



Minnesota Energy Resources Corporation  
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Eagan, MN 55122  
[www.minnesotaenergyresources.com](http://www.minnesotaenergyresources.com)

August 1, 2016

**VIA ELECTRONIC FILING**

Daniel P. Wolf  
Executive Secretary  
Minnesota Public Utilities Commission  
121 Seventh Place East, Suite 350  
St. Paul, MN 55101

Re: 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-16-\_\_\_\_

Dear Mr. Wolf:

In accordance with Minnesota Rule 7825.2910, subpart 2, please find enclosed Minnesota Energy Resources Corporation's (MERC or Company) request to change demand entitlement. Please note that any updated information will be provided with MERC's November 1, 2016 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 (651) 322-8965 if you have any questions regarding the information in this filing. Thank you for your attention to this matter.

Sincerely yours,

/s/ Amber S. Lee

Amber S. Lee  
Regulatory and Legislative Affairs Manager  
Minnesota Energy Resources Corporation

cc: Service List

**ATTACHMENT A**

August 1, 2016

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:

Amber Lee  
Minnesota Energy Resources Corporation  
1995 Rahncliff Court, Suite 200  
Eagan, MN 55122  
(651) 322-8965

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 entering the date of the filing.

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

**Beverly Jones Heydinger  
Nancy Lange  
Dan Lipschultz  
Matt Schuerger  
John 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-16-\_\_\_\_

**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 that the Commission approve the requested changes to be recovered in the Purchased Gas Adjustment (PGA) effective on November 1, 2016.

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

**Beverly Jones Heydinger  
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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-16-\_\_\_\_

**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.<sup>1</sup> MERC requests that the Commission approve the requested changes to be recovered in the Purchased Gas Adjustment (PGA) effective on November 1, 2016.

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:** Affidavit of Service and Service List.

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<sup>1</sup> MERC also serves Minnesota customers off the Northern Natural Gas (“NNG”) system. MERC requests approval of a demand entitlement change for the 2016-2017 heating season for its MERC-NNG and MERC-NNG-Albert Lea PGAs in separate dockets.

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 and Antitrust Division. The summary of the 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  
1995 Rahnclyff Court, Suite 200  
Eagan, MN 55122  
(651) 322-8901

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

Kristin M. Stastny  
Briggs and Morgan, P.A.  
2200 IDS Center  
80 South 8th Street  
Minneapolis, MN 55402  
[KStastny@briggs.com](mailto:KStastny@briggs.com)  
(612) 977-8656

**C. Date of the Filing and Proposed Effective Date**

Date of filing: August 1, 2016  
Proposed Effective Date: November 1, 2016

**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**



Amber S. Lee  
Regulatory and Legislative Affairs Manager  
ASLee@minnesotaenergyresources.com  
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(651) 322-8965

If additional information is required, please contact Amber S. Lee at (651) 322-8965.

DATED: August 1, 2016

Respectfully submitted,  
MINNESOTA ENERGY RESOURCES  
CORPORATION

By: /s/ Amber S. Lee  
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1995 Rahncliff Court, Suite 200  
Eagan, MN 55122  
Telephone: (651) 322-8965

STATE OF MINNESOTA  
BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

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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-16-\_\_\_\_

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. MERC requests that the Commission approve the requested changes to be recovered in the Purchased Gas Adjustment (PGA) effective on November 1, 2016. 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

## II. **Discussion**

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

Minn. R. 7825.2910, subp. 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 2,453 Dth from the November 1, 2015 filing.

**Table 1: MERC Proposed Consolidated Reserve Margins  
For the 2016-2017 Heating Season**

	Reserve Margin 2016-2017 Heating Season	Reserve Margin 2015-2016 Heating Season	Change
Consolidated	-7.89%	4.47%	-12.36%

For the Demand Entitlement filing effective November 1, 2016, the total Design-Day requirement for MERC – Consolidated is 55,528 Dth (Attachment 1). The difference between



the total Design-Day requirement and total Design-Day capacity results in a 7.89% negative 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**

Minn. R. 7825.2910, subp. 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, 2015**

### 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 pipelines:

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

Before July 1, 2013, four Petitions for Change in Demand were filed (one for each PGA):

- A. PNG customers served off of VGT = PNG - VGT
- B. PNG customers served off of GLGT = PNG - GLGT
- C. PNG customers served off of NNG = PNG - NNG

D. All NMU customers - served off of NNG, GLGT, VGT & Centra = NMU

Effective July 1, 2013, two Petitions for Change in Demand need to be filed (one for each PGA):

- i. All MERC customers served off of NNG = NNG
- ii. All other PNG customers, served off of Centra, GLGT & VGT = MERC Consolidated

Effective May 1, 2015, MERC acquired Interstate Power & Light Company's Minnesota natural gas operations and customers. The Commission's Order Approving Sale Subject to Conditions in Docket G-001,011/PA-14-107 required MERC to maintain the transitioned customers on a separate PGA until MERC's next rate case (MERC – NNG-Albert Lea).

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 demand areas:

	<b>Pipeline</b>	<b>PGA</b>	<b>Weather Station(s)</b>
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
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## 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 (Department):
  - a. Review and potentially change the regression methodology to mitigate the impact of autocorrelation.
  - b. Provide a reasonable explanation whenever we choose to use a regression model 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** Steps consisted of:

- Identify the coldest Adjusted Heating Degree Day (AHDD) in the last 20 years for each weather station.
- 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) in the last 20 years. This 1-in-20 approach is consistent with prior years. The results are provided in the following table:

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

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.<sup>2</sup>
  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.

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<sup>2</sup> Temperature and weather data was obtained from Schneider Electric via TherMaxx then converted to HDD65 and AHDD65 in an Excel spreadsheet by MERC – Gas Supply. Temperature data is the average of the high and low temperature based on the 9am to 9am gas day. Wind data is the 24-hour average based on the 9am to 9am gas day.

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, changed the regression methodology to mitigate the impact of autocorrelation. See section below on autocorrelation.
5. In response to comments from the Department, provide a reasonable explanation whenever we choose to use a regression model that does not have an intercept.
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 in 20 years and the Use/Prior Day AHDD65 coefficient times the AHDD65 on the day prior to the coldest AHDD65 in 20 years.

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 Daily Firm Capacity (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 selections needed to be added back. The Sales and Revenue Forecasting department 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 MERC Gas Supply, 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 = Bandon mapped to Bemidji, and 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 NORTSHORE 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 Rochester
- SENECA FOODS-ROCHESTER mapped to Rochester
- ENGINEERED POLYMERS mapped to Cloquet
- SANDSTONE FEDERAL CORRECTIONAL INSTITUTE mapped to Cloquet
- Glenville #1 mapped to Rochester
- 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

- AMERIPRIDE
- NORTHLAND APTS
- NW TECH COLLEGE - BEMIDJI

### NNG

- HENDRICKS HOSPITAL
- GLASSTITE INC.

#### 4. Autocorrelation Review

The Commission's February 4, 2015, Order in Docket Nos. G011/M-12-1192, G011/M-12-1193, G011/M-12-1194, and G011/M-12-1195, MERC's 2012-2013 demand entitlement dockets, 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, we used the Yule-Walker estimation method within the SAS software package to 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 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 (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.

## **III. Additional Filing Requirements**

### **A. Daily Design-Day Estimate to Actual Comparison**

In the 2007-2008 demand entitlement dockets,<sup>3</sup> MERC agreed to include a daily estimate utilizing the Design-Day model which is calculated in Attachment 9. The daily estimate

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<sup>3</sup> Docket Nos. G007/M-07-1402; G007/M-07-1403; G007/M-07-1404; and G007/M-07-1405.

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.

#### **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. G-999/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 actually 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 discussed above, MERC Consolidated has a negative reserve margin for the 2016/17 period. The Company plans to contract for additional capacity to meet its peak day forecast to ensure a positive reserve margin of less than 5%. A combination of approximately 5,000 Dth of additional deliverability will be added on Centra, Viking, and Great Lakes. This capacity may consist of either pipeline capacity or delivered products and the final determination will be made based on the economics and reliability of the options available in the marketplace. These changes will be formally filed in the November 1, 2016, Demand Entitlement petition.

##### **2. Other Demand Entitlement Changes**

MERC has AECO Storage. To deliver supply from storage to MERC-Consolidated markets, MERC currently plans to enter into an AECO/Emerson swap. MERC sells gas at the storage point (AECO) to a supplier and buys an equivalent volume at Emerson/Spruce, which MERC then transports to its Consolidated customers. The swap substitutes the need to contract for firm transport on TransCanada Pipeline (TCPL) to transport the gas from AECO to Emerson/Spruce. There is no planned change in total volume from the previous year.

#### **E. Financial Option Units and Premiums**

In accordance with the Commission's May 28, 2015, Order in Docket No. G011/M-15-231 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 MMBtu) 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 2016-2017 Winter Portfolio Hedging Plans - Minnesota Energy Resources Corporation for GLGT, VGT, and Centra gas supply purchases are shown on Attachment 6. MERC's hedging strategy covers 60% of normal winter volumes; 30% through physical storage; and 30% through financial instruments. The weighted average price of currently purchased futures contracts of natural gas for the 2016/17 winter is \$3.0576. Please see Attachment 11, page 1 of 3. As shown in Attachment 11, page 2 of 3, MERC projects the AECO storage WACOG to be \$1.4053. The remaining 20% is hedged with financial call options. MERC has purchased call options at an average strike price of \$3.2040, 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 40% of normal 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, 2016. 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 our system and our upstream entitlement levels and our process requires us to evaluate the system capability before we allow a customer 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 our demand entitlement levels.

#### **IV. Conclusion**

As discussed above, MERC Consolidated has a negative reserve margin for the 2016-2017 period. The Company plans to contract for additional capacity to meet its peak day forecast to ensure a positive reserve margin of less than 5 percent. MERC will submit an update to this filing by November 1, 2016, reflecting those contract demand entitlements.

DATED: August 1, 2016

Respectfully submitted,

MINNESOTA ENERGY RESOURCES  
CORPORATION

By: /s/ Amber S. Lee

Amber S. Lee

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Telephone: (651) 322-8965

**MINNESOTA ENERGY RESOURCES - Consolidated**

**DESIGN-DAY DEMAND SUMMARY  
NOVEMBER 1, 2016**

Design Day Requirement		55,528
Total Peak Day Entitlement		51,149
2015/16 Firm Peak Day Actual Sendout	1/17/2016	42,679
Firm Annual Throughput - Minnesota		4,823,288
No. of Firm Customers		35,499
Department Load Factor Calculation		30.96%



**MINNESOTA ENERGY RESOURCES - Consolidated**

**MINNESOTA DESIGN DAY REQUIREMENTS  
 NOVEMBER 1, 2016  
 HDD**

Pipeline Group	2015/16 Customer Count	1/20 Design DDD	Regression Factors		Regression Total	Add Adjustment	1/20 Requirements Regression Load	Estimated Contract Demand Units	Total
			Intercept	Slope					
<b>VGT</b>									
Peak		109	635	138	15,174	1,407	16,581	7	16,588
Off Peak		57	635	138	8,527	1,093	9,620	7	9,627
<b>GLGT</b>									
Peak		107	1,936	243	27,666	1,928	29,594	214	29,808
Off Peak		57	1,936	243	15,167	1,845	17,012	214	17,226
<b>Centra</b>									
Peak		107	356	76	8,490	642	9,132	0	9,132
Off Peak		57	356	76	4,712	447	5,159	0	5,159
<b>Total Consolidated</b>									
Peak	35,499	107	2,927	457	51,330	3,977	55,307	221	55,528
Off Peak	35,499	57	2,927	457	28,406	3,385	31,791	221	32,012

**MINNESOTA ENERGY RESOURCES - Consolidated**

**DESIGN-DAY DEMAND PER CUSTOMER  
NOVEMBER 1, 2016**

<b><u>Heating Season</u></b>	<b><u>No. of Firm Customers</u></b>	<b><u>Design Day Requirements</u></b>	<b><u>MMBtu /Customer /Day</u></b>
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
10/11	33,399	50,779	1.52
09/10	34,053	53,931	1.58
08/09	32,632	59,654	1.83
07/08	32,454	57,202	1.76

**MINNESOTA ENERGY RESOURCES - Consolidated**

**SUMMER/WINTER USAGE - Mcf**  
**PROJECTED 12 MONTHS ENDING JUNE 2016**  
**Consolidated**

<u>Class</u>	<u>Summer Apr-Oct</u>	<u>Winter Nov-Mar</u>	<u>Total</u>
GS	1,280,070	3,520,323	4,800,393
SVI	139,761	287,013	426,774
SVJ	5,477	17,418	22,895
LVI	226,964	270,875	497,839
LVJ	0	0	0
SLV	0	0	0
IS	<u>0</u>	<u>0</u>	<u>0</u>
<b>Total</b>	<u>1,652,272</u>	<u>4,095,629</u>	<u>5,747,901</u>

**MINNESOTA ENERGY RESOURCES - Consolidated**

**ENTITLEMENT LEVELS  
 PROPOSED TO BE EFFECTIVE NOVEMBER 1, 2016**

<u>Capacity Type</u>	<i>Summer</i>			<i>April/October</i>			<i>Winter</i>		
	<u>2015/16 MMBtu</u>	<u>Change MMBtu</u>	<u>Proposed MMBtu</u>	<u>2015/16 MMBtu</u>	<u>Change MMBtu</u>	<u>Proposed MMBtu</u>	<u>2015/16 MMBtu</u>	<u>Change MMBtu</u>	<u>Proposed MMBtu</u>
FT Western Zone FT0016	10,130	0	10,130	10,130	0	10,130	10,130	0	10,130
FT Western Zone FT15782	9,000	0	9,000	9,000	0	9,000	9,000	0	9,000
FT Western Zone (12) FT17891 (12)	3,600	0	3,600	3,600	0	3,600	3,600	0	3,600
FT Western Zone (5) FT17891 (5)	0	0	0	0	0	0	3,728	0	3,728
FT Western Zone (5) FT18283	0	0	0	0	0	0	3,300	(3,300)	0
FT-A ZONE 1 - 1 AF0012	12,493	0	12,493	12,493	0	12,493	12,493	0	12,493
FT-A ZONE 1 - 1 AF0209	0	0	0	0	0	0	1,098	0	1,098
FT-A ZONE 1 - 1 AF0102	2,000	0	2,000	2,000	0	2,000	2,000	0	2,000
FT-A ZONE 1 - 1 AF00229	0	0	0	0	0	0	1,000	(1,000)	0
CENTRA FT-1	9,100	0	9,100	9,100	0	9,100	9,100	0	9,100
<b>Total Entitlement</b>	<b><u>46,323</u></b>	<b><u>0</u></b>	<b><u>46,323</u></b>	<b><u>46,323</u></b>	<b><u>0</u></b>	<b><u>46,323</u></b>	<b><u>55,449</u></b>	<b><u>(4,300)</u></b>	<b><u>51,149</u></b>
Forecasted Design Day-Adjusted				31,599	413	32,012	53,075	2,453	55,528
Capacity Surplus/Shortage				14,724	(413)	14,311	2,374	(6,753)	(4,379)
Reserve Margin				46.60%	-1.89%	44.71%	4.47%	-12.36%	-7.89%

## MINNESOTA ENERGY RESOURCES - CONSOLIDATED

### RATE IMPACT OF THE PROPOSED DEMAND CHANGE NOVEMBER 1, 2016

All costs in \$/Dth	Base Cost of Gas G011/MR15-748 Jan 1, 2016	Demand Change Oct 1, 2015	Demand Change Demand Filing Nov 1, 2015	Most Recent PGA Jul 1, 2016	Proposed Effective Nov 1, 2016	Result of Proposed Change				
						Change from Last Rate Case	Change from Nov 1, 2015 Demand Filing	Change from Last PGA %	Change from Last PGA \$	
<b>1) General Service Residential Avg. Annual Use:</b>						<b>87</b>	<b>Dth</b>			
Commodity Cost	\$3.8521	\$3.1948	\$3.1294	\$3.1645	\$3.0993	-19.54%	-2.99%	-2.06%	(\$0.0652)	
Demand Cost	\$0.7996	\$0.7968	\$0.8006	\$0.7422	\$0.6704	-16.16%	-15.86%	-9.67%	(\$0.0718)	
Commodity Margin	\$2.3980	\$2.1806	\$2.1806	\$2.3980	\$2.3980	0.00%	9.97%	0.00%	\$0.0000	
Total Cost of Gas	\$7.0497	\$6.1722	\$6.1106	\$6.3047	\$6.1677	-12.51%	-0.07%	-2.17%	(\$0.1370)	
Avg Annual Cost	\$613.32	\$536.98	\$531.62	\$548.51	\$536.59	-12.51%	-0.07%	-2.17%	(\$11.92)	
Effect of proposed commodity change on average annual bills:									(\$5.67)	
Effect of proposed demand change on average annual bills:									(\$6.25)	
<b>2) Large General Service: Avg. Annual Use:</b>						<b>800</b>	<b>Dth</b>			
Commodity Cost	\$3.8521	\$3.1948	\$3.1294	\$3.1645	\$3.0993	-19.54%	-2.99%	-2.06%	(\$0.0652)	
Demand Cost	\$0.7996	\$0.7968	\$0.8006	\$0.7422	\$0.6704	-16.16%	-15.86%	-9.67%	(\$0.0718)	
Commodity Margin	\$1.8232	\$1.6579	\$1.6579	\$1.8232	\$1.8232	0.00%	9.97%	0.00%	\$0.0000	
Total Cost of Gas	\$6.4749	\$5.6495	\$5.5879	\$5.7299	\$5.5929	-13.62%	-1.00%	-2.39%	(\$0.1370)	
Avg Annual Cost	\$5,179.92	\$4,519.60	\$4,470.32	\$4,583.92	\$4,474.30	-13.62%	-1.00%	-2.39%	(\$109.62)	
Effect of proposed commodity change on average annual bills:									(\$52.18)	
Effect of proposed demand change on average annual bills:									(\$57.44)	
<b>3) SV Interruptible Service: Avg. Annual Use:</b>						<b>5,914</b>	<b>Dth</b>			
Commodity Cost	\$3.8521	\$3.1948	\$3.1294	\$3.1645	\$3.0993	-19.54%	-2.99%	-2.06%	(\$0.0652)	
Commodity Margin	\$0.9336	\$0.8490	\$0.8490	\$0.9336	\$0.9336	0.00%	9.96%	0.00%	\$0.0000	
Total Cost of Gas	\$4.7857	\$4.0438	\$3.9784	\$4.0981	\$4.0329	-15.73%	-0.27%	-1.59%	(\$0.0652)	
Avg Annual Cost	\$28,302.63	\$23,915.03	\$23,528.26	\$24,236.16	\$23,850.40	-15.73%	-0.27%	-1.59%	(\$385.77)	
Effect of proposed commodity change on average annual bills:									(\$385.77)	
<b>4) LV Interruptible Service: Avg. Annual Use:</b>						<b>70,770</b>	<b>Dth</b>			
Commodity Cost	\$3.8521	\$3.1948	\$3.1294	\$3.1645	\$3.0993	-19.54%	-2.99%	-2.06%	(\$0.0652)	
Commodity Margin	\$0.5007	\$0.4553	\$0.4553	\$0.5007	\$0.5007	0.00%	9.97%	0.00%	\$0.0000	
Total Cost of Gas	\$4.3528	\$3.6501	\$3.5847	\$3.6652	\$3.6000	-17.30%	-1.37%	-1.78%	(\$0.0652)	
Avg Annual Cost	\$308,047.66	\$258,317.58	\$253,689.22	\$259,386.20	\$254,769.91	-17.30%	-1.37%	-1.78%	(\$4,616.29)	
Effect of proposed commodity change on average annual bills:									(\$4,616.29)	

