Robert J. Humm
Senior Counsel

November 7, 2017

VIA HAND DELIVERY & ELECTRONIC MAIL

Luly E. Massaro, Commission Clerk
Rhode Island Public Utilities Commission
89 Jefferson Boulevard
Warwick, RI 02888

RE: Docket 4719 - 2017 Gas Cost Recovery Filing
Responses to Division Data Requests – Set 3

Dear Ms. Massaro:

Enclosed please find 10 copies of National Grid's[1] responses to the third set of data requests issued by the Rhode Island Division of Public Utilities and Carriers (Division) in the above-referenced docket.

This filing also contains a Request for Protective Treatment of Confidential Information in accordance with Rule 1.2(g) of the Public Utilities Commission's (PUC) Rules of Practice and Procedure and R.I. Gen. Laws § 38-2-2(4)(B). National Grid seeks protection from public disclosure of certain confidential and privileged information, which is contained in National Grid's response to Division 3-9(b) and in Attachments DIV 3-8, 3-9(c), and 3-12. In compliance with Rule 1.2(g), National Grid has provided the PUC with one complete, unredacted copy of the confidential materials in a sealed envelope marked **"Contains Privileged and Confidential Materials – Do Not Release,"** and has included confidential and/or redacted copies of the materials for the public filing.

Thank you for your attention to this matter. If you have any questions, please contact me at 401-784-7415.

Very truly yours,

Robert J. Humm

Enclosures

cc: Docket 4719 Service List
Leo Wold, Esq.
Steve Scialabba, Division
Bruce Oliver, Division
Tim Oliver, Division

[1] The Narragansett Electric Company d/b/a National Grid.

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STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

RHODE ISLAND PUBLIC UTILITIES COMMISSION

Annual Gas Cost Recovery Filing 2017	)	Docket No. 4719

MOTION OF THE NARRAGANSETT ELECTRIC COMPANY D/B/A NATIONAL GRID FOR PROTECTIVE TREATMENT OF CONFIDENTIAL INFORMATION

National Grid[1] hereby requests that the Rhode Island Public Utilities Commission (PUC) grant protection from public disclosure of certain confidential, competitively sensitive, and proprietary information submitted in this proceeding, as permitted by PUC Rule 1.2(g) and R.I. Gen. Laws § 38-2-2(4)(B). National Grid also hereby requests that, pending entry of that finding, the PUC preliminarily grant National Grid's request for confidential treatment pursuant to Rule 1.2 (g)(2).

I. BACKGROUND

On November 7, 2017, National Grid filed with the PUC its responses to the third set of data requests from the Division of Public Utilities and Carriers (Division) in this docket. One response and three of the attachments to the responses include privileged and confidential information. Division 3-9 requests information in connection with National Grid's competitive bidding process in response to its Request for Proposals (RFP) related to portable liquefied natural gas (LNG) equipment and services in Cumberland. Namely, National Grid's response to

[1] The Narragansett Electric Company d/b/a National Grid (National Grid).

Division 3-9(b) includes the confidential number of competitive bids that National Grid received in response to its RFP, while Attachment DIV 3-9(c) contains the complete copies of all confidential competitive bids that National Grid has received in response to the RFP. Similarly, Attachment DIV 3-12 in response to Division 3-12 includes the confidential identity of a company that provided a preliminary estimate to National Grid for use in preparing the portable LNG proposal. While the numbers included in the estimate used by National Grid in the proposal are not confidential, National Grid seeks to protect the identity of the company that provided the estimated numbers. Finally, Attachment DIV 3-8 produced in response to Division 3-8 is the confidential report prepared for National Grid evaluating certain confidential and proprietary information relative to National Grid's portable LNG equipment and operations.

In accordance with Rule 1.2(g)(3), National Grid has provided a redacted public version of its responses and attachments to Division Set 3, as well as an unredacted, confidential version.

II. LEGAL STANDARD

Rule 1.2(g) of the PUC's Rules of Practice and Procedure provides that access to public records shall be granted in accordance with the Access to Public Records Act (APRA), R.I. Gen. Laws § 38-2-1, *et seq.* Under APRA, all documents and materials submitted in connection with the transaction of official business by an agency is deemed to be a "public record," unless the information contained in such documents and materials falls within one of the exceptions specifically identified in R.I. Gen. Laws § 38-2-2(4). To the extent that information provided to the PUC falls within one of the designated exceptions to the public records law, the PUC has the authority under the terms of APRA to deem such information as confidential and to protect that information from public disclosure.

In that regard, R.I. Gen. Laws § 38-2-2(4)(B) provides that the following types of records shall not be deemed public:

> Trade secrets and commercial or financial information obtained from a person, firm, or corporation which is of a privileged or confidential nature.

The Rhode Island Supreme Court has held that the determination as to whether this exemption applies requires the application of a two-pronged test set forth in *Providence Journal Company v. Convention Center Authority*, 774 A.2d 40 (R.I. 2001). The exemption applies where the disclosure of information would be likely either (1) to impair the Government's ability to obtain necessary information in the future; or (2) to cause substantial harm to the competitive position of the person from whom the information was obtained. *See Providence Journal*, 774 A.2d 40.

The first prong of the test assesses whether the information was provided voluntarily to the governmental agency. *Providence Journal*, 774 A.2d at 47. If the answer to the first question is affirmative, then the question becomes whether the information is "of a kind that would customarily not be released to the public by the person from whom it was obtained." *Id.*

III. BASIS FOR CONFIDENTIALITY

National Grid's response to Division 3-9(b) and Attachments DIV 3-8, 3-9(c), and 3-12 contain confidential and privileged information of the type that National Grid would not ordinarily make public. In particular, National Grid's response to Division 3-9(b) and Attachment DIV 3-9(c) contains confidential information concerning National Grid's competitive bidding process. Along the same lines is the identity of the company that provided National Grid with a preliminary estimate when preparing its portable LNG proposal. This type of information historically has been maintained as confidential when provided in PUC filings. Disclosure of this information would impact the competitive position of National Grid and the

companies involved, and such disclosure would impede on the confidentiality rights of National Grid and the companies involved. Furthermore, Attachment DIV 3-8 contains the confidential and proprietary evaluation of National Grid's LNG equipment and operations. Accordingly, National Grid seeks protection for the confidential information referenced herein.

IV. CONCLUSION

For the foregoing reasons, National Grid respectfully requests that the PUC grant its Motion for Protective Treatment of Confidential Information.

Respectfully submitted,

THE NARRAGANSETT ELECTRIC COMPANY d/b/a NATIONAL GRID
By its attorney,

_____

Robert J. Humm, Esq. (#7920)
National Grid
280 Melrose Street
Providence, RI 02907
(401) 784-7415
Dated: November 7, 2017

Division 3-1

Request:

Re: the Supplemental Direct Testimony of National Grid Witness Leary at page 1, lines 14-15, please:

a. Define and provide a map showing what is included in "*the area of the decommissioned Cumberland liquefied natural gas (LNG) site*;"

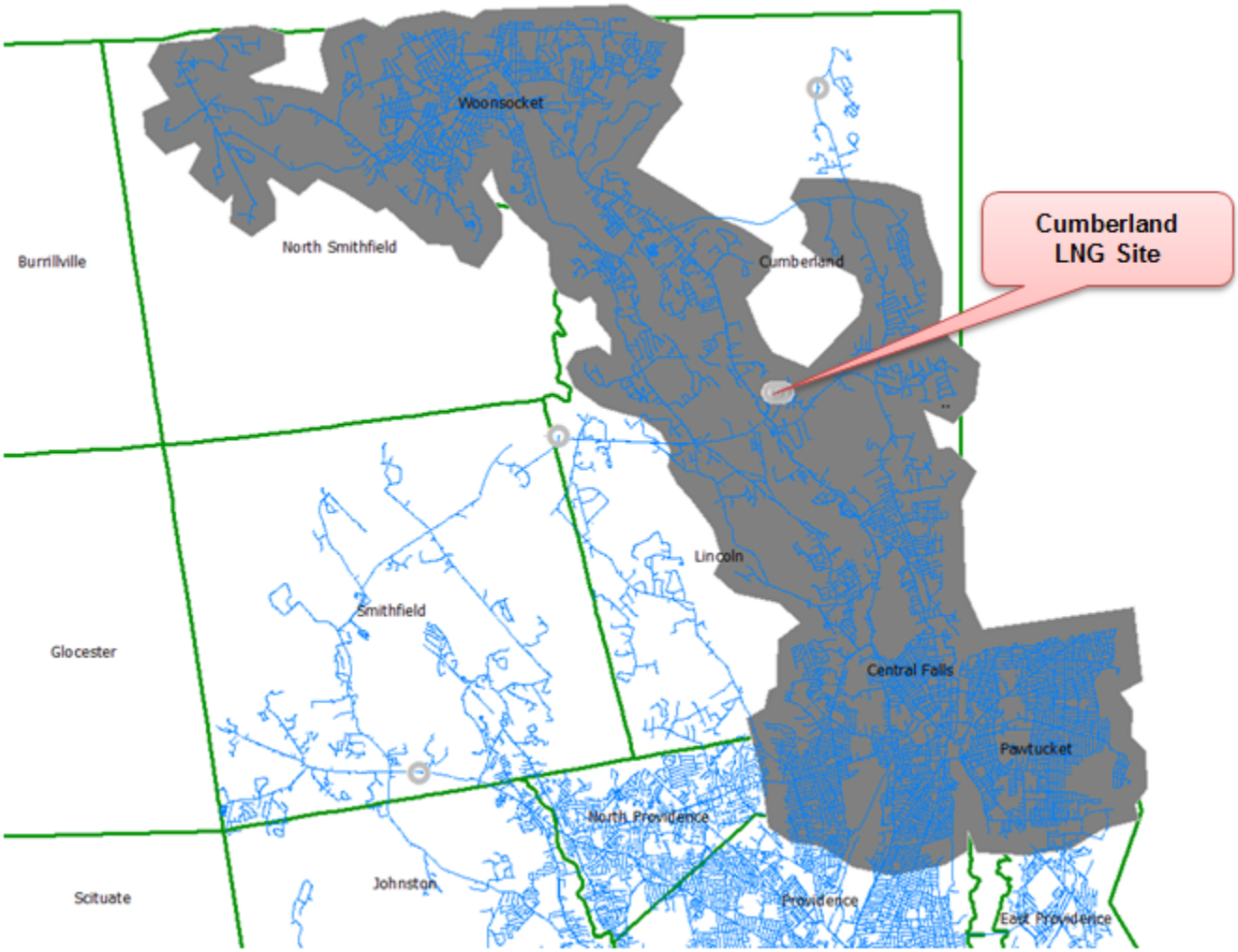
b. Provide the data, analyses, and assumptions the Company has relied upon to assess its "*design day requirements in the area of the decommissioned Cumberland liquefied natural gas (LNG) site*" for:

   i. The winter of 2017-2018
   ii. For all other winter periods for which projections of design day requirements for the area of the decommissioned Cumberland LNG site.

Response:

a. The map below shows the region of the Company's distribution system that was directly served by gas delivered to "the area of the decommissioned Cumberland liquefied natural gas (LNG) site":

Division 3-1, page 2



b. Please see the information below for the studies performed by the Company to determine the need for portable LNG capacity for (i) the winter of 2017-18 and (ii) all other winter periods for which projections of design day requirements for the area of the decommissioned Cumberland LNG site.

i. The winter of 2017-18:

Division 3-1, page 3

I. Objective

Determine the volume of LNG required from Cumberland, if any, in order to pressure-balance the gas system if the Cumberland LNG site was unavailable for the winter and/or the Cumberland Take Station was required to stay within maximum daily quantity contract limitations.

II. Summary

Long Term Planning would require a peak hour flow of 750 dekatherms (dth) per hour of portable LNG at Cumberland for the winter of 2017-18 in order to support a design day event. This volume of LNG is expected to be needed over a 13 hour period during the design day with a total daily volume of 4,700 dth.

III. Assumptions

- Supply volume of 30,800 dth per day from the Lincoln Take Station (which includes the incremental 24,000 dth per day obtained for Cumberland in 2016) supplies the 99 pounds per square inch gauge (psig) system.
- Hourly volume at the Cranston Take Station is not a limitation, as this volume is expected to be exceeded regardless.
- Providence LNG is set to provide approximately 125 psig inlet to the Allens Avenue 99 psig regulators.
- The flow from the Cranston Lateral is limited by allowing the Cowesett valve to only flow to maintain 50 psig back pressure.
- This analysis does not account for any needs by Gas Supply or Gas Control to operate the system for other means.

IV. Winter Weather Data & Peak Day Forecast

The analysis used the latest weather and peak day forecast provided by the Analytics Forecasting group for Rhode Island from June 2017. Only the weather from the winter season (November 1 to March 31) was calculated and the results summarized in Table 1, below, by temperature ranges matching Operation Models:

Division 3-1, page 4

TABLE 1

Average Daily Temp (F)	Average Daily HDD	# of Days Design Winter
35	25-30	14
30	30-35	29
25	35-40	31
20	40-45	6
15	45-50	2
10	50-55	3
5	55-60	0
0	60-65	0
-3	65-68	1

V. Daily Flow Patterns

The hydraulic models are steady-state modeled as a 5% Peak Hour Factor. This is defined as the maximum hourly flow as a percentage of the total daily volume. In order to determine the need for volumes throughout the course of a day, historical data was evaluated to determine variability in flows. While variability occurs in the hourly flows as a percentage of the day, no significant correlation was found relative to Heating Degree Days (HDD). A plot of the percent of hourly flow by HDD is attached in Attachment DIV 3-1-1.

In addition, to find relative flow comparisons against the modeled peak-hour flows, factors were created based upon average hourly flows. The plot of historical flows by the hour is attached in Attachment DIV 3-1-2, along with the factors by the hour in Attachment DIV 3-1-3. The factors are additionally presented in Table 2, below:

Division 3-1, page 5

TABLE 2

Hour	Average % of Daily	Factor of 5% Peak Hour
11 AM	4.68%	94%
12 PM	4.54%	91%
01 PM	4.34%	87%
02 PM	4.19%	84%
03 PM	4.04%	81%
04 PM	3.99%	80%
05 PM	4.09%	82%
06 PM	4.25%	85%
07 PM	4.35%	87%
08 PM	4.35%	87%
09 PM	4.27%	85%
10 PM	4.06%	81%
11 PM	3.78%	76%
12 AM	3.52%	70%
01 AM	3.38%	68%
02 AM	3.34%	67%
03 AM	3.37%	67%
04 AM	3.45%	69%
05 AM	3.69%	74%
06 AM	4.20%	84%
07 AM	4.95%	99%
08 AM	5.30%	106%
09 AM	5.07%	101%
10 AM	4.82%	96%

For the instances where the Peak Hour Factor is above 5%, the peak hour flows were used.

Prepared by or under the supervision of: Stephen A. Caliri

Division 3-1, page 6

VI. Flows Analysis

The hydraulic model from Winter Operations was simulated with the modifications to the 99 psig system delivery supply points. The maximum flows at Cumberland and Lincoln were set near contract limitations (1,350 thousand cubic feet per hour (mcfh) at Cumberland and 1,250 mcfh at Lincoln). This limitation resulted in lower set pressures to maintain on the 99 psig system. Cumberland was limited to 87 psig. The Company determined that the Cumberland LNG site was required to maintain approximately 90 psig in order to pressure balance the gas system. Any decrease in pressure from 90 psig lead to pressures below minimum design on the downstream Low Pressure systems as a result of Low Pressure stations not being able to maintain sufficient set points. The resultant LNG flow at Cumberland to maintain this pressure on a design day was 750 dth per hour.

The model flows for each HDD that LNG was required was converted to flows for each hour utilizing the percentage of the peak hour factor as shown in Table 2, above. Any hourly flows resultant for that HDD were separated and matched to an equivalent peak hour LNG pressure support flow. For instance, a Peak Day (68 HDD) when separated for 24 hours showed 4 hours flowing above 20,284 dth (equivalent to a 65 HDD peak hour flow) and 2 hours above 18,870 dth (equivalent to 60 HDD) and 7 hours above 17,455 dth (equivalent to 55 HDD). A summary of hours above modeled peak hour flows results is shown in Table 3, below:

TABLE 3

HDD	Hours Per Day Equivalent to Peak Hour for:		
	60 HDD	65 HDD	68 HDD
60	5	-	-
65	4	5	-
68	7	2	4

This data was used to multiply the hours per day by the LNG pressure peaking flows for their matching HDD and the number of days expected in the design winter to achieve the seasonal volume results for each different HDD expected, as set forth in Table 4, below:

Division 3-1, page 7

TABLE 4

HDD	LNG Flows
35	-
40	-
45	-
50	-
55	-
60	500
65	2,900
68	4,700

As no 60-65 HDD is anticipated (see Table 1, above), the seasonal volume is equivalent to that volume anticipated on the event of a Peak Day, i.e. 4,700 dth.

ii. For all other winter periods for which projections of design day requirements for the area of the decommissioned Cumberland LNG site, at this time, given forecasted customer requirements for next year, the Company expects it will need portable LNG capacity for the winter of 2018-19 for the area of the decommissioned Cumberland LNG site.

