MINNESOTA ENERGY RESOURCES - NNG

DESIGN-DAY DEMAND SUMMARY

NOVEMBER 1, 2018

NNG

Design Day Requirement		273,842
Total Peak Day Entitlement		277,256
2017/18 Firm Peak Day Actual Sendout	12/31/2017	233,945
Firm Annual Throughput - Minnesota		24,507,563
No. of Firm Customers		198,628
Department Load Factor Calculation		28.70%

MINNESOTA ENERGY RESOURCES - NNG

NNG MINNESOTA DESIGN DAY REQUIREMENTS
NOVEMBER 1, 2018
NNG

Pipeline Group	2017/18 Customer Count	Zone Total Customer Count	1/20 Design DDD	Regression Factors Intercept	Regression Factors Slope	Regression Total	Regression Adjustment	1/20 Requirements Regression Load	Estimated Contract Demand Units	Total *
PEAK										
NNG	198,628	198,628	99	12,917	2,525	261,635	12,112	273,747	95	273,842
Total	198,628	198,628								273,842
OFF PEAK										
NNG	198,628	198,628	55	12,917	2,525	151,782	12,112	163,894	95	163,989
Total	198,628	198,628								163,989

* Adjusted for customer growth

MINNESOTA ENERGY RESOURCES - NNG

DESIGN-DAY DEMAND PER CUSTOMER - GS

NOVEMBER 1, 2018

NNG

Heating Season	No. of Firm Customers	Design Day Requirements	MMBtu /Customer /Day
18/19	198,628	273,842	1.38
17/18	197,991	267,783	1.35
16/17	195,311	262,324	1.34
15/16	192,016	259,076	1.35
14/15	189,078	273,917	1.45
13/14	189,254	258,913	1.37
12/13	187,545	239,325	1.28
11/12	185,890	247,982	1.33
10/11	186,610	234,907	1.26
09/10	185,811	244,601	1.32

MINNESOTA ENERGY RESOURCES - NNG

SUMMER/WINTER USAGE - Dth

PROJECTED 12 MONTHS ENDING JUNE 2019

NNG

Class	Summer Apr-Oct	Winter Nov-Mar	Total
GS	6,779,082	17,713,972	24,493,054
SVI	492,582	1,206,754	1,699,336
SVJ	5,099	7,020	12,119
LVI	494,146	627,088	1,121,234
LVJ	765	1,625	2,390
SLV			0
Total	7,771,674	19,556,459	27,328,133

Attachment 3
NNG

MINNESOTA ENERGY RESOURCES - NNG

ENTITLEMENT LEVELS
PROPOSED TO BE EFFECTIVE NOVEMBER 1, 2018

	Summer			*April/October*			*Winter*		
Capacity Type	2017/18 MMBtu	Change MMBtu	Proposed MMBtu	2017/18 MMBtu	Change MMBtu	Proposed MMBtu	2017/18 MMBtu	Change MMBtu	Proposed MMBtu
TF-12 Base & Variable	84,709	0	84,709	84,709	0	84,709	84,709	0	84,709
TF5	0	0	0	0	0	0	36,275	0	36,275
TFX - 12	32,297	15,939	48,236	32,297	15,939	48,236	32,297	15,939	48,236
TFX - 5	0	0	0	0	0	0	109,501	(5,000)	104,501
TFX- (Apr/Oct) Offpeak*	0	0	0	2,000	0	2,000	0	0	0
Bison	50,000	0	50,000	50,000	0	50,000	50,000	0	50,000
NBPL	50,000	0	50,000	50,000	0	50,000	50,000	0	50,000
Northwest Gas (Windom)	2,500	0	2,500	2,500	0	2,500	2,500	0	2,500
Northwestern Energy (Ortonville)	1,035	0	1,035	1,035	0	1,035	1,035	0	1,035
NNG Zone Delivery Call Option	0	0	0	0	0	0	0	0	0
Total	120,541	15,939	136,480	122,541	15,939	138,480	266,317	10,939	277,256
Heating Season Forecasted Design Day-Adjusted							267,783	6,059	273,842
Non-Heating Season Forecasted Design Day				162,282	1,707	163,989			
Heating Season Capacity Surplus/Shortage							(1,466)	4,880	3,414
Non-Heating Season Capacity Surplus/Shortage				(39,741)	14,232	(25,509)			
*Not included in Heating Season Total entitlement									
Reserve Margin			N3	-24.49%	8.93%	-15.56%	-0.55%	1.79%	1.25%

Attachment 4
Page 1 of 2

MINNESOTA ENERGY RESOURCES - NNG

RATE IMPACT OF THE PROPOSED DEMAND CHANGE
NOVEMBER 1, 2018

All costs in $/Dth	Base Cost of Gas G011/MR-17-564 Jan 1, 2018	Demand Charge Oct 1, 2017	Demand Charge Demand Filing Nov 1, 2017	Most Recent PGA Oct 1, 2018	Proposed Effective Nov 1, 2018	Result of Proposed Change: Change from Last Rate Case	Change from Nov 1, 2017 Demand Filing	Change from Last PGA %	Change from Last PGA $
1) General Service Residential: Avg. Annual Use:		**88**		**Dth**					
Commodity Cost	$3.7406	$3.2257	$3.0201	$3.9591	$3.7371	($0.0035)	$0.7170	-5.61%	($0.2220)
Demand Cost	$0.9361	$0.9288	$0.9328	$0.6797	$1.1467	$0.2106	$0.2139	68.71%	$0.4670
Commodity Margin	$2.6284	$2.4116	$2.4116	$2.5727	$2.5727	($0.0557)	$0.1611	0.00%	$0.0000
Total Cost of Gas	$7.3051	$6.5661	$6.3645	$7.2115	$7.4565	$0.1514	$1.0920	3.40%	$0.2450
Avg Annual Cost	$642.85	$577.82	$560.08	$634.61	$656.17	$13.33	$96.10	3.40%	$21.56
Effect of proposed commodity change on average annual bills:									($19.54)
Effect of proposed demand change on average annual bills:									$41.10
2) Small Vol. Interruptible: Avg. Annual Use:		**5,110**		**Dth**					
Commodity Cost	$3.7406	$3.2257	$3.0201	$3.8855	$3.7371	($0.0035)	$0.7170	-3.82%	($0.1484)
Demand Cost									
Commodity Margin	$1.0616	$0.9740	$0.9740	$1.0391	$1.0391	($0.0225)	$0.0651	0.00%	$0.0000
Total Cost of Gas	$4.8022	$4.1997	$3.9941	$4.9246	$4.7762	($0.0260)	$0.7821	-3.01%	($0.1484)
Avg Annual Cost	$24,539.24	$21,460.47	$20,409.85	$25,164.71	$24,406.38	($132.86)	$3,996.53	-3.01%	($758.32)
Effect of proposed commodity change on average annual bills:									($758.32)
Effect of proposed demand change on average annual bills:									$0.00
3) Large Vol. Interruptible: Avg. Annual Use:		**16,150**		**Dth**					
Commodity Cost	$3.7406	$3.2257	$3.0201	$3.8855	$3.7371	($0.0035)	$0.7170	-3.82%	($0.1484)
Demand Cost									
Commodity Margin	$0.5808	$0.5329	$0.5329	$0.5685	$0.5685	($0.0123)	$0.0356	0.00%	$0.0000
Total Cost of Gas	$4.3214	$3.7586	$3.5530	$4.4540	$4.3056	($0.0158)	$0.7526	-3.33%	($0.1484)
Avg Annual Cost	$69,790.61	$60,701.39	$57,380.95	$71,932.10	$69,535.44	($255.17)	$12,154.49	-3.33%	($2,396.66)
Effect of proposed commodity change on average annual bills:									($2,396.66)
Effect of proposed demand change on average annual bills:									$0.00
4) Small Vol. Firm: Avg. Annual Use:		**5,110**		**Dth**					
		25		**DTh**					
Commodity Cost	$3.7406	$3.2257	$3.0201	$3.8855	$3.7371	($0.0035)	$0.7170	-3.82%	($0.1484)
Demand Cost	$28.0830	$27.8640	$27.9840	$2.8101	$34.4019	$0.0000	$6.4179	1124.22%	$31.5918
Commodity Margin	$1.0616	$0.9740	$0.9740	$1.0391	$1.0391	($0.0225)	$0.0651	0.00%	$0.0000
Demand Margin	$3.2697	$3.0000	$3.0000	$3.1449	$3.1449	$3.1449	$0.1449	0.00%	$0.0000
Total Cost of Gas	$4.8022	$4.1997	$3.9941	$4.9246	$4.7762	($0.0260)	$0.7821	-3.01%	($0.1484)
Total Demand Cost	$31.3527	$30.8640	$30.9840	$5.9550	$37.5468	$6.1941	$6.5628	530.51%	$31.5918
Avg Annual Cost	$25,323.06	$22,232.07	$21,184.45	$25,313.58	$25,345.05	$21.99	$4,160.60	0.12%	$31.47
Effect of proposed commodity change on average annual bills:									($758.32)
Effect of proposed demand change on average annual bills:									$789.79
5) Large Vol. Firm: Avg. Annual Use:		**16,150**		**Dth**					
		75		**DTh**					
Commodity Cost	$3.7406	$3.2257	$3.0201	$3.8855	$3.7371	($0.0035)	$0.7170	-3.82%	($0.1484)
Demand Cost	$28.0830	$27.8640	$27.9840	$2.8101	$34.4019	$6.3189	$6.4179	1124.22%	$31.5918
Commodity Margin	$0.5808	$0.5329	$0.5329	$0.5685	$0.5685	($0.0123)	$0.0356	0.00%	$0.0000
Demand Margin	$3.2697	$3.0000	$3.0000	$3.1449	$3.1449	$0.0000	$0.1449	0.00%	$0.0000
Total Cost of Gas	$4.3214	$3.7586	$3.5530	$4.4540	$4.3056	($0.0158)	$0.7526	-3.33%	($0.1484)
Total Demand Cost	$31.3527	$30.8640	$30.9840	$5.9550	$37.5468	$37.5468	$6.5628	530.51%	$31.5918
Avg Annual Cost	$72,142.06	$63,016.19	$59,704.75	$72,378.73	$72,351.45	$2,560.84	$12,646.70	-0.04%	($27.28)
Effect of proposed commodity change on average annual bills:									($2,396.66)
Effect of proposed demand change on average annual bills:									$2,369.38

Note: Average Annual Average based on NNG Annual Automatic Adjustment Report in Docket No. E,G999/AA-17-493
Note: Commodity Cost Rates do not include ACA adjustment.

