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Attachments BRO-1 through BRO-5

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS FOR THE RECORD.

A. My name is Bruce R. Oliver. My business address is 7103 Laketree Drive, Fairfax Station, Virginia, 22039.

Q. BY WHOM AND IN WHAT CAPACITY ARE YOU EMPLOYED?

A. I am employed by Revilo Hill Associates, Inc., and serve as President of the firm. I manage the firm's business and consulting activities, and I direct its preparation and presentation of economic, utility planning, and policy analyses for our clients.

Q. ON WHOSE BEHALF DO YOU APPEAR IN THIS PROCEEDING?

A. My testimony in this proceeding is presented on behalf of the Division of Public Utilities and Carriers (hereinafter "the Division").

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. This testimony addresses issues relating to the National Grid (or hereinafter "the Company") Annual Gas Cost Recovery (GCR) filing. This testimony reviews and comments on the content of the September 1, 2015 direct testimony of witnesses Arangio, Leary, Poe and McCauley, as well as the attachments submitted in support of those testimonies and the Company's responses to data requests.

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Q. WHAT EXHIBITS ARE YOU SPONSORING AS PART OF THIS TESTIMONY?

- A. Attached to this testimony are five attachments. They include:
- Attachment BRO-1: Proposed Changes in GCR Charges by Rate Class
 - Attachment BRO-2: Changes in Costs by GCR Cost Component
 - Attachment BRO-3: Changes in Forecasted Normal Weather Sales and Throughput
 - Attachment BRO-4: Changes in Forecasted Design Winter Throughput
 - Attachment BRO-5: Comparison of Forecasted and Actual Throughput by Rate Class

II. SUMMARY

Q. PLEASE SUMMARIZE YOUR ASSESSMENT OF THE COMPANY'S 2015 GCR FILING.

- A. My review of National Grid's GCR filing produces the following findings and recommendations:
- The projected 2015/16 gas costs upon which the Company has premised its proposed GCR charges appear reasonable.

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- 1 ➤ National Grid’s total projected fixed and variable gas supply and storage
2 costs **decline** for the third straight year. However, the **proposed reductions**
3 in GCR Charges in this proceeding **exceed 20%** due primarily to the
4 elimination of large under-recoveries of gas costs from the winter of 2013-14.
5
6 ➤ The Company’s computed GPIP incentive of **\$84,340** for the 12-months
7 ended June 30, 2015 is appropriately determined and should be accepted.
8
9 ➤ The **\$2,109,531.34** NGPMP incentive that National Grid computes for the
10 twelve months ended March 31, 2015 reflects a proper application of the
11 terms of the approved incentive mechanism.
12
13 ➤ In the context of the requirements for annual reconciliation of the Company’s
14 gas costs and revenues, the GCR Charges that National Grid proposes for
15 2015 may be accepted as presented despite reservations expressed herein
16 regarding: (1) the reasonableness of the Company’s forecasts of sales and
17 throughput volumes for the 2015/16 GCR year; and (2) the Company’s
18 forecasted monthly distribution of gas use by rate classification which can
19 affect the allocation of Fixed Cost responsibilities for High Load Factor and
20 Low Load Factor rate classes.

21

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1 of National Grid's gas cost reconciliation analyses, and their implications for the
2 GCR rates to be established by the Commission in this proceeding. **Section D**
3 presents an assessment of the Company's incentive calculations under the Gas
4 Procurement Incentive Plan ("GPIP"), as well as the performance of that incentive
5 mechanism over the past year. **Section E** offers a similar assessment of National
6 Grid's performance under the provisions of the Natural Gas Portfolio Management
7 Plan ("NGPMP"), the incentive amount for which the Company seeks approval in
8 this proceeding, and expectations for ratepayer benefits from the NGPMP over the
9 2015/16 GCR year. **Section F** evaluates the reasonableness of the forecasts of
10 normalized sales and design winter sales that have been relied upon in the
11 development of National Grid's proposed GCR charges. **Section G** considers the
12 Company's planned changes in its natural gas supply portfolio and the anticipated
13 impacts of those changes on its future gas supply costs.