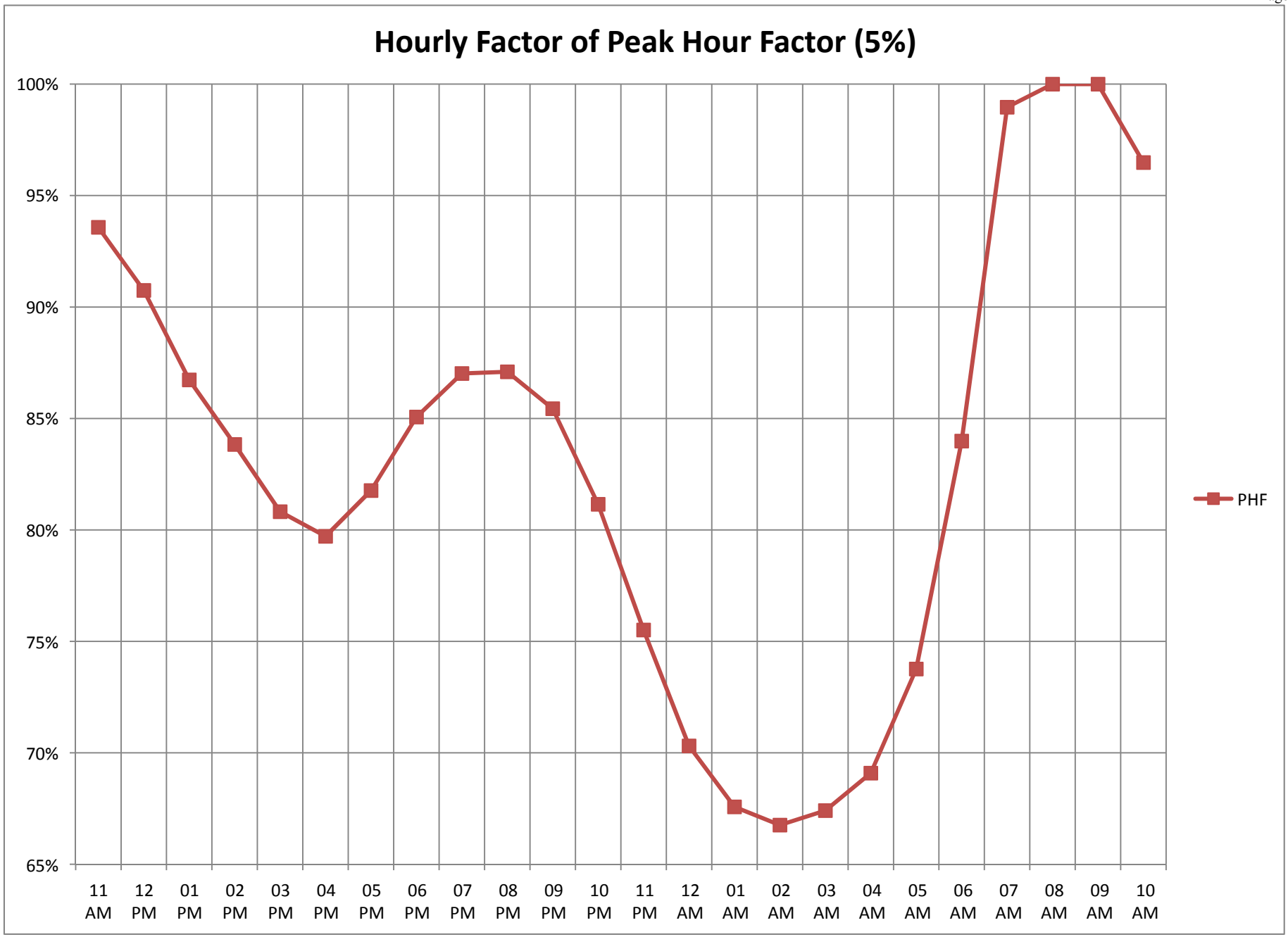
Attachment DIV 3-1-1

Due to the large electronic file size of Attachment DIV 3-1-1, the Company is providing this attachment on CD-ROM.

Prepared by or under the supervision of: Stephen A. Caliri

Attachment DIV 3-1-2

Due to the large electronic file size of Attachment DIV 3-1-2, the Company is providing this attachment on CD-ROM.


Hourly Factor of Peak Hour Factor (5%)
100%
95%
90%
85%
80%
75%
70%
65%
11 AM
12 PM
01 PM
02 PM
03 PM
04 PM
05 PM
06 PM
07 PM
08 PM
09 PM
10 PM
11 PM
12 AM
01 AM
02 AM
03 AM
04 AM
05 AM
06 AM
07 AM
08 AM
09 AM
10 AM
PHF

Division 3-2

Request:

Re: the Supplemental Direct Testimony of National Grid Witness Leary at page 2, lines 17-21, please identify the specific Attachments, pages, and lines in Ms. Culliford's supplemental attachments in which the additional gas volumes and gas costs that the Company represents are required to meet design day requirements in the Cumberland area are presented, and if not shown separately identify the volumes and costs by month that were added in Witness Culliford's supplemental attachments.

Response:

The additional gas volumes and gas costs required to meet design day requirements in the Cumberland area are set forth as follows in the Confidential Supplemental Attachments of Nancy G. Culliford:

1. Attachment NGC-2S CONFIDENTIAL, page 11 of 17, Section "Supplier Fixed Cost Unit Prices," at the line labeled "ENGIE GAS DEMAND PAYMENT Winter". This information is also provided in Excel File NGC 1 2 Gas Costs 17_18 Revised Confidential Tab NGC-2 Pgs. 10-14, Row 76 Columns B thru N.

2. Attachment NGC-2S CONFIDENTIAL, page 12 of 17, Section "Supplier Fixed Cost Billing Units," at the line labeled as "ENGIE GAS DEMAND PAYMENT Winter". This information is also provided in Excel File NGC 1 2 Gas Costs 17_18 Revised Confidential Tab NGC-2 Pgs. 10-14, Row 228 Columns B thru N.

3. Attachment NGC-2S CONFIDENTIAL, page 14 of 17, Section "Total Supplier Demand Cost," at the line labeled as "ENGIE GAS DEMAND PAYMENT Winter". This information is also provided in Excel File NGC 1 2 Gas Costs 17_18 Revised Confidential Tab NGC-2 Pgs. 10-14, Row 228 Columns B thru N.

Division 3-3

Request:

Provide all data, analyses, and assumptions relied upon to assess the design peak day requirements for the Cumberland area for:

a. The Winter of 2017-2018;
b. The Winter of 2016-2017

Response:

a. Please see the Company's response to Division 3-1(b)(i) for the data, analyses, and assumptions relied upon to assess the design peak day requirements for the Cumberland area for the winter of 2017-18.

b. Please see the information below for the studies performed by the Company to determine the need for portable liquefied natural gas (LNG) capacity for the winter of 2016-17.

I. Objective

Determine the volume of LNG required from Cumberland, if any, in order to pressure-balance the gas system if the Cumberland LNG site was unavailable for the winter and/or the Cumberland Take Station was required to stay within maximum daily quantity contract limitations.

II. Summary

Long Term Planning would require LNG at Cumberland at a volume equivalent to 760 dekatherms (dth) per hour at approximately 9 hours for the winter of 2016-17 in order to support a design day event.

III. Assumptions

- Additional supply volume of 24,000 dth per day from Lincoln Take Station supplies the 99 pounds per square inch gauge (psig) system.
- Hourly volume at the Cranston Take Station is not a limitation, as this volume is expected to be exceeded regardless.
- Providence LNG is set to provide approximately 125 psig inlet to the Allens Avenue 99 psig regulators.
- The flow from the Cranston Lateral is limited by allowing the Cowesett valve to only flow to maintain 50 psig back pressure.
- This analysis does not account for any needs by Gas Supply or Gas Control to operate the system for other means.

Prepared by or under the supervision of: Stephen A. Caliri

IV. Winter Weather Data & Peak Day Forecast

The analysis used the latest weather and peak day forecast provided by the Analytics Forecasting group for Rhode Island from June 2016. Only the weather from the Winter Season (November 1 to March 31) was calculated and the results summarized in Table 1, below, by temperature ranges matching Operation Models:

TABLE 1

Average Daily Temp (F)	Average Daily HDD	# of Days Design Winter
35	25-30	30
30	30-35	13
25	35-40	29
20	40-45	30
15	45-50	6
10	50-55	2
5	55-60	3
0	60-65	0
-3	65-68	1

V. Daily Flow Patterns

The hydraulic models are steady-state modeled as a 5% Peak Hour Factor. This is defined as the maximum hourly flow as a percentage of the total daily volume. In order to determine the need for volumes throughout the course of a day, historical data for the past two calendar years (2014 and 2015) was evaluated to determine variability in flows. While variability occurs in the hourly flows as a percentage of the day, no significant correlation was found relative to Heating Degree Days (HDD). A plot of the percent of hourly flow by HDD is attached in Attachment DIV 3-3-1.

In addition, to find relative flow comparisons against the modeled peak-hour flows, factors were created based upon average hourly flows. The plot of historical flows by the hour is attached in Attachment DIV 3-3-2, along with the factors by the hour in Attachment DIV 3-3-3. The factors are additionally presented in Table 2, below:

Division 3-3, page 3

TABLE 2

Hour	Average % of Daily	Factor of 5% Peak Hour
11 AM	4.68%	94%
12 PM	4.54%	91%
01 PM	4.34%	87%
02 PM	4.19%	84%
03 PM	4.04%	81%
04 PM	3.99%	80%
05 PM	4.09%	82%
06 PM	4.25%	85%
07 PM	4.35%	87%
08 PM	4.35%	87%
09 PM	4.27%	85%
10 PM	4.06%	81%
11 PM	3.78%	76%
12 AM	3.52%	70%
01 AM	3.38%	68%
02 AM	3.34%	67%
03 AM	3.37%	67%
04 AM	3.45%	69%
05 AM	3.69%	74%
06 AM	4.20%	84%
07 AM	4.95%	99%
08 AM	5.30%	106%
09 AM	5.07%	101%
10 AM	4.82%	96%

For the instances where the Peak Hour Factor is above 5%, the peak hour flows were used.