Attachment 4

MINNESOTA ENERGY RESOURCES - NNG

RATE IMPACT OF THE PROPOSED DEMAND CHANGE

NOVEMBER 1, 2018

NNG

IV. NORTHERN NATURAL GAS COMPANY'S RATES -- CURRENT COST OF GAS EFFECTIVE — **01-Nov-18**

		Tariff-Summer(7 mths)	Tariff-Winter(5 mths)	Wt. Annual	GRI	Total
TF-12B	112495	$ 5.6830	$ 10.2300	$7.5776	$0.0000	$7.5776
TF-12B Discount	112495	$ 5.6830	$ 10.0320	$7.4951	$0.0000	$7.4951
TF-12V	112495	$ 5.6830	$ 13.8660	$9.0926	$0.0000	$9.0926
TF-5	112495	$ -	$ 15.1530	$15.1530	$0.0000	$15.1530
TFX	112486	$ 5.6830	$ 15.1530	$9.6288	$0.0000	$9.6288
TFX-5	112486	$ -	$ 15.1530	$15.1530	$0.0000	$15.1530
TFX-5 Discount	112486	$ -	$ 10.0320	$10.0320	$0.0000	$10.0320
TFX Rochester	112486	$ 37.1175	$ 37.1175	$37.1175	$0.0000	$37.1175
TFX - Discount	111866	$ 2.2192	$ 15.1392	$7.6025	$0.0000	$7.6025
TFX - Discount	111866	$ 4.8640	$ 4.8640	$4.8640	$0.0000	$4.8640
TFX - Discount	111866	$ 5.4720	$ 5.4720	$5.4720	$0.0000	$5.4720
TFX-5	127852	$ -	$ 15.1530	$15.1530	$0.0000	$15.1530
Gas Cost						$2.9695 /Dth

V. ANNUAL SALES -- As approved in Docket No. G011/MR-17-564 — 264,337,861

VI. MERC-NNG'S CURRENT COST OF GAS EFFECTIVE: — **01-Nov-18**

		Contract #(s)	Monthly Entitlements (Dth)	Months	Rate $/Dth		Contract Costs	Rate/Therm
A. GS-NNG	TF12B (Max Rate) Winter	112495	46,506	5	$ 10.2300	=	$2,378,782	$ 0.01004
	TF12B (Max Rate) Summer	112495	46,506	7	$ 5.6830	=	$1,850,055	$ 0.00781
	TF12V (Max Rate)	112495	33,003	12	$ 9.0926	=	$3,600,997	$ 0.01520
	TF5 (Max Rate)	112495	36,275	5	$ 15.1530	=	$2,748,375	$ 0.01160
	TF12B (Discount-Winter)	112495	5,200	12	$ 7.4951	=	$467,694	$ 0.00197
	TFX12 (Max Rate)	112486	16,261	12	$ 9.6288	=	$1,878,887	$ 0.00793
	TFX Apr (Max Rate)	112486	2,000	1	$ 5.6830	=	$11,366	$ 0.00005
	TFX Oct (Max Rate)	112486	2,000	1	$ 5.6830	=	$11,366	$ 0.00005
	TFX5 (Max Rate)	112486	77,688	5	$ 15.1530	=	$5,886,031	$ 0.02485
	TFX5 (Discount)	112486	1,800	5	$ 10.0320	=	$90,288	$ 0.00038
	TFX12 (Rochester)	112486	10,500	12	$ 37.1175	=	$4,676,805	$ 0.01974
	TFX12 (Discount)	111866	1,283	12	$ 4.8640	=	$74,886	$ 0.00032
	TFX12 (Discount)	111866	8,271	12	$ 5.4720	=	$543,107	$ 0.00229
	TFX12 (Discount)	111866	11,921	12	$ 7.6025	=	$1,087,553	$ 0.00459
	TFX5 (Discount)	111866	379	5	$ 4.8640	=	$9,217	$ 0.00004
	TFX5 (Discount)	111866	2,445	5	$ 5.4720	=	$66,895	$ 0.00028
	TFX5 (Discount)	111866	22,189	5	$ 15.1392	=	$1,679,619	$ 0.00709
	Windom		2,500	12	$ -	=	$0	$ -
	Northwestern Energy		1,035	12	$ 8.3382	=	$103,560	$ 0.00044
	Total Demand Cost						$27,165,484	**$ 0.11467**
	As proposed in Docket No. G011/MR-17-564						236,895,506	
	GS-1 Demand Current Cost of Gas/therm							**$ 0.11467**
	GS-1 Commodity Current Cost of Gas/therm							**$ 0.37371**
	Total GS-1 Current Cost of Gas/therm							**$ 0.48838**

B. GS-NNG, SVI-NNG, LVI-NNG, SJ-NNG, LJ-NNG, SLV-Commodity

		Monthly Entitlement (Dth)	Months	Rate ($/Dth)	Contract Costs	Contract Costs	Rate ($/therm)
FDD - Reservation	118657	81,508	12	$ 1.7140	=	$1,676,457	$ 0.00634
FDD - Storage Cycle	118657	939,864	5	$ 0.3567	=	$1,676,248	$ 0.00634
FDD - Reservation	118657	5,550	12	$ 3.3157	=	$220,826	$ 0.00084
FDD - Storage Cycle	118657	64,000	5	$ 0.6901	=	$220,832	$ 0.00084
FDD - Reservation	133736	17,345	12	$ 1.7140	=	$356,752	$ 0.00135
FDD - Storage Cycle	133736	200,000	5	$ 0.3567	=	$356,700	$ 0.00135
FDD - Reservation	132024*	8,672	12	$ 1.7140	=	$178,366	$ 0.00067
FDD - Storage Cycle	132024*	100,000	5	$ 0.3567	=	$178,350	$ 0.00067
Firm Deferred Delivery Storage Contracts						$4,864,530	$ 0.01840

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

		Monthly Entitlement (Dth)	Months	Rate ($/Dth)	Contract Costs	Contract Costs	Rate ($/therm)
Bison	FT0003	50,000	12	$ 17.4896	=	$10,493,750	$ 0.03970
NBPL	T8673F	50,000	12	$ 6.3905	=	$3,834,300	$ 0.01451
						$14,328,050	$ 0.05420

Per Doct No. G-007/M-10-1166 and G-011/M-10-1168 dated January 26, 2015, recover the costs associated with Bison contract through commodity effective

	Annual Sales (Dth)		Rate ($/Dth)	Commodity Cost	Rate Case Sales (therm)	Rate ($/therm)
CD-1 Commodity	26,433,786	x	$2.9695	$78,495,128	264,337,861	$ 0.29695
SMS-Bal Service	272,160	x	$2.1800	$593,309	264,337,861	$ 0.00224
Physical Forward Start Premium				$128,700	264,337,861	$ 0.00049
Call Option Premium				$378,446	264,337,861	$ 0.00143
GS-NNG, SVI-NNG, LVI-NNG, SJ-NNG, LJ-NNG, SLV Commodity Current Cost of Gas/therm				$84,460,112	264,337,861	$ 0.37371

*Contract 132024 was transposed with contract 132112 in the 2017-2018 Demand Entitlement Filing (no impact to volumes or dollars in total)

Attachment 5

MINNESOTA ENERGY RESOURCES - NNG

Financial Options

Heating Season 2018-2019

Units - Gas Daily Peaker Packages (Physical)

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

Premium - Gas Daily Peaker (Monthly Cost)

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

Units - Futures (Dth)

	November		December		January		February		March		
	Contract Date	Daily Volume	Contract Date	Daily Volume	Contract Date	Daily Volume	Contract Date	Daily Volume	Contract Date	Daily Volume	Term Total
1	05/03/18	1,406	05/15/18	2,667	05/17/18	2,998	05/08/18	2,700	05/10/18	532	309,397
2	05/03/18	281	06/12/18	2,401	06/13/18	2,725	06/07/18	2,400	05/10/18	1,597	284,310
3	06/05/18	1,688	07/17/18	2,401	07/19/18	2,725	06/07/18	300	06/11/18	1,863	275,948
4	07/05/18	1,688	08/14/18	2,134	08/16/18	273	07/10/18	2,400	07/12/18	1,863	250,862
5	08/02/18	844	09/13/18	1,600	08/16/18	2,180	08/07/18	2,400	08/09/18	1,597	259,224
6	08/02/18	563	09/13/18	533	09/18/18	2,453	09/06/18	2,400	09/11/18	1,597	225,776
7	09/04/18	1,406	10/18/18	2,134	10/16/18	2,453	10/10/18	2,400	10/16/18	1,597	301,034
8	10/05/18	1,125									33,448
Total		9,000		13,871		15,806		15,000		10,645	1,940,000

Units - Call Options (Dth)

	November		December		January		February		March		
	Contract Date	Daily	Contract Date	Daily	Contract Date	Daily	Contract Date	Daily	Contract Date	Daily	Term Total
1	43223	3,046	43230	4,801	43228	2,972	43235	5,357	43237	3,726	597,868
2	43256	3046.153846	43262	4801.488834	43237	2701.957541	43263	5059.52381	43264	3725.806452	581158.12
3	07/05/18	3,046	07/12/18	4,535	06/07/18	5,404	07/17/18	5,060	07/19/18	3,460	648,400
4	08/02/18	3,046	08/09/18	4,535	07/10/18	5,134	08/14/18	5,060	08/16/18	3,460	640,024
5	09/04/18	3,046	09/11/18	4,535	08/07/18	5,134	09/13/18	5,060	09/18/18	3,460	640,024
6	10/05/18	2,769	10/16/18	4,535	09/06/18	5,134	10/18/18	4,762	10/10/18	3,460	623,382
7					10/10/18	5,134					159,145
8											
Total		18,000		27,742		31,613		30,357		21,290	3,890,000

Premium - Call Option (Monthly Cost)

	November		December		January		February		March		Total	
	Option Premium	Premium	Option Premium	Premium	Option Premium	Premium	Option Premium	Premium	Option Premium	Premium	Option Premium	Premium
1	0.095	8,682	0.09	13,396	0.095	8,753	0.093	13,950	0.098	11,319	0.09383297	56,100
2	0.1	9,138	0.1	14,885	0.098	8,209	0.097	13,742	0.1	11,550	0.09898045	57,523
3	$ 0.1000	$ 9,138	$ 0.0970	$ 13,636	$ 0.0990	$ 16,585	$ 0.0940	$ 13,317	$ 0.0990	$ 10,618	$ 0.0976	$ 63,293
4	$ 0.0980	$ 8,956	$ 0.0970	$ 13,636	$ 0.0970	$ 15,437	$ 0.0970	$ 13,742	$ 0.0980	$ 10,511	$ 0.0973	$ 62,281
5	$ 0.1000	$ 9,138	$ 0.0990	$ 13,917	$ 0.1000	$ 15,915	$ 0.0980	$ 13,883	$ 0.1000	$ 10,725	$ 0.0993	$ 63,578
6	$ 0.0980	$ 8,142	$ 0.0930	$ 13,074	$ 0.0950	$ 15,119	$ 0.1000	$ 13,333	$ 0.1000	$ 10,725	$ 0.0969	$ 60,392
7	$ -	$ -	$ -	$ -	$ 0.0960	$ 15,278	$ -	$ -	$ -	$ -		$ 15,278
8	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -		$ -
Total	$ 0.0985	$ 53,194	$ 0.0960	$ 82,543	$ 0.0972	$ 95,295	$ 0.0964	$ 81,967	$ 0.0992	$ 65,447	$ 0.0973	$ 378,446

Units - Collar Floor (put)

No Puts were purchased.

Attachment 6
Page 1 of 2

18/19 Winter Portfolio Plan - NNG MERC Hedging Plan

10,000 Contract Size

		Contracts		Contracts		Contracts		Contracts		Contracts		Total		Percent
System	Purchase Month	Number Contracts	Contract Volume	Number Contracts	Contract Volume	Number Contracts	Contract Volume	Number Contracts	Contract Volume	Number Contracts	Contract Volume	Number Contracts	Contract Volume	of Requirements
MN Requirements			2,729,521		4,302,043		4,900,437		4,277,234		3,347,223		19,556,458	19,556,458
Daily Average			90,984		138,776		158,079		152,758		107,975		129,513	
10%	Futures		272,952		430,204		490,044		427,723		334,722		1,955,646	
20%	Call		545,904		860,409		980,087		855,447		669,445		3,911,292	
30%	Storage		818,856		1,290,613		1,470,131		1,283,170		1,004,167		5,866,937	
40%	Index		1,091,808		1,720,817		1,960,175		1,710,894		1,338,889		7,822,583	
Futures														
Contracts	May-18	5	50,000	8	80,000	9	90,000	7	70,000	6	60,000	35	350,000	
	Jun-18	5	50,000	7	70,000	8	80,000	7	70,000	6	60,000	33	330,000	
	Jul-18	5	50,000	7	70,000	8	80,000	7	70,000	6	60,000	33	330,000	
	Aug-18	4	40,000	7	70,000	8	80,000	7	70,000	5	50,000	31	310,000	
	Sep-18	4	40,000	7	70,000	8	80,000	7	70,000	5	50,000	31	310,000	
	Oct-18	4	40,000	7	70,000	8	80,000	7	70,000	5	50,000	31	310,000	
	Total	27	270,000	43	430,000	49	490,000	42	420,000	33	330,000	194	1,940,000	**9.92%**
Call Options	May-18	9	90,000	15	150,000	17	170,000	15	150,000	11	110,000	67	670,000	
	Jun-18	9	90,000	15	150,000	17	170,000	14	140,000	11	110,000	66	660,000	
	Jul-18	9	90,000	14	140,000	16	160,000	14	140,000	11	110,000	64	640,000	
	Aug-18	9	90,000	14	140,000	16	160,000	14	140,000	11	110,000	64	640,000	
	Sep-18	9	90,000	14	140,000	16	160,000	14	140,000	11	110,000	64	640,000	
	Oct-18	9	90,000	14	140,000	16	160,000	14	140,000	11	110,000	64	640,000	
	Total	54	540,000	86	860,000	98	980,000	85	850,000	66	660,000	389	3,890,000	**19.89%**
Collars	May-18	0	0	0	0	0	0	0	0	0	0	0	0	
	Jun-18	0	0	0	0	0	0	0	0	0	0	0	0	
	Jul-18	0	0	0	0	0	0	0	0	0	0	0	0	
	Aug-18	0	0	0	0	0	0	0	0	0	0	0	0	
	Sep-18	0	0	0	0	0	0	0	0	0	0	0	0	
	Oct-18	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		810,000		1,290,000		1,470,000		1,270,000		990,000		5,830,000	**29.81%**
Physical Hedges			0		0		0		0		0		0	
Storage			635,634		1,597,234		1,597,234		1,597,234		635,634		6,062,969	**31.00%**
Prepaid Obl			0		0		0		0		0		0	**0.00%**
			53%		67%		63%		67%		49%		61%	**60.81%**
Term Index		0	0	0	0	0	0	0	0	0	0		0	**0.00%**
		0	0	0	0	0	0	0	0	0	0		0	**0.00%**
Total NNG MN														
Futures													1,940,000	**9.92%**
Call Options													3,890,000	**19.89%**
Costing Collar													0	**0.00%**
Storage													6,062,969	**31.00%**
Prepaid Obl													0	**0.00%**
Term Index													0	**0.00%**
Month/Daily													7,663,489	**39.19%**
Total													19,556,458	**100.00%**