14
15 **A. Changes in National Grid's GCR Rates and Gas Costs**

16
17 **Q. WHAT ARE THE COMPANY'S PROPOSED CHANGES IN GCR CHARGES?**

18 A. National Grid's filing proposes significant reductions in its GCR charges for all firm
19 gas sales service rate classifications. As shown in **Exhibit BRO-1**, the Company
20 proposes to lower its GCR charges for Residential Heating customers, Small C&I
21 customers, Medium C&I customers, Low Load Factor Large C&I customers, and

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1 Low Load Factor Extra Large C&I customers by **20.7%** from \$0.6871 per therm to
2 **\$0.5446 per therm**. The Company's September 1, 2015 filing also proposes a
3 GCR **reduction** of **22.7%** for High Load Factor gas sales service customers. As a
4 result, GCR charges for those customers would also **decline** from \$0.6692 per
5 therm to **\$0.5174 per therm**.

6 For Marketer Transportation, National Grid computes that its Weighted
7 Average Cost of Upstream Pipeline Transportation declines from \$0.5039 per
8 dekatherm ("Dth") to **\$0.4219 per Dth** (i.e., a **16.3% reduction**). However, the
9 Company's computed FT-2 Demand Rate increases **4.2%** from \$8.5224 per Dth to
10 **\$8.8817 per Dth**.

11
12 **Q. DO THE PROPOSED REDUCTIONS IN NATIONAL GRID'S GCR CHARGES**
13 **INDICATE THAT THE COMPANY'S GAS COSTS HAVE FALLEN BY MORE**
14 **THAN 20% SINCE LAST YEAR?**

15 **A.** No. Attachment BRO-2 demonstrates that the Company's **overall costs of gas**
16 (including both Fixed and Variable gas cost components) prior to reconciliations,
17 credits, and other adjustments have only **declined 6.7%** from the levels projected in
18 its 2014 GCR filing in Docket 4520. This marks the third straight year in which the
19 Company's total gas costs (prior to Adjustments and Reconciliations) have declined

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1 from the prior year's projections.¹ The 6.7% reduction in estimated total gas costs
2 for 2015/16 reflects the **net effect** of a 12.7% decrease in the Company's variable
3 gas costs and a 3.3% increase in its Fixed Gas Supply and Storage Costs.

4 The factors that account for the difference between the 6.7% decline in
5 National Grid's overall costs of gas and the proposed greater than 20% reductions
6 in its GCR charges for firm sales customers are identified in the analysis that is
7 presented in Attachment BRO-2. As shown in that exhibit, the factors having the
8 largest influence on the Company's projected reduction in its overall costs of gas
9 include:

- 10
- 11 1. A **\$25.1 million reduction** in the Company's **Deferred**
12 **Variable Cost** recovery requirement;
 - 13
 - 14 2. An **\$11.7 million reduction** in the Company's projected
15 **Variable Gas Costs**;
 - 16
 - 17 3. A **\$4.3 million increase** in National Grid's Deferred Fixed Cost
18 Recovery requirement;
 - 19

¹ As shown in Attachment BRO-2 the Company's **total gas costs (prior to adjustments and reconciliations)** declined 2.1% between 2012/13 and 2013/14. They also declined 4.2% between 2013/14 and

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1 4. A **\$2.5 million increase** in customers' NGPMP benefits; and

2

3 5. A **1.8% increase** in the forecasted total annual gas sales
4 volumes which the Company uses to compute GCR Charges.

5

6 The \$25.1 million reduction in National Grid's under-recovery of Variable Gas
7 Costs constitutes the largest single driver of the Company's computed reduction in
8 GCR charges for the 2015/16 gas year. It is more than double the Company's
9 forecasted \$11.7 million reduction in Variable Gas Costs for 2015/16. National
10 Grid's computed **\$25.1 million reduction in Deferred Variable Costs** is partially
11 offset by a computed **\$4.3 million increase** in Deferred Fixed Cost Recovery
12 requirements. The other major cost factor contributing to the computed reductions
13 in National Grid's GCR charges is an increase in Rhode Island customers' share of
14 asset management revenue under the NGPMP. The credits to gas costs that
15 Rhode Island customers will receive as their share of net NGPMP revenues
16 increases from \$6.9 million in Docket 4520 to over **\$9.4 million** for the 2015/16
17 GCR year (i.e., a \$2.5 million increase).