Prepared by or under the supervision of: Stephen A. Caliri

VI. Flows Analysis

The hydraulic model from Winter Operations was simulated with the modifications to the 99 psig system delivery supply points. The maximum flows at Cumberland and Lincoln were set near contract limitations (1,350 thousand cubic feet per hour (mcfh) at Cumberland and 1,250 mcfh at Lincoln). This limitation resulted in lower set pressures to maintain on the 99 psig system. Cumberland was limited to 87 psig and Lincoln was limited to 93.5 psig. The Company determined that the Cumberland LNG site was required to maintain approximately 90 psig in order to pressure balance the gas system. Any decrease in pressure from 90 psig lead to pressures below minimum design on the downstream Low Pressure systems as a result of Low Pressure stations not being able to maintain sufficient set points. The resultant LNG flow at Cumberland to maintain this pressure on a design day was 759 dth per hour.

The model flows for each HDD that LNG was required was converted to flows for each hour utilizing the percentage of the peak hour factor as shown in Table 2, above. Any hourly flows resultant for that HDD were separated and matched to an equivalent peak hour LNG pressure support flow. For instance, a Peak Day (68 HDD) when separated for 24 hours showed 5 hours flowing above 19,248 dth (equivalent to a 68 HDD peak hour flow) and 4 hours above 17,903 dth (equivalent to 60 HDD). A summary of hours above modeled peak hour flows results is shown in Table 3, below:

TABLE 3

HDD	Hours Per Day Equivalent to Peak Hour for:		
	60 HDD	65 HDD	68 HDD
60	5	-	-
65	4	5	-
68	7	4	5

This data was used to multiply the hours per day by the LNG pressure peaking flows for their matching HDD and the number of days expected in the design winter to achieve the seasonal volume results for each different HDD expected, as set forth in Table 4, below:

Division 3-3, page 5

TABLE 4

HDD	LNG Flows
35	-
40	-
45	-
50	-
55	-
60	-
65	3,800
68	6,840

As no 60-65 HDD is anticipated (see Table 1, above), the seasonal volume is equivalent to that volume anticipated on the event of a Peak Day, i.e. 6,840 dth.

Attachment DIV 3-3-1

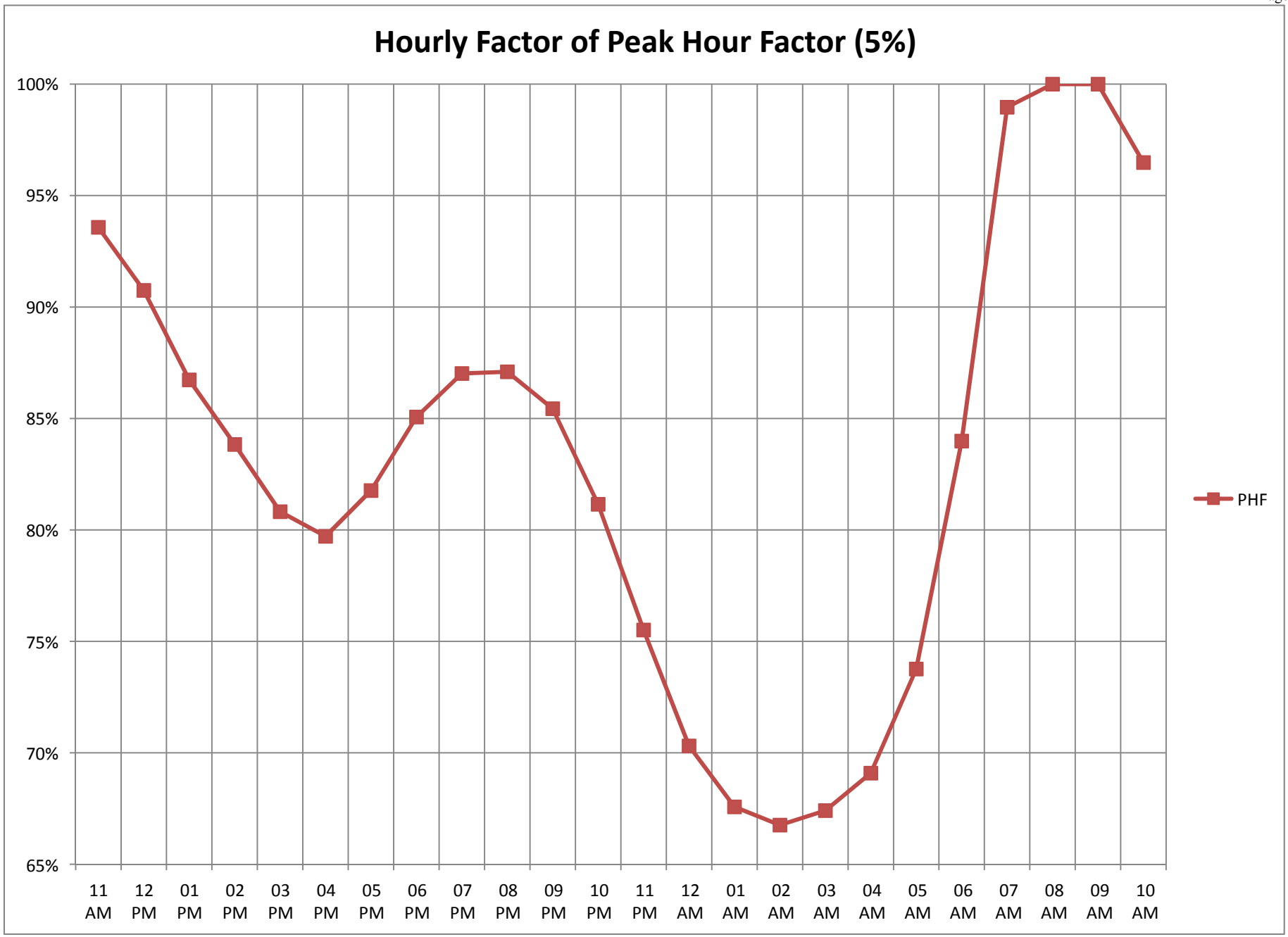
Due to the large electronic file size of Attachment DIV 3-3-1, the Company is providing this attachment on CD-ROM.

Prepared by or under the supervision of: Stephen A. Caliri

Attachment DIV 3-3-2

Due to the large electronic file size of Attachment DIV 3-3-2, the Company is providing this attachment on CD-ROM.

Prepared by or under the supervision of: Stephen A. Caliri


Hourly Factor of Peak Hour Factor (5%)
100%
95%
90%
85%
80%
75%
70%
65%
11 AM
12 PM
01 PM
02 PM
03 PM
04 PM
05 PM
06 PM
07 PM
08 PM
09 PM
10 PM
11 PM
12 AM
01 AM
02 AM
03 AM
04 AM
05 AM
06 AM
07 AM
08 AM
09 AM
10 AM
PHF

Division 3-4

Request:

For each of the last five full GCR years and 2016-2017 to date, please provide the total actual peak day sendout for the Cumberland area and specify the portions of those requirements that have been served from:

a. Pipeline Supplies
b. Storage
c. LNG or other local peaking resources

Response:

Below is the peak day sendout for the Cumberland area for the last five full years and 2016-2017 year to date.

Cumberland System Peak Day Flow Profile (in Dth)

Date	HDD	Total Sendout	LNG	Pipeline Supply	Pipeline Storage*
01/15/2012	51	54,595	17,164	37,431	11,836
01/23/2013	55	52,885	19,051	33,834	11,836
01/03/2014	59	62,039	10,261	51,778	11,836
02/15/2015	57	60,252	1,706	58,546	11,836
02/14/2016	59	63,597	6,588	57,009	11,836
01/09/2017	51	57,346	0	57,346	11,836

*Note: Pipeline Storage is included in the Pipeline Supply number

Prepared by or under the supervision of: Nancy G. Culliford and Paul Loiacono

Division 3-5

Request:

Identify the maximum day sendout of LNG for the Cumberland area for the maximum day in each of the last five full GCR Years and 2016-2017 to date along with the reported degree days and wind speeds reported for the maximum demand day in each referenced winter period.

Response:

Below is a table showing the maximum day sendout of LNG for the Cumberland area for the last five full GCR years and 2016-2017 year to date. The wind and degree day data is included in the table.