Attachment 6
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MINNESOTA ENERGY RESOURCES

NNG WINTER PLAN
NOVEMBER 2018 THROUGH MARCH 2019

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

INDEX	Contract Number	Date	Receipt Point	Nov	Dec	Jan	Feb	Mar	Total
	64133	4/24/2018	NBPL Port of Morgan	25,000	25,000	25,000	25,000	25,000	3,775,000
	64143	4/24/2018	NBPL Port of Morgan	15,000	15,000	15,000	15,000	15,000	2,265,000
	64178	4/24/2018	NBPL Port of Morgan		10,000	10,000	10,000		900,000
	64175	4/24/2018	NNG/GLGT Carlton	3,012	3,012	3,012	3,012	3,012	454,812
	64174	4/24/2018	NNG/GLGT Grand Rapids	6,064	6,064	6,064	6,064	6,064	915,664
	64175	4/24/2018	NNG Demarc		5,000	5,000	5,000		450,000
	64138	4/24/2018	NNG Ventura		15,000	15,000	15,000		1,350,000
	64136	4/24/2018	NNG/GLGT Carlton	10,000	10,000	10,000	10,000	10,000	1,510,000
	64134	4/24/2018	NNG Ventura	5,000	5,000	5,000	5,000	5,000	755,000
	Total Actual Seasonal Index			64,076	94,076	94,076	94,076	64,076	12,375,476

GAS DAILY PACKAGES								
Physical Call Option	64139	4/24/2018	NNG Ventura	10,000	10,000	10,000	10,000	10,000
Physical Call Option	64140	4/24/2018	NNG Ventura		10,000	10,000	10,000	
Physical Call Option	64141	4/24/2018	NNG Ventura	10,000	10,000	10,000	10,000	10,000
Physical Call Option	64142	4/24/2018	NNG Ventura		10,000	10,000	10,000	

STORAGE

Injection Month	K#118657 Volume Injected	K#132024 Volume Injected	K#133736 Volume Injected	Total Volume Injected
May - balance forward	0	0	0	0
June	984,181	98,039	196,078	1,278,298
July	1,016,987	101,307	202,614	1,320,908
August	1,016,987	101,307	202,614	1,320,908
Sept	984,181	98,039	196,078	1,278,298
Oct (est)	1,016,987	101,307	202,614	1,320,908
Total	**5,019,321**	**500,000**	**1,000,000**	**6,519,321**

Attachment 7
NNG

MINNESOTA ENERGY RESOURCES - NNG

	2014-2015 NNG GS	2015-2016 NNG GS	2016-2017 NNG GS	2017-2018 NNG GS	2018-2019 NNG GS	Proposed Change
Design Day	261,002	259,076	262,324	267,783	**273,842**	6,059
Customer Requirements moving to Transportation						
Adjusted Design Day						
Design Day Percentages	28.07%	32.40%	29.71%	30.43%	**28.70%**	-1.73%
Total Design Day Capacity (includes non-recallable capacity)	266,385	266,317	266,317	266,317	**277,256**	10,939
Less: Windom	2,500	2,500	2,500	2,500	**2,500**	0
Less: Northwestern Energy	910	1,035	1,035	1,035	**1,035**	0
Total Design Day Capacity NNG Pipeline	262,975	262,782	262,782	262,782	**273,721**	10,939
Factors for All Winter Capacity	100.00%	100.00%	100.00%	100.00%	**100.00%**	
<u>Direct Assigned Entitlements in PGA</u>						
TF12B	55,019	48,183	48,183	54,419	**51,706**	**(2,713)**
TF12V	21,060	36,526	36,526	30,290	**33,003**	**2,713**
TF5	31,515	36,275	36,275	36,275	**36,275**	**0**
TFX12	32,297	32,297	32,297	32,297	**48,236**	**15,939**
TFX(5)	123,084	109,501	109,501	109,501	**104,501**	**(5,000)**
TFX(5) (12-V)						**0**
TFX (April Only)	2,000	2,000	2,000	2,000	**2,000**	**0**
TFX (October Only)	2,000	2,000	2,000	2,000	**2,000**	**0**
Windom	2,500	2,500	2,500	2,500	**2,500**	**0**
Northwestern Energy	910	1,035	1,035	1,035	**1,035**	**0**
NNG Zone Delivery Call Option	0	0	0	0	**0**	**0**
Bison *	50,000	50,000	50,000	50,000	**50,000**	**0**
NBPL *	50,000	50,000	50,000	50,000	**50,000**	**0**
Total Direct Assignments	266,385	266,317	266,317	266,317	**277,256**	**10,939**
LP Peak Shaving						**0**
Total Design Day Capacity	266,385	266,317	266,317	266,317	**277,256**	**10,939**
Total Annual Transportation	111,786	120,541	120,541	120,541	**136,480**	**15,939**
Total Seasonal Transportation	154,599	145,776	145,776	145,776	**140,776**	**(5,000)**
Total Percent Seasonal	58.0%	54.7%	54.7%	54.7%	**50.8%**	**-4.0%**
Reserve Margin	2.06%	2.79%	1.52%	-0.55%	**1.25%**	**1.8%**
Total Design Day Capacity w/ contract demand	266,385	266,317	266,317	266,317	**277,256**	10,939
Factors	28.07%	32.40%	29.71%	30.43%	**28.70%**	-1.73%
<u>Other Entitlements not included in Peak Day Deliverability</u>						
TFX Oct	2,000	2,000	2,000	2,000	**2,000**	0
TFX Apr	2,000	2,000	2,000	2,000	**2,000**	0
FDD Storage Reservation	94,863	100,934	107,871	113,075	**113,075**	0
FDD Storage Capacity	1,093,864	1,163,864	1,163,864	1,303,864	**1,303,864**	0
FDD Maximum Storage Quantity	5,469,321	5,819,321	6,219,321	6,519,321	**6,519,321**	0
SMS	22,680	24,380	24,380	22,680	**22,680**	0

Attachment 8

MINNESOTA ENERGY RESOURCES - NNG

Change in Costs due to November 1, 2018 Change in Entitlement Levels and Related Demand Costs

Costs Assigned In Demand	Contract	2017/18 Entitlements	2018/19 Entitlements	Entitlement Change	Months	2018/19 Rate	2017/18 Total Annual Cost	2018/19 Total Annual Cost	Total Annual Cost Change
TF12B (Max Rate) Winter	112495	49,219	46,506	(2,713)	5	$10.2300	$2,517,552	$2,378,782	($138,770)
TF12B (Max Rate) Summer	112495	49,219	46,506	(2,713)	7	$5.6830	$1,957,981	$1,850,055	($107,926)
TF12V (Max Rate)	112495	30,290	33,003	2,713	12	$9.0926	$3,304,978	$3,600,997	$296,019
TF5 (Max Rate)	112495	36,275	36,275	0	5	$15.1530	$2,748,375	$2,748,375	$0
TF12B (Discount-Winter)	112495	5,200	5,200	0	12	$7.4951	$467,694	$467,694	$0
TFX12 (Max Rate)	112486	10,822	16,261	5,439	12	$9.6288	$1,250,434	$1,878,887	$628,453
TFX Apr (Max Rate)	112486	2,000	2,000	0	1	$5.6830	$11,366	$11,366	$0
TFX Oct (Max Rate)	112486	2,000	2,000	0	1	$5.6830	$11,366	$11,366	$0
TFX5 (Max Rate)	112486	82,688	77,688	(5,000)	5	$15.1530	$6,264,856	$5,886,031	($378,825)
TFX5 (Discount)	112486	1,800	1,800	0	5	$10.0320	$90,288	$90,288	$0
TFX12 (Rochester)	112486	0	10,500	10,500	12	$37.1175	$0	$4,676,805	$4,676,805
TFX12 (Discount)	111866	1,283	1,283	0	12	$4.8640	$74,886	$74,886	$0
TFX12 (Discount)	111866	8,271	8,271	0	12	$5.4720	$543,107	$543,107	$0
TFX12 (Discount)	111866	11,921	11,921	0	12	$7.6025	$1,087,553	$1,087,553	$0
TFX5 (Discount)	111866	379	379	0	5	$4.8640	$9,217	$9,217	$0
TFX5 (Discount)	111866	2,445	2,445	0	5	$5.4720	$66,895	$66,895	$0
TFX5 (Discount)	111866	22,189	22,189	0	5	$15.1392	$1,679,619	$1,679,619	$0
Windom		2,500	2,500	0	12	$0.0000	$0	$0	$0
Northwestern Energy		1,035	1,035	0	12	$8.3382	$103,560	$103,560	$0
Total Demand Cost							$22,189,728	$27,165,484	$4,975,755

Costs Assigned In Commodity		2017/18 Entitlements	2018/19 Entitlement	Entitlement Change	Months	2018/19 Rate/Dth	2017/18 Total Annual Cost	Entitlement Total Cost	Entitlement Change
Upstream Surcharges:									
Storage (FDD)									
FDD - Reservation	118657	81,508	81,508	0	12	$ 1.7140	$1,676,457	$1,676,457	$0
FDD - Storage Cycle	118657	939,864	939,864	0	5	$ 0.3567	$1,676,248	$1,676,248	$0
FDD - Reservation	118657	5,550	5,550	0	12	$ 3.3157	$220,826	$220,826	$0
FDD - Storage Cycle	118657	64,000	64,000	0	5	$ 0.6901	$220,832	$220,832	$0
FDD - Reservation	133736	17,345	17,345	0	12	$ 1.7140	$356,748	$356,752	$4
FDD - Storage Cycle	133736	200,000	200,000	0	5	$ 0.3567	$356,700	$356,700	$0
FDD - Reservation	132024*	8,672	8,672	0	12	$ 1.7140	$178,374	$178,366	($8)
FDD - Storage Cycle	132024*	100,000	100,000	0	5	$ 0.3567	$178,350	$178,350	$0
Pipeline									
Bison	FT0003	50,000	50,000	0	12	$17.4896	$10,493,750	$10,493,750	$0
NBPL	T8673F	50,000	50,000	0	12	$6.3905	$4,197,500	$3,834,300	($363,200)
SMS-Bal Service		272,160	272,160	0	1	$2.1800	$593,309	$593,309	$0
Physical Forward Start Premium							$53,820	$128,700	$74,880
Financial Call Option Premium							$713,379	$378,446	($334,933)
Total Commodity Costs							$20,916,292	$20,293,034	($623,257)