Note: Average Annual Average based on PNG Annual Automatic Adjustment Report in Docket No. E,G999/AA-15-612

## MINNESOTA ENERGY RESOURCES - CONSOLIDATED

### RATE IMPACT OF THE PROPOSED DEMAND CHANGE

NOVEMBER 1, 2016

DEMAND									
Contract Type		Season	Monthly Entitlement (Dth)	Months	Rate (\$/Dth)	Contract Costs	Rate Case Sales (therms)	\$/therm	
<b>Viking (VGT)</b>									
FT-A ZONE 1 - 1	AF0012	Annual	12,493	12	4.3706 \$	655,223	49,765,067	\$0.01317	
FT-A ZONE 1 - 1	AF0209	Winter	1,098	3	4.3706 \$	14,397	49,765,067	\$0.00029	
FT-A ZONE 1 - 1	AF0102	Annual	2,000	12	4.5607 \$	109,457	49,765,067	\$0.00220	
<b>VGT Demand</b>						<b>\$ 779,077</b>	49,765,067	<b>\$0.01566</b>	
<b>Great Lakes (GLGT)</b>									
FT Western Zone	FT0016	Annual	10,130	12	\$3.8490 \$	467,884	49,765,067	\$0.00940	
FT Western Zone	FT15782	Annual	9,000	12	\$3.8490 \$	415,692	49,765,067	\$0.00835	
FT Western Zone (12)	FT17891 (12)	Annual	3,600	12	\$3.8490 \$	166,277	49,765,067	\$0.00334	
FT Western Zone (5)	FT17891 (5)	Winter	3,728	5	\$3.8490 \$	71,745	49,765,067	\$0.00144	
<b>GLGT Demand</b>						<b>\$ 1,121,598</b>	49,765,067	<b>\$0.02254</b>	
<b>Centra</b>									
CENTRA TRANSMISSION		Annual	9,100	12	\$9.8460 \$	1,075,187	49,765,067	\$0.02161	
CENTRA MINNESOTA PIPELINES		Annual	9,100	12	\$3.2990 \$	360,251	49,765,067	\$0.00724	
<b>Centra Demand</b>						<b>\$ 1,435,438</b>	49,765,067	<b>\$0.02884</b>	
<b>MERC-Consolidated DEMAND - \$/therm</b>						<b>\$ 3,336,113</b>		<b><u>\$0.06704</u></b>	
<b>FOR JOINT RATE DEMAND</b>									
						<b>49,765,067</b>	<b>Annual Firm Sales in therms</b>		
MERC-Consolidated Firm (GS) Sales as approved in Docket No. G011/MR-15-748									
<b>Viking (VGT)</b>									
FT-A ZONE 1 - 1		Annual	12,493	12	149,916				
FT-A ZONE 1 - 1		Winter	1,098	3	3,294				
FT-A ZONE 1 - 1		Annual	2,000	12	24,000				
<b>Great Lakes (GLGT)</b>									
FT Western Zone		Annual	10,130	12	121,560				
FT Western Zone		Annual	9,000	12	108,000				
FT Western Zone (12)		Annual	3,600	12	43,200				
FT Western Zone (5)		Winter	3,728	5	18,640				
<b>Centra</b>									
CENTRA TRANSMISSION		Annual	9,100	12	109,200				
CENTRA MINNESOTA PIPELINES		Annual	9,100	12	109,200				
<b>Total Demand Cost</b>			<b>\$ 3,336,113</b>						
<b>Total Demand Weighted Vol in therms</b>			<b>5,778,100</b>						
<b>Total Joint Demand Rate \$/therm</b>						<b>\$0.57737 /therm</b>			

**MINNESOTA ENERGY RESOURCES - CONSOLIDATED**  
RATE IMPACT OF THE PROPOSED DEMAND CHANGE

PRESENT AVERAGE COST OF GAS COMMODITY

NOVEMBER 1, 2015

WACOG	Rate	Annual Dth	Call Option Premium	Balancing Service	Total Annual Cost	System Cost/therm	Storage Comm Rate	Total Comm Rate	REFERENCE	Effective
<b>VGT</b>										
GAS COST	\$2.71700									
FUEL 0.00%	\$0.00000								Sub 16th Revised Sheet No. 5B	Apr. 1, 2006
COMMODITY TRANSPORTATION	\$0.01160								Sub 16th Revised Sheet No. 5B	Apr. 1, 2006
GRI	\$0.00000								Sub 16th Revised Sheet No. 5B	Apr. 1, 2006
ACA	\$0.00140								Sub 16th Revised Sheet No. 5B	Apr. 1, 2006
<b>VGT Commodity</b>	\$2.73000	2,145,731	\$31,259	\$89,580	\$5,978,685	\$0.10515			<b>VGT Commodity</b>	
<b>GLGT</b>										
GAS COST	\$2.71700									
FUEL 1.255%	\$0.03454								5 Revised Sheet 4	Jun 1, 1997
COMMODITY TRANSPORTATION	\$0.00394								Contract	Jun. 1, 2004
GRI	\$0.00000								18th Revised Sheet No. 7	Oct. 1, 2005
ACA	\$0.00140									
<b>GLGT Commodity</b>	\$2.75688	2,216,718	\$32,293	\$0	\$6,143,518	\$0.10805			<b>GLGT Commodity</b>	
<b>CENTRA</b>										
CENTRA TRANSMISSION (\$Cdn/103M3)	1.062								Sheet 1 (N.E.B.)	
Conversion	\$0.02315									
Abandonment Toll	\$0.27436								N.E.B. MO-078-2014	Jan. 1, 2015
GAS COSTS	\$2.71700									
CUSTOMS FEE	\$0.00031									
<b>CENTRA Commodity</b>	\$3.01482	1,323,492	\$19,280	\$54,000	\$4,063,375	\$0.07146			<b>Centra Commodity</b>	
<b>Consolidated WACOG w/Premium &amp; Balancing</b>		<b>5,685,941</b>	<b>\$82,832</b>	<b>\$143,580</b>	<b>\$16,185,578</b>	<b>\$0.28466</b>	<b>\$0.02527</b>			
		Total Annual Sales in therms	56,859,413							
									<b>\$0.30993 Total Consolidated WACOG-\$/therm</b>	

Balancing Service		Season	Monthly Entitlement (Dth)	Months	Rate (\$/Dth)	Contract Costs
Pipeline	Description					
VGT	Balancing Agreement	Annual	7,465	12	\$1.0000	\$89,580
GLGT	---		0	0	\$0.0000	\$0
Centra	Union Balancing	Annual	10,000	12	\$0.4500	\$54,000

Storage Service		Season	Monthly Entitlement (Dth)	Months	Rate (\$/Dth)	Contract Costs	Annual Sales (therms)	Rate (\$/therm)
Niska Storage (AECO)	Annual	947,820	1		\$0.4676	\$443,205	56,859,413	\$0.00779
AECO/Emerson Swap	Annual	955,255	1		\$1.04000	\$993,465	56,859,413	\$0.01747
						\$1,436,670	56,859,413	\$0.02527

**Total Commodity Cost: \$0.30993**

\* Per Docket No. G-007/M-07-1402-05 dated August 6th, 2014, storage demand charges will be allocated through the commodity charge effective 11/01/2014.

**MINNESOTA ENERGY RESOURCES - CONSOLIDATED**

**Financial Options  
Heating Season 2016-2017**

**Units - Gas Daily Peaker Packages (Physical)**

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

**Units - Futures (Daily Volume)**

	<u>November</u>		<u>December</u>		<u>January</u>		<u>February</u>		<u>March</u>		
	<u>Contract Date</u>	<u>Daily Volume</u>	<u>Contract Date</u>	<u>Daily Volume</u>	<u>Contract Date</u>	<u>Daily Volume</u>	<u>Contract Date</u>	<u>Daily Volume</u>	<u>Contract Date</u>	<u>Daily Volume</u>	<u>Term Total</u>
1	05/18/16	438	05/26/16	281	05/25/16	634	05/19/16	630	05/23/16	430	72,444
2	06/02/16	313	05/26/16	224	06/20/16	634	06/14/16	630	05/23/16	54	55,288
3	-	-	06/22/16	505	-	-	-	-	06/16/16	430	28,986
4	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-
Total		<u>750</u>		<u>1,010</u>		<u>1,267</u>		<u>1,261</u>		<u>914</u>	<u>156,718</u>

**Units - Call Options (Daily Volume)**

	<u>November</u>		<u>December</u>		<u>January</u>		<u>February</u>		<u>March</u>		
	<u>Contract Date</u>	<u>Daily Volume</u>	<u>Contract Date</u>	<u>Daily Volume</u>	<u>Contract Date</u>	<u>Daily Volume</u>	<u>Contract Date</u>	<u>Daily Volume</u>	<u>Contract Date</u>	<u>Daily Volume</u>	<u>Term Total</u>
1	05/24/16	677	05/20/16	992	05/19/16	1,142	05/25/16	567	05/18/16	864	129,119
2	06/17/16	677	06/15/16	933	06/13/16	1,142	05/26/16	567	06/01/16	864	127,310
3	-	-	-	-	-	-	06/21/16	1,134	-	-	31,765
4	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-
Total		<u>1,354</u>		<u>1,925</u>		<u>2,284</u>		<u>2,269</u>		<u>1,728</u>	<u>288,194</u>

**Premium - Call Option (Monthly Cost)**

	<u>November</u>		<u>December</u>		<u>January</u>		<u>February</u>		<u>March</u>			<u>Total</u>
	<u>Option Premium</u>	<u>Premium Cost</u>	<u>Option Premium</u>	<u>Premium Cost</u>	<u>Option Premium</u>	<u>Premium Cost</u>	<u>Option Premium</u>	<u>Premium Cost</u>	<u>Option Premium</u>	<u>Premium Cost</u>	<u>Option Premium</u>	<u>Premium Cost</u>
1	\$ 0.1840	\$ 3,737	\$ 0.2420	\$ 7,440	\$ 0.2580	\$ 9,133	\$ 0.3300	\$ 5,241	\$ 0.3600	\$ 9,643	\$ 0.2726	\$ 35,194
2	\$ 0.2020	\$ 4,102	\$ 0.2410	\$ 6,974	\$ 0.2860	\$ 10,124	\$ 0.3500	\$ 5,559	\$ 0.3680	\$ 9,857	\$ 0.2876	\$ 36,616
3	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 0.3470	\$ 11,022	\$ -	\$ -	\$ 0.3470	\$ 11,022
4	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
5	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
6	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
7	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	<u>\$ 0.1930</u>	<u>\$ 7,839</u>	<u>\$ 0.2415</u>	<u>\$ 14,414</u>	<u>\$ 0.2720</u>	<u>\$ 19,257</u>	<u>\$ 0.3435</u>	<u>\$ 21,822</u>	<u>\$ 0.3640</u>	<u>\$ 19,500</u>	<u>\$ 0.2874</u>	<u>\$ 82,832</u>

**Units - Collar Floor (put)**

No Puts were purchased.



## MINNESOTA ENERGY RESOURCES - CONSOLIDATED

## 16/17 Winter Portfolio Plan - Total MERC Hedging Plan

Minnesota Energy Resources Corporation  
2016-2017 Demand Entitlement  
MERC-Consolidated

10000 Contract Size

System	Purchase Month	Nov-16		Dec-16		Jan-17		Feb-17		Mar-17		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	
<b>MN Requirements</b>			584,025		847,176		1,015,217		890,249		758,963		4,095,630	4,095,630
<b>GLGT -MN</b>			19,468		27,328		32,749		31,795		24,483		26,945	
10%	Futures		58,403		84,718		101,522		89,025		75,896		409,563	
20%	Call		116,805		169,435		203,043		178,050		151,793		819,126	
30%	Storage		175,208		254,153		304,565		267,075		227,689		1,228,689	
40%	Index		233,610		338,870		406,087		356,100		303,585		1,638,252	
Contracts	Aug-16	1	10,000	2	20,000	2	20,000	2	20,000	2	20,000	9	90,000	
	Sep-16	1	10,000	2	20,000	2	20,000	2	20,000	1	10,000	8	80,000	
	Oct-16	1	10,000	1	10,000	2	20,000	2	20,000	1	10,000	7	70,000	
	Total	1	10,000	1	10,000	2	20,000	1	10,000	1	10,000	6	60,000	
	May-16	1	10,000	1	10,000	1	10,000	1	10,000	1	10,000	5	50,000	
	Jun-16	1	10,000	1	10,000	1	10,000	1	10,000	1	10,000	5	50,000	
	<b>Total</b>	<b>6</b>	<b>60,000</b>	<b>8</b>	<b>80,000</b>	<b>10</b>	<b>100,000</b>	<b>9</b>	<b>90,000</b>	<b>7</b>	<b>70,000</b>	<b>40</b>	<b>400,000</b>	9.77%
Call Options	Aug-16	2	20,000	3	30,000	4	40,000	3	30,000	3	30,000	15	150,000	
	Sep-16	2	20,000	3	30,000	4	40,000	3	30,000	3	30,000	15	150,000	
	Oct-16	2	20,000	3	30,000	3	30,000	3	30,000	3	30,000	14	140,000	
	Total	2	20,000	3	30,000	3	30,000	3	30,000	2	20,000	13	130,000	
	May-16	2	20,000	3	30,000	3	30,000	3	30,000	2	20,000	13	130,000	
	Jun-16	1	10,000	2	20,000	3	30,000	3	30,000	2	20,000	11	110,000	
	<b>Total</b>	<b>11</b>	<b>110,000</b>	<b>17</b>	<b>170,000</b>	<b>20</b>	<b>200,000</b>	<b>18</b>	<b>180,000</b>	<b>15</b>	<b>150,000</b>	<b>81</b>	<b>810,000</b>	19.78%
Collars	Aug-16	0	0	0	0	0	0	0	0	0	0	0	0	
	Sep-16	0	0	0	0	0	0	0	0	0	0	0	0	
	Oct-16	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	
	May-16	0	0	0	0	0	0	0	0	0	0	0	0	
	Jun-16	0	0	0	0	0	0	0	0	0	0	0	0	
	<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	0.00%
Index (back financial)	<b>Total</b>		<b>170,000</b>		<b>250,000</b>		<b>300,000</b>		<b>270,000</b>		<b>220,000</b>		<b>1,210,000</b>	29.54%
Physical Hedges			0		0		0		0		0		0	
Storage			85,304		231,768		231,768		209,339		96,374		854,552	20.86%
Prepaid Obl			0		0		0		0		0		0	0.00%
			43.71%		56.87%		52.38%		53.84%		41.69%		50.41%	50.41%
Term Index	Total	0	0	0	0	0	0	0	0	0	0	0	0	0.00%
	May-16	0	0	0	0	0	0	0	0	0	0	0	0	0.00%
	Jun-16	0	0	0	0	0	0	0	0	0	0	0	0	0.00%
<b>Total NNG MN</b>													400,000	9.77%
Contracts													810,000	19.78%
Call Options													0	0.00%
Costing Collar													854,552	20.86%
Storage													0	0.00%
Prepaid Obl													0	0.00%
Term Index													0	0.00%
Month/Daily													2,031,078	49.59%
<b>Total</b>													4,095,630	100.00%

NOTE:



## MINNESOTA ENERGY RESOURCES - CONSOLIDATED

	2012 Consolidated GS	2013 Consolidated GS	2014 Consolidated GS	2015 Consolidated GS	2016 Consolidated GS	Proposed Change
<b>Viking Gas Transmission (VGT)</b>						
FT-A ZONE 1 - 1	12,493	12,493	12,493	<b>12,493</b>	<b>12,493</b>	0
FT-A ZONE 1 - 1	1,098	1,098	1,098	<b>1,098</b>	<b>1,098</b>	0
FT-A ZONE 1 - 1	2,000	2,000	2,000	<b>2,000</b>	<b>2,000</b>	0
FA-A ZONE 1 - 1	0	1,500	0	<b>1,000</b>	<b>0</b>	-1,000
Wadena Delivered GDD Option	3500	0	0	<b>0</b>	<b>0</b>	0
<b>Great Lakes Gas Transmission (GLGT)</b>						
FT Western Zone	10,130	10,130	10,130	<b>10,130</b>	<b>10,130</b>	0
FT Western Zone	9,000	9,000	9,000	9,000	<b>9,000</b>	0
FT Western Zone (12)	3,600	3,600	3,600	3,600	<b>3,600</b>	0
FT Western Zone (5)	3,638	3,638	3,638	3,728	<b>3,728</b>	0
	0	0	0	<b>3,300</b>	<b>0</b>	-3,300
<b>Centra Transmission Holding/Centra Minnesota Pipelines (CTHI/CPMI)</b>						
Centra FT-1	9,500	9,500	9,500	<b>9,100</b>	<b>9,100</b>	0
Total VGT Transportation	19,091	17,091	15,591	<b>16,591</b>	<b>15,591</b>	-1,000
Total GLGT Transportation	26,368	26,368	26,368	<b>29,758</b>	<b>26,458</b>	-3,300
Total CTHI/CPMI Transportation	9,500	9,500	9,500	<b>9,100</b>	<b>9,100</b>	0
Total Transportation	54,959	52,959	51,459	<b>55,449</b>	<b>51,149</b>	-4,300
Total Seasonal Transportation	4,598	2,598	1,098	<b>2,098</b>	<b>1,098</b>	-1,000
Total Seasonal Transportation %	8.37%	4.91%	2.13%	<b>3.78%</b>	<b>2.15%</b>	-1.64%
<u>Other Entitlements not included in Peak Day Deliverability</u>						
AECO Storage	947,820	947,820	947,820	<b>947,820</b>	<b>947,820</b>	0
AECO/Emerson Swap	947,823	947,823	940,428	<b>955,255</b>	<b>955,255</b>	0