Cumberland System Peak Day LNG Flows

Date	HDD	Ave Wind (mph)	Wind Gust (mph)	LNG (Dth)
01/15/2012	51	9	20	17,164
01/23/2013	55	11	20	19,051
01/03/2014	59	8	23	10,261
02/15/2015	57	19	30	1,706
02/14/2016	59	7	18	6,588
01/09/2017	51	3	8	0

Prepared by or under the supervision of: Stephen P. Greco

Division 3-6

Request:

Re: the Supplemental Direct Testimony of National Grid Witness Greco at page 7, lines 18-20, please explain why supply rated 30,000 Dth per day for the plant was required when, as indicated at page 5, lines "24,000 Dth per day remains in the Company's portfolio through October 31, 2018."

Response:

The Company's peak day requirement at the Cumberland LNG plant for sendout was 30,000 dekatherms. Last year, the Company secured 24,000 Dth from the Tennessee Pipeline, which remains in the Company's portfolio through October 31, 2018. That leaves a shortfall of 6,000 Dth, so the Company proposes the use of portable LNG equipment to make up for this shortfall.

Attachment DIV 3-6 provides the Company's analysis utilizing the SENDOUT® model to support the Company securing 24,000 Dth per day of pipeline capacity from Dracut, Massachusetts to the Company's citygate in Lincoln, Rhode Island. The Company provided this analysis in response to Division 2-10 in the Company's 2016 Gas Cost Recovery proceeding, Docket No. 4647.

The Narragansett Electric Company
d/b/a National Grid
RIPUC Docket No. 4647
2016 Gas Cost Recovery Filing
Responses to Division's Second Set of Data Requests
Issued September 9, 2016

Division 2-10

Request:

Re: Witness Arangio's Direct Testimony at page 15 of 23, line 11, through page 16 of 23, line 2, please:

a. Provide the analyses upon which the Company has relied to determine that a "term of four months" is necessary and appropriate for the new Dracut capacity;

b. Verify that the new Dracut capacity has only been contracted for the specified four month period in the winter of 2016-17, and if not, explain the nature and duration of any longer term commitments the Company has made to purchase or have options to continue to purchase the "new Dracut capacity;"

c. Identify and explain any and all potential variability in the charges that National Grid will pay for the referenced "new Dracut capacity" over the full term of the agreement for that service including any possible extension(s) of the initial agreement;

d. Identify the "appropriate resource mix" that was determined using the SENDOUT® model;

e. Please provide a load duration curve, or equivalent information regarding the frequency and duration of load, for sendout from the Cumberland LNG tank during each of the last three winter seasons.

Response:

a. The table below provides the output from the SENDOUT® model run used to determine the total supply requirements at Dracut for the term of four months (volumes = MDth).

The Narragansett Electric Company
d/b/a National Grid
RIPUC Docket No. 4647
2016 Gas Cost Recovery Filing
Responses to Division's Second Set of Data Requests
Issued September 9, 2016

Division 2-10, page 2

Day	NOV 2016 MDth	DEC 2016 MDth	JAN 2017 MDth	FEB 2017 MDth	MAR 2017 MDth	APR 2017 MDth
1			26.7		35.53	
2		21.36	1.54			
3		39.02		26.96	16.59	
4		3.75		32.31	11.86	
5		26.93		39.02		23.44
6		8.21		39.02		
7		12.66	19.81	39.02		
8		12.56	8.11	9.26	7.09	
9		31.22	3.97	18.4	30.68	
10		0.66		4.45	35.67	
11			6.59	13.8		
12			39.02			
13		16.87	4.13	9.33		
14		12.5	29.25	28.29		
15			4.1			
16		0.63				
17						
18			0.56			
19			39.02	0.67		
20		0.64	32.57			
21		12.44	2.46	4.53		
22			39.02	18.57		
23	0.93					
24	20.02		27.39			
25	24.55			28.04		
26			3.15	14.27		
27			33.02	1.63	2.36	
28				0.73	11.85	
29			32.08			
30			33.02			
31			5.84			
Total	45.49	199.46	391.36	328.3	151.62	23.44
Average	1.52	6.43	12.62	11.73	4.89	0.78
Minimum						
Maximum	24.55	39.02	39.02	39.02	35.67	23.44

Prepared by or under the supervision of: Elizabeth D. Arangio

The Narragansett Electric Company
d/b/a National Grid
RIPUC Docket No. 4647
2016 Gas Cost Recovery Filing
Responses to Division's Second Set of Data Requests
Issued September 9, 2016

Division 2-10, page 3

b. As referenced in Elizabeth D. Arangio's Direct Testimony at page 15 of 23, line 1, through 9, the Company has secured an incremental 24,000 Dth of pipeline capacity on the Tennessee Pipeline for a 12 month period (November 1, 2016 through October 31, 2017) from Dracut, MA to the Company's citygate in Lincoln, RI. The Company has secured a supply arrangement to be transported on this capacity for a four month period (December 2016 through March 2017).

c. The Company will pay the Tennessee Pipeline Firm Transportation Tariff (FT-A) Maximum Reservation Rate of Zone 6 to Zone 6, which is currently $4.7435 per month. If the Company renews the capacity agreement it expects to pay the same Tennessee Pipeline Firm Transportation Tariff (FT-A) Maximum Reservation Rate of Zone 6 to Zone 6. The annual reservation charge totals $1,366,128 at the current Tennessee Pipeline FT-A Tariff Rate.

d. The SENDOUT® model utilizes all assets in the portfolio including the existing Dracut capacity of 15,000 Dth per day as well as the new Dracut capacity of 24,000 Dth per day in order to determine the appropriate MDQ and ACQ for RFPs to meet design day and design year requirements. The Company sought proposals and awarded bids for a maximum daily quantity of 39,000 Dth per day of supply (15,000 Dth per day of existing Dracut capacity plus 24,000 Dth per day of new Dracut capacity) for a maximum seasonal quantity of 1,092,000 Dth for a term of four months (December 2016, January 2017, February 2017 and March 2017).

e. Please see the Company's response to Division 1-4, filed in this docket on September 16, 2016, for the sendout volumes from the Cumberland LNG tank during each of the last three winter seasons.

Prepared by or under the supervision of: Elizabeth D. Arangio

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Division 3-7

Request:

Provide full specifications for all portable LNG facilities previously used in other parts of National Grid's system in Rhode Island (e.g., Aquidneck Island), and detail:

a. The manner in which the equipment was used;

b. The actual reliability experience of the equipment previously employed; and

c. An explanation of how and why the current requirements for Cumberland differ from those for each previous deployment of portable LNG equipment.

Response:

a. The Aquidneck Island portable LNG facility, located at the U.S. Naval Station in Newport, Rhode Island, was originally built by the Providence Gas Company as a countermeasure in the event an inspection pig became lodged in the 99 pounds per square inch gauge (psig) pipeline on Aquidneck Island. The portable site on Aquidneck Island has been used during testing only. The equipment specification consists of the following:

    1) Type of Vaporizer: one Chicago Power & Process shell & tube vertical rated at 500,000 standard cubic feet per hour (SCFH).

    2) Type of Glycol Water Heaters: two RBI Hydronic Water Heaters

    3) Maximum Allowable Working Pressure: The distribution main is rated for 99 psig, which is the MAWP.

    4) System Flow Rate: 500,000 SCFH.

b. The equipment was last tested Memorial Day weekend in 2012 as a backup for the single feed system for Aquidneck Island during pigging operations into the 99 psig system.

c. The current requirements from Cumberland differ from those in Newport in that the Cumberland desired flow rate of 750,000 SCFH is required for peak shaving on design days into the 99 psig system.

Prepared by or under the supervision of: Stephen P. Greco

Division 3-8

Request:

Re: the Supplemental Direct Testimony of National Grid Witness Greco at page 10, line 17, through page 11, line 4, please provide a complete copy of the referenced "draft report" issued by consultants on September 7, 2017 and provide the qualifications of the consultants relied upon to prepare the referenced report.

Response:

Please see Attachment DIV 3-8 for a copy of the confidential draft report referenced in the testimony of Stephen P. Greco.

As stated on its website, CH-IV International and its predecessor, CH-IV Corporation (collectively, CH-IV), has been providing LNG engineering and consulting services to a wide base of clients encompassing the entire LNG value chain since 1991. CH-IV's staff of employees has a combined total of over 150 years of engineering experience covering the entire LNG value chain. From gas treatment and liquefaction for peak shaving or export, through marine and land transportation to the final import regasification and delivery of the gas to the consumer, CH-IV has the experience to handle it all. In addition to our primary office in Hanover, Maryland, CH-IV maintains a permanent office in Houston, Texas.

Attachment DIV 3-8
REDACTED

Prepared by or under the supervision of: Stephen P. Greco

Redacted

Division 3-9

Request:

Re: the Supplemental Direct Testimony of National Grid Witness Greco at page 9, lines 2-4, please:

a. Provide a complete copy of the referenced RFP that was issued on or about September 29, 2017;

b. Provide the number of bids that have been received or are ultimately received in response to the referenced RFP;

c. Provide complete copies of all responses to the referenced RFP that the Company receives or has received;

d. Detail all evaluation criteria the Company intends to use to determine the winning bidder for the referenced RFP.