18 The Company's forecasted increase in gas service volumes for the 2015/16
19 GCR period serves to increase National Grid's forecasted total gas costs. However,
20 the increase in National Grid's forecasted sales and throughput also enables the

2014/15. Thus, the Company's projected gas costs (prior to adjustments and reconciliations) have **declined**

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1 Company to spread its recovery of fixed cost gas supply and storage costs over
2 greater units of service, thereby reducing slightly the Company's average fixed cost
3 per unit of forecasted sales. Still National Grid's average Fixed Costs per Dth of
4 annual sales in Docket 4520 was \$1.04, while a similar computation based on the
5 Company's filing in this proceeding yields an average Fixed Cost of \$1.14 per Dth of
6 annual sales.

7

8 **B. Pricing of Capacity Assignments for Marketers**

9

10 **Q. HOW DOES NATIONAL GRID PRICE THE PIPELINE CAPACITY AND STORAGE**
11 **AND PEAKING CAPACITY THAT IT ASSIGNS TO MARKETERS FOR USE IN**
12 **SERVING TRANSPORTATION SERVICE CUSTOMERS?**

13 A. Capacity assigned to marketers is priced through three mechanisms. First, pipeline
14 capacity is priced on a pipeline path basis subject to reconciliation in the next
15 annual GCR proceeding. Second, charges for peaking and storage capacity that is
16 used by marketers to serve FT-2 customers are billed through the FT-2 Demand
17 charge. Third, a Storage and Peaking Charge for FT-1 customers eligible for TSS
18 service is separately computed and separately applied.

19

12.5% over the last three GCR proceedings.

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1 **Q. HOW DOES NATIONAL GRID COMPUTE THE DOLLAR AMOUNTS IT**
2 **PROPOSES TO BILL TO MARKETERS FOR ASSIGNMENTS OF PIPELINE**
3 **CAPACITY?**

4 A. The Company's charges to marketers for assignments of pipeline capacity comprise
5 a base charge which reflects the system average cost of pipeline capacity and a set
6 of surcharges and credits which reflect the differences between the system average
7 costs and the computed cost for 100% load factor use of assigned capacity where
8 the applicable surcharge/credit varies based on the pipeline path(s) used by each
9 marketer. The calculation process is explained in the testimony of witness Arangio
10 at pages 21 through 23 and detailed in Attachment EDA-4 to that testimony.

11 For each pipeline path utilized by a marketer, the marketer is billed a monthly
12 surcharge or credit which reflects the difference between the 100% load factor costs
13 (stated on a dollars per Dth basis) for the pipeline chosen and the system average
14 delivered cost. In the Company's two subsequent annual GCR filings, National Grid
15 provides analyses that reconcile its actual pipeline fixed and variable costs for the
16 system and for each pipeline path system average costs and surcharges and credits
17 that were established in the last GCR proceeding. This reconciliation process is
18 detailed for 2014/15 on page 1 of witness Leary's Attachment AEL-7 and on page 2
19 of that Attachment for 2013/14. Page 2 Attachment AEL-7 also computes a total
20 dollar adjustment for the two annual periods. The total computed reconciliation
21 amount for 2013/14 and 2014/15 is then applied in the determination of the

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1 proposed system average 100% load factor rate for next GCR period (i.e., in this
2 proceeding the 2015/16 GCR year).

3 The Company's proposed FT-2 Demand Charge and its Storage and
4 Peaking Charge for TSS eligible FT-1 customers for 2015/16 are developed in
5 witness Leary's Attachment AEL-5. The ties between the inputs used to determine
6 those charges and the Company's projected 2015/16 gas costs are well docu-
7 mented in the pages of Attachment AEL-5 and the references provided therein.

8

9 **Q. DO YOU HAVE ANY CONCERNS REGARDING NATIONAL GRID'S RECON-**
10 **CILIATIONS OF THE CREDITS AND SURCHARGES BILLED TO MARKETERS**
11 **WITH THE COMPANY'S ACTUAL COSTS FOR PIPELINE CAPACITY THAT IS**
12 **SUBJECT TO ASSIGNMENT?**

13 A. As long as the pipeline capacity assigned to marketers is fully utilized, or near fully
14 utilized, by each marketer to whom such assignments are made, the reconciliation
15 process used by the Company will produce reasonable and equitable results.
16 However, the reconciliation process used by National Grid has two perceived
17 vulnerabilities.