**MINNESOTA ENERGY RESOURCES - CONSOLIDATED**

Change in Costs due to November,1 2016 Change in Entitlement Levels and Related Demand Costs

	2015/16 Entitlements	2016/17 Entitlements	Entitlement Change	2016/17 Rate	Months	2015/16 Total Annual Cost	2016/17 Total Annual Cost	Total Annual Cost Change
<b>Costs Assigned in Demand Charge</b>								
<u>Viking Pipeline</u>								
FT-A ZONE 1 - 1AF0012	12,493	12,493	0	\$ 4.3706	12	\$655,223	\$655,223	\$0
FT-A ZONE 1 - 1AF0209	1,098	1,098	0	\$ 4.3706	3	\$14,397	\$14,397	\$0
FT-A ZONE 1 - 1AF0102	2,000	2,000	0	\$ 4.5607	12	\$109,457	\$109,457	\$0
FT-A ZONE 1 - AF0229 (Nov-Mar)	1,000	0	-1,000	\$ 4.7507	0	\$23,754	\$0	-\$23,754
<u>GLGTPipeline</u>								
FT Western ZoneFT0016	10,130	10,130	0	\$ 3.8490	12	\$467,884	\$467,884	\$0
FT Western ZoneFT15782	9,000	9,000	0	\$ 3.8490	12	\$415,692	\$415,692	\$0
FT Western Zone (12)FT17891 (12)	3,600	3,600	0	\$ 3.8490	12	\$166,277	\$166,277	\$0
FT Western Zone (5)FT17891 (5)	3,728	3,728	0	\$ 3.8490	5	\$71,745	\$71,745	\$0
FT Western Zone (5)FT18283 (Nov-Mar)	3,300	0	-3,300	\$ 3.8490	5	\$63,509	\$0	-\$63,509
<u>CENTRA Pipeline</u>								
CENTRA TRANSMISSION	9,100	9,100	0	\$ 9.8460	12	\$1,350,564	\$1,075,187	-\$275,377
CENTRA MINNESOTA PIPELINES	9,100	9,100	0	\$ 3.2990	12	\$355,009	\$360,251	\$5,242
<b>Total Costs Assigned to Demand Charge</b>						<b>\$3,693,510</b>	<b>\$3,336,113</b>	<b>-\$357,397</b>
<b>Costs Assigned in Commodity Charge</b>								
<u>Storage Service</u>								
Niska Storage (AECO)	947,820	947,820	0	\$ 0.4676	1	\$590,018	\$443,205	-\$146,813
AECO/Emerson Swap	955,255	955,255	0	\$ 1.0400	1	\$993,465	\$993,465	\$0
<u>Balancing</u>								
VGT Balancing Agreement	7,465	7,465	0	\$ 1.0000	12	\$89,580	\$89,580	\$0
Union Balancing	4,453	10,000	5,547	\$ 0.4500	12	\$54,000	\$54,000	\$0
<u>Call Options Premium</u>								
						\$307,091	\$82,832	-\$224,259
<b>Total Costs Assigned to Commodity Charge</b>						<b>\$2,034,154</b>	<b>\$1,663,082</b>	<b>-\$371,072</b>

**MINNESOTA ENERGY RESOURCES - Consolidated**

Daily Total Throughput Data - July 1, 2015 through June 30, 2016

Minnesota Energy Resources Corporation

2016-2017 Demand Entitlement

MERC-Consolidated

Attachment 9

Design Day:

Base	2,927
Variable	457

Date	28.53% Bernidji 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 **
7/1/15	0	3	0	0	0	24,018	3,116
7/2/15	0	0	0	0	0	14,748	2,927
7/3/15	0	0	0	2	0	11,052	3,148
7/4/15	0	0	0	0	0	8,598	2,927
7/5/15	0	0	0	0	0	12,120	2,927
7/6/15	16	8	11	16	13	20,993	8,869
7/7/15	4	6	0	9	4	20,643	4,712
7/8/15	9	2	3	7	5	21,068	5,364
7/9/15	0	0	0	1	0	18,557	3,032
7/10/15	0	0	0	0	0	15,469	2,927
7/11/15	0	0	0	0	0	12,314	2,927
7/12/15	0	0	0	0	0	12,769	2,927
7/13/15	0	0	0	0	0	14,587	2,927
7/14/15	0	3	0	0	0	17,877	3,086
7/15/15	0	0	0	0	0	19,161	2,927
7/16/15	0	0	0	0	0	19,877	2,927
7/17/15	0	0	0	0	0	17,136	2,927
7/18/15	0	0	0	0	0	11,925	2,927
7/19/15	0	0	0	0	0	13,156	2,927
7/20/15	3	1	0	5	2	19,623	3,914
7/21/15	0	0	0	8	2	18,169	3,747
7/22/15	0	0	0	0	0	17,796	2,927
7/23/15	0	0	0	0	0	14,359	2,927
7/24/15	0	0	0	1	0	12,094	2,980
7/25/15	0	0	0	0	0	9,015	2,927
7/26/15	0	0	0	0	0	9,573	2,927
7/27/15	0	0	0	0	0	17,369	2,927
7/28/15	0	0	0	0	0	21,114	2,927
7/29/15	0	0	0	0	0	18,954	2,927
7/30/15	0	0	0	0	0	18,695	2,927
7/31/15	0	0	0	1	0	15,345	3,043
8/1/15	0	0	0	0	0	11,347	2,927
8/2/15	3	0	0	1	1	12,863	3,486
8/3/15	8	4	0	12	6	17,812	5,473
8/4/15	5	6	0	14	5	21,687	5,343
8/5/15	0	2	0	0	0	25,958	3,025
8/6/15	0	3	0	2	1	17,750	3,323
8/7/15	0	5	0	0	1	15,577	3,238
8/8/15	0	0	0	0	0	12,151	2,927
8/9/15	1	0	0	0	0	12,577	2,992
8/10/15	1	0	0	5	1	17,502	3,564
8/11/15	0	0	0	0	0	16,228	2,927
8/12/15	0	0	0	0	0	17,232	2,927
8/13/15	0	0	0	0	0	17,734	2,927
8/14/15	0	0	0	0	0	17,980	2,927
8/15/15	0	0	0	0	0	11,859	2,927
8/16/15	8	0	7	7	6	13,272	5,632
8/17/15	9	6	1	12	7	20,518	5,932
8/18/15	6	6	5	2	4	25,496	4,966
8/19/15	16	10	9	14	12	22,369	8,463
8/20/15	3	5	0	7	3	16,947	4,393
8/21/15	0	0	0	0	0	14,200	2,927
8/22/15	4	1	0	2	2	10,420	3,653
8/23/15	16	13	7	15	12	13,853	8,483
8/24/15	14	16	8	17	13	21,558	8,809
8/25/15	13	10	5	14	10	22,326	7,513
8/26/15	7	7	0	11	5	20,118	5,400
8/27/15	0	1	0	0	0	16,898	2,988
8/28/15	0	0	0	0	0	15,549	2,927
8/29/15	0	0	0	0	0	11,752	2,927
8/30/15	0	0	0	0	0	12,812	2,927
8/31/15	0	0	0	0	0	19,855	2,927
9/1/15	0	0	0	0	0	19,833	2,927
9/2/15	0	0	0	0	0	22,455	2,927
9/3/15	0	3	0	0	0	18,037	3,086
9/4/15	0	0	0	0	0	15,196	2,927
9/5/15	0	0	0	0	0	10,654	2,927
9/6/15	3	0	1	1	1	9,777	3,462
9/7/15	7	0	5	5	5	11,509	5,107
9/8/15	7	3	3	11	6	20,636	5,575
9/9/15	14	6	6	14	10	22,306	7,664
9/10/15	20	14	12	17	16	21,483	10,113
9/11/15	17	17	9	18	14	17,420	9,533
9/12/15	8	8	1	6	5	15,234	5,258
9/13/15	0	2	0	0	0	15,892	3,061
9/14/15	0	0	0	6	1	21,352	3,537

9/15/15	0	0	0	0	0	22,027	2,927
9/16/15	0	0	0	0	0	23,271	2,927
9/17/15	10	5	9	3	8	22,060	6,364
9/18/15	13	12	12	15	13	18,031	8,921
9/19/15	7	9	2	8	5	14,380	5,415
9/20/15	1	3	0	1	1	15,188	3,316
9/21/15	1	0	0	5	2	21,428	3,638
9/22/15	11	9	6	13	9	24,369	7,022
9/23/15	15	14	8	10	11	25,532	7,967
9/24/15	6	9	0	10	5	20,635	5,289
9/25/15	1	10	0	3	2	19,474	3,944
9/26/15	0	7	0	0	1	22,022	3,372
9/27/15	6	0	0	11	4	27,515	4,858
9/28/15	19	14	13	23	17	35,726	10,782
9/29/15	18	21	10	23	17	36,670	10,557
9/30/15	12	15	4	15	10	37,392	7,586
10/1/15	15	22	11	21	16	31,595	10,174
10/2/15	17	22	13	18	17	26,456	10,491
10/3/15	19	24	12	22	18	21,474	11,052
10/4/15	15	18	10	15	14	21,967	9,143
10/5/15	18	14	13	23	17	27,767	10,673
10/6/15	27	19	18	30	23	28,378	13,660
10/7/15	20	20	14	22	19	26,469	11,395
10/8/15	18	21	21	20	20	25,491	12,047
10/9/15	16	19	13	15	15	19,747	9,801
10/10/15	5	10	0	10	5	15,316	5,218
10/11/15	0	0	0	0	0	14,967	2,927
10/12/15	27	22	27	22	25	27,603	14,345
10/13/15	21	21	16	27	21	29,241	12,410
10/14/15	16	14	11	18	14	25,790	9,509
10/15/15	33	26	27	31	30	26,844	16,441
10/16/15	33	33	29	35	32	27,836	17,605
10/17/15	29	28	23	33	28	25,124	15,513
10/18/15	17	21	9	20	15	20,868	9,813
10/19/15	12	11	7	14	10	24,928	7,694
10/20/15	20	22	7	24	16	28,821	10,380
10/21/15	27	26	21	32	26	31,865	14,756
10/22/15	20	18	15	24	19	24,541	11,532
10/23/15	24	22	23	24	23	21,956	13,547
10/24/15	26	24	20	29	24	21,757	13,987
10/25/15	29	22	23	32	27	27,893	15,156
10/26/15	26	23	22	29	25	31,996	14,308
10/27/15	25	20	19	22	22	32,557	12,862
10/28/15	33	27	34	27	31	36,726	17,198
10/29/15	30	24	28	28	28	29,903	15,642
10/30/15	23	24	23	26	24	24,928	13,873
10/31/15	25	22	26	23	25	25,382	14,182
11/1/15	28	23	23	31	26	25,860	14,736
11/2/15	17	14	17	26	18	29,281	11,330
11/3/15	17	16	12	20	16	28,701	10,291
11/4/15	16	13	20	14	17	30,561	10,508
11/5/15	31	17	31	25	28	33,121	15,523
11/6/15	34	30	33	33	33	29,539	17,935
11/7/15	30	29	26	32	29	27,135	16,070
11/8/15	22	18	21	20	21	22,870	12,303
11/9/15	17	17	17	19	17	28,918	10,879
11/10/15	20	16	20	17	19	30,647	11,555
11/11/15	35	20	35	26	31	34,845	17,096
11/12/15	40	34	38	36	38	34,946	20,122
11/13/15	33	35	31	36	33	30,458	18,019
11/14/15	27	26	23	27	25	25,572	14,572
11/15/15	20	23	14	24	19	23,300	11,621
11/16/15	20	19	19	22	20	32,067	12,115
11/17/15	23	17	28	18	23	33,327	13,378
11/18/15	38	29	38	30	35	39,938	18,932
11/19/15	56	49	49	47	51	45,793	26,044
11/20/15	51	49	49	50	50	42,377	25,787
11/21/15	51	51	47	55	51	41,135	26,054
11/22/15	44	46	39	46	43	38,166	22,618
11/23/15	42	34	31	39	37	41,556	19,644
11/24/15	37	35	31	39	35	39,709	18,916
11/25/15	43	32	45	41	42	38,784	22,035
11/26/15	59	53	57	58	57	40,112	29,125
11/27/15	55	49	52	56	53	41,271	27,167
11/28/15	47	44	43	48	45	37,805	23,566
11/29/15	44	39	34	43	40	35,584	20,989
11/30/15	38	37	34	39	37	41,911	19,789
12/1/15	37	33	45	38	40	40,889	21,096
12/2/15	44	36	51	39	44	44,693	23,077
12/3/15	40	41	43	40	41	43,654	21,790
12/4/15	33	36	40	32	36	32,147	19,245
12/5/15	35	29	38	31	34	31,549	18,524
12/6/15	30	36	40	31	34	33,304	18,599
12/7/15	36	34	36	33	35	44,014	18,893
12/8/15	34	32	36	36	35	45,555	18,750
12/9/15	27	30	29	34	30	40,936	16,456
12/10/15	34	31	30	36	32	39,889	17,741
12/11/15	36	31	34	40	35	37,827	19,065
12/12/15	34	31	37	36	35	34,622	18,884

Minnesota Energy Resources Corporation  
2016-2017 Demand Entitlement  
MERC-Consolidated  
Attachment 9

12/13/15	38	35	37	37	37	34,280	19,776
12/14/15	45	41	39	46	43	45,334	22,403
12/15/15	44	41	41	47	43	46,439	22,610
12/16/15	47	42	49	48	47	47,515	24,499
12/17/15	57	52	56	57	56	52,101	28,345
12/18/15	68	65	64	65	65	52,664	32,832
12/19/15	58	56	55	56	56	45,194	28,529
12/20/15	45	42	49	46	46	40,062	24,045
12/21/15	46	44	49	48	47	47,033	24,476
12/22/15	41	38	41	40	40	41,878	21,369
12/23/15	52	43	51	45	49	43,072	25,127
12/24/15	56	49	50	62	54	40,150	27,657
12/25/15	49	43	50	49	49	37,470	25,124
12/26/15	65	51	69	64	64	48,139	32,163
12/27/15	66	61	66	67	66	54,165	32,877
12/28/15	58	50	58	61	57	60,068	29,200
12/29/15	53	53	51	59	54	62,360	27,431
12/30/15	52	49	58	55	54	53,457	27,696
12/31/15	54	52	50	53	52	47,342	26,782
1/1/16	50	49	51	51	50	43,486	25,942
1/2/16	48	46	47	50	48	41,754	24,848
1/3/16	53	44	50	44	49	46,539	25,232
1/4/16	54	48	54	44	51	50,155	26,152
1/5/16	44	42	44	43	43	53,519	22,714
1/6/16	43	40	41	42	42	52,584	21,918
1/7/16	43	36	47	40	43	45,032	22,543
1/8/16	68	51	69	60	64	53,050	32,167
1/9/16	87	78	82	84	83	64,468	40,948
1/10/16	79	79	79	79	79	67,114	38,978
1/11/16	78	79	76	77	77	70,351	38,324
1/12/16	74	75	71	78	74	67,963	36,812
1/13/16	57	61	51	75	59	62,713	30,087
1/14/16	63	53	64	63	62	61,184	31,372
1/15/16	79	71	76	75	76	60,257	37,652
1/16/16	92	87	87	86	88	67,515	43,198
1/17/16	87	85	78	84	83	68,333	40,758
1/18/16	80	79	70	77	75	70,741	37,411
1/19/16	70	67	61	72	67	64,367	33,607
1/20/16	54	55	48	58	53	54,997	27,125
1/21/16	56	53	62	55	57	54,469	29,185
1/22/16	56	53	66	54	59	47,404	29,711
1/23/16	48	51	47	47	48	41,966	24,725
1/24/16	40	41	48	43	43	39,543	22,753
1/25/16	47	44	47	46	46	46,099	24,035
1/26/16	49	49	49	49	49	48,960	25,309
1/27/16	43	44	41	48	43	47,587	22,766
1/28/16	53	56	46	62	53	46,368	27,159
1/29/16	41	46	35	43	40	37,671	21,238
1/30/16	41	38	40	37	39	34,741	20,873
1/31/16	45	37	40	52	44	37,969	22,813
2/1/16	41	42	38	47	41	47,312	21,889
2/2/16	55	51	53	57	54	52,446	27,677
2/3/16	56	60	51	59	56	52,389	28,336
2/4/16	55	57	50	58	54	50,401	27,524
2/5/16	47	52	43	49	47	43,342	24,374
2/6/16	39	40	37	41	39	35,923	20,806
2/7/16	57	49	52	52	53	46,408	27,193
2/8/16	73	69	66	75	71	62,786	35,184
2/9/16	71	73	61	76	69	65,810	34,394
2/10/16	72	69	60	76	68	65,481	34,225
2/11/16	70	66	62	71	67	59,176	33,647
2/12/16	85	80	75	87	81	64,243	40,053
2/13/16	78	69	70	77	73	57,140	36,419
2/14/16	55	59	51	57	55	50,354	27,854
2/15/16	42	45	40	50	43	47,203	22,712
2/16/16	63	62	47	70	59	54,709	29,818
2/17/16	55	54	45	60	53	48,463	26,953
2/18/16	38	38	34	39	37	36,916	19,709
2/19/16	35	31	27	33	31	31,848	17,259
2/20/16	45	36	41	46	43	35,182	22,408
2/21/16	49	43	48	60	50	42,045	25,941
2/22/16	44	42	39	47	43	44,335	22,387
2/23/16	40	36	40	38	39	42,934	20,749
2/24/16	42	43	38	49	42	45,496	22,271
2/25/16	51	49	43	52	48	48,232	24,887
2/26/16	37	40	31	37	35	34,842	18,937
2/27/16	33	28	29	38	32	29,111	17,603
2/28/16	58	53	53	62	56	44,223	28,648
2/29/16	67	62	64	75	67	62,186	33,589
3/1/16	56	58	49	65	56	59,595	28,488
3/2/16	45	45	41	58	47	55,632	24,338
3/3/16	53	49	45	58	51	54,154	26,111
3/4/16	45	43	38	55	44	49,277	23,197
3/5/16	42	40	38	42	40	39,539	21,266
3/6/16	25	26	18	28	23	30,470	13,501
3/7/16	23	32	13	25	21	32,771	12,641
3/8/16	32	23	36	33	32	36,951	17,742
3/9/16	38	32	38	37	37	42,231	19,845
3/10/16	30	32	31	34	32	36,193	17,419