*Contract 132024 was transposed with contract 132112 in the 2017-2018 Demand Entitlement Filing (no impact to volumes or dollars in total)

Attachment 9

MINNESOTA ENERGY RESOURCES - NNG

Daily Total Throughput Data - July 1, 2017 through June 30, 2018
NNG

Design Day:	
Base	12,917
Variable	2,525

Date	13.98% Cloquet Adjusted HDD	29.22% Minneapolis Adjusted HDD	45.15% Rochester Adjusted HDD	11.65% Worthington Adjusted HDD	100.00% Weighted Adjusted HDD	Actual Total Through-Put *	Estimated Firm Through-Put **
7/1/17	4	0	0	0	1	134,314	**14,400**
7/2/17	5	0	0	0	1	134,736	**14,541**
7/3/17	2	0	0	0	0	143,865	**13,482**
7/4/17	0	0	0	0	0	136,745	**12,917**
7/5/17	0	0	0	0	0	182,646	**12,917**
7/6/17	0	0	0	0	0	175,415	**12,917**
7/7/17	4	0	0	0	1	154,460	**14,223**
7/8/17	0	0	0	0	0	143,068	**12,917**
7/9/17	2	0	0	0	0	145,872	**13,658**
7/10/17	0	0	0	0	0	172,886	**12,917**
7/11/17	0	0	0	0	0	167,683	**12,917**
7/12/17	11	0	0	0	2	162,048	**16,906**
7/13/17	11	0	2	4	3	160,010	**19,756**
7/14/17	0	0	2	0	1	160,071	**14,741**
7/15/17	0	0	0	0	0	148,767	**12,917**
7/16/17	8	0	0	0	1	138,265	**15,564**
7/17/17	0	0	0	0	0	173,479	**12,917**
7/18/17	2	0	0	0	0	186,847	**13,482**
7/19/17	0	0	0	0	0	186,200	**12,917**
7/20/17	0	0	0	0	0	179,568	**12,917**
7/21/17	0	0	0	0	0	163,926	**12,917**
7/22/17	1	0	0	0	0	146,884	**13,093**
7/23/17	5	0	0	0	1	141,276	**14,753**
7/24/17	0	0	0	0	0	163,000	**12,917**
7/25/17	0	0	0	0	0	164,315	**12,917**
7/26/17	0	0	0	0	0	175,732	**12,917**
7/27/17	0	0	0	0	0	178,086	**12,917**
7/28/17	0	0	0	0	0	164,295	**12,917**
7/29/17	0	0	0	0	0	138,490	**12,917**
7/30/17	0	0	0	0	0	150,876	**12,917**
7/31/17	0	0	0	0	0	167,940	**12,917**
8/1/17	0	0	0	0	0	162,901	**12,917**
8/2/17	5	0	0	0	1	161,682	**14,823**
8/3/17	14	10	8	10	10	146,758	**37,227**
8/4/17	4	0	4	2	3	139,813	**19,922**
8/5/17	5	0	0	2	1	133,498	**15,011**
8/6/17	6	0	3	2	2	135,656	**18,476**

8/7/17	0	0	0	2	0	139,036	**13,388**
8/8/17	0	0	0	0	0	149,729	**12,917**
8/9/17	0	0	0	0	0	135,042	**12,917**
8/10/17	7	0	1	3	2	137,327	**16,972**
8/11/17	5	0	1	2	1	129,955	**15,587**
8/12/17	1	0	1	0	1	120,116	**14,234**
8/13/17	2	0	0	1	0	119,226	**13,594**
8/14/17	5	0	0	3	1	150,863	**15,482**
8/15/17	0	0	0	1	0	136,227	**13,064**
8/16/17	3	0	0	0	0	137,959	**13,905**
8/17/17	7	0	1	0	1	124,165	**16,466**
8/18/17	1	0	5	0	2	135,719	**18,452**
8/19/17	0	0	0	0	0	131,066	**12,917**
8/20/17	0	0	0	0	0	143,472	**12,917**
8/21/17	5	0	0	3	1	158,155	**15,723**
8/22/17	7	0	5	4	4	149,475	**22,177**
8/23/17	10	0	2	0	2	155,588	**18,920**
8/24/17	10	0	3	0	3	156,771	**19,666**
8/25/17	5	1	2	0	2	153,449	**17,888**
8/26/17	6	1	2	0	2	146,772	**18,461**
8/27/17	5	0	0	0	1	141,247	**14,611**
8/28/17	2	0	3	2	2	141,896	**17,712**
8/29/17	0	0	1	0	0	134,354	**13,487**
8/30/17	4	0	0	0	1	138,525	**14,435**
8/31/17	11	4	8	2	7	149,275	**29,520**
9/1/17	7	2	5	0	4	142,481	**22,166**
9/2/17	0	0	1	0	0	135,179	**13,487**
9/3/17	0	0	0	0	0	135,118	**12,917**
9/4/17	10	2	7	8	6	144,795	**27,968**
9/5/17	16	10	12	13	12	157,705	**43,432**
9/6/17	14	7	15	12	12	151,483	**42,887**
9/7/17	19	2	5	3	6	150,744	**27,578**
9/8/17	12	5	8	3	7	144,384	**30,957**
9/9/17	6	0	1	0	1	136,454	**15,825**
9/10/17	0	0	1	0	0	128,896	**13,601**
9/11/17	3	0	0	0	0	136,940	**13,835**
9/12/17	0	0	0	0	0	141,515	**12,917**
9/13/17	0	0	0	0	0	141,032	**12,917**
9/14/17	0	0	0	0	0	150,127	**12,917**
9/15/17	7	0	0	0	1	149,226	**15,247**
9/16/17	4	1	1	16	3	147,345	**20,283**
9/17/17	16	5	7	8	8	141,665	**32,340**
9/18/17	12	8	9	5	9	152,327	**34,797**
9/19/17	2	0	0	0	0	150,087	**13,482**
9/20/17	10	1	0	5	2	164,891	**18,193**
9/21/17	4	0	0	0	1	151,335	**14,435**
9/22/17	0	0	0	0	0	171,133	**12,917**
9/23/17	0	0	0	0	0	167,884	**12,917**
9/24/17	0	0	0	0	0	158,531	**12,917**

9/25/17	11	5	0	13	4	171,764	**24,260**
9/26/17	15	10	12	15	12	169,258	**43,638**
9/27/17	13	8	12	9	10	147,982	**39,177**
9/28/17	11	5	6	5	6	150,031	**28,274**
9/29/17	20	10	14	10	13	151,618	**46,294**
9/30/17	11	5	8	5	7	141,518	**31,096**
10/1/17	9	7	3	8	6	137,165	**27,376**
10/2/17	8	1	0	8	2	141,678	**18,210**
10/3/17	13	8	7	15	9	150,330	**34,961**
10/4/17	18	11	13	13	13	156,078	**46,514**
10/5/17	21	9	11	11	12	173,544	**42,357**
10/6/17	17	9	8	14	10	156,925	**38,194**
10/7/17	11	7	13	5	10	146,242	**37,981**
10/8/17	11	7	5	11	7	155,896	**30,240**
10/9/17	29	21	19	28	22	199,006	**67,694**
10/10/17	25	21	22	29	23	206,337	**71,060**
10/11/17	19	16	17	17	17	184,858	**55,440**
10/12/17	15	11	12	15	12	171,461	**43,800**
10/13/17	24	13	18	19	17	191,403	**56,620**
10/14/17	21	18	21	23	21	189,832	**64,857**
10/15/17	25	20	24	21	23	180,544	**70,125**
10/16/17	16	12	14	9	13	171,847	**45,568**
10/17/17	9	4	6	3	6	156,185	**26,838**
10/18/17	12	7	12	10	10	165,544	**38,738**
10/19/17	10	6	7	4	7	171,916	**30,408**
10/20/17	1	0	0	0	0	158,481	**13,305**
10/21/17	11	7	9	11	9	153,012	**36,184**
10/22/17	14	10	14	14	13	162,202	**44,734**
10/23/17	21	18	20	26	20	191,341	**63,582**
10/24/17	28	23	28	27	26	210,022	**79,622**
10/25/17	22	17	20	13	19	215,235	**60,182**
10/26/17	28	23	27	32	26	225,555	**79,278**
10/27/17	39	39	41	48	41	244,996	**116,747**
10/28/17	40	36	40	35	38	256,473	**109,919**
10/29/17	35	30	33	30	32	222,605	**93,514**
10/30/17	38	37	40	48	40	277,342	**113,469**
10/31/17	43	38	41	43	41	298,621	**115,555**
11/1/17	39	33	35	31	34	264,164	**99,879**
11/2/17	37	35	34	34	34	275,859	**99,898**
11/3/17	39	35	36	37	36	288,520	**103,792**
11/4/17	34	28	28	32	29	248,739	**86,904**
11/5/17	48	41	40	46	42	275,257	**119,082**
11/6/17	48	38	38	41	39	321,192	**112,299**
11/7/17	46	36	40	39	39	318,725	**112,340**
11/8/17	50	38	38	41	40	288,598	**113,773**
11/9/17	66	55	56	55	57	352,636	**156,273**
11/10/17	55	48	51	49	50	323,627	**140,376**
11/11/17	39	33	38	34	36	284,439	**104,388**
11/12/17	43	35	37	33	37	275,278	**106,303**

11/13/17	37	29	33	30	32	264,026	**93,410**
11/14/17	31	25	26	27	27	238,719	**80,036**
11/15/17	44	38	41	44	41	281,980	**115,861**
11/16/17	41	36	40	40	39	278,512	**111,522**
11/17/17	39	32	34	31	34	253,880	**97,980**
11/18/17	53	43	45	46	45	276,428	**127,694**
11/19/17	46	36	41	31	39	268,800	**110,871**
11/20/17	42	33	33	39	35	261,438	**101,823**
11/21/17	53	49	52	53	51	305,673	**142,186**
11/22/17	50	42	45	45	45	289,285	**126,046**
11/23/17	38	27	31	26	30	222,077	**89,775**
11/24/17	36	21	22	24	24	218,874	**72,268**
11/25/17	44	34	37	30	36	247,108	**104,495**
11/26/17	30	25	26	20	26	225,667	**77,628**
11/27/17	25	17	22	17	20	203,493	**63,808**
11/28/17	40	29	35	32	33	233,907	**97,198**
11/29/17	40	31	33	31	33	235,905	**96,884**
11/30/17	33	29	33	28	31	232,637	**91,985**
12/1/17	34	26	28	29	28	226,491	**84,445**
12/2/17	32	28	30	25	29	227,440	**86,704**
12/3/17	30	22	24	25	24	202,363	**74,060**
12/4/17	45	33	32	41	35	232,775	**102,094**
12/5/17	60	55	58	52	57	315,473	**155,629**
12/6/17	62	58	58	62	59	323,825	**162,591**
12/7/17	55	53	58	59	56	311,169	**154,377**
12/8/17	54	45	47	51	48	283,474	**133,611**
12/9/17	53	46	51	46	49	284,555	**136,799**
12/10/17	49	40	45	34	43	270,275	**120,468**
12/11/17	57	51	54	50	53	299,162	**146,724**
12/12/17	58	49	51	44	50	290,554	**140,305**
12/13/17	53	48	54	44	51	303,048	**141,243**
12/14/17	55	48	53	43	51	306,742	**140,662**
12/15/17	54	40	41	34	42	268,491	**118,599**
12/16/17	48	43	39	36	41	262,642	**116,032**
12/17/17	45	40	40	39	41	268,180	**115,834**
12/18/17	39	32	38	33	36	256,586	**102,893**
12/19/17	56	43	41	39	43	274,462	**122,456**
12/20/17	59	50	48	46	50	304,445	**138,790**
12/21/17	53	48	49	60	50	301,395	**140,400**
12/22/17	55	50	57	58	55	306,400	**151,506**
12/23/17	54	51	59	59	56	307,332	**154,196**
12/24/17	70	60	66	68	65	321,936	**177,026**
12/25/17	88	78	80	82	81	377,648	**217,336**
12/26/17	85	74	82	83	80	417,607	**214,741**
12/27/17	78	70	75	76	74	398,760	**199,631**
12/28/17	77	65	67	65	68	369,431	**183,937**
12/29/17	84	80	80	83	81	385,963	**216,739**
12/30/17	91	84	86	91	86	412,689	**230,896**
12/31/17	89	82	88	93	87	407,925	**232,723**