18 First, the initial surcharges and credits are computed on the assumption that
19 assigned capacity will be utilized at a 100% load factor, but the reconciliation
20 amounts are computed based on actual marketer activity (throughput volumes) not
21 assumed 100% load factor operations. As a result, any additional costs or credits

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1 attributable to a pipeline path that is less than fully utilized by a marketer are
2 effectively shifted to firm gas sales service customers.

3 Second, the computed reconciliation adjustment is applied in a manner that
4 implicitly assumes the adjustment is reflective of an error in the Company's
5 projection of its system average costs for pipeline capacity. If the computed
6 adjustment is actually attributable to differences in the actual and projected costs for
7 individual pipelines with little or no impact on the Company's overall average
8 pipeline capacity costs, the adjustment methodology that National Grid employs
9 may distort the distribution of actual cost responsibilities among marketers.

10 The Company's initial reconciliation analyses are premised on partially
11 forecasted data. However, the Company's re-examination of those reconciliations
12 in the second annual GCR filing following the establishment of a set of surcharges
13 and credits allows for full recognition of actual costs and actual volume measures.
14 As seen in Attachment AEL-7, the Company reconciles its costs for 2014/15 based
15 on the twelve months of the current GCR period even though actual costs and
16 usage information was not available at the time of the Company's filing for the last
17 three months of the 2014/15 GCR year.

18

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1 **Q. ARE ANY RECONCILIATIONS PERFORMED FOR STORAGE AND PEAKING**
2 **CHARGES BILLED TO MARKETERS?**

3 A. No. The Company offers no reconciliation of actual and forecasted costs for either
4 its FT-2 Demand charges or the Storage and Peaking Charges for FT-1 customers
5 who are eligible for TSS service.

6
7 **Q. ARE COMPANY'S PROPOSED CHARGES IN THIS PROCEEDING FOR**
8 **MARKETERS' USE OF ASSIGNED PIPELINE CAPACITY AND FOR STORAGE**
9 **AND PEAKING CAPACITY REASONABLE?**

10 A. Yes, in the context of this proceeding, the proposed charges appear reasonable.
11 However, future capacity cost reconciliations and capacity charge proposals may
12 warrant a re-examination of the assumptions and methods underlying those
13 determinations, particularly if significant additional assignments of pipeline and/or
14 storage and peaking capacity are required by current Capacity Exempt customers
15 who may choose to relinquish their Capacity Exempt status.

16
17 **Q. DOES THE COMPANY PROPOSE ANY CHANGES IN ITS CUSTOMER CHOICE**
18 **PROGRAM IN THIS PROCEEDING THAT MIGHT IMPACT ITS DETERMINATION**
19 **OF MARKETERS' CAPACITY COST RESPONSIBILITIES?**

20 A. No, it does not. However, National Grid has proposed changes to its Customer
21 Choice Program in Docket 4323 that could, and arguably should, impact the manner

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1 in which pipeline capacity costs are assigned to transportation service customers if
2 current Capacity Exempt customers are permitted to relinquish their current status
3 and seek assignments of capacity from National Grid.

4

5 **C. Gas Cost Reconciliations**

6

7 **Q. HAVE YOU REVIEWED THE COMPANY'S RECONCILIATION OF GAS COSTS**
8 **FOR THE TWELVE MONTHS ENDED JUNE 30, 2015?**

9 A. Yes, I have. The Company's gas cost reconciliation calculations are presented in
10 the Company's "Annual Gas Cost Recovery Reconciliation Report." That report is
11 provided in this docket as Attachment AEL-2 to the Direct Testimony of witness Ann
12 E. Leary for the Company which was filed on September 1, 2015. In that
13 reconciliation report, National Grid details its costs and revenue collections by
14 month for each of the major components of its Gas Supply Costs for the twelve
15 months ended March 31, 2015. Moreover, an electronic version of the Company's
16 gas cost reconciliation analyses was provided to the Division in advance of the
17 Company's September 1, 2015 filing in this proceeding. National Grid's gas cost
18 reconciliations have been reviewed and analyzed in considerable detail for this
19 testimony.