Minnesota Energy Resources Corporation  
2016-2017 Demand Entitlement  
MERC-Consolidated  
Attachment 9

3/11/16	22	21	18	24	21	29,273	12,414
3/12/16	15	16	10	19	14	25,879	9,434
3/13/16	25	25	18	18	21	30,913	12,485
3/14/16	19	22	13	22	18	33,346	11,075
3/15/16	27	30	23	27	26	40,279	14,722
3/16/16	38	36	31	39	36	53,861	19,170
3/17/16	41	37	39	46	41	51,334	21,501
3/18/16	45	47	34	51	43	44,675	22,390
3/19/16	39	42	37	43	40	40,306	20,980
3/20/16	37	37	32	42	36	36,358	19,452
3/21/16	34	34	27	39	33	44,093	17,927
3/22/16	37	39	29	44	36	48,481	19,472
3/23/16	41	44	37	46	41	44,216	21,744
3/24/16	33	38	30	38	34	36,411	18,385
3/25/16	38	30	39	41	38	33,161	20,203
3/26/16	40	36	36	42	39	32,774	20,526
3/27/16	28	33	22	29	27	28,779	15,257
3/28/16	29	30	19	29	26	35,600	14,621
3/29/16	17	19	9	20	15	34,285	9,901
3/30/16	28	28	23	24	25	36,577	14,525
3/31/16	33	33	30	35	32	36,370	17,637
4/1/16	48	43	42	50	46	37,545	23,734
4/2/16	49	46	42	50	46	36,406	24,177
4/3/16	44	43	36	50	42	34,267	22,260
4/4/16	38	37	35	43	38	39,061	20,191
4/5/16	36	34	25	32	31	39,216	16,989
4/6/16	36	33	31	34	33	37,541	18,218
4/7/16	41	40	42	41	41	39,928	21,763
4/8/16	54	52	46	54	51	40,107	26,136
4/9/16	44	42	33	45	40	36,789	21,209
4/10/16	43	31	37	40	39	38,138	20,531
4/11/16	48	42	39	47	44	46,639	22,937
4/12/16	30	30	32	32	31	37,690	17,220
4/13/16	21	26	14	22	20	28,656	11,893
4/14/16	4	9	2	9	5	23,567	5,291
4/15/16	3	6	10	2	6	19,682	5,648
4/16/16	3	6	12	6	7	26,768	6,180
4/17/16	11	10	20	23	17	24,904	10,535
4/18/16	24	29	17	26	23	32,912	13,221
4/19/16	19	26	16	15	18	30,741	11,157
4/20/16	15	14	11	15	13	29,618	9,033
4/21/16	31	16	26	32	27	32,458	15,441
4/22/16	19	27	15	23	20	24,385	11,991
4/23/16	18	23	11	22	17	27,224	10,813
4/24/16	29	34	17	28	25	29,141	14,347
4/25/16	32	35	26	32	30	37,681	16,766
4/26/16	23	28	23	25	24	31,943	14,051
4/27/16	21	27	18	23	21	31,097	12,634
4/28/16	24	29	18	24	23	27,997	13,340
4/29/16	20	23	13	24	19	21,495	11,559
4/30/16	25	28	19	24	23	24,683	13,538
5/1/16	20	25	11	22	18	23,932	11,170
5/2/16	10	12	7	13	10	24,331	7,392
5/3/16	17	13	14	19	16	29,684	10,139
5/4/16	14	18	5	17	12	29,219	8,440
5/5/16	0	2	0	0	0	21,624	3,031
5/6/16	6	0	2	3	3	15,952	4,290
5/7/16	17	16	10	20	15	19,386	9,783
5/8/16	7	14	0	12	7	20,236	5,984
5/9/16	6	17	1	6	6	24,468	5,613
5/10/16	19	23	7	7	12	26,599	8,635
5/11/16	17	18	11	17	15	26,121	9,876
5/12/16	26	16	18	24	21	28,794	12,713
5/13/16	37	32	33	34	34	31,322	18,517
5/14/16	32	33	22	33	29	29,421	16,180
5/15/16	20	16	13	28	19	24,650	11,490
5/16/16	20	21	17	25	20	28,801	12,142
5/17/16	18	16	7	19	14	26,858	9,385
5/18/16	12	14	1	12	8	26,561	6,658
5/19/16	6	8	0	6	4	22,905	4,834
5/20/16	10	9	1	8	6	20,917	5,688
5/21/16	0	3	0	5	1	16,417	3,599
5/22/16	0	0	0	0	0	16,318	2,927
5/23/16	0	0	0	2	0	23,451	3,095
5/24/16	0	2	0	3	1	26,736	3,361
5/25/16	6	18	6	5	7	25,747	6,245
5/26/16	4	7	0	4	3	20,876	4,285
5/27/16	4	11	0	1	3	16,738	4,276
5/28/16	8	8	1	8	5	13,225	5,438
5/29/16	10	3	0	10	6	11,724	5,441
5/30/16	0	3	0	3	1	12,796	3,438
5/31/16	5	22	3	14	9	24,713	6,911
6/1/16	14	11	12	9	12	27,238	8,231
6/2/16	6	9	0	12	6	23,215	5,617
6/3/16	6	15	1	3	5	20,396	5,078
6/4/16	6	12	1	12	6	16,754	5,810
6/5/16	2	3	0	4	2	17,784	3,713
6/6/16	15	11	8	20	13	27,613	8,802
6/7/16	13	14	4	19	11	25,619	8,105

Minnesota Energy Resources Corporation  
2016-2017 Demand Entitlement  
MERC-Consolidated  
Attachment 9



6/8/16	3	5	0	9	4	22,271	4,597
6/9/16	0	9	0	0	1	17,843	3,457
6/10/16	0	0	0	0	0	15,182	2,927
6/11/16	0	0	0	5	1	15,299	3,442
6/12/16	6	12	0	10	6	17,003	5,506
6/13/16	1	11	0	7	3	25,266	4,424
6/14/16	6	14	0	4	4	25,926	4,948
6/15/16	5	12	0	5	4	23,699	4,806
6/16/16	0	3	0	0	0	21,096	3,086
6/17/16	2	0	0	3	1	15,428	3,409
6/18/16	0	0	0	0	0	14,659	2,927
6/19/16	0	0	0	0	0	15,290	2,927
6/20/16	2	2	0	7	3	22,557	4,087
6/21/16	3	1	0	8	3	23,752	4,108
6/22/16	7	6	0	10	5	23,417	5,216
6/23/16	1	0	0	1	0	22,185	3,110
6/24/16	0	0	0	0	0	17,184	2,927
6/25/16	0	0	0	0	0	15,209	2,927
6/26/16	2	0	0	5	2	16,259	3,635
6/27/16	13	11	5	13	10	21,328	7,366
6/28/16	3	3	0	3	2	20,754	3,728
6/29/16	0	0	0	0	0	20,324	2,927
6/30/16	13	7	8	15	11	19,252	7,976
Totals	9,210	8,872	8,094	9,616	8,866	11,421,377	5,123,223

\* 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, 2015 through June 30, 2016

Tariff Rate Class	Rate Designation	Jul-15 Average Customers	Aug-15 Average Customers	Sep-15 Average Customers	Oct-15 Average Customers	Nov-15 Average Customers	Dec-15 Average Customers	Jan-16 Average Customers	Feb-16 Average Customers	Mar-16 Average Customers	Apr-16 Average Customers	May-16 Average Customers	Jun-16 Average Customers	Annual Average Customers
GS- Residential	MERC000002	30,716	29,012	29,240	32,608	25,483	29,895	31,482	31,337	30,131	30,343	30,246	30,317	30,068
GS-C&I <1,500 therms/yr (Small)	MERC000006	2,117	2,069	2,061	2,259	1,798	2,097	2,194	2,197	2,114	2,140	2,118	2,099	2,105
GS-C&I >1,500 therms/yr (Large)	MERC000010	3,225	3,225	3,189	3,559	2,728	3,228	3,383	3,414	3,239	3,251	3,248	3,215	3,242
Small Volume Interruptible (SVI)	MERC000017	75	75	75	75	74	73	73	68	65	16	155	51	73
Small Volume Interruptible w/Joint (SVJ)	MERC000021	5	5	5	5	5	3	5	4	3	2	7	0	4
Large Volume Interruptible (LVI)	MERC000024	8	6	8	8	7	7	7	5	7	3	13	5	7
Large Volume Interruptible w/Joint (LVJ)	N/A	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>36,146</b>	<b>34,392</b>	<b>34,578</b>	<b>38,514</b>	<b>30,095</b>	<b>35,303</b>	<b>37,144</b>	<b>37,025</b>	<b>35,559</b>	<b>35,755</b>	<b>35,787</b>	<b>35,687</b>	<b>35,499</b>



## MINNESOTA ENERGY RESOURCES - Consolidated

Projected Storage Cost - November 2016 through March 2017

Month/Year	K#118657 NNG Storage	LS Power K#130698 NNG Storage	LS Power K#130699 NNG Storage	Total NNG Storage	Projected NNG WACOG	K#118657 NNG Storage Cost	K#130698 NNG Storage Cost	K#130699 NNG Storage Cost	Total NNG Storage Cost	AECO Storage GLGT/VGT Centra Emerson	AECO Storage GLGT/VGT Centra Emerson WACOG	AECO Storage GLGT/VGT Centra Emerson Cost	NNG-ABL K#22335 NNG Storage	NNG-ABL K#22335 NNG Projected WACOG	NNG-ABL K#22335 NNG Projected Cost
Nov-16	455,259	68,250	48,750	572,259	\$ 2.4197	\$ 1,101,591	\$ 165,145	\$ 117,960	\$ 1,384,696	85,304	\$ 1.4053	\$ 119,878	34,125	\$ 2.5168	\$ 85,885
Dec-16	1,143,984	171,500	122,500	1,437,984	\$ 2.4197	\$ 2,768,101	\$ 414,979	\$ 296,414	\$ 3,479,493	231,768	\$ 1.4053	\$ 325,707	85,750	\$ 2.5168	\$ 215,814
Jan-17	1,143,984	171,500	122,500	1,437,984	\$ 2.4197	\$ 2,768,101	\$ 414,979	\$ 296,414	\$ 3,479,493	231,768	\$ 1.4053	\$ 325,707	85,750	\$ 2.5168	\$ 215,814
Feb-17	1,143,984	171,500	122,500	1,437,984	\$ 2.4197	\$ 2,768,101	\$ 414,979	\$ 296,414	\$ 3,479,493	209,339	\$ 1.4053	\$ 294,187	85,750	\$ 2.5168	\$ 215,814
Mar-17	455,259	68,250	48,750	572,259	\$ 2.4197	\$ 1,101,591	\$ 165,145	\$ 117,960	\$ 1,384,696	96,374	\$ 1.4053	\$ 135,436	34,125	\$ 2.5168	\$ 85,885
<b>Total</b>	<b>4,342,470</b>	<b>651,000</b>	<b>465,000</b>	<b>5,458,470</b>	<b>\$ 2.4197</b>	<b>\$ 10,507,485</b>	<b>\$ 1,575,226</b>	<b>\$ 1,125,162</b>	<b>\$ 13,207,873</b>	<b>854,552</b>	<b>\$ 1.4053</b>	<b>\$ 1,200,915</b>	<b>325,500</b>	<b>\$ 2.5168</b>	<b>\$ 819,211</b>

Month/Year	NNG Storage Volume	NNG Indexes Price	NNG Indexes Cost
Nov-16	572,259	\$ 2.9805	\$ 1,705,618
Dec-16	1,437,984	\$ 3.3235	\$ 4,779,140
Jan-17	1,437,984	\$ 3.6680	\$ 5,274,525
Feb-17	1,437,984	\$ 3.6630	\$ 5,267,335
Mar-17	572,259	\$ 3.3380	\$ 1,910,201
<b>Total</b>	<b>5,458,470</b>	<b>\$ 3.4693</b>	<b>\$ 18,936,819</b>

5,728,946

Month/Year	AECO Storage Volume	Total AECO Market WACOG	Total AECO Market Cost
Nov-16	85,304	\$ 2.0880	\$ 178,114
Dec-16	231,768	\$ 2.3560	\$ 546,045
Jan-17	231,768	\$ 2.4530	\$ 568,526
Feb-17	209,339	\$ 2.4530	\$ 513,508
Mar-17	96,374	\$ 2.3980	\$ 231,105
<b>Total</b>	<b>854,552</b>	<b>\$ 2.3841</b>	<b>\$ 2,037,298</b>

\$ 836,383

Month/Year	NNG-ABL Storage Volume	NNG-ABL Indexes Price	NNG-ABL Indexes Cost
Nov-16	34,125	\$ 2.9705	\$ 101,368
Dec-16	85,750	\$ 3.2985	\$ 282,846
Jan-17	85,750	\$ 3.5630	\$ 305,527
Feb-17	85,750	\$ 3.5455	\$ 304,027
Mar-17	34,125	\$ 3.3680	\$ 114,933
<b>Total</b>	<b>325,500</b>	<b>\$ 3.4061</b>	<b>\$ 1,108,702</b>

\$ 289,491

Max NNG-MERC Storage (Storage plan withdrawals through Apr 17)	5,458,470	5,869,321	06/30/16 Storage Balance - NNG-MERC	1,590,259	27.09%	1,478,941
Max AECO Storage (Storage plan withdrawals through Apr 17)	854,552	947,817	06/30/16 Storage Balance - AECO	376,203	39.69%	339,185
Max NNG-ABL Storage (Storage plan withdrawals through Apr 17)	325,500	350,000	06/30/16 Storage Balance - NNG-ABL	64,761	18.50%	60,228

Month/Year	K#118657 NNG Storage	LS Power K#130698 NNG Storage	LS Power K#130699 NNG Storage	Total NNG Storage	Projected K#118657 NNG WACOG	Projected K#130698 NNG WACOG	Projected K#130699 NNG WACOG	WACOG NNG Cost	Projected NNG Indexes Price	Projected NNG Index Cost	Additional Storage (Savings)/ Cost
Nov-16	455,259	68,250	48,750	572,259	\$ 2.4197	\$ 2.4197	\$ 2.4197	\$ 1,384,696	\$ 2.9805	\$ 1,705,618	\$ (320,921)
Dec-16	1,143,984	171,500	122,500	1,437,984	\$ 2.4197	\$ 2.4197	\$ 2.4197	\$ 3,479,493	\$ 3.3235	\$ 4,779,140	\$ (1,299,647)
Jan-17	1,143,984	171,500	122,500	1,437,984	\$ 2.4197	\$ 2.4197	\$ 2.4197	\$ 3,479,493	\$ 3.6680	\$ 5,274,525	\$ (1,795,032)
Feb-17	1,143,984	171,500	122,500	1,437,984	\$ 2.4197	\$ 2.4197	\$ 2.4197	\$ 3,479,493	\$ 3.6630	\$ 5,267,335	\$ (1,787,842)
Mar-17	455,259	68,250	48,750	572,259	\$ 2.4197	\$ 2.4197	\$ 2.4197	\$ 1,384,696	\$ 3.3380	\$ 1,910,201	\$ (525,504)
<b>Total</b>	<b>4,342,470</b>	<b>651,000</b>	<b>465,000</b>	<b>5,458,470</b>	<b>\$ 2.8092</b>	<b>\$ 2.8092</b>	<b>\$ 2.8092</b>	<b>\$ 13,207,873</b>	<b>\$ 3.1285</b>	<b>\$ 18,936,819</b>	<b>\$ (5,728,946)</b>

Month/Year	AECO Storage	AECO Storage Other WACOG	Total AECO Cost	Projected Emerson Index Price	Projected Emerson Index Cost	Additional Storage (Savings)/ Cost
Nov-16	85,304	\$ 1.4053	\$ 119,878	\$ 2.0880	\$ 178,114	\$ (58,235)
Dec-16	231,768	\$ 1.4053	\$ 325,707	\$ 2.3560	\$ 546,045	\$ (220,338)
Jan-17	231,768	\$ 1.4053	\$ 325,707	\$ 2.4530	\$ 568,526	\$ (242,819)
Feb-17	209,339	\$ 1.4053	\$ 294,187	\$ 2.4530	\$ 513,508	\$ (219,321)
Mar-17	96,374	\$ 1.4053	\$ 135,436	\$ 2.3980	\$ 231,105	\$ (95,669)
<b>Total</b>	<b>854,552</b>	<b>\$ 1.4053</b>	<b>\$ 1,200,915</b>	<b>\$ 2.3841</b>	<b>\$ 2,037,298</b>	<b>\$ (836,383)</b>

Month/Year	NNG-ABL K#22335 NNG Storage	K#22335 NNG Projected WACOG	K#22335 NNG Projected Cost	NNG-ABL Indexes Price	NNG-ABL Indexes Cost	Additional Storage (Savings)/ Cost
Nov-16	34,125	\$ 2.5168	\$ 85,885	\$ 2.9705	\$ 101,368	\$ (15,483)
Dec-16	85,750	\$ 2.5168	\$ 215,814	\$ 3.2985	\$ 282,846	\$ (67,033)
Jan-17	85,750	\$ 2.5168	\$ 215,814	\$ 3.5630	\$ 305,527	\$ (89,714)
Feb-17	85,750	\$ 2.5168	\$ 215,814	\$ 3.5455	\$ 304,027	\$ (88,213)
Mar-17	34,125	\$ 2.5168	\$ 85,885	\$ 3.3680	\$ 114,933	\$ (29,048)
<b>Total</b>	<b>325,500</b>	<b>\$ 2.5168</b>	<b>\$ 819,211</b>	<b>\$ 3.4061</b>	<b>\$ 1,108,702</b>	<b>\$ (289,491)</b>

\*Indexes and projected WACOG based on 7/14/16 market prices



**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-16-\_\_\_\_

CERTIFICATE OF SERVICE

I, Kristin M. Stastny, hereby certify that on the 1st day of August, 2016, 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](http://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 1<sup>st</sup> day of August, 2016.