Response:

a. Please see Attachment DIV 3-9(a) for a copy of the Request for Proposal (RFP) issued on September 29, 2017.

b. The Company received a total of [redacted] offers in response to the referenced RFP, with [redacted] offers conforming to the scope of work defined in the RFP and [redacted] offers for services non-conforming to those solicited.

c. Please see Attachment DIV 3-9(c) for a copy of the confidential responses to the RFP that the Company received.

d. The Company has evaluated proposals received in response to the RFP based on both cost and non-cost factors, including vendor qualifications and completion of a process hazard analysis of the proposal.

Prepared by or under the supervision of: Stephen P. Greco

nationalgrid

National Grid USA Service Company, Inc.

Request for Proposals

For

LNG Storage Injection Services on behalf of The Narragansett Electric Company

September 29, 2017

Request for Proposals

Table of Contents

20. PS-05-01 – Safety Critical Activities Procedure Categorization Risk Ranking Tool
21. PS-05-07 – Human Factors Implementation Plan for Safety in Design
22. PS-05-08 – Safety in Design Specification for Incorporating Human Factors

I Introduction and Overview

National Grid USA Service Company, Inc. ("National Grid" or "Company") is requesting proposals for temporary liquid natural gas ('LNG") injection storage services on behalf of its customers in the territory served by The Narragansett Electric Company d/b/a National Grid during the winter 2017/2018 period. National Grid reserves the right not to award this Request for Proposal ("RFP"). Selection of an offer may result in a transaction confirmation for services entered into by either National Grid or its subsidiaries.

A. Objective of the Request for Proposals

The purpose of this RFP is to solicit, evaluate and select, through a competitive bidding process, agreements for LNG injection storage services to the location described herein; the current configuration of National Grid's planned winter operations at the Cumberland LNG facility are best suited to accommodate a CHART Queen Storage trailer or similar isotainer cargo container that will provide the same safety appurtenances and delivery pressures. Bidders must submit the requested documentation detailed in each of the Exhibits incorporated herein in order to be considered for a definitive agreement resulting from this RFP, as well as the make and model of the Queen Storage Units they will utilize to serve National Grid if awarded work under this RFP. The agreement between National Grid and the successful bidder shall be documented under a duly executed Transaction Confirmation, in the form attached hereto **(Exhibit 19)**.

B. Scope of Work

National Grid shall contract for and provide supplies of LNG and third party trucking to deliver LNG to its Cumberland LNG Plant facility to facilitate the scope of work described herein. The awarded contractor shall provide all materials, equipment, apparatus, tools, labor, services and facilities necessary to perform all the work in accordance with a Transaction Confirmation resulting from this solicitation as follows:

1. The Narragansett Electric Company d/b/a National Grid

The successful bidder shall provide a temporary LNG injection service to National Grid at the Cumberland LNG Plant facility at 1595 Mendon Rd. in Cumberland, RI. Services to be provided include all necessary equipment, labor

and related *LNG Queen Storage* trailer service required to meet National Grid health, safety and operational requirements by the service start date of December 1, 2017, including but not limited to the following:

- Mobilize and maintain all necessary LNG Queen storage units, portable pipe supports and truck unloading manifolds, as well as all necessary piping, connections and related ancillary items to complete fabrication and commissioning of the resulting system no later than the week of November 15, 2017 and complete construction of the same to achieve ready for operation status December 1, 2017;
- Enter remotely monitored standby operation beginning December 1, 2017, through and including March 31, 2018, including all equipment, and manpower required to perform;
- National Grid may, but is not required to, provide notice of activation shall be issued by National Grid's Gas System Operator ("GSO") at least 72 hours before expected ambient temperatures of 10 degrees F or below, upon which time the successful bidder will dispatch qualified trained personnel to the site for start-up, with injection service activation to occur at 5 degrees F or below;
- Upon injection service activation, the successful bidder shall meet National Grid's requirements of up to 750,000 SCFH daily gas injection service over a duration of six (6) hours winter peak demand – defined as the period from 6:00 am to 12:00 pm, unless otherwise specified by GSO, and shall continue to provide such services until shutdown notification is issued by GSO. Injected gas shall be delivered at approximately 120 psig.
- Ancillary items related to the mobilization and maintenance of the LNG injection service shall include the availability and presence of a subject matter expert during a process hazard analysis (PHA) and Pre-Startup Safety Review (PSSR).
- Successful bidder shall provide operating procedures, including but not limited to start-up, normal operations, shut-down, emergency shut-down, and shall include the availability and presence of a subject matter expert during human factors analysis of these procedures.
- Demobilization to occur March 31, 2018.

C. Compliance with National Grid's Procedures and Requirements

Bidders shall provide, where necessary, completed Exhibits along with their proposals; failure to provide completed exhibits and/or demonstration of compliance with National Grid's requirements may result in a bid being precluded from consideration. Additionally, the recipient of an award resulting from this RFP shall maintain compliance with National Grid's policies and procedures in

accordance with each of the Exhibits incorporated hereto for the duration of an agreement resulting from this RFP.

ISNetworld — Bidders shall use due diligence to subscribe to and receive an acceptable rating from ISNetworld for their health, safety and environmental oversight and review for the duration of the Agreement resulting from this RFP; acceptable shall be considered a rating by ISN of "C" or higher.
http://www.isnetworld.com/isn/asp/ISNMainFrameSet.asp

Waiver of this provision shall be granted on a non-discriminatory basis.

Emergency Contact: Bidder shall provide National Grid with a current list of 24 hour Emergency Contacts and provide updates as necessary during the term of the Agreement.

D. Proposals – Pricing Arrangements and RFP Evaluation Criteria

National Grid requests that bidders submit pricing options in the format included as **Exhibit 18**. Bidders' demonstrated compliance with Company's Safety, Procurement and Risk policies shall be evaluated as a threshold matter. Such compliance shall be assessed by Company's Safety, Procurement and Risk organizations, respectively. Information provided to ISNetworld and information provided pursuant to each of the **Exhibits** will be reviewed by Company's Safety, Risk and Procurement organizations. Bidders may also include a CV or other available information regarding experience and qualifications that will enhance the success of their project through design, engineering and construction associated with the Scope of Work.

E. Compliance with National Grid's Supplier Code of Conduct

At National Grid we are always seeking to improve our reputation as a sustainable and responsible company. We believe that a responsible approach to doing business is fundamental to what we do. In all of our activities we operate within Global Standards of Ethical Conduct. These standards include a commitment to both safety and the protection and enhancement of the environment and safeguarding our global environment for future generations. Our goal is to comply with regulations, reduce any impact that we may have and proactively seek out opportunities for improvement. In furtherance of this goal, National Grid has developed the "Supplier Code of Conduct" which describes our company's values and is incorporated into this RFP as **Exhibit 17**.

We value the business relationships we have with you and we believe that you are an important and central part of our success. This means that we expect you to carry out your business in line with these values. National Grid expects all of its suppliers to execute a Supplier Ethics Certification Statement. Through this certification statement, you are confirming that you have read and understand the Global Supplier Code of Conduct and that you will communicate the same information to all of your employees and any subcontractors that you retain on behalf of National Grid. **This certification statement attached hereto as Exhibit 8 needs to be signed prior to performing any work for National Grid.**

II General Procedures

A. Submission of Proposals

Proposals must be submitted electronically. National Grid reserves the right to reject any proposal at its discretion. All proposals must be sent to the National Grid contacts listed below and must include contact information in the event that National Grid has questions related to the Proposal.

Should bidder have any questions, they must submit them to the National Grid contacts listed below via email. All questions and responses will be distributed to all potential bidders.

National Grid Contacts:

John E. Allocca
Director Gas Contracting and Compliance
100 E. Old Country Road
Hicksville, NY 11801
Telephone: (516) 545-3108
Email address: john.allocca@nationalgrid.com

Elizabeth D. Arangio
Director Gas Supply Planning
40 Sylvan Road E1
Waltham, MA 02451
Telephone: (781) 907-1639
Email address: elizabeth.arangio@nationalgrid.com

Samara Jaffe
Lead Program Manager
100 E. Old Country Road
Hicksville, NY 11801
Telephone: (516) 545-5408
Email address: samara.jaffe@nationalgrid.com

Janet A. Prag
Contract Specialist
100 E. Old Country Road
Hicksville, NY 11801
Telephone: (516) 545-5463
Email address: janet.prag@nationalgrid.com

B. Schedule

October 6, 2017	Prospective bidders must contact Kathy Sullivan by this date at (508) 509-0541or Zachary Kinton at (781) 697-7707 to schedule site visits of the Cumberland Site. *All visits must be scheduled and completed in advance of the offer submission deadline.* ***Site visits are expected to be conducted on October 11 & 12.***
October 16, 2017	Proposals must be submitted ***electronically*** to National Grid by 5:00 PM EST.
October 20, 2017	National Grid shall endeavor to make a preliminary selection and will confirm with the selected vendor its intention to continue negotiations for LNG services.
October 31, 2017	Target date for execution of a binding Transaction Confirmation with successful bidder.