20

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1 **Q. ARE THE COMPANY'S RECONCILIATIONS MATHEMATICALLY ACCURATE?**

2 A. Our review of National Grid's gas costs reconciliations has found no basis for
3 questioning the reasonableness and accuracy of the Company's filed reconciliation
4 analyses in this proceeding.

5

6 **Q. WHAT ARE THE RESULTS OF NATIONAL GRID'S FILED GAS COST**
7 **RECONCILIATION ANALYSES?**

8 A. The Company's gas cost reconciliations show an aggregate deferred gas cost
9 balance as of March 31, 2015 of \$22,413,764. That aggregate balance represents
10 the net of a \$38,999,966 under-recovery of Variable Costs and a \$16,586,201 over-
11 recovery of Fixed Costs. However, as explained in the testimony of witness Leary,
12 the Company identified some curtailment penalty charges incurred by non-Firm
13 customers that were omitted from its original gas cost reconciliation analysis. To
14 properly reflect those penalty charge revenues, National Grid filed a Supplemental
15 2015 Annual Gas Cost Recovery Reconciliation Filing which reflects an additional
16 \$23,399 of Non-Firm margin credits for firm gas sales customers.

17 Since March 31, 2015, the Company's deferred gas cost balance has been
18 further reduced. As of the time of the Company's filing on September 1, 2015,
19 National Grid projected an end of October 2015 deferred gas cost balance of
20 \$8,227,655 comprised of a Variable Cost under-recovery of \$10,989,316, and a
21 Fixed Cost over-recovery of \$2,761,661. However, over the summer months (i.e.,

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1 June through August 2015) the Company's projected October 31, 2015 deferred
2 gas cost balance has grown, and on September 18, 2015 National Grid reported a
3 projected October 31, 2015 deferred gas cost balance of **\$9,149,232**. The growth in
4 that projected balance appears to be primarily attributable to the Company's
5 significant under-forecasting of variable gas costs for those months. Although gas
6 sales for June, July and August 2015 have been below forecasted levels, the
7 Company's reported Variable Supply Costs have been significantly higher than
8 forecasted. If this relationship between forecasted Variable Supply Costs and
9 actual Variable Supply Costs continues through September and October, National
10 Grid's actual end of October 2015 deferred gas cost balance could be in the range
11 of \$11.5 million to \$12 million (i.e., \$3.0 to \$4.0 million greater than the level
12 reflected in the Company's GCR rate calculations.

13

14 **Q. SHOULD THE COMMISSION ACCEPT THE COMPANY'S ANNUAL GAS COST**
15 **RECOVERY RECONCILIATION AS REVISED?**

16 A. Yes. However, the Commission should question the Company with respect to the
17 observed differences in forecasted and actual Variable Gas Costs as reflected in
18 the Company's monthly Deferred Gas Cost Recovery Reports. Of particular
19 concern is the fact that the forecasted variable gas costs reflected in those reports
20 do not seem to be related to the NYMEX Strip prices (as of July 31, 2014) upon

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1 which witness Arangio relied in Docket 4520 to develop the Company's filed gas
2 costs projections for the current GCR period.

3 For example, National Grid's revised monthly Deferred Gas Cost Recovery
4 Report for July (as filed on August 31, 2015) projected 676,833 Dth of gas sales for
5 August 2015 and Variable Costs of \$1,374,663. That equates to a projected
6 average variable cost of \$2.031 per Dth. The Company's actual results for August
7 2015 are reflected in its September 18, 2015 monthly Deferred Gas Cost Report. In
8 that report we find that the Company's actual gas sales volumes for August were
9 **below** the forecasted level for that month by **93,793 Dth or 13.9%**. However, the
10 Company's actual Variable Costs for August were **\$2,049,122 (i.e., 49.1%) above**
11 the Company's forecasted Variable Costs for that month. Thus, the combination of
12 lower actual sales and higher actual gas costs yields an actual average variable
13 cost of gas for August 2015 of \$3.515 per Dth or **73% above** the level the Company
14 had reflected in the forecasted data presented for that month in earlier monthly
15 Deferred Gas Cost Recovery Reports. Such large deviations between the
16 Company's forecasted and actual average costs per Dth warrant further
17 explanation.