/s/ Kristin M. Stastny  
Kristin M. Stastny

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Michael	Ahern	ahern.michael@dorsey.com	Dorsey & Whitney, LLP	50 S 6th St Ste 1500  Minneapolis, MN 554021498	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Julia	Anderson	Julia.Anderson@ag.state.mn.us	Office of the Attorney General-DOC	1800 BRM Tower 445 Minnesota St St. Paul, MN 551012134	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Michael	Auger	mauger@usenergyservices.com	U S Energy Services, Inc.	Suite 1200 605 Highway 169 N Minneapolis, MN 554416531	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Elizabeth	Brama	ebrama@briggs.com	Briggs and Morgan	2200 IDS Center 80 South 8th Street Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Jeanne	Cochran	Jeanne.Cochran@state.mn.us	Office of Administrative Hearings	P.O. Box 64620  St. Paul, MN 55164-0620	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Seth	DeMerritt	ssdemerritt@integrysgroup.com	MERC (Holding)	700 North Adams P.O. Box 19001 Green Bay, WI 543079001	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Ian	Dobson	ian.dobson@ag.state.mn.us	Office of the Attorney General-RUD	Antitrust and Utilities Division 445 Minnesota Street, BRM Tower St. Paul, MN 55101	Electronic Service 1400	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Darcy	Fabrizius	Darcy.fabrizius@constellation.com	Constellation Energy	N21 W23340 Ridgeview Pkwy  Waukesha, WI 53188	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Emma	Fazio	emma.fazio@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 500  Saint Paul, MN 551012198	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Daryll	Fuentes	dfuentes@usg.com	USG Corporation	550 W Adams St  Chicago, IL 60661	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Robert	Harding	robert.harding@state.mn.us	Public Utilities Commission	Suite 350 121 7th Place East  St. Paul, MN 55101	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Linda	Jensen	linda.s.jensen@ag.state.mn.us	Office of the Attorney General-DOC	1800 BRM Tower 445 Minnesota Street  St. Paul, MN 551012134	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Michael	Krikava	mkrikava@briggs.com	Briggs And Morgan, P.A.	2200 IDS Center 80 S 8th St Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Amber	Lee	ASLee@minnesotaenergyresources.com	Minnesota Energy Resources Corporation	2665 145th St W  Rosemount, MN 55068	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
John	Lindell	agorud.ecf@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012130	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Peter	Madsen	peter.madsen@ag.state.mn.us	Office of the Attorney General-DOC	Bremer Tower, Suite 1800 445 Minnesota Street St. Paul, Minnesota 55101	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Brian	Meloy	brian.meloy@stinson.com	Stinson, Leonard, Street LLP	150 S 5th St Ste 2300  Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Joseph	Meyer	joseph.meyer@ag.state.mn.us	Office of the Attorney General-RUD	Bremer Tower, Suite 1400 445 Minnesota Street St Paul, MN 55101-2131	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP	33 South Sixth St Ste 4200  Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement



First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Richard	Savelkoul	rsavelkoul@martinsquires.com	Martin & Squires, P.A.	332 Minnesota Street Ste W2750  St. Paul, MN 55101	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Janet	Shaddix Elling	jshaddix@janetshaddix.com	Shaddix And Associates	Ste 122 9100 W Bloomington Frwy Bloomington, MN 55431	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Colleen	Sipiorski	ctsipiorski@integrysgroup.com	Minnesota Energy Resources Corporation	700 North Adams Street  Green Bay, WI 54307	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Kristin	Stastny	kstastny@briggs.com	Briggs and Morgan, P.A.	2200 IDS Center 80 South 8th Street Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Eric	Swanson	eswanson@winthrop.com	Winthrop Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Casey	Whelan	cwhelan@usenergyservices.com	U.S. Energy Services, Inc.	605 Highway 169 N Ste 1200  Plymouth, MN 55441	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement
Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 551012147	Electronic Service	No	GEN_SL_Minnesota Energy Resources Corporation (HOLDING)_2016 Demand Entitlement

**MINNESOTA ENERGY RESOURCES - Consolidated**

**DESIGN-DAY DEMAND SUMMARY  
NOVEMBER 1, 2016**

Design Day Requirement		55,528
Total Peak Day Entitlement		51,149
2015/16 Firm Peak Day Actual Sendout	1/17/2016	42,679
Firm Annual Throughput - Minnesota		4,823,288
No. of Firm Customers		35,499
Department Load Factor Calculation		30.96%

**MINNESOTA ENERGY RESOURCES - Consolidated**

**MINNESOTA DESIGN DAY REQUIREMENTS  
 NOVEMBER 1, 2016  
 HDD**

Pipeline Group	2015/16 Customer Count	1/20 Design DDD	Regression Factors		Regression Total	Add Adjustment	1/20 Requirements Regression Load	Estimated Contract Demand Units	Total
			Intercept	Slope					

**VGT**

Peak		109	635	138	15,174	1,407	16,581	7	16,588
Off Peak		57	635	138	8,527	1,093	9,620	7	9,627

**GLGT**

Peak		107	1,936	243	27,666	1,928	29,594	214	29,808
Off Peak		57	1,936	243	15,167	1,845	17,012	214	17,226

**Centra**

Peak		107	356	76	8,490	642	9,132	0	9,132
Off Peak		57	356	76	4,712	447	5,159	0	5,159

**Total Consolidated**

Peak	35,499	107	2,927	457	51,330	3,977	55,307	221	55,528
Off Peak	35,499	57	2,927	457	28,406	3,385	31,791	221	32,012

**MINNESOTA ENERGY RESOURCES - Consolidated**

**DESIGN-DAY DEMAND PER CUSTOMER**

**NOVEMBER 1, 2016**

<u>Heating Season</u>	<u>No. of Firm Customers</u>	<u>Design Day Requirements</u>	<u>MMBtu /Customer /Day</u>
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
10/11	33,399	50,779	1.52
09/10	34,053	53,931	1.58
08/09	32,632	59,654	1.83
07/08	32,454	57,202	1.76

**MINNESOTA ENERGY RESOURCES - Consolidated**

**SUMMER/WINTER USAGE - Mcf**  
**PROJECTED 12 MONTHS ENDING JUNE 2016**  
**Consolidated**

<u>Class</u>	<u>Summer Apr-Oct</u>	<u>Winter Nov-Mar</u>	<u>Total</u>
GS	1,280,070	3,520,323	4,800,393
SVI	139,761	287,013	426,774
SVJ	5,477	17,418	22,895
LVI	226,964	270,875	497,839
LVJ	0	0	0
SLV	0	0	0
IS	<u>0</u>	<u>0</u>	<u>0</u>
<b>Total</b>	<u>1,652,272</u>	<u>4,095,629</u>	<u>5,747,901</u>

## MINNESOTA ENERGY RESOURCES - Consolidated

### ENTITLEMENT LEVELS PROPOSED TO BE EFFECTIVE NOVEMBER 1, 2016

<u>Capacity Type</u>	<i>Summer</i>			<i>April/October</i>			<i>Winter</i>		
	<u>2015/16</u> <u>MMBtu</u>	<u>Change</u> <u>MMBtu</u>	<u>Proposed</u> <u>MMBtu</u>	<u>2015/16</u> <u>MMBtu</u>	<u>Change</u> <u>MMBtu</u>	<u>Proposed</u> <u>MMBtu</u>	<u>2015/16</u> <u>MMBtu</u>	<u>Change</u> <u>MMBtu</u>	<u>Proposed</u> <u>MMBtu</u>
FT Western Zone FT0016	10,130	0	10,130	10,130	0	10,130	10,130	0	10,130
FT Western Zone FT15782	9,000	0	9,000	9,000	0	9,000	9,000	0	9,000
FT Western Zone (12) FT17891 (12)	3,600	0	3,600	3,600	0	3,600	3,600	0	3,600
FT Western Zone (5) FT17891 (5)	0	0	0	0	0	0	3,728	0	3,728
FT Western Zone (5) FT18283	0	0	0	0	0	0	3,300	(3,300)	0
FT-A ZONE 1 - 1 AF0012	12,493	0	12,493	12,493	0	12,493	12,493	0	12,493
FT-A ZONE 1 - 1 AF0209	0	0	0	0	0	0	1,098	0	1,098
FT-A ZONE 1 - 1 AF0102	2,000	0	2,000	2,000	0	2,000	2,000	0	2,000
FT-A ZONE 1 - 1 AF00229	0	0	0	0	0	0	1,000	(1,000)	0
CENTRA FT-1	9,100	0	9,100	9,100	0	9,100	9,100	0	9,100
<b>Total Entitlement</b>	<b><u>46,323</u></b>	<b><u>0</u></b>	<b><u>46,323</u></b>	<b><u>46,323</u></b>	<b><u>0</u></b>	<b><u>46,323</u></b>	<b><u>55,449</u></b>	<b><u>(4,300)</u></b>	<b><u>51,149</u></b>
Forecasted Design Day-Adjusted				31,599	413	32,012	53,075	2,453	55,528
Capacity Surplus/Shortage				14,724	(413)	14,311	2,374	(6,753)	(4,379)
Reserve Margin				46.60%	-1.89%	44.71%	4.47%	-12.36%	-7.89%

## MINNESOTA ENERGY RESOURCES - CONSOLIDATED

### RATE IMPACT OF THE PROPOSED DEMAND CHANGE NOVEMBER 1, 2016

All costs in \$/Dth	Base Cost of Gas G011/MR15-748 Jan 1, 2016	Demand Change  Oct 1, 2015	Demand Change  Demand Filing Nov 1, 2015	Most Recent PGA  Jul 1, 2016	Proposed Effective  Nov 1, 2016	Result of Proposed Change				
						Change from Last Rate Case	Change from Nov 1, 2015 Demand Filing	Change from Last PGA %	Change from Last PGA \$	
<b>1) General Service Residential Avg. Annual Use:</b>						<b>87</b>	<b>Dth</b>			
Commodity Cost	\$3.8521	\$3.1948	\$3.1294	\$3.1645	\$3.0993	-19.54%	-2.99%	-2.06%	(\$0.0652)	
Demand Cost	\$0.7996	\$0.7968	\$0.8006	\$0.7422	\$0.6704	-16.16%	-15.86%	-9.67%	(\$0.0718)	
Commodity Margin	\$2.3980	\$2.1806	\$2.1806	\$2.3980	\$2.3980	0.00%	9.97%	0.00%	\$0.0000	
Total Cost of Gas	\$7.0497	\$6.1722	\$6.1106	\$6.3047	\$6.1677	-12.51%	-0.07%	-2.17%	(\$0.1370)	
Avg Annual Cost	\$613.32	\$536.98	\$531.62	\$548.51	\$536.59	-12.51%	-0.07%	-2.17%	(\$11.92)	
Effect of proposed commodity change on average annual bills:									(\$5.67)	
Effect of proposed demand change on average annual bills:									(\$6.25)	
<b>2) Large General Service: Avg. Annual Use:</b>						<b>800</b>	<b>Dth</b>			
Commodity Cost	\$3.8521	\$3.1948	\$3.1294	\$3.1645	\$3.0993	-19.54%	-2.99%	-2.06%	(\$0.0652)	
Demand Cost	\$0.7996	\$0.7968	\$0.8006	\$0.7422	\$0.6704	-16.16%	-15.86%	-9.67%	(\$0.0718)	
Commodity Margin	\$1.8232	\$1.6579	\$1.6579	\$1.8232	\$1.8232	0.00%	9.97%	0.00%	\$0.0000	
Total Cost of Gas	\$6.4749	\$5.6495	\$5.5879	\$5.7299	\$5.5929	-13.62%	-1.00%	-2.39%	(\$0.1370)	
Avg Annual Cost	\$5,179.92	\$4,519.60	\$4,470.32	\$4,583.92	\$4,474.30	-13.62%	-1.00%	-2.39%	(\$109.62)	
Effect of proposed commodity change on average annual bills:									(\$52.18)	
Effect of proposed demand change on average annual bills:									(\$57.44)	
<b>3) SV Interruptible Service: Avg. Annual Use:</b>						<b>5,914</b>	<b>Dth</b>			
Commodity Cost	\$3.8521	\$3.1948	\$3.1294	\$3.1645	\$3.0993	-19.54%	-2.99%	-2.06%	(\$0.0652)	
Commodity Margin	\$0.9336	\$0.8490	\$0.8490	\$0.9336	\$0.9336	0.00%	9.96%	0.00%	\$0.0000	
Total Cost of Gas	\$4.7857	\$4.0438	\$3.9784	\$4.0981	\$4.0329	-15.73%	-0.27%	-1.59%	(\$0.0652)	
Avg Annual Cost	\$28,302.63	\$23,915.03	\$23,528.26	\$24,236.16	\$23,850.40	-15.73%	-0.27%	-1.59%	(\$385.77)	
Effect of proposed commodity change on average annual bills:									(\$385.77)	
<b>4) LV Interruptible Service: Avg. Annual Use:</b>						<b>70,770</b>	<b>Dth</b>			
Commodity Cost	\$3.8521	\$3.1948	\$3.1294	\$3.1645	\$3.0993	-19.54%	-2.99%	-2.06%	(\$0.0652)	
Commodity Margin	\$0.5007	\$0.4553	\$0.4553	\$0.5007	\$0.5007	0.00%	9.97%	0.00%	\$0.0000	
Total Cost of Gas	\$4.3528	\$3.6501	\$3.5847	\$3.6652	\$3.6000	-17.30%	-1.37%	-1.78%	(\$0.0652)	
Avg Annual Cost	\$308,047.66	\$258,317.58	\$253,689.22	\$259,386.20	\$254,769.91	-17.30%	-1.37%	-1.78%	(\$4,616.29)	
Effect of proposed commodity change on average annual bills:									(\$4,616.29)	

Note: Average Annual Average based on PNG Annual Automatic Adjustment Report in Docket No. E,G999/AA-15-612

**MINNESOTA ENERGY RESOURCES - CONSOLIDATED**

**RATE IMPACT OF THE PROPOSED DEMAND CHANGE**

**NOVEMBER 1, 2016**

<b>DEMAND</b>									
<b>Contract Type</b>		<b>Season</b>	<b>Monthly Entitlement (Dth)</b>	<b>Months</b>	<b>Rate (\$/Dth)</b>	<b>Contract Costs</b>	<b>Rate Case Sales (therms)</b>	<b>\$/therm</b>	
<b>Viking (VGT)</b>									
FT-A ZONE 1 - 1	AF0012	Annual	12,493	12	4.3706	\$ 655,223	49,765,067	\$0.01317	
FT-A ZONE 1 - 1	AF0209	Winter	1,098	3	4.3706	\$ 14,397	49,765,067	\$0.00029	
FT-A ZONE 1 - 1	AF0102	Annual	2,000	12	4.5607	\$ 109,457	49,765,067	\$0.00220	
<b>VGT Demand</b>						<b>\$ 779,077</b>	49,765,067	<b>\$0.01566</b>	
<b>Great Lakes (GLGT)</b>									
FT Western Zone	FT0016	Annual	10,130	12	\$3.8490	\$ 467,884	49,765,067	\$0.00940	
FT Western Zone	FT15782	Annual	9,000	12	\$3.8490	\$ 415,692	49,765,067	\$0.00835	
FT Western Zone (12)	FT17891 (12)	Annual	3,600	12	\$3.8490	\$ 166,277	49,765,067	\$0.00334	
FT Western Zone (5)	FT17891 (5)	Winter	3,728	5	\$3.8490	\$ 71,745	49,765,067	\$0.00144	
<b>GLGT Demand</b>						<b>\$ 1,121,598</b>	49,765,067	<b>\$0.02254</b>	
<b>Centra</b>									
CENTRA TRANSMISSION		Annual	9,100	12	\$9.8460	\$ 1,075,187	49,765,067	\$0.02161	
CENTRA MINNESOTA PIPELINES		Annual	9,100	12	\$3.2990	\$ 360,251	49,765,067	\$0.00724	
<b>Centra Demand</b>						<b>\$ 1,435,438</b>	49,765,067	<b>\$0.02884</b>	
<b>MERC-Consolidated DEMAND - \$/therm</b>						<b>\$ 3,336,113</b>		<b>\$0.06704</b>	
<b>FOR JOINT RATE DEMAND</b>					<b>49,765,067</b>	<b>Annual Firm Sales in therms</b>			
MERC-Consolidated Firm (GS) Sales as approved in Docket No. G011/MR-15-748									
<b>Viking (VGT)</b>									
FT-A ZONE 1 - 1		Annual	12,493	12	149,916				
FT-A ZONE 1 - 1		Winter	1,098	3	3,294				
FT-A ZONE 1 - 1		Annual	2,000	12	24,000				
<b>Great Lakes (GLGT)</b>									
FT Western Zone		Annual	10,130	12	121,560				
FT Western Zone		Annual	9,000	12	108,000				
FT Western Zone (12)		Annual	3,600	12	43,200				
FT Western Zone (5)		Winter	3,728	5	18,640				
<b>Centra</b>									
CENTRA TRANSMISSION		Annual	9,100	12	109,200				
CENTRA MINNESOTA PIPELINES		Annual	9,100	12	109,200				
<b>Total Demand Cost</b>			<b>\$ 3,336,113</b>						
<b>Total Demand Weighted Vol in therms</b>			<b>5,778,100</b>						
<b>Total Joint Demand Rate \$/therm</b>			<b>\$0.57737 /therm</b>						



**MINNESOTA ENERGY RESOURCES - CONSOLIDATED**  
RATE IMPACT OF THE PROPOSED DEMAND CHANGE

PRESENT AVERAGE COST OF GAS COMMODITY

NOVEMBER 1, 2015

WACOG	Rate	Annual Dth	Call Option Premium	Balancing Service	Total Annual Cost	System Cost/therm	Storage Comm Rate	Total Comm Rate	REFERENCE	Effective
<b>VGT</b>										
GAS COST	\$2.71700									
FUEL 0.00%	\$0.00000								Sub 16th Revised Sheet No. 5B	Apr. 1, 2006
COMMODITY TRANSPORTATION	\$0.01160								Sub 16th Revised Sheet No. 5B	Apr. 1, 2006
GRI	\$0.00000								Sub 16th Revised Sheet No. 5B	Apr. 1, 2006
ACA	\$0.00140								Sub 16th Revised Sheet No. 5B	Apr. 1, 2006
<b>VGT Commodity</b>	\$2.73000	2,145,731	\$31,259	\$89,580	\$5,978,685	\$0.10515			<b>VGT Commodity</b>	
<b>GLGT</b>										
GAS COST	\$2.71700									
FUEL 1.255%	\$0.03454									
COMMODITY TRANSPORTATION	\$0.00394								5 Revised Sheet 4	Jun 1, 1997
GRI	\$0.00000								Contract	Jun. 1, 2004
ACA	\$0.00140								18th Revised Sheet No. 7	Oct. 1, 2005
<b>GLGT Commodity</b>	\$2.75688	2,216,718	\$32,293	\$0	\$6,143,518	\$0.10805			<b>GLGT Commodity</b>	
<b>CENTRA</b>										
CENTRA TRANSMISSION (\$Cdn/103M3)	1.062								Sheet 1 (N.E.B.)	
Conversion	\$0.02315									
Abandonment Toll	\$0.27436								N.E.B. MO-078-2014	Jan. 1, 2015
GAS COSTS	\$2.71700									
CUSTOMS FEE	\$0.00031									
<b>CENTRA Commodity</b>	\$3.01482	1,323,492	\$19,280	\$54,000	\$4,063,375	\$0.07146			<b>Centra Commodity</b>	
<b>Consolidated WACOG w/Premium &amp; Balancing</b>		<b>5,685,941</b>	<b>\$82,832</b>	<b>\$143,580</b>	<b>\$16,185,578</b>	<b>\$0.28466</b>	<b>\$0.02527</b>			
	Total Annual Sales in therms	56,859,413								
									<b>\$0.30993 Total Consolidated WACOG-\$/therm</b>	

Balancing Service						
Pipeline	Description	Season	Monthly Entitlement (Dth)	Months	Rate (\$/Dth)	Contract Costs
VGT	Balancing Agreement	Annual	7,465	12	\$1.0000	\$89,580
GLGT	---		0	0	\$0.0000	\$0
Centra	Union Balancing	Annual	10,000	12	\$0.4500	\$54,000

Storage Service							
	Season	Monthly Entitlement (Dth)	Months	Rate (\$/Dth)	Contract Costs	Annual Sales (therms)	Rate (\$/therm)
Niska Storage (AECO)	Annual	947,820	1	\$0.4676	\$443,205	56,859,413	\$0.00779
AECO/Emerson Swap	Annual	955,255	1	\$ 1.04000	\$993,465	56,859,413	\$0.01747
					\$1,436,670	56,859,413	\$0.02527

**Total Commodity Cost: \$0.30993**

\* Per Docket No. G-007/M-07-1402-05 dated August 6th, 2014, storage demand charges will be allocated through the commodity charge effective 11/01/2014.

