG

- HENDRICKS HOSPITAL
- BRAND FX BODY INC

4. Autocorrelation Review

The Commission's February 4, 2015, Order in MERC's 2012-2013 demand entitlement dockets³ required MERC to check its regression models for autocorrelation and correct the model if autocorrelation is present and to provide a reasonable explanation of its use of no-intercept models if it chooses to use one again in the future.

In a regression analysis, using time series data, autocorrelation of the errors is a problem. Autocorrelation of the errors, which themselves are unobserved, can generally be detected because it produces autocorrelation in the observable residuals. (Errors are also known as "error terms" in econometrics.) Autocorrelation violates the ordinary least squares (OLS) assumption that the error terms are uncorrelated. While it does not bias the OLS coefficient estimates, the standard errors tend to be underestimated (and the t-scores overestimated) when the autocorrelations of the errors at low lags are positive. The traditional test for the presence of first-order autocorrelation is the Durbin–Watson statistic or, if the explanatory variables include a lagged dependent variable, Durbin's h statistic. To correct for this use, MERC used the Yule-Walker estimation method within the SAS software package to

³ Docket Nos. G011/M-12-1192, G011/M-12-1193, G011/M-12-1194, and G011/M-12-1195

employ an AR (1) regression which then showed that the Durbin–Watson statistics are all either close to 2 or above.

5. Design-Day Model

Order Point 5 of the Commission’s January 21, 2015, Order in MERC’s 2010-2011 demand entitlement dockets⁴ required that in future demand entitlement filings, MERC provide (1) the determinants used in its Design-Day models that account for each and every impact on usage associated with economic conditions, and (2) a detailed explanation of each and every cause of unexpected changes in usage that might impact the Design-Day calculation, and what, if any, modifications the Company made to its Design-Day numbers. MERC does not forecast its Design Day using economic variables. Additionally, there were no unexpected changes in the Design-Day forecast.

6. Verification of Regression Analysis Results

Order Point 10 of the Commission’s April 28, 2016, Order in Docket No. G011/M-15-722 required that MERC verify its regression analysis results in future demand entitlement filings to ensure the results are consistent with the underlying theory the analysis attempts to explain. MERC has carefully reviewed the results of its regression analysis and verified that the results are consistent with the underlying theory the analysis attempts to explain. Please see the May 31, 2016, compliance filing in Docket Nos. G011/M-15-722, G011/M-15-723, and G011/M-15-724 for further discussion of this issue.

⁴ Docket Nos. G007/M-10-1166, G007/M-10-1167, G011/M-10-1168, and G011/M-10-1169

ATTACHMENT D

In the Matter of the Petition of Minnesota
Energy Resources Corporation for Approval of
a Change in Demand Entitlement for its
Consolidated System

Docket No. G011/M-20-____

CERTIFICATE OF SERVICE

I, Colleen T. Sipiorski, hereby certify that on the 31st day of July, 2020, on behalf of Minnesota Energy Resources Corporation (MERC) I electronically filed a true and correct copy of MERC's Petition for Approval of a Change in Demand Entitlement on www.edockets.state.mn.us. Said documents were also served via U.S. mail and electronic service as designated on the attached service list.

Dated this 31st day of July, 2020.

/s/ Colleen T. Sipiorski
Colleen T. Sipiorski

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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