1/1/18	79	75	83	89	81	400,088	**217,377**
1/2/18	70	71	75	72	73	367,495	**196,362**
1/3/18	79	70	75	75	74	378,230	**199,797**
1/4/18	79	72	75	71	74	396,770	**200,754**
1/5/18	80	71	76	72	75	396,598	**201,755**
1/6/18	72	66	75	67	71	338,486	**192,534**
1/7/18	48	43	48	44	46	270,010	**129,596**
1/8/18	48	37	39	38	39	259,884	**112,070**
1/9/18	41	32	36	35	35	237,125	**102,216**
1/10/18	44	44	47	53	46	246,772	**129,979**
1/11/18	79	74	78	83	78	346,104	**208,612**
1/12/18	82	75	79	78	78	358,952	**210,402**
1/13/18	76	70	76	68	73	347,537	**197,316**
1/14/18	72	62	64	71	65	317,939	**177,824**
1/15/18	71	72	76	87	75	349,281	**202,836**
1/16/18	66	65	72	74	70	336,310	**188,430**
1/17/18	55	51	61	55	57	276,332	**155,958**
1/18/18	36	34	44	40	40	235,590	**112,656**
1/19/18	34	33	37	32	35	235,447	**101,391**
1/20/18	33	30	33	30	32	229,260	**92,841**
1/21/18	40	33	35	37	35	227,492	**101,857**
1/22/18	57	47	50	53	50	263,910	**140,171**
1/23/18	56	48	54	48	52	298,420	**143,514**
1/24/18	48	44	48	47	46	310,578	**130,286**
1/25/18	45	35	39	41	39	270,607	**110,974**
1/26/18	34	34	39	39	37	237,144	**106,228**
1/27/18	53	44	44	54	46	267,034	**129,540**
1/28/18	64	57	60	72	61	318,414	**166,764**
1/29/18	69	60	65	62	63	354,299	**172,828**
1/30/18	56	52	55	46	53	313,327	**146,422**
1/31/18	69	61	62	57	62	309,449	**168,964**
2/1/18	77	72	76	71	74	378,700	**200,645**
2/2/18	69	65	64	58	64	340,024	**175,160**
2/3/18	73	66	59	62	63	332,803	**173,095**
2/4/18	76	71	75	73	74	378,776	**199,283**
2/5/18	71	66	72	71	70	382,800	**189,708**
2/6/18	70	66	68	70	68	367,150	**184,983**
2/7/18	66	59	65	66	64	350,448	**173,913**
2/8/18	71	61	63	64	63	350,229	**172,600**
2/9/18	70	64	70	71	68	350,513	**184,893**
2/10/18	66	63	66	69	65	339,600	**177,954**
2/11/18	69	60	68	63	65	346,706	**177,074**
2/12/18	67	60	62	66	63	349,183	**171,083**
2/13/18	51	47	51	51	50	298,384	**139,130**
2/14/18	38	36	38	38	37	247,159	**107,195**
2/15/18	61	53	55	60	56	301,764	**153,672**
2/16/18	64	55	60	60	59	316,504	**162,970**
2/17/18	51	40	50	45	47	284,742	**130,720**
2/18/18	54	37	40	46	42	267,623	**118,754**

2/19/18	58	50	45	62	50	317,176	**139,611**
2/20/18	62	59	60	68	61	346,956	**166,688**
2/21/18	61	56	54	56	56	352,794	**153,604**
2/22/18	52	45	44	49	46	303,421	**129,447**
2/23/18	52	48	52	51	51	299,865	**141,060**
2/24/18	50	49	50	58	51	286,340	**140,618**
2/25/18	50	46	51	50	49	281,760	**137,507**
2/26/18	37	33	39	41	37	252,331	**106,567**
2/27/18	36	32	33	45	34	251,534	**99,499**
2/28/18	45	33	32	43	35	248,173	**101,965**
3/1/18	41	39	41	45	41	265,364	**115,651**
3/2/18	34	38	35	39	36	245,677	**104,261**
3/3/18	36	31	33	34	33	224,928	**95,785**
3/4/18	35	31	32	33	33	228,452	**95,004**
3/5/18	43	40	43	45	42	271,688	**119,045**
3/6/18	54	46	52	52	50	290,131	**140,148**
3/7/18	54	48	57	54	54	298,222	**148,338**
3/8/18	49	43	52	45	48	299,121	**133,634**
3/9/18	48	40	43	42	43	259,846	**120,286**
3/10/18	38	36	37	36	37	231,080	**105,577**
3/11/18	40	39	43	47	42	244,026	**118,756**
3/12/18	42	37	45	47	42	237,901	**120,027**
3/13/18	42	39	47	46	44	246,690	**123,019**
3/14/18	37	31	37	35	35	236,517	**101,033**
3/15/18	45	38	40	41	40	244,769	**114,670**
3/16/18	41	35	39	42	38	249,105	**109,444**
3/17/18	33	28	30	33	30	234,769	**89,215**
3/18/18	36	30	28	31	30	229,716	**88,095**
3/19/18	47	32	32	35	34	242,410	**99,870**
3/20/18	48	41	41	35	41	283,931	**116,059**
3/21/18	44	34	35	33	36	273,367	**103,154**
3/22/18	40	32	31	31	32	237,810	**94,765**
3/23/18	43	35	34	40	36	246,671	**103,759**
3/24/18	44	34	37	42	38	240,148	**107,977**
3/25/18	37	32	33	40	34	240,104	**99,259**
3/26/18	36	33	33	37	34	278,842	**97,796**
3/27/18	30	28	34	31	31	239,894	**91,600**
3/28/18	35	32	32	35	33	233,137	**96,153**
3/29/18	42	35	36	40	37	257,419	**106,283**
3/30/18	45	36	34	36	36	254,156	**104,572**
3/31/18	60	54	53	53	54	294,338	**149,565**
4/1/18	51	46	45	42	45	278,005	**127,600**
4/2/18	43	37	38	42	39	280,165	**111,468**
4/3/18	52	51	55	58	54	317,206	**148,856**
4/4/18	47	46	54	50	50	318,024	**139,595**
4/5/18	49	43	45	46	45	275,514	**126,415**
4/6/18	57	56	60	58	58	321,253	**159,852**
4/7/18	55	44	51	42	48	299,363	**134,845**
4/8/18	42	41	44	46	43	284,433	**121,422**

4/9/18	40	36	40	38	38	283,062	**109,453**
4/10/18	38	32	37	27	34	268,619	**99,500**
4/11/18	26	27	28	30	28	233,665	**82,375**
4/12/18	34	23	23	29	25	222,597	**75,977**
4/13/18	40	37	40	46	40	256,656	**112,987**
4/14/18	50	48	50	55	50	286,089	**139,779**
4/15/18	47	46	50	51	48	281,030	**134,839**
4/16/18	44	40	45	44	43	289,133	**122,413**
4/17/18	33	30	37	37	34	261,728	**99,720**
4/18/18	35	35	44	44	40	266,441	**113,790**
4/19/18	23	25	34	33	30	261,325	**88,357**
4/20/18	25	21	28	29	26	216,396	**77,772**
4/21/18	24	18	23	28	22	195,696	**68,526**
4/22/18	20	13	17	22	17	189,265	**55,588**
4/23/18	16	8	11	14	11	193,186	**40,973**
4/24/18	26	17	15	25	18	200,784	**58,939**
4/25/18	19	15	19	19	18	207,229	**58,070**
4/26/18	23	12	18	21	17	177,190	**56,051**
4/27/18	32	16	22	23	22	181,846	**68,106**
4/28/18	28	18	23	20	22	182,116	**67,600**
4/29/18	14	6	11	6	10	162,210	**37,192**
4/30/18	7	0	0	0	1	152,357	**15,211**
5/1/18	16	7	4	18	8	147,833	**32,943**
5/2/18	17	5	9	13	9	163,237	**36,431**
5/3/18	11	1	6	10	5	167,948	**26,720**
5/4/18	11	0	4	2	4	159,370	**21,825**
5/5/18	11	0	1	1	2	140,195	**18,378**
5/6/18	16	0	6	0	5	145,782	**24,659**
5/7/18	0	0	0	0	0	152,906	**12,917**
5/8/18	17	1	3	8	5	158,119	**25,602**
5/9/18	25	11	12	10	13	167,779	**45,897**
5/10/18	23	12	16	18	16	186,085	**53,984**
5/11/18	26	17	25	24	22	183,107	**69,630**
5/12/18	19	13	15	17	15	162,783	**50,844**
5/13/18	1	3	12	9	8	178,545	**32,034**
5/14/18	2	2	8	8	5	182,595	**26,195**
5/15/18	13	0	1	0	2	175,815	**18,866**
5/16/18	1	0	0	0	0	169,060	**13,129**
5/17/18	23	0	0	0	3	169,659	**21,142**
5/18/18	12	0	0	1	2	145,607	**17,406**
5/19/18	24	12	8	13	12	152,047	**43,307**
5/20/18	13	4	13	11	10	157,136	**38,016**
5/21/18	4	1	11	7	7	165,529	**29,437**
5/22/18	4	0	1	0	1	160,494	**14,758**
5/23/18	0	0	0	0	0	154,554	**12,917**
5/24/18	0	0	0	0	0	149,555	**12,917**
5/25/18	0	0	0	0	0	151,185	**12,917**
5/26/18	0	0	0	0	0	150,722	**12,917**
5/27/18	0	0	0	0	0	150,257	**12,917**

5/28/18	0	0	0	0	0	153,825	**12,917**
5/29/18	2	0	0	0	0	152,978	**13,482**
5/30/18	5	0	0	0	1	161,840	**14,541**
5/31/18	6	0	0	0	1	182,230	**14,858**
6/1/18	20	0	0	0	3	161,486	**19,871**
6/2/18	21	1	1	2	4	145,262	**22,966**
6/3/18	12	2	6	2	5	139,250	**26,353**
6/4/18	9	0	0	0	1	136,558	**15,988**
6/5/18	11	0	0	0	2	151,936	**16,906**
6/6/18	5	0	0	0	1	150,767	**14,611**
6/7/18	9	0	0	0	1	163,799	**16,235**
6/8/18	6	0	0	0	1	146,050	**15,176**
6/9/18	12	0	0	0	2	141,460	**17,259**
6/10/18	8	0	2	0	2	131,257	**17,538**
6/11/18	8	0	0	0	1	139,187	**15,670**
6/12/18	3	0	1	2	1	143,916	**14,911**
6/13/18	0	0	0	0	0	143,870	**12,917**
6/14/18	2	0	0	0	0	128,824	**13,482**
6/15/18	2	0	0	0	0	149,806	**13,482**
6/16/18	0	0	0	0	0	125,699	**12,917**
6/17/18	0	0	0	0	0	133,017	**12,917**
6/18/18	0	0	0	0	0	150,706	**12,917**
6/19/18	0	0	2	0	1	139,130	**14,855**
6/20/18	0	0	2	4	2	134,674	**16,775**
6/21/18	6	0	5	3	3	144,284	**21,551**
6/22/18	3	0	0	0	0	133,759	**13,799**
6/23/18	3	0	0	0	0	128,931	**13,870**
6/24/18	13	0	0	0	2	135,422	**17,471**
6/25/18	10	0	0	0	1	141,321	**16,341**
6/26/18	10	0	0	0	1	148,095	**16,306**
6/27/18	0	0	0	0	0	163,163	**12,917**
6/28/18	0	0	0	0	0	165,398	**12,917**
6/29/18	0	0	0	0	0	159,145	**12,917**
6/30/18	0	0	0	0	0	151,136	**12,917**
Totals	10,422	8,446	9,229	9,322	9,177	80,165,526	27,887,755