**MINNESOTA ENERGY RESOURCES - CONSOLIDATED**

**Financial Options  
 Heating Season 2016-2017**

**Units - Gas Daily Peaker Packages (Physical)**

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

**Units - Futures (Daily Volume)**

	<u>November</u>		<u>December</u>		<u>January</u>		<u>February</u>		<u>March</u>		<u>Term Total</u>
	<u>Contract Date</u>	<u>Daily Volume</u>	<u>Contract Date</u>	<u>Daily Volume</u>	<u>Contract Date</u>	<u>Daily Volume</u>	<u>Contract Date</u>	<u>Daily Volume</u>	<u>Contract Date</u>	<u>Daily Volume</u>	
1	05/18/16	438	05/26/16	281	05/25/16	634	05/19/16	630	05/23/16	430	72,444
2	06/02/16	313	05/26/16	224	06/20/16	634	06/14/16	630	05/23/16	54	55,288
3	-	-	06/22/16	505	-	-	-	-	06/16/16	430	28,986
4	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-
Total		<u>750</u>		<u>1,010</u>		<u>1,267</u>		<u>1,261</u>		<u>914</u>	<u>156,718</u>

**Units - Call Options (Daily Volume)**

	<u>November</u>		<u>December</u>		<u>January</u>		<u>February</u>		<u>March</u>		<u>Term Total</u>
	<u>Contract Date</u>	<u>Daily Volume</u>	<u>Contract Date</u>	<u>Daily Volume</u>	<u>Contract Date</u>	<u>Daily Volume</u>	<u>Contract Date</u>	<u>Daily Volume</u>	<u>Contract Date</u>	<u>Daily Volume</u>	
1	05/24/16	677	05/20/16	992	05/19/16	1,142	05/25/16	567	05/18/16	864	129,119
2	06/17/16	677	06/15/16	933	06/13/16	1,142	05/26/16	567	06/01/16	864	127,310
3	-	-	-	-	-	-	06/21/16	1,134	-	-	31,765
4	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-
Total		<u>1,354</u>		<u>1,925</u>		<u>2,284</u>		<u>2,269</u>		<u>1,728</u>	<u>288,194</u>

**Premium - Call Option (Monthly Cost)**

	<u>November</u>		<u>December</u>		<u>January</u>		<u>February</u>		<u>March</u>			<u>Total</u>
	<u>Option Premium</u>	<u>Premium Cost</u>	<u>Option Premium</u>	<u>Premium Cost</u>	<u>Option Premium</u>	<u>Premium Cost</u>	<u>Option Premium</u>	<u>Premium Cost</u>	<u>Option Premium</u>	<u>Premium Cost</u>		
1	\$ 0.1840	\$ 3,737	\$ 0.2420	\$ 7,440	\$ 0.2580	\$ 9,133	\$ 0.3300	\$ 5,241	\$ 0.3600	\$ 9,643	\$ 0.2726	\$ 35,194
2	\$ 0.2020	\$ 4,102	\$ 0.2410	\$ 6,974	\$ 0.2860	\$ 10,124	\$ 0.3500	\$ 5,559	\$ 0.3680	\$ 9,857	\$ 0.2876	\$ 36,616
3	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 0.3470	\$ 11,022	\$ -	\$ -	\$ 0.3470	\$ 11,022
4	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
5	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
6	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
7	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	<u>\$ 0.1930</u>	<u>\$ 7,839</u>	<u>\$ 0.2415</u>	<u>\$ 14,414</u>	<u>\$ 0.2720</u>	<u>\$ 19,257</u>	<u>\$ 0.3435</u>	<u>\$ 21,822</u>	<u>\$ 0.3640</u>	<u>\$ 19,500</u>	<u>\$ 0.2874</u>	<u>\$ 82,832</u>

**Units - Collar Floor (put)**

No Puts were purchased.

**MINNESOTA ENERGY RESOURCES - CONSOLIDATED**  
**16/17 Winter Portfolio Plan - Total MERC Hedging Plan**

Minnesota Energy Resources Corporation  
 2016-2017 Demand Entitlement  
 MERC-Consolidated

10000 Contract Size

System	Purchase Month	Nov-16		Dec-16		Jan-17		Feb-17		Mar-17		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	
<b>MN Requirements</b>			584,025		847,176		1,015,217		890,249		758,963		4,095,630	4,095,630
<b>GLGT -MN</b>			19,468		27,328		32,749		31,795		24,483		26,945	
10%	Futures		58,403		84,718		101,522		89,025		75,896		409,563	
20%	Call		116,805		169,435		203,043		178,050		151,793		819,126	
30%	Storage		175,208		254,153		304,565		267,075		227,689		1,228,689	
40%	Index		233,610		338,870		406,087		356,100		303,585		1,638,252	
Contracts	Aug-16	1	10,000	2	20,000	2	20,000	2	20,000	2	20,000	9	90,000	
	Sep-16	1	10,000	2	20,000	2	20,000	2	20,000	1	10,000	8	80,000	
	Oct-16	1	10,000	1	10,000	2	20,000	2	20,000	1	10,000	7	70,000	
	Total	1	10,000	1	10,000	2	20,000	1	10,000	1	10,000	6	60,000	
	May-16	1	10,000	1	10,000	1	10,000	1	10,000	1	10,000	5	50,000	
	Jun-16	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	10	100,000	9	90,000	7	70,000	40	400,000	9.77%
Call Options	Aug-16	2	20,000	3	30,000	4	40,000	3	30,000	3	30,000	15	150,000	
	Sep-16	2	20,000	3	30,000	4	40,000	3	30,000	3	30,000	15	150,000	
	Oct-16	2	20,000	3	30,000	3	30,000	3	30,000	3	30,000	14	140,000	
	Total	2	20,000	3	30,000	3	30,000	3	30,000	2	20,000	13	130,000	
	May-16	2	20,000	3	30,000	3	30,000	3	30,000	2	20,000	13	130,000	
	Jun-16	1	10,000	2	20,000	3	30,000	3	30,000	2	20,000	11	110,000	
	Total	11	110,000	17	170,000	20	200,000	18	180,000	15	150,000	81	810,000	19.78%
Collars	Aug-16	0	0	0	0	0	0	0	0	0	0	0	0	
	Sep-16	0	0	0	0	0	0	0	0	0	0	0	0	
	Oct-16	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	
	May-16	0	0	0	0	0	0	0	0	0	0	0	0	
	Jun-16	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		170,000		250,000		300,000		270,000		220,000		1,210,000	29.54%
Physical Hedges			0		0		0		0		0		0	
Storage			85,304		231,768		231,768		209,339		96,374		854,552	20.86%
Prepaid Obl			0		0		0		0		0		0	0.00%
			43.71%		56.87%		52.38%		53.84%		41.69%		50.41%	50.41%
Term Index	Total	0	0	0	0	0	0	0	0	0	0	0	0	0.00%
	May-16	0	0	0	0	0	0	0	0	0	0	0	0	0.00%
	Jun-16	0	0	0	0	0	0	0	0	0	0	0	0	0.00%
<b>Total NNG MN</b>													400,000	9.77%
Contracts													810,000	19.78%
Call Options													0	0.00%
Costing Collar													854,552	20.86%
Storage													0	0.00%
Prepaid Obl													0	0.00%
Term Index													0	0.00%
Month/Daily													2,031,078	49.59%
Total													4,095,630	100.00%

NOTE:



**MINNESOTA ENERGY RESOURCES - CONSOLIDATED**

	2012 Consolidated GS	2013 Consolidated GS	2014 Consolidated GS	2015 Consolidated GS	2016 Consolidated GS	Proposed Change
<b>Viking Gas Transmission (VGT)</b>						
FT-A ZONE 1 - 1	12,493	12,493	12,493	<b>12,493</b>	<b>12,493</b>	0
FT-A ZONE 1 - 1	1,098	1,098	1,098	<b>1,098</b>	<b>1,098</b>	0
FT-A ZONE 1 - 1	2,000	2,000	2,000	<b>2,000</b>	<b>2,000</b>	0
FA-A ZONE 1 - 1	0	1,500	0	<b>1,000</b>	<b>0</b>	-1,000
Wadena Delivered GDD Option	3500	0	0	<b>0</b>	<b>0</b>	0
<b>Great Lakes Gas Transmission (GLGT)</b>						
FT Western Zone	10,130	10,130	10,130	<b>10,130</b>	<b>10,130</b>	0
FT Western Zone	9,000	9,000	9,000	9,000	<b>9,000</b>	0
FT Western Zone (12)	3,600	3,600	3,600	3,600	<b>3,600</b>	0
FT Western Zone (5)	3,638	3,638	3,638	3,728	<b>3,728</b>	0
	0	0	0	<b>3,300</b>	<b>0</b>	-3,300
<b>Centra Transmission Holding/Centra Minnesota Pipelines (CTHI/CPMI)</b>						
Centra FT-1	9,500	9,500	9,500	<b>9,100</b>	<b>9,100</b>	0
Total VGT Transportation	19,091	17,091	15,591	<b>16,591</b>	<b>15,591</b>	-1,000
Total GLGT Transportation	26,368	26,368	26,368	<b>29,758</b>	<b>26,458</b>	-3,300
Total CTHI/CPMI Transportation	9,500	9,500	9,500	<b>9,100</b>	<b>9,100</b>	0
Total Transportation	54,959	52,959	51,459	<b>55,449</b>	<b>51,149</b>	-4,300
Total Seasonal Transportation	4,598	2,598	1,098	<b>2,098</b>	<b>1,098</b>	-1,000
Total Seasonal Transportation %	8.37%	4.91%	2.13%	<b>3.78%</b>	<b>2.15%</b>	-1.64%
<u>Other Entitlements not included in Peak Day Deliverability</u>						
AECO Storage	947,820	947,820	947,820	<b>947,820</b>	<b>947,820</b>	0
AECO/Emerson Swap	947,823	947,823	940,428	<b>955,255</b>	<b>955,255</b>	0

## MINNESOTA ENERGY RESOURCES - CONSOLIDATED

### Change in Costs due to November,1 2016 Change in Entitlement Levels and Related Demand Costs

	2015/16 Entitlements	2016/17 Entitlements	Entitlement Change	2016/17 Rate	Months	2015/16 Total Annual Cost	2016/17 Total Annual Cost	Total Annual Cost Change
<b>Costs Assigned in Demand Charge</b>								
<u>Viking Pipeline</u>								
FT-A ZONE 1 - 1AF0012	12,493	12,493	0	\$ 4.3706	12	\$655,223	\$655,223	\$0
FT-A ZONE 1 - 1AF0209	1,098	1,098	0	\$ 4.3706	3	\$14,397	\$14,397	\$0
FT-A ZONE 1 - 1AF0102	2,000	2,000	0	\$ 4.5607	12	\$109,457	\$109,457	\$0
FT-A ZONE 1 - AF0229 (Nov-Mar)	1,000	0	-1,000	\$ 4.7507	0	\$23,754	\$0	-\$23,754
<u>GLGTPipeline</u>								
FT Western ZoneFT0016	10,130	10,130	0	\$ 3.8490	12	\$467,884	\$467,884	\$0
FT Western ZoneFT15782	9,000	9,000	0	\$ 3.8490	12	\$415,692	\$415,692	\$0
FT Western Zone (12)FT17891 (12)	3,600	3,600	0	\$ 3.8490	12	\$166,277	\$166,277	\$0
FT Western Zone (5)FT17891 (5)	3,728	3,728	0	\$ 3.8490	5	\$71,745	\$71,745	\$0
FT Western Zone (5)FT18283 (Nov-Mar)	3,300	0	-3,300	\$ 3.8490	5	\$63,509	\$0	-\$63,509
<u>CENTRA Pipeline</u>								
CENTRA TRANSMISSION	9,100	9,100	0	\$ 9.8460	12	\$1,350,564	\$1,075,187	-\$275,377
CENTRA MINNESOTA PIPELINES	9,100	9,100	0	\$ 3.2990	12	\$355,009	\$360,251	\$5,242
<b>Total Costs Assigned to Demand Charge</b>						<b>\$3,693,510</b>	<b>\$3,336,113</b>	<b>-\$357,397</b>
<b>Costs Assigned in Commodity Charge</b>								
<u>Storage Service</u>								
Niska Storage (AECO)	947,820	947,820	0	\$ 0.4676	1	\$590,018	\$443,205	-\$146,813
AECO/Emerson Swap	955,255	955,255	0	\$ 1.0400	1	\$993,465	\$993,465	\$0
<u>Balancing</u>								
VGT Balancing Agreement	7,465	7,465	0	\$ 1.0000	12	\$89,580	\$89,580	\$0
Union Balancing	4,453	10,000	5,547	\$ 0.4500	12	\$54,000	\$54,000	\$0
<u>Call Options Premium</u>								
<b>Total Costs Assigned to Commodity Charge</b>						<b>\$307,091</b>	<b>\$82,832</b>	<b>-\$224,259</b>
						<b>\$2,034,154</b>	<b>\$1,663,082</b>	<b>-\$371,072</b>

**MINNESOTA ENERGY RESOURCES - Consolidated**

Daily Total Throughput Data - July 1, 2015 through June 30, 2016

Energy Resources Corporation  
2016-2017 Demand Entitlement  
MERC-Consolidated  
Attachment 9

Design Day:

Base	2,927
Variable	457

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 **
7/1/15	0	3	0	0	0	24,018	3,116
7/2/15	0	0	0	0	0	14,748	2,927
7/3/15	0	0	0	2	0	11,052	3,148
7/4/15	0	0	0	0	0	8,598	2,927
7/5/15	0	0	0	0	0	12,120	2,927
7/6/15	16	8	11	16	13	20,993	8,869
7/7/15	4	6	0	9	4	20,643	4,712
7/8/15	9	2	3	7	5	21,068	5,364
7/9/15	0	0	0	1	0	18,557	3,032
7/10/15	0	0	0	0	0	15,469	2,927
7/11/15	0	0	0	0	0	12,314	2,927
7/12/15	0	0	0	0	0	12,769	2,927
7/13/15	0	0	0	0	0	14,587	2,927
7/14/15	0	3	0	0	0	17,877	3,086
7/15/15	0	0	0	0	0	19,161	2,927
7/16/15	0	0	0	0	0	19,877	2,927
7/17/15	0	0	0	0	0	17,136	2,927
7/18/15	0	0	0	0	0	11,925	2,927
7/19/15	0	0	0	0	0	13,156	2,927
7/20/15	3	1	0	5	2	19,623	3,914
7/21/15	0	0	0	8	2	18,169	3,747
7/22/15	0	0	0	0	0	17,796	2,927
7/23/15	0	0	0	0	0	14,359	2,927
7/24/15	0	0	0	1	0	12,094	2,980
7/25/15	0	0	0	0	0	9,015	2,927
7/26/15	0	0	0	0	0	9,573	2,927
7/27/15	0	0	0	0	0	17,369	2,927
7/28/15	0	0	0	0	0	21,114	2,927
7/29/15	0	0	0	0	0	18,954	2,927
7/30/15	0	0	0	0	0	18,695	2,927
7/31/15	0	0	0	1	0	15,345	3,043
8/1/15	0	0	0	0	0	11,347	2,927
8/2/15	3	0	0	1	1	12,863	3,486
8/3/15	8	4	0	12	6	17,812	5,473
8/4/15	5	6	0	14	5	21,687	5,343
8/5/15	0	2	0	0	0	25,958	3,025
8/6/15	0	3	0	2	1	17,750	3,323
8/7/15	0	5	0	0	1	15,577	3,238
8/8/15	0	0	0	0	0	12,151	2,927
8/9/15	1	0	0	0	0	12,577	2,992
8/10/15	1	0	0	5	1	17,502	3,564
8/11/15	0	0	0	0	0	16,228	2,927
8/12/15	0	0	0	0	0	17,232	2,927
8/13/15	0	0	0	0	0	17,734	2,927
8/14/15	0	0	0	0	0	17,980	2,927
8/15/15	0	0	0	0	0	11,859	2,927
8/16/15	8	0	7	7	6	13,272	5,632
8/17/15	9	6	1	12	7	20,518	5,932
8/18/15	6	6	5	2	4	25,496	4,966
8/19/15	16	10	9	14	12	22,369	8,463
8/20/15	3	5	0	7	3	16,947	4,393
8/21/15	0	0	0	0	0	14,200	2,927
8/22/15	4	1	0	2	2	10,420	3,653
8/23/15	16	13	7	15	12	13,853	8,483
8/24/15	14	16	8	17	13	21,558	8,809
8/25/15	13	10	5	14	10	22,326	7,513
8/26/15	7	7	0	11	5	20,118	5,400
8/27/15	0	1	0	0	0	16,898	2,988
8/28/15	0	0	0	0	0	15,549	2,927
8/29/15	0	0	0	0	0	11,752	2,927
8/30/15	0	0	0	0	0	12,812	2,927
8/31/15	0	0	0	0	0	19,855	2,927
9/1/15	0	0	0	0	0	19,833	2,927
9/2/15	0	0	0	0	0	22,455	2,927
9/3/15	0	3	0	0	0	18,037	3,086