C. Confidentiality

A bidder may request that specific information contained in or relative to its proposal be treated by National Grid on a confidential basis. Such a request shall be clearly stated on every page of the portion of the proposal on which confidential information may appear and identify the specific information sought to be protected. National Grid and its representatives shall take reasonable steps to protect the information that is clearly identified as confidential from disclosure to third parties. Bidders should understand that National Grid might deem it necessary to disclose non-proprietary information regarding the RFP and/or to disclose confidential information in connection with any necessary submission to the appropriate regulatory authorities. Upon request by bidder, National Grid shall request that information designated as confidential by the bidder be treated as confidential and proprietary in accordance with the provisions of applicable laws and regulations and protected from disclosure to third parties. National Grid will request, but

cannot ensure that such treatment will be granted by any of these regulatory authorities.

In no event shall National Grid be liable for damage resulting from an inadvertent disclosure of confidential information during the period of review and analysis of proposals, during subsequent contract negotiations or from disclosure mandated by any relevant regulatory authority.

D. Company's Rights

National Grid reserves the right to reject any and all bids or to terminate this RFP process at its sole discretion. National Grid may elect to delay all or part of the contract award schedule and to request re-bids if necessary. The issuance of this RFP in no way obligates National Grid to negotiate a contract with any bidder. National Grid reserves the right to negotiate with any bidder any provision of its bid or contract proposal.

National Grid shall be under no obligation to accept the lowest cost proposal or to return any proposals or materials submitted in response to the RFP. National Grid reserves the right to select all or portions of any completed bids. Proposals will be evaluated on the basis of quantitative and qualitative factors at National Grid's sole discretion. National Grid reserves the right to purchase services at any time from any source outside of the context of this RFP.

We look forward to receiving your proposal.

Exhibit 18
Pricing Proposal

Description	Cost
Monthly Lease of LNG Queen Storage Vessels (Contractors should specify the number of vessels it will utilize)	
Mobilization/Demobilization Charge(s)	
Technician Cost	

Exhibit 19
Transaction Confirmation

Date:

This Transaction Confirmation for Liquid Natural Gas service is entered into by and between [National Grid USA Service Company/ National Grid Gas Delivery Company] ("National Grid"), a New York Corporation with offices at 100 East Old Country Road, Hicksville, NY 11801 and _____ ("Contractor") for services at National Grid's location at Cumberland LNG Facility Injection.

Scope of Work: (from RFP and Contractor's proposal)

Pricing: (from Exhibit 18)

Invoicing and Payment: Contractor shall invoice National Grid monthly for services rendered within five (5) business days from the close of the month such services were provided.

Special Conditions: This Transaction Confirmation was awarded pursuant to National Grid USA Service Company, Inc. Request for Proposals for LNG Storage Injection Services on behalf of The Narragansett Electric Company, September 29, 2017 and the Exhibits attached thereto, which are incorporated into and made a part hereof.

Agreed to as of the date first written above by:

National Grid USA Service Company, Inc.

By: _____ **By:** _____

Name: _____ **Name:** _____

Title: _____ **Title:** _____

Attachment DIV 3-9(c)

REDACTED

Prepared by or under the supervision of: Stephen P. Greco

Division 3-10

Request:

Re: the Supplemental Direct Testimony of National Grid Witness Greco at page 10, line 17, through page 11, line 4. Please detail the criteria the Company will use to determine "when the weather is cold enough" to test the system.

Response:

During the testing phase of the portable liquefied natural gas (LNG) equipment, the Company plans to vaporize LNG up to the maximum required peak-hour volume of approximately 750 dekatherms (dth) per hour. This requires that customer demand for gas on the distribution system facilitate a flow rate of at least 750 dth per hour from the Cumberland site. Because customer demand for gas typically increases as the weather gets colder, the "weather is cold enough" when this flow rate can be achieved. Initial analysis indicates that 20 heating degree day (HDD) conditions would facilitate the needed flow rate for maximum capacity testing.

Division 3-11

Request:

Re: the Supplemental Direct Testimony of National Grid Witness Greco at page 10, line 17, through page 11, line 4. Please detail the following with respect to the referenced "test" of the system in mid-December 2017:

a. The specific procedures that will be used to "test the system;"

b. The anticipated duration of each "test" procedure;

c. Specification of all measurements or readings the Company intends to record as part of the referenced "test" of the system;

d. The amount of gas measured in terms of gallons and Dth that will be required to run the referenced "test."

Response:

a. Operating Procedures to test the equipment will be available after a bidder has been selected and modified to suit the site conditions. Further modifications may be required pending a Process Hazard Analysis that the Company will perform in November 2017.

b. The anticipated duration for the test phase is two days and will include a minimum of two tests, depending on test results.

c. Gas Control will monitor the pressure and flow that is being sent out of the Cumberland LNG facility. LNG Operations is looking to capture data regarding gas send out rate, gas send out pressure, temperature, and various parameters associated with the portable supply trailer, including pressure, level, and flow rate.

d. The company is requesting five trucks with an equivalent of approximately 4,691 dekatherms to run the tests.

Division 3-12

Request:

Re: the Supplemental Direct Testimony of National Grid Witness Greco, Attachment SPG-1. Please provide a complete copy of the "actual proposal" referenced in the Note at the bottom of the Attachment SPG-1.

Response:

Attachment DIV 3-12 provides the proposal referenced in the Note at the bottom of Attachment SPG-1 to the pre-filed direct testimony of Stephen P. Greco. The confidential proposal contains both one time and recurring costs. Please note that Attachment DIV 3-12 is an estimate only, subject to change through the Request for Proposal (RFP) bidding process. Attachment DIV 3-12 has been redacted to protect the name of the third-party who provided the estimate.

[redacted]

Estimate

From [redacted]

Estimate For

National Grid
Zach Kinton
Supervisor Operations
Providence & Cumberland LNG
Mobile: (781) 697-7707
Email: Zachary.Kinton@nationalgrid.com

Issue Date 09/13/2017

Subject National Grid- Cumberland LNG Winter Peaking Project Month-to-Month Lease

Description	Quantity	Unit Price	Amount
4- LNG Queen Storage Vessels (13,500 gallon capacity) Complete Piping Solution -steel braided flex hosing -piping manifold setup -flanges/connections	1.00	$67,500.00	**$67,500.00**
*Mobilization of Equipment (Initial month setup) -Transportation (HAZMAT) of equipment to site (from Texas). -Transportation of cryogenic technicians. -Transportation of service vehicles -Labor to set up of equipment on site -Safety permitting & inspection	1.00	$77,000.00	**$77,000.00**
*Demobilization of Equipment Upon Project Completion (final month)	1.00	$74,000.00	**$74,000.00**
2 Field Service Technicians. All in price, includes all onsite and standby labor and per diem, per month. *Per Diem Includes airfare, lodging and meals for crew.	1.00	$81,000.00	**$81,000.00**

Estimate Total **$299,500.00**

Notes

Estimate only, All quantities adjusted upon completion and invoiced monthly.

Division 3-13

Request:

Re: the Supplemental Direct Testimony of National Grid Witness Greco, Attachment SPG-1. For Item 1 in Attachment SPG-1, please provide a breakdown of the "Unit Cost" showing the costs included for:

a. Steel braided flex hosing
b. Piping manifold setup
c. Flanges/connections
d. The cost of each trailer independent of the items identified in parts a., b., and c., above.
e. Explain whether "Piping manifold setup is a one-time cost or a cost that must be incurred each month for each trailer rented, and if it is a costs that must be incurred multiple times during a six month rental period, explain all factors to determine the frequency with which "piping manifold setup" costs must be incurred and the costs per setup.

Response:

a.-d. The Company does not currently have a breakdown of costs for steel braided flex hosing, piping manifold setup, flanges/connections, and/or the cost of each trailer independent of the items identified in parts (a), (b), and (c) herein. The Company is currently in the process of evaluating bids received in response to a Request for Proposal (RFP) and will update this response and Attachment SPG-1 to the testimony of Stephen P. Greco as soon as its evaluation is complete.

e. The piping manifold is a one-time cost that is included with the proposal to furnish portable LNG trailers. Upon finalization of a site plan, the Company will request ownership of the piping manifold such that this can become a onetime cost.

Division 3-14

Request:

Re: the Supplemental Direct Testimony of National Grid Witness Greco, Attachment SPG-1. For Item 2 in Attachment SPG-1, please:

a. Provide a breakdown of the composition of the $77.000 "Unit Cost" cited, showing separately the costs included for:

   i. Transportation (HAZMAT) of equipment to the site (from Texas).
   ii. Transportation for cryogenic technicians.
   iii. Transportation of service vehicles
   iv. Labor to set-up equipment on site
   v. Safety permitting & inspection

b. Provide the qualifications required of the referenced "cryogenic technicians" and explain how the referenced "cryogenic technicians differ from the "Field Service Technicians referenced in Item 4.

c. Identify the number of persons employed by National Grid in Rhode Island or neighboring states who qualify as "cryogenic technicians."