* Volumes include interruptible and transportation volumes

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

Attachment 10
NNG

MINNESOTA ENERGY RESOURCES - NNG

Customer Counts by PGAC Class - July 1, 2017 through June 30, 2018

Tariff Rate Class	Rate Designation	Jul-17 Average Customers	Aug-17 Average Customers	Sep-17 Average Customers	Oct-17 Average Customers	Nov-17 Average Customers	Dec-17 Average Customers	Jan-18 Average Customers	Feb-18 Average Customers	Mar-18 Average Customers	Apr-18 Average Customers	May-18 Average Customers	Jun-18 Average Customers	Annual Average Customers
GS- Residential	MERC000001	170,356	169,426	170,761	170,630	171,394	171,703	172,292	172,292	172,221	172,355	172,437	173,012	171,573
GS-C&I <1,500 therms/yr (Small)	MERC000005	6,495	6,431	6,466	6,462	6,482	6,523	6,607	6,866	7,323	7,275	7,357	7,335	6,802
GS-C&I <1,500 therms/yr (Small) Emmons, IA	MERC000013	1	1	1	1	1	1	1	1	1	1	1	1	1
GS-C&I >1,500 therms/yr (Large)	MERC000009	9,830	9,735	9,801	9,865	9,837	9,911	9,931	9,574	9,145	9,145	9,153	9,198	9,594
GS-C&I >1,500 therms/yr (Large) Emmons, IA	MERC000014	2	2	2	2	2	2	2	2	2	2	2	2	2
Small Volume Interruptible (SVI)	MERC000015	278	278	281	273	276	264	268	252	271	266	241	260	267
Small Volume Interruptible w/Joint (SVJ)	MERC000019	-5	2	2	2	5	2	2	2	2	2	2	2	2
Large Volume Interruptible (LVI)	MERC000022	58	50	65	70	46	80	70	59	62	52	48	60	60
Large Volume Interruptible w/Joint (LVJ)	MERC000026	2	4	3	-7	3	6	8	5	7	7	7	7	4
	MERC000101	9,440	9,425	9,435	9,397	9,412	9,421	9,431	9,423	9,452	9,420	9,423	9,417	9,425
	MERC000102	52	51	51	52	51	52	76	353	573	586	584	584	255
	MERC000103	1,116	1,132	1,136	1,137	1,128	1,131	1,103	825	578	591	594	591	922
	MERC000104	34	32	33	30	38	37	33	35	32	35	34	35	34
	MERC000106	14	14	14	14	14	13	15	15	15	15	15	14	14
Total		197,673	196,583	198,051	197,928	198,689	199,146	199,839	199,704	199,684	199,752	199,898	200,518	198,955

MINNESOTA ENERGY RESOURCES - NNG

Projected Fixed Cost - November 2018 through March 2019

Futures Contracts WACOG

Futures 10,000 Dth/contract 30 31 31

Nov-18

Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	LDS Settle*	LDS Settle Cost	Over/(Under Market	Premium Per Unit	Premium Cost	Total Cost
1	05/03/18	64480	5	50,000	$ 2.8150	$ 140,750	$ 3.3200	$ 166,000	$ (25,250)		$ -	$ 140,750
2	05/03/18	64481	1	10,000	$ 2.8160	$ 28,160	$ 3.3200	$ 33,200	$ (5,040)		$ -	$ 28,160
3	06/05/18	65874	6	60,000	$ 2.9350	$ 176,100	$ 3.3200	$ 199,200	$ (23,100)		$ -	$ 176,100
4	07/05/18	66731	6	60,000	$ 2.8820	$ 172,920	$ 3.3200	$ 199,200	$ (26,280)		$ -	$ 172,920
5	08/02/18	67750	3	30,000	$ 2.8150	$ 84,450	$ 3.3200	$ 99,600	$ (15,150)		$ -	$ 84,450
6	08/02/18	67751	2	20,000	$ 2.8170	$ 56,340	$ 3.3200	$ 66,400	$ (10,060)		$ -	$ 56,340
7	09/04/18	68448	5	50,000	$ 2.8610	$ 143,050	$ 3.3200	$ 166,000	$ (22,950)		$ -	$ 143,050
8	10/05/18	69571	4	40,000	$ 3.1960	$ 127,840	$ 3.3200	$ 132,800	$ (4,960)		$ -	$ 127,840
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Total			32	320,000		$ 929,610		$ 1,062,400	$ (132,790)		$ -	$ 929,610
						$ 2.9050		$ 3.3200	$ (0.4150)		$ -	$ 2.9050
NNG	27	84.38%	27	270,000	$ 2.9050	$ 784,358	$ 3.3200	$ 896,400	$ (112,042)	$ -	$ -	$ 784,358
Other-Cons	5	15.63%	5	50,000	$ 2.9050	$ 145,252	$ 3.3200	$ 166,000	$ (20,748)	$ -	$ -	$ 145,252
Total	32	100.0%	32	320,000	$ 2.9050	$ 929,610	$ 3.3200	$ 1,062,400	$ (132,790)	$ -	$ -	$ 929,610

Dec-18

Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	LDS Settle*	LDS Settle Cost	Over/(Under) Market	Premium Per Unit	Premium Cost	Total Cost
1	05/15/18	65032	10	100,000	$ 3.0030	$ 300,300	$ 3.3690	$ 336,900	$ (36,600)		$ -	$ 300,300
2	06/12/18	66051	9	90,000	$ 3.0770	$ 276,930	$ 3.3690	$ 303,210	$ (26,280)		$ -	$ 276,930
3	07/17/18	67114	9	90,000	$ 2.8880	$ 259,920	$ 3.3690	$ 303,210	$ (43,290)		$ -	$ 259,920
4	08/14/18	67972	8	80,000	$ 3.0910	$ 247,280	$ 3.3690	$ 269,520	$ (22,240)		$ -	$ 247,280
5	09/13/18	68713	6	60,000	$ 2.9230	$ 175,380	$ 3.3690	$ 202,140	$ (26,760)		$ -	$ 175,380
6	09/13/18	68714	2	20,000	$ 2.9220	$ 58,440	$ 3.3690	$ 67,380	$ (8,940)		$ -	$ 58,440
7	10/18/18	70370	8	80,000	$ 3.2970	$ 263,760	$ 3.3690	$ 269,520	$ (5,760)		$ -	$ 263,760
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Total			52	520,000		$ 1,582,010		$ 1,751,880	$ (169,870)		$ -	$ 1,582,010
						$ 3.0423		$ 3.3690	$ (0.3267)		$ -	$ 3.0423
NNG	43	82.69%	43	430,000	$ 3.0423	$ 1,308,201	$ 3.3690	$ 1,448,670	$ (140,469)	$ -	$ -	$ 1,308,201
Other-Cons	9	17.31%	9	90,000	$ 3.0423	$ 273,809	$ 3.3690	$ 303,210	$ (29,401)	$ -	$ -	$ 273,809
Total	52	100.0%	52	520,000	$ 3.0423	$ 1,582,010	$ 3.3690	$ 1,751,880	$ (169,870)	$ -	$ -	$ 1,582,010

Jan-19

Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	LDS Settle*	LDS Settle Cost	Over/(Under) Market	Premium Per Unit	Premium Cost	Total Cost
1	05/17/18	65170	11	110,000	$ 3.0470	$ 335,170	$ 3.4390	$ 378,290	$ (43,120)		$ -	$ 335,170
2	06/13/18	66146	10	100,000	$ 3.1820	$ 318,200	$ 3.4390	$ 343,900	$ (25,700)		$ -	$ 318,200
3	07/19/18	67242	10	100,000	$ 2.9460	$ 294,600	$ 3.4390	$ 343,900	$ (49,300)		$ -	$ 294,600
4	08/16/18	68020	1	10,000	$ 3.1640	$ 31,640	$ 3.4390	$ 34,390	$ (2,750)		$ -	$ 31,640
5	08/16/18	68021	8	80,000	$ 3.1660	$ 253,280	$ 3.4390	$ 275,120	$ (21,840)		$ -	$ 253,280
6	09/18/18	68881	9	90,000	$ 2.9690	$ 267,210	$ 3.4390	$ 309,510	$ (42,300)		$ -	$ 267,210
7	10/16/18	70128	9	90,000	$ 3.3610	$ 302,490	$ 3.4390	$ 309,510	$ (7,020)		$ -	$ 302,490
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Total	Total		58	580,000		$ 1,802,590		$ 1,994,620	$ (192,030)		$ -	$ 1,802,590
						$ 3.1079		$ 3.4390	$ (0.3311)		$ -	$ 3.1079
NNG	49	84.48%	49	490,000	$ 3.1079	$ 1,522,878	$ 3.4390	$ 1,685,110	$ (162,232)	$ -	$ -	$ 1,522,878
Other-Cons	9	15.52%	9	90,000	$ 3.1079	$ 279,712	$ 3.4390	$ 309,510	$ (29,798)	$ -	$ -	$ 279,712
Total	58	100.0%	58	580,000	$ 3.1079	$ 1,802,590	$ 3.4390	$ 1,994,620	$ (192,030)	$ -	$ -	$ 1,802,590

Feb-19

Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	LDS Settle*	LDS Settle Cost	Over/(Under Market	Premium Per Unit	Premium Cost	Total Cost
1	05/08/18	64616	9	90,000	$ 2.9520	$ 265,680	$ 3.3470	$ 301,230	$ (35,550)		$ -	$ 265,680
2	06/07/18	65943	8	80,000	$ 3.1410	$ 251,280	$ 3.3470	$ 267,760	$ (16,480)		$ -	$ 251,280
3	06/07/18	65944	1	10,000	$ 3.1400	$ 31,400	$ 3.3470	$ 33,470	$ (2,070)		$ -	$ 31,400
4	07/10/18	66846	8	80,000	$ 3.0050	$ 240,400	$ 3.3470	$ 267,760	$ (27,360)		$ -	$ 240,400
5	08/07/18	67855	8	80,000	$ 3.0710	$ 245,680	$ 3.3470	$ 267,760	$ (22,080)		$ -	$ 245,680
6	09/06/18	68509	8	80,000	$ 2.9550	$ 236,400	$ 3.3470	$ 267,760	$ (31,360)		$ -	$ 236,400
7	10/10/18	69731	8	80,000	$ 3.3420	$ 267,360	$ 3.3470	$ 267,760	$ (400)		$ -	$ 267,360
8				-		$ -	$ 3.3470	$ -	$ -		$ -	$ -
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Total			50	500,000		$ 1,538,200		$ 1,673,500	$ (135,300)		$ -	$ 1,538,200
						$ 3.0764		$ 3.3470	$ (0.2706)		$ -	$ 3.0764
NNG	42	84.00%	42	420,000	$ 3.0764	$ 1,292,088	$ 3.3470	$ 1,405,740	$ (113,652)	$ -	$ -	$ 1,292,088
Other-Cons	8	16.00%	8	80,000	$ 3.0764	$ 246,112	$ 3.3470	$ 267,760	$ (21,648)	$ -	$ -	$ 246,112
Total	50	100.0%	50	500,000	$ 3.0764	$ 1,538,200	$ 3.3470	$ 1,673,500	$ (135,300)	$ -	$ -	$ 1,538,200