9/4/15	0	0	0	0	0	15,196	2,927
9/5/15	0	0	0	0	0	10,654	2,927
9/6/15	3	0	1	1	1	9,777	3,462
9/7/15	7	0	5	5	5	11,509	5,107
9/8/15	7	3	3	11	6	20,636	5,575
9/9/15	14	6	6	14	10	22,306	7,664
9/10/15	20	14	12	17	16	21,483	10,113
9/11/15	17	17	9	18	14	17,420	9,533
9/12/15	8	8	1	6	5	15,234	5,258
9/13/15	0	2	0	0	0	15,892	3,061
9/14/15	0	0	0	6	1	21,352	3,537
9/15/15	0	0	0	0	0	22,027	2,927
9/16/15	0	0	0	0	0	23,271	2,927
9/17/15	10	5	9	3	8	22,060	6,364
9/18/15	13	12	12	15	13	18,031	8,921
9/19/15	7	9	2	8	5	14,380	5,415
9/20/15	1	3	0	1	1	15,188	3,316
9/21/15	1	0	0	5	2	21,428	3,638
9/22/15	11	9	6	13	9	24,369	7,022
9/23/15	15	14	8	10	11	25,532	7,967
9/24/15	6	9	0	10	5	20,635	5,289
9/25/15	1	10	0	3	2	19,474	3,944
9/26/15	0	7	0	0	1	22,022	3,372
9/27/15	6	0	0	11	4	27,515	4,858
9/28/15	19	14	13	23	17	35,726	10,782
9/29/15	18	21	10	23	17	36,670	10,557
9/30/15	12	15	4	15	10	37,392	7,586
10/1/15	15	22	11	21	16	31,595	10,174
10/2/15	17	22	13	18	17	26,456	10,491
10/3/15	19	24	12	22	18	21,474	11,052
10/4/15	15	18	10	15	14	21,967	9,143
10/5/15	18	14	13	23	17	27,767	10,673
10/6/15	27	19	18	30	23	28,378	13,660
10/7/15	20	20	14	22	19	26,469	11,395
10/8/15	18	21	21	20	20	25,491	12,047
10/9/15	16	19	13	15	15	19,747	9,801
10/10/15	5	10	0	10	5	15,316	5,218
10/11/15	0	0	0	0	0	14,967	2,927
10/12/15	27	22	27	22	25	27,603	14,345
10/13/15	21	21	16	27	21	29,241	12,410
10/14/15	16	14	11	18	14	25,790	9,509
10/15/15	33	26	27	31	30	26,844	16,441
10/16/15	33	33	29	35	32	27,836	17,605
10/17/15	29	28	23	33	28	25,124	15,513
10/18/15	17	21	9	20	15	20,868	9,813
10/19/15	12	11	7	14	10	24,928	7,694
10/20/15	20	22	7	24	16	28,821	10,380
10/21/15	27	26	21	32	26	31,865	14,756
10/22/15	20	18	15	24	19	24,541	11,532
10/23/15	24	22	23	24	23	21,956	13,547
10/24/15	26	24	20	29	24	21,757	13,987
10/25/15	29	22	23	32	27	27,893	15,156
10/26/15	26	23	22	29	25	31,996	14,308
10/27/15	25	20	19	22	22	32,557	12,862
10/28/15	33	27	34	27	31	36,726	17,198
10/29/15	30	24	28	28	28	29,903	15,642
10/30/15	23	24	23	26	24	24,928	13,873
10/31/15	25	22	26	23	25	25,382	14,182
11/1/15	28	23	23	31	26	25,860	14,736
11/2/15	17	14	17	26	18	29,281	11,330
11/3/15	17	16	12	20	16	28,701	10,291
11/4/15	16	13	20	14	17	30,561	10,508
11/5/15	31	17	31	25	28	33,121	15,523
11/6/15	34	30	33	33	33	29,539	17,935
11/7/15	30	29	26	32	29	27,135	16,070
11/8/15	22	18	21	20	21	22,870	12,303
11/9/15	17	17	17	19	17	28,918	10,879
11/10/15	20	16	20	17	19	30,647	11,555
11/11/15	35	20	35	26	31	34,845	17,096
11/12/15	40	34	38	36	38	34,946	20,122
11/13/15	33	35	31	36	33	30,458	18,019
11/14/15	27	26	23	27	25	25,572	14,572
11/15/15	20	23	14	24	19	23,300	11,621
11/16/15	20	19	19	22	20	32,067	12,115
11/17/15	23	17	28	18	23	33,327	13,378
11/18/15	38	29	38	30	35	39,938	18,932
11/19/15	56	49	49	47	51	45,793	26,044

Minnesota Energy Resources Corporation  
2016-2017 Demand Entitlement  
MERC-Consolidated  
Attachment 9



11/20/15	51	49	49	50	50	42,377	25,787
11/21/15	51	51	47	55	51	41,135	26,054
11/22/15	44	46	39	46	43	38,166	22,618
11/23/15	42	34	31	39	37	41,556	19,644
11/24/15	37	35	31	39	35	39,709	18,916
11/25/15	43	32	45	41	42	38,784	22,035
11/26/15	59	53	57	58	57	40,112	29,125
11/27/15	55	49	52	56	53	41,271	27,167
11/28/15	47	44	43	48	45	37,805	23,566
11/29/15	44	39	34	43	40	35,584	20,989
11/30/15	38	37	34	39	37	41,911	19,789
12/1/15	37	33	45	38	40	40,889	21,096
12/2/15	44	36	51	39	44	44,693	23,077
12/3/15	40	41	43	40	41	43,654	21,790
12/4/15	33	36	40	32	36	32,147	19,245
12/5/15	35	29	38	31	34	31,549	18,524
12/6/15	30	36	40	31	34	33,304	18,599
12/7/15	36	34	36	33	35	44,014	18,893
12/8/15	34	32	36	36	35	45,555	18,750
12/9/15	27	30	29	34	30	40,936	16,456
12/10/15	34	31	30	36	32	39,889	17,741
12/11/15	36	31	34	40	35	37,827	19,065
12/12/15	34	31	37	36	35	34,622	18,884
12/13/15	38	35	37	37	37	34,280	19,776
12/14/15	45	41	39	46	43	45,334	22,403
12/15/15	44	41	41	47	43	46,439	22,610
12/16/15	47	42	49	48	47	47,515	24,499
12/17/15	57	52	56	57	56	52,101	28,345
12/18/15	68	65	64	65	65	52,664	32,832
12/19/15	58	56	55	56	56	45,194	28,529
12/20/15	45	42	49	46	46	40,062	24,045
12/21/15	46	44	49	48	47	47,033	24,476
12/22/15	41	38	41	40	40	41,878	21,369
12/23/15	52	43	51	45	49	43,072	25,127
12/24/15	56	49	50	62	54	40,150	27,657
12/25/15	49	43	50	49	49	37,470	25,124
12/26/15	65	51	69	64	64	48,139	32,163
12/27/15	66	61	66	67	66	54,165	32,877
12/28/15	58	50	58	61	57	60,068	29,200
12/29/15	53	53	51	59	54	62,360	27,431
12/30/15	52	49	58	55	54	53,457	27,696
12/31/15	54	52	50	53	52	47,342	26,782
1/1/16	50	49	51	51	50	43,486	25,942
1/2/16	48	46	47	50	48	41,754	24,848
1/3/16	53	44	50	44	49	46,539	25,232
1/4/16	54	48	54	44	51	50,155	26,152
1/5/16	44	42	44	43	43	53,519	22,714
1/6/16	43	40	41	42	42	52,584	21,918
1/7/16	43	36	47	40	43	45,032	22,543
1/8/16	68	51	69	60	64	53,050	32,167
1/9/16	87	78	82	84	83	64,468	40,948
1/10/16	79	79	79	79	79	67,114	38,978
1/11/16	78	79	76	77	77	70,351	38,324
1/12/16	74	75	71	78	74	67,963	36,812
1/13/16	57	61	51	75	59	62,713	30,087
1/14/16	63	53	64	63	62	61,184	31,372
1/15/16	79	71	76	75	76	60,257	37,652
1/16/16	92	87	87	86	88	67,515	43,198
1/17/16	87	85	78	84	83	68,333	40,758
1/18/16	80	79	70	77	75	70,741	37,411
1/19/16	70	67	61	72	67	64,367	33,607
1/20/16	54	55	48	58	53	54,997	27,125
1/21/16	56	53	62	55	57	54,469	29,185
1/22/16	56	53	66	54	59	47,404	29,711
1/23/16	48	51	47	47	48	41,966	24,725
1/24/16	40	41	48	43	43	39,543	22,753
1/25/16	47	44	47	46	46	46,099	24,035
1/26/16	49	49	49	49	49	48,960	25,309
1/27/16	43	44	41	48	43	47,587	22,766
1/28/16	53	56	46	62	53	46,368	27,159
1/29/16	41	46	35	43	40	37,671	21,238
1/30/16	41	38	40	37	39	34,741	20,873
1/31/16	45	37	40	52	44	37,969	22,813
2/1/16	41	42	38	47	41	47,312	21,889
2/2/16	55	51	53	57	54	52,446	27,677
2/3/16	56	60	51	59	56	52,389	28,336
2/4/16	55	57	50	58	54	50,401	27,524

Minnesota Energy Resources Corporation  
2016-2017 Demand Entitlement  
MERC-Consolidated  
Attachment 9

2/5/16	47	52	43	49	47	43,342	24,374
2/6/16	39	40	37	41	39	35,923	20,806
2/7/16	57	49	52	52	53	46,408	27,193
2/8/16	73	69	66	75	71	62,786	35,184
2/9/16	71	73	61	76	69	65,810	34,394
2/10/16	72	69	60	76	68	65,481	34,225
2/11/16	70	66	62	71	67	59,176	33,647
2/12/16	85	80	75	87	81	64,243	40,053
2/13/16	78	69	70	77	73	57,140	36,419
2/14/16	55	59	51	57	55	50,354	27,854
2/15/16	42	45	40	50	43	47,203	22,712
2/16/16	63	62	47	70	59	54,709	29,818
2/17/16	55	54	45	60	53	48,463	26,953
2/18/16	38	38	34	39	37	36,916	19,709
2/19/16	35	31	27	33	31	31,848	17,259
2/20/16	45	36	41	46	43	35,182	22,408
2/21/16	49	43	48	60	50	42,045	25,941
2/22/16	44	42	39	47	43	44,335	22,387
2/23/16	40	36	40	38	39	42,934	20,749
2/24/16	42	43	38	49	42	45,496	22,271
2/25/16	51	49	43	52	48	48,232	24,887
2/26/16	37	40	31	37	35	34,842	18,937
2/27/16	33	28	29	38	32	29,111	17,603
2/28/16	58	53	53	62	56	44,223	28,648
2/29/16	67	62	64	75	67	62,186	33,589
3/1/16	56	58	49	65	56	59,595	28,488
3/2/16	45	45	41	58	47	55,632	24,338
3/3/16	53	49	45	58	51	54,154	26,111
3/4/16	45	43	38	55	44	49,277	23,197
3/5/16	42	40	38	42	40	39,539	21,266
3/6/16	25	26	18	28	23	30,470	13,501
3/7/16	23	32	13	25	21	32,771	12,641
3/8/16	32	23	36	33	32	36,951	17,742
3/9/16	38	32	38	37	37	42,231	19,845
3/10/16	30	32	31	34	32	36,193	17,419
3/11/16	22	21	18	24	21	29,273	12,414
3/12/16	15	16	10	19	14	25,879	9,434
3/13/16	25	25	18	18	21	30,913	12,485
3/14/16	19	22	13	22	18	33,346	11,075
3/15/16	27	30	23	27	26	40,279	14,722
3/16/16	38	36	31	39	36	53,861	19,170
3/17/16	41	37	39	46	41	51,334	21,501
3/18/16	45	47	34	51	43	44,675	22,390
3/19/16	39	42	37	43	40	40,306	20,980
3/20/16	37	37	32	42	36	36,358	19,452
3/21/16	34	34	27	39	33	44,093	17,927
3/22/16	37	39	29	44	36	48,481	19,472
3/23/16	41	44	37	46	41	44,216	21,744
3/24/16	33	38	30	38	34	36,411	18,385
3/25/16	38	30	39	41	38	33,161	20,203
3/26/16	40	36	36	42	39	32,774	20,526
3/27/16	28	33	22	29	27	28,779	15,257
3/28/16	29	30	19	29	26	35,600	14,621
3/29/16	17	19	9	20	15	34,285	9,901
3/30/16	28	28	23	24	25	36,577	14,525
3/31/16	33	33	30	35	32	36,370	17,637
4/1/16	48	43	42	50	46	37,545	23,734
4/2/16	49	46	42	50	46	36,406	24,177
4/3/16	44	43	36	50	42	34,267	22,260
4/4/16	38	37	35	43	38	39,061	20,191
4/5/16	36	34	25	32	31	39,216	16,989
4/6/16	36	33	31	34	33	37,541	18,218
4/7/16	41	40	42	41	41	39,928	21,763
4/8/16	54	52	46	54	51	40,107	26,136
4/9/16	44	42	33	45	40	36,789	21,209
4/10/16	43	31	37	40	39	38,138	20,531
4/11/16	48	42	39	47	44	46,639	22,937
4/12/16	30	30	32	32	31	37,690	17,220
4/13/16	21	26	14	22	20	28,656	11,893
4/14/16	4	9	2	9	5	23,567	5,291
4/15/16	3	6	10	2	6	19,682	5,648
4/16/16	3	6	12	6	7	26,768	6,180
4/17/16	11	10	20	23	17	24,904	10,535
4/18/16	24	29	17	26	23	32,912	13,221
4/19/16	19	26	16	15	18	30,741	11,157
4/20/16	15	14	11	15	13	29,618	9,033
4/21/16	31	16	26	32	27	32,458	15,441

4/22/16	19	27	15	23	20	24,385	11,991
4/23/16	18	23	11	22	17	27,224	10,813
4/24/16	29	34	17	28	25	29,141	14,347
4/25/16	32	35	26	32	30	37,681	16,766
4/26/16	23	28	23	25	24	31,943	14,051
4/27/16	21	27	18	23	21	31,097	12,634
4/28/16	24	29	18	24	23	27,997	13,340
4/29/16	20	23	13	24	19	21,495	11,559
4/30/16	25	28	19	24	23	24,683	13,538
5/1/16	20	25	11	22	18	23,932	11,170
5/2/16	10	12	7	13	10	24,331	7,392
5/3/16	17	13	14	19	16	29,684	10,139
5/4/16	14	18	5	17	12	29,219	8,440
5/5/16	0	2	0	0	0	21,624	3,031
5/6/16	6	0	2	3	3	15,952	4,290
5/7/16	17	16	10	20	15	19,386	9,783
5/8/16	7	14	0	12	7	20,236	5,984
5/9/16	6	17	1	6	6	24,468	5,613
5/10/16	19	23	7	7	12	26,599	8,635
5/11/16	17	18	11	17	15	26,121	9,876
5/12/16	26	16	18	24	21	28,794	12,713
5/13/16	37	32	33	34	34	31,322	18,517
5/14/16	32	33	22	33	29	29,421	16,180
5/15/16	20	16	13	28	19	24,650	11,490
5/16/16	20	21	17	25	20	28,801	12,142
5/17/16	18	16	7	19	14	26,858	9,385
5/18/16	12	14	1	12	8	26,561	6,658
5/19/16	6	8	0	6	4	22,905	4,834
5/20/16	10	9	1	8	6	20,917	5,688
5/21/16	0	3	0	5	1	16,417	3,599
5/22/16	0	0	0	0	0	16,318	2,927
5/23/16	0	0	0	2	0	23,451	3,095
5/24/16	0	2	0	3	1	26,736	3,361
5/25/16	6	18	6	5	7	25,747	6,245
5/26/16	4	7	0	4	3	20,876	4,285
5/27/16	4	11	0	1	3	16,738	4,276
5/28/16	8	8	1	8	5	13,225	5,438
5/29/16	10	3	0	10	6	11,724	5,441
5/30/16	0	3	0	3	1	12,796	3,438
5/31/16	5	22	3	14	9	24,713	6,911
6/1/16	14	11	12	9	12	27,238	8,231
6/2/16	6	9	0	12	6	23,215	5,617
6/3/16	6	15	1	3	5	20,396	5,078
6/4/16	6	12	1	12	6	16,754	5,810
6/5/16	2	3	0	4	2	17,784	3,713
6/6/16	15	11	8	20	13	27,613	8,802
6/7/16	13	14	4	19	11	25,619	8,105
6/8/16	3	5	0	9	4	22,271	4,597
6/9/16	0	9	0	0	1	17,843	3,457
6/10/16	0	0	0	0	0	15,182	2,927
6/11/16	0	0	0	5	1	15,299	3,442
6/12/16	6	12	0	10	6	17,003	5,506
6/13/16	1	11	0	7	3	25,266	4,424
6/14/16	6	14	0	4	4	25,926	4,948
6/15/16	5	12	0	5	4	23,699	4,806
6/16/16	0	3	0	0	0	21,096	3,086
6/17/16	2	0	0	3	1	15,428	3,409
6/18/16	0	0	0	0	0	14,659	2,927
6/19/16	0	0	0	0	0	15,290	2,927
6/20/16	2	2	0	7	3	22,557	4,087
6/21/16	3	1	0	8	3	23,752	4,108
6/22/16	7	6	0	10	5	23,417	5,216
6/23/16	1	0	0	1	0	22,185	3,110
6/24/16	0	0	0	0	0	17,184	2,927
6/25/16	0	0	0	0	0	15,209	2,927
6/26/16	2	0	0	5	2	16,259	3,635
6/27/16	13	11	5	13	10	21,328	7,366
6/28/16	3	3	0	3	2	20,754	3,728
6/29/16	0	0	0	0	0	20,324	2,927
6/30/16	13	7	8	15	11	19,252	7,976
Totals	9,210	8,872	8,094	9,616	8,866	11,421,377	5,123,223

Minnesota Energy Resources Corporation  
2016-2017 Demand Entitlement  
MERC-Consolidated  
Attachment 9

\* 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, 2015 through June 30, 2016