Response:

a. The Company does not currently have a breakdown of the costs listed in Division 3-14(a). The Company is currently in the process of evaluating bids received in response to a Request for Proposal (RFP) and will update this response and Attachment SPG-1 to the pre-filed direct testimony of Stephen P. Greco as soon as its evaluation is complete.

b. The terms "Field Service Technician" and "cryogenic technician" are interchangeable. Such technicians hold their liquefied natural gas (LNG)/compressed natural gas (CNG) licenses through the applicable regulatory agency in their home state.

c. No National Grid personnel in Rhode Island or neighboring states qualify as "cryogenic technicians."

Prepared by or under the supervision of: Stephen P. Greco

Division 3-15

Request:

Re: the Supplemental Direct Testimony of National Grid Witness Greco, Attachment SPG-1. For Item 3 in Attachment SPG-1, please detail all personnel, equipment, materials, and procedures that will be required for "demobilization of equipment upon project completion."

Response:

The basic demobilization of equipment typically consists of the following steps:

a) Labor to demobilize equipment on site includes the following:
    1. Demobilization of equipment includes pipework, hoses, and manifold assemblies, as well as the portable trailer.
    2. Preparation for Department of Transportation transport, including purging. This work is estimated based on two technicians and one supervisor from the prospective bidder, and a complement of existing National Grid personnel.

b) Demobilization costs include the following:
    1. Transportation of equipment from the Cumberland LNG site to the prospective bidder's location or site.
    2. Transportation for cryogenic technician(s) and supervisor.
    3. Transportation of service vehicles.

Division 3-16

Request:

Re: the Supplemental Direct Testimony of National Grid Witness Greco, Attachment SPG-1. Item 4 in Attachment SPG-1 references "*2 Field Service Technicians*." With respect to those Field Service Technicians, please:

a. Provide the qualifications required of the referenced "Field Service Technicians;"

b. Provide the assumed "airfare cost," assumed destination, and frequency of travel;

c. Provide the "per diem" rates used to compute costs for:

   i. Lodging
   ii. Meals
   iii. All other items included in the "per month" costs.

d. For the referenced on-site and standby labor, provide:

   i. The qualifications for all personnel included in on-site labor;
   ii. The qualifications for all personnel included in standby labor;
   iii. The number of on-site personnel required;
   iv. The number of standby personnel required;
   v. The expected number of hours required for each classification of personnel referenced;
   vi. The "per diem" rate and total cost "per month" for each classification of personnel required.

Response:

a. Training and Qualifications:
National Grid will require the successful bidder to show documentation of training for its Field Service Technicians in accordance with the applicable requirements stated in National Fire Protection Association (NFPA) 59A Sections 5.9 and 14.9. This code outlines the qualifications required for portable liquefied natural gas (LNG) facilities and personnel training.

Division 3-16, page 2

b. Assumed Airfare Costs:
Travel costs for the Field Service Technicians can vary, as some companies have local personnel while others need to bring personnel in from other states. National Grid will have more information after completing its evaluations of the bids in response to the Request for Proposal (RFP).

c. Per Diem Rates:
Per diem rates for lodging and meals for crew, and all other per diem items, will vary based on the selected contractor, depending on location of travel of the technicians.

d. On-site and Standby Labor requirements:
   i. Qualifications for all personnel included in on-site labor will require personnel to meet the requirements of NFPA 59A 5.9 and 14.9.

   ii. Qualifications for all personnel included in standby labor will require personnel to meet the requirements of NFPA 59A 5.9 and 14.9.

   iii. The Company estimates that the number of on-site personnel requirements will vary. For mobilization and demobilization, the Company anticipates a supervisor and two or three technicians, in addition to the existing plant personnel of National Grid. For operations, is the Company projects there will be two 12-hour shifts with one technician from the contractor, in addition to National Grid's normal operators of the plant.

   iv. The number of standby personnel will consist of one standby contractor for a 12-hour shift, in addition to the normal National Grid personnel on standby as required during peak shaving season.

   v. The Company expects 12-hour shift rotations of contractors, along with the normal National Grid personnel as required during the peak shaving season.

   vi. The "per diem" rate and total cost "per month" for each classification of personnel required will vary depending on the rate of the bidders in response to the RFP. National Grid will have more information after completing its evaluation of the bids.

Division 3-17

Request:

Re: the Supplemental Direct Testimony of National Grid Witness Greco, Attachment SPG-1. Item 4 in Attachment SPG-1 references "*2 Field Service Technicians*." With respect to those Field Service Technicians, please:

a. Indicate whether the referenced "Field Service Technicians" are expected to be contract personnel or National Grid employees;

b. Provide the data, analyses, and criteria used to determine whether the referenced "Field Service Technicians" would or would not be more cost-effectively hired as National Grid employees.

c. Identify the number of National Grid employees in Rhode Island or neighboring states that qualify as "Field Service Technicians" for the purpose of the LNG related activities outlined in Attachment SPG-1.

Response:

a. The "Field Service Technicians" are expected to be contract personnel.

b. No National Grid employees are currently trained or qualified to operate the Queen Storage units. The amount of operating time that is forecasted is two days of testing and two days of operations. Given the complexity of the equipment, the time to train a National Grid employee is estimated at five days, which exceeds the amount of time that a trained Field Service Technician would be required at the site to operate the equipment. For this reason, it is recommended that the Field Service Technicians be contracted.

c. No National Grid employees in Rhode Island or neighboring states qualify as "Field Service Technicians" for the purpose of LNG-related activities outlined in Attachment SPG-1 to the pre-filed direct testimony of Stephen P. Greco.

Prepared by or under the supervision of: Stephen P. Greco

Division 3-18

Request:

Re: the Supplemental Direct Testimony of National Grid Witness Greco, Attachment SPG-2. Item 4 in Attachment SPG-1 references "*2 Field Service Technicians*." With respect to those Field Service Technicians, please:

a. Detail and explain the derivation of the entries in the Column headed "Portable LNG Supply Need," including all supporting workpapers, data, assumptions, and analyses.

b. Identify the specific lines, columns, or data entries to which each "Note" at the bottom of Attachment SPB-2 (i.e., Notes 1 through 5) is applicable.

Response:

a. The Company determined the "Portable LNG Supply Need" based on anticipated inventory usage for testing, Peak Day Supply requirement, and Peak Day Supply requirement for contingency.

As described in the pre-filed direct testimony of Stephen P. Greco at Page 5, Lines 9-11, the Company proposes to mobilize four portable high pressure trailers, each with a capacity of 13,520 gallons. The Company proposes to fill all four portable high pressure trailers for testing. Therefore, the Portable LNG Supply Need for testing is 54,080 gallons of LNG. Using the conversion factor of 0.08673 dekatherms (Dth) per gallon of LNG, the equivalent Dth value is 4,691 Dth.

The Cumberland LNG tank had provided up to 30,000 Dth per day. The agreement with the Tennessee Gas Pipeline Co., L.L.C. for 24,000 Dth per day remains in the Company's portfolio through October 31, 2018. Therefore, the remaining volume calculated to make up the total volume historically provided by the Cumberland LNG tank is 6,000 Dth per day.

The Company's Response to Division 3-1(b)(i) at Table 1 indicates there is a forecast of one occurrence of a peak day of 68 heating degree days (HDD) in a Design Winter. As a contingency, the Company has secured portable LNG supply of 6,000 Dth in the event a second peak day occurs.

Prepared by or under the supervision of: Stephen P. Greco

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b. In Attachment DIV 3-18, the Company has revised the original table in Mr. Greco's Attachment SPG-2 to identify the column to which each note applies. The Company has also added notes in Attachment DIV 3-18 to further explain the derivation of the entries.

RI Portable LNG Portfolio

Anticipated Inventory Usage	Portable LNG Supply Need Dth (1) (2) (6) (7)	Onsite Storage Equivalent Dth (1) (2) (6) (7)	Calculated # Trucks (4)	Equivalent Supply Makeup Dth (1) (2) (6) (7)	Calculated # Trucks (4)	Total Calc # Trucks (4)	Actual # Trucks (8)
Testing	**4,691**	4,691	4.94	0	0	4.94	**5**
Peak Day Requirement	**6,000**	4,691	4.94	1,309	1.38	6.32	**7**
Peak Day Requirement Contingency	**6,000**	4,691	4.94	1,309	1.38	6.32	**7**
	16,691						**19**

Notes

1 - Assumption that one (1) high pressure trailer holds 13,520 gallons of LNG
2 - Plan is to mobilize four (4) high pressure trailers
3 - One (1) LNG Truck can deliver an average of 10,000-12,000 gallons of LNG
4 - This is calculated using 950 dth per LNG Trailer
5 - Anticipated boiloff is less than 1% of total volume for the season
6 - There is approximately 0.08673 Dth of natural gas per gallon of LNG.
7 - A btu heating value of 1.045 mmbtu/cf was used to convert cf to Dth
8 - The total calculated trucks is rounded up to the next whole number for the actual truck count