Mar-19

Deal Number	Purchase Date	Trade Number	Number Contracts	Financial Volume	Strike Price	Strike Cost	LDS Settle*	LDS Settle Cost	Over/(Under) Market	Premium Per Unit	Premium Cost	Total Cost
1	05/10/18	64777	2	20,000	$ 2.8560	$ 57,120	$ 3.1520	$ 63,040	$ (5,920)		$ -	$ 57,120
2	05/10/18	64778	6	60,000	$ 2.8570	$ 171,420	$ 3.1520	$ 189,120	$ (17,700)		$ -	$ 171,420
3	06/11/18	66009	7	70,000	$ 3.0400	$ 212,800	$ 3.1520	$ 220,640	$ (7,840)		$ -	$ 212,800
4	07/12/18	66971	7	70,000	$ 2.9200	$ 204,400	$ 3.1520	$ 220,640	$ (16,240)		$ -	$ 204,400
5	08/09/18	67902	6	60,000	$ 3.0160	$ 180,960	$ 3.1520	$ 189,120	$ (8,160)		$ -	$ 180,960
6	09/11/18	68648	6	60,000	$ 2.8470	$ 170,820	$ 3.1520	$ 189,120	$ (18,300)		$ -	$ 170,820
7	10/16/18	70129	6	60,000	$ 3.0960	$ 185,760	$ 3.1520	$ 189,120	$ (3,360)		$ -	$ 185,760
8				-		$ -	$ 3.1520	$ -	$ -		$ -	$ -
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Total			40	400,000		$ 1,183,280		$ 1,260,800	$ (77,520)		$ -	$ 1,183,280
						$ 2.9582		$ 3.1520	$ (0.1938)		$ -	$ 2.9582
NNG	33	82.50%	33	330,000	$ 2.9582	$ 976,206	$ 3.1520	$ 1,040,160	$ (63,954)	$ -	$ -	$ 976,206
Other-Cons	7	17.50%	7	70,000	$ 2.9582	$ 207,074	$ 3.1520	$ 220,640	$ (13,566)	$ -	$ -	$ 207,074
Total	40	100.0%	40	400,000	$ 2.9582	$ 1,183,280	$ 3.1520	$ 1,260,800	$ (77,520)	$ -	$ -	$ 1,183,280

Total

Deal Number	Purchase Date	%	Number Contracts	Physical Volume	Strike Price	Strike Cost	LDS Settle	LDS Settle Cost	Over/(Under) Market	Premium Per Unit	Premium Cost	Total Cost
1			37	370,000	$ 2.9703	$ 1,099,020	$ 3.3661	$ 1,245,460	$ (146,440)	$ -	$ -	$ 1,099,020
2			34	340,000	$ 3.0764	$ 1,045,990	$ 3.3447	$ 1,137,190	$ (91,200)	$ -	$ -	$ 1,045,990
3			33	330,000	$ 2.9540	$ 974,820	$ 3.3346	$ 1,100,420	$ (125,600)	$ -	$ -	$ 974,820
4			30	300,000	$ 2.9888	$ 896,640	$ 3.3050	$ 991,510	$ (94,870)	$ -	$ -	$ 896,640
5			31	310,000	$ 3.0315	$ 939,750	$ 3.3346	$ 1,033,740	$ (93,990)	$ -	$ -	$ 939,750
6			27	270,000	$ 2.9230	$ 789,210	$ 3.3340	$ 900,170	$ (110,960)	$ -	$ -	$ 789,210
7			36	360,000	$ 3.2289	$ 1,162,420	$ 3.3386	$ 1,201,910	$ (39,490)	$ -	$ -	$ 1,162,420
8			4	40,000	$ 3.1960	$ 127,840	$ 3.3200	$ 132,800	$ (4,960)	$ -	$ -	$ 127,840
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Total			232	2,320,000		$ 7,035,690		$ 7,743,200	$ (707,510)		$ -	$ 7,035,690
						$ 3.0326		$ 3.3376	$ (0.3050)		$ -	$ 3.0326
NNG	194	83.62%	194	1,940,000.00	$ 3.0326	$ 5,883,293	$ 3.3376	$ 6,474,917	$ (591,625)	$ -	$ -	$ 5,883,293
Other-Cons	38	16.38%	38	380,000	$ 3.0326	$ 1,152,398	$ 3.3376	$ 1,268,283	$ (115,885)	$ -	$ -	$ 1,152,398
Total	232	100.0%	232	2,320,000	$ 3.0326	$ 7,035,690	$ 3.3376	$ 7,743,200	$ (707,510)	$ -	$ -	$ 7,035,690

*Prices from 10/17/18 NYMEX market

MINNESOTA ENERGY RESOURCES - NNG

Projected Storage Cost - November 2018 through March 2019

Month/ Year	K#118657 NNG Storage (Dth)	LS Power K#132024 NNG Storage (Dth)	LS Power K#133736 NNG Storage (Dth)	Total NNG Storage (Dth)	Projected NNG WACOG	K#118657 NNG Storage Cost	K#132024 NNG Storage Cost	K#132112 NNG Storage Cost	Total NNG Storage Cost	ANR Storage GLGT/VGT (Dth)	ANR Storage GLGT/VGT WACOG	ANR Storage GLGT/VGT Cost
Nov-18	489,384	48,750	97,500	635,634	$ 2.5729	$ 1,259,154	$ 125,431	$ 250,861	$ 1,635,446	96,000	$ 2.8102	$ 269,779
Dec-18	1,229,734	122,500	245,000	1,597,234	$ 2.5729	$ 3,164,028	$ 315,185	$ 630,370	$ 4,109,582	189,100	$ 2.8102	$ 531,408
Jan-19	1,229,734	122,500	245,000	1,597,234	$ 2.5729	$ 3,164,028	$ 315,185	$ 630,370	$ 4,109,582	189,100	$ 2.8102	$ 531,408
Feb-19	1,229,734	122,500	245,000	1,597,234	$ 2.5729	$ 3,164,028	$ 315,185	$ 630,370	$ 4,109,582	196,000	$ 2.8102	$ 550,799
Mar-19	489,384	48,750	97,500	635,634	$ 2.5729	$ 1,259,154	$ 125,431	$ 250,861	$ 1,635,446	85,900	$ 2.8102	$ 241,396
Total	4,667,969	465,000	930,000	6,062,969		$ 12,010,391	$ 1,196,416	$ 2,392,832	$ 15,599,639	756,100		$ 2,124,790

Month/ Year	NNG Storage Volume (Dth)	NNG Index Price	NNG Index Cost
Nov-18	635,634	$ 3.4800	$ 2,212,006
Dec-18	1,597,234	$ 3.8840	$ 6,203,655
Jan-19	1,597,234	$ 4.1715	$ 6,662,860
Feb-19	1,597,234	$ 4.1370	$ 6,607,756
Mar-19	635,634	$ 3.0470	$ 1,936,776
Total	6,062,969		$ 23,623,053
			$ 8,023,414

Month/ Year	ANR Storage Volume (Dth)	Emerson Index Price	Emerson Market Cost
Nov-18	96,000	$ 3.3150	$ 318,240
Dec-18	189,100	$ 3.5715	$ 675,371
Jan-19	189,100	$ 3.8065	$ 719,809
Feb-19	196,000	$ 3.7145	$ 728,042
Mar-19	85,900	$ 3.3695	$ 289,440
Total	756,100		$ 2,730,902
			$ 606,112

Max NNG-MERC Storage (Storage plan withdrawals through Apr 19)	6,062,969	6,519,321	06/30/18 Storage Balance - NNG-MERC	5,021,762	77.03%	4,670,239
Max ANR Storage (Storage plan withdrawals through Apr 19)	756,100	756,100	06/30/18 Storage Balance - ANR	313,222	41.43%	313,222

Month/ Year	K#118657 NNG Storage (Dth)	LS Power K#132024 NNG Storage (Dth)	LS Power K#132112 NNG Storage (Dth)	Total NNG Storage (Dth)	Projected K#118657 NNG WACOG	Projected K#132024 NNG WACOG	Projected K#132112 NNG WACOG	WACOG NNG Cost	Projected NNG Indexes Price	Projected NNG Index Cost	Projected Storage (Savings)/ Cost
Nov-18	489,384	48,750	97,500	635,634	$ 2.5729	$ 2.5729	$ 2.5729	$ 1,635,446	$ 3.4800	$ 2,212,006	$ (576,560)
Dec-18	1,229,734	122,500	245,000	1,597,234	$ 2.5729	$ 2.5729	$ 2.5729	$ 4,109,582	$ 3.8840	$ 6,203,655	$ (2,094,073)
Jan-19	1,229,734	122,500	245,000	1,597,234	$ 2.5729	$ 2.5729	$ 2.5729	$ 4,109,582	$ 4.1715	$ 6,662,860	$ (2,553,278)
Feb-19	1,229,734	122,500	245,000	1,597,234	$ 2.5729	$ 2.5729	$ 2.5729	$ 4,109,582	$ 4.1370	$ 6,607,756	$ (2,498,173)
Mar-19	489,384	48,750	97,500	635,634	$ 2.5729	$ 2.5729	$ 2.5729	$ 1,635,446	$ 3.0470	$ 1,936,776	$ (301,330)
Total	4,667,969	465,000	930,000	6,062,969				$ 15,599,639		$ 23,623,053	$ (8,023,414)

*Indexes and projected WACOG based on 10/17/18 market prices

MINNESOTA ENERGY RESOURCES - NNG

Projected Call Option Costs - November 2018 through March 2019

Call/Put Options WACOG

Call/Put Options 10,000 Dth/contract

Nov-18

Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	Option Price	Option Cost	Pent Settle*	Pent Settle Cost	Over/(Under) Market	Premium Per Unit	Premium Cost	Total Cost
1	05/03/18	64479	11	110,000	$ 3.0000	$ 330,000	$ 3.0000	$ 330,000	$ 3.3200	$ 365,200	$ (35,200)	$ 0.0950	$ 10,450	$ 340,450
2	06/05/18	65873	11	110,000	$ 3.1000	$ 341,000	$ 3.1000	$ 341,000	$ 3.3200	$ 365,200	$ (24,200)	$ 0.1000	$ 11,000	$ 352,000
3	07/05/18	66730	11	110,000	$ 2.9800	$ 327,800	$ 2.9800	$ 327,800	$ 3.3200	$ 365,200	$ (37,400)	$ 0.1000	$ 11,000	$ 338,800
4	08/02/18	67749	11	110,000	$ 2.8600	$ 314,600	$ 2.8600	$ 314,600	$ 3.3200	$ 365,200	$ (50,600)	$ 0.0980	$ 10,780	$ 325,380
5	09/04/18	68447	11	110,000	$ 2.8600	$ 314,600	$ 2.8600	$ 314,600	$ 3.3200	$ 365,200	$ (50,600)	$ 0.1000	$ 11,000	$ 325,600
6	10/05/18	69569	10	100,000	$ 3.2000	$ 320,000	$ 3.2000	$ 320,000	$ 3.3200	$ 332,000	$ (12,000)	$ 0.0980	$ 9,800	$ 329,800
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Total			65	650,000		$ 1,948,000		$ 1,948,000		$ 2,158,000	$ (210,000)		$ 64,030	$ 2,012,030
						$ 2.9969		$ 2.9969		$ 3.3200	$ (0.3231)		$ 0.0329	$ 3.0954
NNG	54	83.08%	54	540,000	$ 2.9969	$ 1,618,338	$ 2.9969	$ 1,618,338	$ 3.3200	$ 1,792,800	$ (174,462)	$ 0.0985	$ 53,194	$ 1,671,533
Other-Cons	11	16.92%	11	110,000	$ 2.9969	$ 329,662	$ 2.9969	$ 329,662	$ 3.3200	$ 365,200	$ (35,538)	$ 0.0985	$ 10,836	$ 340,497
Total	65	100.0%	65	650,000	$ 2.9969	$ 1,948,000	$ 2.9969	$ 1,948,000	$ 3.3200	$ 2,158,000	$ (210,000)	$ 0.0985	$ 64,030	$ 2,012,030