Tariff Rate Class	Rate Designation	Jul-15 Average Customers	Aug-15 Average Customers	Sep-15 Average Customers	Oct-15 Average Customers	Nov-15 Average Customers	Dec-15 Average Customers	Jan-16 Average Customers	Feb-16 Average Customers	Mar-16 Average Customers	Apr-16 Average Customers	May-16 Average Customers	Jun-16 Average Customers	Annual Average Customers
GS- Residential	MERC000002	30,716	29,012	29,240	32,608	25,483	29,895	31,482	31,337	30,131	30,343	30,246	30,317	30,068
GS-C&I <1,500 therms/yr (Small)	MERC000006	2,117	2,069	2,061	2,259	1,798	2,097	2,194	2,197	2,114	2,140	2,118	2,099	2,105
GS-C&I >1,500 therms/yr (Large)	MERC000010	3,225	3,225	3,189	3,559	2,728	3,228	3,383	3,414	3,239	3,251	3,248	3,215	3,242
Small Volume Interruptible (SVI)	MERC000017	75	75	75	75	74	73	73	68	65	16	155	51	73
Small Volume Interruptible w/Joint (SVJ)	MERC000021	5	5	5	5	5	3	5	4	3	2	7	0	4
Large Volume Interruptible (LVI)	MERC000024	8	6	8	8	7	7	7	5	7	3	13	5	7
Large Volume Interruptible w/Joint (LVJ)	N/A	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>36,146</b>	<b>34,392</b>	<b>34,578</b>	<b>38,514</b>	<b>30,095</b>	<b>35,303</b>	<b>37,144</b>	<b>37,025</b>	<b>35,559</b>	<b>35,755</b>	<b>35,787</b>	<b>35,687</b>	<b>35,499</b>

**MINNESOTA ENERGY RESOURCES - Consolidated**  
 Projected Fixed Cost - November 2016 through March 2017

Futures Contracts WACOG

Minnesota Energy Resources Corporation  
 2016-2017 Demand Entitlement  
 MERC-Consolidated

30											31											31											Jan-17										
Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	Nov-16		Over/(Under) Market	Premium Per Unit	Premium Cost	Total Cost	Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	Dec-16		Over/(Under) Market	Premium Per Unit	Premium Cost	Total Cost	Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	Jan-17		Over/(Under) Market	Premium Per Unit	Premium Cost	Total Cost					
							LDS Settle*	LDS Settle Cost												LDS Settle*	LDS Settle Cost												LDS Settle*	LDS Settle Cost									
1	05/18/16	36607	7	70,000	\$ 2,5120	\$ 175,840	\$ 2,9330	\$ 205,310	\$ (29,470)	\$ -	\$ 175,840	1	05/26/16	30757	5	50,000	\$ 2,9590	\$ 147,950	\$ 3,2010	\$ 160,050	\$ (12,100)	\$ -	\$ 147,950	1	05/25/16	30720	11	110,000	\$3,0750	\$ 338,250	\$ 3,3330	\$ 366,630	\$ (28,380)	\$ -	\$ -	\$ 338,250							
2	06/02/16	37174	5	50,000	\$ 2,7790	\$ 138,950	\$ 2,9330	\$ 146,650	\$ (7,700)	\$ -	\$ 138,950	2	05/26/16	30758	4	40,000	\$ 2,9600	\$ 118,400	\$ 3,2010	\$ 128,040	\$ (9,640)	\$ -	\$ 118,400	2	06/20/16	31074	11	110,000	\$3,3300	\$ 366,300	\$ 3,3330	\$ 366,630	\$ (330)	\$ -	\$ -	\$ 366,300							
3												3	06/22/16	31172	9	90,000	\$ 3,1900	\$ 286,200	\$ 3,2010	\$ 286,000	\$ (1,800)	\$ -	\$ 286,200	3																			
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<b>Total</b>			12	120,000	\$ 314,790	\$ 2,6233	\$ 351,960	\$ (37,170)	\$ -	\$ -	\$ 314,790	<b>Total</b>			18	180,000	\$ 552,550	\$ 3,0697	\$ 576,180	\$ (23,630)	\$ -	\$ -	\$ 552,550	<b>Total</b>			22	220,000	\$ 704,550	\$ 3,3330	\$ 733,260	\$ (28,710)	\$ -	\$ -	\$ 704,550								
NGM	25	78.13%	9,375	93,750	\$ 2,6233	\$ 245,930	\$ 2,9330	\$ 274,989	\$ (29,099)	\$ -	\$ 245,930	NGM	36	78.26%	14,086957	140,870	\$ 3,0697	\$ 432,430	\$ 3,2010	\$ 450,923	\$ (18,493)	\$ -	\$ -	\$ 432,430	NGM	44	78.57%	17	172,857	\$3,2025	\$ 553,575	\$ 3,3330	\$ 576,133	\$ (22,558)	\$ -	\$ -	\$ 553,575						
NGM-ABL	1	3.13%	0,375	3,750	\$ 2,6233	\$ 9,837	\$ 2,9330	\$ 10,999	\$ (1,162)	\$ -	\$ 9,837	NGM-ABL	2	4.35%	0,7826987	7,826	\$ 3,0697	\$ 24,024	\$ 3,2010	\$ 25,051	\$ (1,027)	\$ -	\$ -	\$ 24,024	NGM-ABL	2	3.57%	1	7,857	\$3,2025	\$ 25,163	\$ 3,3330	\$ 26,188	\$ (1,025)	\$ -	\$ -	\$ 25,163						
Other-Cons	6	18.75%	2,25	22,500	\$ 2,6233	\$ 59,023	\$ 2,9330	\$ 65,993	\$ (6,969)	\$ -	\$ 59,023	Other-Cons	8	17.39%	3,1304348	31,304	\$ 3,0697	\$ 96,096	\$ 3,2010	\$ 100,205	\$ (4,110)	\$ -	\$ -	\$ 96,096	Other-Cons	10	17.86%	4	39,286	\$3,2025	\$ 125,813	\$ 3,3330	\$ 130,939	\$ (5,127)	\$ -	\$ -	\$ 125,813						
<b>Total</b>	32	100.0%	12	120,000	\$ 2,6233	\$ 314,790	\$ 2,9330	\$ 351,960	\$ (37,170)	\$ -	\$ 314,790	<b>Total</b>	46	100.0%	18	180,000	\$ 3,0697	\$ 552,550	\$ 3,2010	\$ 576,180	\$ (23,630)	\$ -	\$ -	\$ 552,550	<b>Total</b>	56	100.0%	22	220,000	\$ 3,2025	\$ 704,550	\$ 3,3330	\$ 733,260	\$ (28,710)	\$ -	\$ -	\$ 704,550						

  

Feb-17											Mar-17											Total																
Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	Feb-17		Over/(Under) Market	Premium Per Unit	Premium Cost	Total Cost	Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	Mar-17		Over/(Under) Market	Premium Per Unit	Premium Cost	Total Cost	Deal Number	Purchase Date	%	Number Contracts	Physical Volume	Strike Price	Strike Cost	Total		Over/(Under) Market	Premium Per Unit	Premium Cost	Total Cost
							LDS Settle*	LDS Settle Cost												LDS Settle*	LDS Settle Cost												LDS Settle*	LDS Settle Cost				
1	05/18/16	30587	10	100,000	\$ 3,0070	\$ 300,700	\$ 3,3230	\$ 332,300	\$ (31,600)	\$ -	\$ 300,700	1	05/23/16	36835	8	80,000	\$ 2,9830	\$ 238,640	\$ 3,2780	\$ 262,240	\$ (23,600)	\$ -	\$ 238,640	1			41	410,000	\$2,9302	\$ 1,201,380	\$ 3,2354	\$ 1,326,530	\$ (125,150)	\$ -	\$ -	\$ 1,201,380		
2	06/14/16	37487	10	100,000	\$ 3,2600	\$ 326,000	\$ 3,3230	\$ 332,300	\$ (6,300)	\$ -	\$ 326,000	2	05/23/16	36836	1	10,000	\$ 2,9820	\$ 29,820	\$ 3,2780	\$ 32,780	\$ (2,960)	\$ -	\$ 29,820	2			31	310,000	\$3,1596	\$ 979,470	\$ 3,2465	\$ 1,006,400	\$ (26,930)	\$ -	\$ -	\$ 979,470		
3												3	06/16/16	37541	8	80,000	\$ 3,1780	\$ 254,240	\$ 3,2780	\$ 262,240	\$ (8,000)	\$ -	\$ 254,240	3			17	170,000	\$3,1791	\$ 540,440	\$ 3,2372	\$ 550,330	\$ (9,890)	\$ -	\$ -	\$ 540,440		
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<b>Total</b>			20	200,000	\$ 626,700	\$ 3,1335	\$ 664,600	\$ (37,900)	\$ -	\$ -	\$ 626,700	<b>Total</b>			17	170,000	\$ 522,700	\$ 3,0747	\$ 557,260	\$ (34,560)	\$ -	\$ -	\$ 522,700	<b>Total</b>			89	890,000	\$ 2,721,290	\$ 3,0576	\$ 2,883,260	\$ (161,970)	\$ -	\$ -	\$ 2,721,290			
NGM	40	78.43%	16	156,863	\$ 3,1335	\$ 491,529	\$ 3,3230	\$ 521,255	\$ (29,725)	\$ -	\$ 491,529	NGM	33	78.57%	13	133,571	\$ 3,0747	\$ 410,693	\$ 3,2780	\$ 437,847	\$ (27,154)	\$ -	\$ -	\$ 410,693	NGM	178	78.41%	70	697,885	\$3,0576	\$ 2,133,875	\$ 3,2396	\$ 2,260,882	\$ (127,007)	\$ -	\$ -	\$ 2,133,875	
NGM-ABL	2	3.92%	1	7,843	\$ 3,1335	\$ 24,576	\$ 3,3230	\$ 28,063	\$ (1,486)	\$ -	\$ 24,576	NGM-ABL	2	4.76%	1	8,095	\$ 3,0747	\$ 24,890	\$ 3,2780	\$ 28,536	\$ (1,646)	\$ -	\$ -	\$ 24,890	NGM-ABL	9	3.96%	4	35,286	\$3,0576	\$ 107,893	\$ 3,2396	\$ 114,314	\$ (6,422)	\$ -	\$ -	\$ 107,893	
Other-Cons	9	18.75%	4	35,294	\$ 3,1335	\$ 110,594	\$ 3,3230	\$ 117,282	\$ (6,688)	\$ -	\$ 110,594	Other-Cons	7	16.67%	3	28,333	\$ 3,0747	\$ 87,117	\$ 3,2780	\$ 92,877	\$ (5,760)	\$ -	\$ -	\$ 87,117	Other-Cons	40	17.62											

### MINNESOTA ENERGY RESOURCES - Consolidated

Projected Storage Cost - November 2016 through March 2017

Month/ Year	K#118657 NNG Storage	LS Power K#130698 NNG Storage	LS Power K#130699 NNG Storage	Total NNG Storage	Projected NNG WACOG	K#118657 NNG Storage Cost	K#130698 NNG Storage Cost	K#130699 NNG Storage Cost	Total NNG Storage Cost	AECO Storage GLGT/VGT Centra Emerson	AECO Storage GLGT/VGT Centra Emerson WACOG	AECO Storage GLGT/VGT Centra Emerson Cost	NNG-ABL K#22335 NNG Storage	NNG-ABL K#22335 NNG Projected WACOG	NNG-ABL K#22335 NNG Projected Cost
Nov-16	455,259	68,250	48,750	572,259	\$ 2.4197	\$ 1,101,591	\$ 165,145	\$ 117,960	\$ 1,384,696	85,304	\$ 1.4053	\$ 119,878	34,125	\$ 2.5168	\$ 85,885
Dec-16	1,143,984	171,500	122,500	1,437,984	\$ 2.4197	\$ 2,768,101	\$ 414,979	\$ 296,414	\$ 3,479,493	231,768	\$ 1.4053	\$ 325,707	85,750	\$ 2.5168	\$ 215,814
Jan-17	1,143,984	171,500	122,500	1,437,984	\$ 2.4197	\$ 2,768,101	\$ 414,979	\$ 296,414	\$ 3,479,493	231,768	\$ 1.4053	\$ 325,707	85,750	\$ 2.5168	\$ 215,814
Feb-17	1,143,984	171,500	122,500	1,437,984	\$ 2.4197	\$ 2,768,101	\$ 414,979	\$ 296,414	\$ 3,479,493	209,339	\$ 1.4053	\$ 294,187	85,750	\$ 2.5168	\$ 215,814
Mar-17	455,259	68,250	48,750	572,259	\$ 2.4197	\$ 1,101,591	\$ 165,145	\$ 117,960	\$ 1,384,696	96,374	\$ 1.4053	\$ 135,436	34,125	\$ 2.5168	\$ 85,885
Total	4,342,470	651,000	465,000	5,458,470	\$ 2.4197	\$ 10,507,485	\$ 1,575,226	\$ 1,125,162	\$ 13,207,873	854,552	\$ 1.4053	\$ 1,200,915	325,500	\$ 2.5168	\$ 819,211

Month/ Year	NNG Storage Volume	NNG Indexes Price	NNG Indexes Cost
Nov-16	572,259	\$ 2.9805	\$ 1,705,618
Dec-16	1,437,984	\$ 3.3235	\$ 4,779,140
Jan-17	1,437,984	\$ 3.6680	\$ 5,274,525
Feb-17	1,437,984	\$ 3.6630	\$ 5,267,335
Mar-17	572,259	\$ 3.3380	\$ 1,910,201
Total	5,458,470	\$ 3.4693	\$ 18,936,819

5,728,946

Month/ Year	AECO Storage Volume	Total AECO Market WACOG	Total AECO Market Cost
Nov-16	85,304	\$ 2.0880	\$ 178,114
Dec-16	231,768	\$ 2.3560	\$ 546,045
Jan-17	231,768	\$ 2.4530	\$ 568,526
Feb-17	209,339	\$ 2.4530	\$ 513,508
Mar-17	96,374	\$ 2.3980	\$ 231,105
Total	854,552	\$ 2.3841	\$ 2,037,298

\$ 836,383

Month/ Year	NNG-ABL Storage Volume	NNG-ABL Indexes Price	NNG-ABL Indexes Cost
Nov-16	34,125	\$ 2.9705	\$ 101,368
Dec-16	85,750	\$ 3.2985	\$ 282,846
Jan-17	85,750	\$ 3.5630	\$ 305,527
Feb-17	85,750	\$ 3.5455	\$ 304,027
Mar-17	34,125	\$ 3.3680	\$ 114,933
Total	325,500	\$ 3.4061	\$ 1,108,702

\$ 289,491

Max NNG-MERC Storage (Storage plan withdrawals through Apr 17) 5,458,470 5,869,321 06/30/16 Storage Balance - NNG-MERC 1,590,259 27.09% 1,478,941  
 Max AECO Storage (Storage plan withdrawals through Apr 17) 854,552 947,817 06/30/16 Storage Balance - AECO 376,203 39.69% 339,185  
 Max NNG-ABL Storage (Storage plan withdrawals through Apr 17) 325,500 350,000 06/30/16 Storage Balance - NNG-ABL 64,761 18.50% 60,228

Month/ Year	K#118657 NNG Storage	LS Power K#130698 NNG Storage	LS Power K#130699 NNG Storage	Total NNG Storage	Projected K#118657 NNG WACOG	Projected K#130698 NNG WACOG	Projected K#130699 NNG WACOG	WACOG NNG Cost	Projected NNG Indexes Price	Projected NNG Index Cost	Additional Storage (Savings)/ Cost
Nov-16	455,259	68,250	48,750	572,259	\$ 2.4197	\$ 2.4197	\$ 2.4197	\$ 1,384,696	\$ 2.9805	\$ 1,705,618	\$ (320,921)
Dec-16	1,143,984	171,500	122,500	1,437,984	\$ 2.4197	\$ 2.4197	\$ 2.4197	\$ 3,479,493	\$ 3.3235	\$ 4,779,140	\$ (1,299,647)
Jan-17	1,143,984	171,500	122,500	1,437,984	\$ 2.4197	\$ 2.4197	\$ 2.4197	\$ 3,479,493	\$ 3.6680	\$ 5,274,525	\$ (1,795,032)
Feb-17	1,143,984	171,500	122,500	1,437,984	\$ 2.4197	\$ 2.4197	\$ 2.4197	\$ 3,479,493	\$ 3.6630	\$ 5,267,335	\$ (1,787,842)
Mar-17	455,259	68,250	48,750	572,259	\$ 2.4197	\$ 2.4197	\$ 2.4197	\$ 1,384,696	\$ 3.3380	\$ 1,910,201	\$ (525,504)
Total	4,342,470	651,000	465,000	5,458,470	\$ 2.8092	\$ 2.8092	\$ 2.8092	\$ 13,207,873	\$ 3.1285	\$ 18,936,819	\$ (5,728,946)

Month/ Year	AECO Storage	AECO Storage Other WACOG	Total AECO Cost	Projected Emerson Index Price	Projected Emerson Index Cost	Additional Storage (Savings)/ Cost
Nov-16	85,304	\$ 1.4053	\$ 119,878	\$ 2.0880	\$ 178,114	\$ (58,235)
Dec-16	231,768	\$ 1.4053	\$ 325,707	\$ 2.3560	\$ 546,045	\$ (220,338)
Jan-17	231,768	\$ 1.4053	\$ 325,707	\$ 2.4530	\$ 568,526	\$ (242,819)
Feb-17	209,339	\$ 1.4053	\$ 294,187	\$ 2.4530	\$ 513,508	\$ (219,321)
Mar-17	96,374	\$ 1.4053	\$ 135,436	\$ 2.3980	\$ 231,105	\$ (95,669)
Total	854,552	\$ 1.4053	\$ 1,200,915	\$ 2.3841	\$ 2,037,298	\$ (836,383)

Month/ Year	NNG-ABL K#22335 NNG Storage	K#22335 NNG Projected WACOG	K#22335 NNG Projected Cost	NNG-ABL Indexes Price	NNG-ABL Indexes Cost	Additional Storage (Savings)/ Cost
Nov-16	34,125	\$ 2.5168	\$ 85,885	\$ 2.9705	\$ 101,368	\$ (15,483)
Dec-16	85,750	\$ 2.5168	\$ 215,814	\$ 3.2985	\$ 282,846	\$ (67,033)
Jan-17	85,750	\$ 2.5168	\$ 215,814	\$ 3.5630	\$ 305,527	\$ (89,714)
Feb-17	85,750	\$ 2.5168	\$ 215,814	\$ 3.5455	\$ 304,027	\$ (88,213)
Mar-17	34,125	\$ 2.5168	\$ 85,885	\$ 3.3680	\$ 114,933	\$ (29,048)
Total	325,500	\$ 2.5168	\$ 819,211	\$ 3.4061	\$ 1,108,702	\$ (289,491)

\*Indexes and projected WACOG based on 7/14/16 market prices