Dec-18

Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	Option Price	Option Cost	Pent Settle*	Pent Settle Cost	Over/(Under) Market	Premium Per Unit	Premium Cost	Total Cost
1	05/10/18	64773	18	180,000	$ 3.2000	$ 576,000	$ 3.2000	$ 576,000	$ 3.3690	$ 606,420	$ (30,420)	$ 0.0900	$ 16,200	$ 592,200
2	06/11/18	66008	18	180,000	$ 3.3700	$ 606,600	$ 3.3690	$ 606,420	$ 3.3690	$ 606,420	$ -	$ 0.1000	$ 18,000	$ 624,420
3	07/12/18	66970	17	170,000	$ 3.2000	$ 544,000	$ 3.2000	$ 544,000	$ 3.3690	$ 572,730	$ (28,730)	$ 0.0970	$ 16,490	$ 560,490
4	08/09/18	67901	17	170,000	$ 3.3000	$ 561,000	$ 3.3000	$ 561,000	$ 3.3690	$ 572,730	$ (11,730)	$ 0.0970	$ 16,490	$ 577,490
5	09/11/18	68647	17	170,000	$ 2.9800	$ 506,600	$ 2.9800	$ 506,600	$ 3.3690	$ 572,730	$ (66,130)	$ 0.0990	$ 16,830	$ 523,430
6	10/16/18	70127	17	170,000	$ 3.5500	$ 603,500	$ 3.3690	$ 572,730	$ 3.3690	$ 572,730	$ -	$ 0.0930	$ 15,810	$ 588,540
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Total			104	1,040,000		$ 3,397,700		$ 3,366,750		$ 3,503,760	$ (137,010)		$ 99,820	$ 3,466,570
						$ 3.2670		$ 3.2373		$ 3.3690	$ (0.1317)		$ 0.0294	$ 3.3332
NNG	86	82.69%	86	860,000	$ 3.2670	$ 2,809,637	$ 3.2373	$ 2,784,043	$ 3.3690	$ 2,897,340	$ (113,297)	$ 0.0960	$ 82,543	$ 2,866,587
Other-Cons	18	17.31%	18	180,000	$ 3.2670	$ 588,063	$ 3.2373	$ 582,707	$ 3.3690	$ 606,420	$ (23,713)	$ 0.0960	$ 17,277	$ 599,983
Total	104	100.0%	104	1,040,000	$ 3.2670	$ 3,397,700	$ 3.2373	$ 3,366,750	$ 3.3690	$ 3,503,760	$ (137,010)	$ 0.0960	$ 99,820	$ 3,466,570

Jan-19

Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	Option Price	Option Cost	Pent Settle*	Pent Settle Cost	Over/(Under) Market	Premium Per Unit	Premium Cost	Total Cost
1	05/08/18	64615	11	110,000	$ 3.5500	$ 390,500	$ 3.4390	$ 378,290	$ 3.4390	$ 378,290	$ -	$ 0.0950	$ 10,450	$ 388,740
2	05/17/18	65168	10	100,000	$ 3.6000	$ 360,000	$ 3.4390	$ 343,900	$ 3.4390	$ 343,900	$ -	$ 0.0980	$ 9,800	$ 353,700
3	06/07/18	65942	20	200,000	$ 3.7000	$ 740,000	$ 3.4390	$ 687,800	$ 3.4390	$ 687,800	$ -	$ 0.0990	$ 19,800	$ 707,600
4	07/10/18	66845	19	190,000	$ 3.5000	$ 665,000	$ 3.4390	$ 653,410	$ 3.4390	$ 653,410	$ -	$ 0.0970	$ 18,430	$ 671,840
5	08/07/18	67854	19	190,000	$ 3.5500	$ 674,500	$ 3.4390	$ 653,410	$ 3.4390	$ 653,410	$ -	$ 0.1000	$ 19,000	$ 672,410
6	09/06/18	68508	19	190,000	$ 3.4000	$ 646,000	$ 3.4000	$ 646,000	$ 3.4390	$ 653,410	$ (7,410)	$ 0.0950	$ 18,050	$ 664,050
7	10/10/18	69729	19	190,000	$ 4.1000	$ 779,000	$ 3.4390	$ 653,410	$ 3.4390	$ 653,410	$ -	$ 0.0960	$ 18,240	$ 671,650
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Total	Total		117	1,170,000		$ 4,255,000		$ 4,016,220		$ 4,023,630	$ (7,410)		$ 113,770	$ 4,129,990
						$ 3.6368		$ 3.4327		$ 3.4390	$ (0.0063)		$ 0.0267	$ 3.5299
NNG	98	83.76%	98	980,000	$ 3.6368	$ 3,564,017	$ 3.4327	$ 3,364,013	$ 3.4390	$ 3,370,220	$ (6,207)	$ 0.0972	$ 95,295	$ 3,459,308
Other-Cons	19	16.24%	19	190,000	$ 3.6368	$ 690,983	$ 3.4327	$ 652,207	$ 3.4390	$ 653,410	$ (1,203)	$ 0.0972	$ 18,475	$ 670,682
Total	117	100.0%	117	1,170,000	$ 3.6368	$ 4,255,000	$ 3.4327	$ 4,016,220	$ 3.4390	$ 4,023,630	$ (7,410)	$ 0.0972	$ 113,770	$ 4,129,990

Feb-19

Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	Option Price	Option Cost	Pent Settle*	Pent Settle Cost	Over/(Under) Market	Premium Per Unit	Premium Cost	Total Cost
1	05/15/18	65030	18	180,000	$ 4.1500	$ 747,000	$ 3.3470	$ 602,460	$ 3.3470	$ 602,460	$ -	$ 0.0930	$ 16,740	$ 619,200
2	06/12/18	66049	17	170,000	$ 4.1500	$ 705,500	$ 3.3470	$ 568,990	$ 3.3470	$ 568,990	$ -	$ 0.0970	$ 16,490	$ 585,480
3	07/17/18	67113	17	170,000	$ 3.7500	$ 637,500	$ 3.3470	$ 568,990	$ 3.3470	$ 568,990	$ -	$ 0.0940	$ 15,980	$ 584,970
4	08/14/18	67971	17	170,000	$ 4.0000	$ 680,000	$ 3.3470	$ 568,990	$ 3.3470	$ 568,990	$ -	$ 0.0970	$ 16,490	$ 585,480
5	09/13/18	68712	17	170,000	$ 3.6500	$ 620,500	$ 3.3470	$ 568,990	$ 3.3470	$ 568,990	$ -	$ 0.0980	$ 16,660	$ 585,650
6	10/18/18	70366	16	160,000	$ 4.2500	$ 680,000	$ 3.3470	$ 535,520	$ 3.3470	$ 535,520	$ -	$ 0.1000	$ 16,000	$ 551,520
7				-		$ -	$ -	$ -	$ 3.3470	$ -	$ -		$ -	$ -
8				-		$ -	$ -	$ -	$ 3.3470	$ -	$ -		$ -	$ -
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Total			102	1,020,000		$ 4,070,500		$ 3,413,940		$ 3,413,940	$ -		$ 98,360	$ 3,512,300
						$ 3.9907		$ 3.3470		$ 3.3470	$ -		$ 0.0242	$ 3.4434
NNG	85	83.33%	85	850,000	$ 3.9907	$ 3,392,083	$ 3.3470	$ 2,844,950	$ 3.3470	$ 2,844,950	$ -	$ 0.0964	$ 81,967	$ 2,926,917
Other-Cons	17	16.67%	17	170,000	$ 3.9907	$ 678,417	$ 3.3470	$ 568,990	$ 3.3470	$ 568,990	$ -	$ 0.0964	$ 16,393	$ 585,383
Total	102	100.0%	102	1,020,000	$ 3.9907	$ 4,070,500	$ 3.3470	$ 3,413,940	$ 3.3470	$ 3,413,940	$ -	$ 0.0964	$ 98,360	$ 3,512,300

Mar-19

Deal Number	Purchase Date	Trade Number	Number Contracts	Financial Volume	Strike Price	Strike Cost	Option Price	Option Cost	Pent Settle*	Pent Settle Cost	Over/(Under) Market	Premium Per Unit	Premium Cost	Total Cost
1	05/17/18	65169	14	140,000	$ 4.0500	$ 567,000	$ 3.1520	$ 441,280	$ 3.1520	$ 441,280	$ -	$ 0.0980	$ 13,720	$ 455,000
2	06/13/18	66145	14	140,000	$ 4.3000	$ 602,000	$ 3.1520	$ 441,280	$ 3.1520	$ 441,280	$ -	$ 0.1000	$ 14,000	$ 455,280
3	07/19/18	67241	13	130,000	$ 3.7000	$ 481,000	$ 3.1520	$ 409,760	$ 3.1520	$ 409,760	$ -	$ 0.0990	$ 12,870	$ 422,630
4	08/16/18	68019	13	130,000	$ 4.0500	$ 526,500	$ 3.1520	$ 409,760	$ 3.1520	$ 409,760	$ -	$ 0.0980	$ 12,740	$ 422,500
5	09/18/18	68880	13	130,000	$ 3.5700	$ 464,100	$ 3.1520	$ 409,760	$ 3.1520	$ 409,760	$ -	$ 0.1000	$ 13,000	$ 422,760
6	10/10/18	69730	13	130,000	$ 4.0000	$ 520,000	$ 3.1520	$ 409,760	$ 3.1520	$ 409,760	$ -	$ 0.1000	$ 13,000	$ 422,760
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Total			80	800,000		$ 3,160,600		$ 2,521,600		$ 2,521,600	$ -		$ 79,330	$ 2,600,930
						$ 3.9508		$ 3.1520		$ 3.1520	$ -		$ 0.0251	$ 3.2512
NNG	66	82.50%	66	660,000	$ 3.9508	$ 2,607,495	$ 3.1520	$ 2,080,320	$ 3.1520	$ 2,080,320	$ -	$ 0.0992	$ 65,447	$ 2,145,767
Other-Cons	14	17.50%	14	140,000	$ 3.9508	$ 553,105	$ 3.1520	$ 441,280	$ 3.1520	$ 441,280	$ -	$ 0.0992	$ 13,883	$ 455,163
Total	80	100.0%	80	800,000	$ 3.9508	$ 3,160,600	$ 3.1520	$ 2,521,600	$ 3.1520	$ 2,521,600	$ -	$ 0.0992	$ 79,330	$ 2,600,930

Total

Deal Number	Purchase Date	%	Number Contracts	Physical Volume	Strike Price	Strike Cost	Option Price	Option Cost	Pent Settle*	Pent Settle Cost	Over/(Under) Market	Premium Per Unit	Premium Cost	Total Cost
1			72	720,000	$ 3.6257	$ 2,610,500	$ 3.2334	$ 2,328,030	$ 3.3245	$ 2,393,650	$ (65,620)	$ 0.0938	$ 67,560	$ 2,395,590
2			70	700,000	$ 3.7359	$ 2,615,100	$ 3.2880	$ 2,301,590	$ 3.3226	$ 2,325,790	$ (24,200)	$ 0.0990	$ 69,290	$ 2,370,880
3			78	780,000	$ 3.5004	$ 2,730,300	$ 3.2543	$ 2,538,350	$ 3.3391	$ 2,604,480	$ (66,130)	$ 0.0976	$ 76,140	$ 2,614,490
4			77	770,000	$ 3.5677	$ 2,747,100	$ 3.2568	$ 2,507,760	$ 3.3378	$ 2,570,090	$ (62,330)	$ 0.0973	$ 74,930	$ 2,582,690
5			77	770,000	$ 3.3510	$ 2,580,300	$ 3.1862	$ 2,453,360	$ 3.3378	$ 2,570,090	$ (116,730)	$ 0.0993	$ 76,490	$ 2,529,850
6			75	750,000	$ 3.6927	$ 2,769,500	$ 3.3120	$ 2,484,010	$ 3.3379	$ 2,503,420	$ (19,410)	$ 0.0969	$ 72,660	$ 2,556,670
7			19	190,000	$ 4.1000	$ 779,000	$ 3.4390	$ 653,410	$ 3.4390	$ 653,410	$ -	$ 0.0960	$ 18,240	$ 671,650
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Total			468	4,680,000		$ 16,831,800		$ 15,266,510		$ 15,620,930	$ (354,420)		$ 455,310	$ 15,721,820
						$ 3.5965		$ 3.2621		$ 3.3378	$ (0.0757)		2.71%	$ 3.3594
NNG	389	83.12%	389	3,890,000	$ 3.5968	$ 13,991,570	$ 3.2626	$ 12,691,665	$ 3.3382	$ 12,985,630	$ (293,965)	$ 0.0973	$ 378,446	$ 13,070,111
Other-Cons	79	16.88%	79	790,000	$ 3.5952	$ 2,840,230	$ 3.2593	$ 2,574,845	$ 3.3358	$ 2,635,300	$ (60,455)	$ 0.0973	$ 76,864	$ 2,651,709
Total	468	83.1%	468	4,680,000	$ 3.5965	$ 16,831,800	$ 3.2621	$ 15,266,510	$ 3.3378	$ 15,620,930	$ (354,420)	$ 0.0973	$ 455,310	$ 15,721,820

*Prices from 10/17/18 NYMEX market