18

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1 **D. GPIIP Incentive Calculations**

2

3 **Q. DOES THE COMPANY SEEK APPROVAL OF A GAS PROCUREMENT INCEN-**
4 **TIVE FOR THE 12 MONTH PERIOD ENDED JUNE 2015?**

5 A. Yes. The September 1, 2015 testimony of witness Stephen McCauley requests the
6 Commission's approval of a GPIIP incentive payment for the Company of **\$84,340**
7 for the 12-months ended June 30, 2015.

8

9 **Q. DO YOU FIND ANY REASON TO QUESTION THE ACCURACY OF THE**
10 **COMPANY'S GPIIP INCENTIVE CALCULATIONS?**

11 A. No, I do not. I have reviewed the supporting detail for the Company's mandatory
12 and discretionary gas purchases for the twelve months ended June 2015, and I find
13 that the Company's incentive calculation is consistent with the terms of the Gas
14 Procurement Incentive Plan (GPIIP).

15

16 **Q. IS THE GPIIP INCENTIVE MECHANISM CONTINUING TO FUNCTION IN A**
17 **MANNER THAT BENEFITS THE COMPANY'S FIRM GAS SALES CUSTOMERS?**

18 A. Yes. Market conditions have limited opportunities for the Company to obtain
19 incentives based on its gas commodity procurement activities over the last year.
20 However, the Company's overall natural gas commodity costs have continued to
21 decline, and the GPIIP incentive mechanism has contributed positively to those

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1 results. Thus, I do not assess a need for further adjustments to the GPIP incentive
2 mechanism at this time.

3

4 **Q. SHOULD THE COMMISSION APPROVE NATIONAL GRID'S REQUESTED GPIP**
5 **INCENTIVE PAYMENT FOR THE TWELVE MONTHS ENDED JUNE 2015?**

6 A. Yes. The Company has well-documented the basis for its request, and I find no
7 reason why the Commission should withhold its approval of the incentive amount
8 National Grid has requested.

9

10 **E. Natural Gas Portfolio Management Plan (NGPMP)**

11

12 **Q. DOES THE COMPANY REQUEST APPROVAL OF AN INCENTIVE PAYMENT**
13 **UNDER THE PROVISIONS OF THE NGPMP?**

14 A. Yes. National Grid, through the September 1, 2015 testimony of witness McCauley
15 presents a request for approval of a **\$2,109,531.34** NGPMP incentive for the
16 Company for the twelve months ended March 31, 2015.

17

18 **Q. IS THE INCENTIVE THAT NATIONAL GRID COMPUTES UNDER THE PRO-**
19 **VISIONS OF THE NATURAL GAS PORTFOLIO MANAGEMENT PLAN (NGPMP)**
20 **APPROPRIATELY COMPUTED?**

21 A. Yes, it is.

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1

2 **Q. IS THE LEVEL OF THE COMPANY'S NGPMP INCENTIVE SUBJECT TO A CAP**
3 **OR LIMIT ON THE AMOUNT OF THE INCENTIVE THAT NATIONAL GRID MAY**
4 **EARN FOR AN ANNUAL PERIOD?**

5 A. No, it is not. The Company's NGPMP incentive request in this proceeding is the
6 largest request it has filed under the terms of the NGPMP mechanism to date, but it
7 is not subject to any cap on annual incentive amounts. This open ended
8 arrangement serves two functions. First, it ensures that National Grid will continue
9 to have an incentive to maximize its natural gas portfolio management revenue in a
10 manner that benefits its customers as market conditions change. Second, it
11 recognizes National Grid's commitment to credit 100% of the first \$1.0 million of net
12 asset management revenue each year to its customers.

13

14 **Q. HOW DOES THE LEVEL OF THE COMPANY'S REQUESTED NGPMP**
15 **INCENTIVE COMPARE WITH THE ASSET MANAGEMENT BENEFITS THAT**
16 **FLOW TO RHODE ISLAND GAS USERS THROUGH THE NGPMP MECHANISM**
17 **FOR THE TWELVE MONTHS ENDED MARCH 31, 2015?**

18 A. In this proceeding, the Company shows total net asset management revenue under
19 the NGPMP mechanism of more than \$11.5 million. Of that amount, **over \$9.4**
20 **million** (or 81.7% of the total) accrues to the benefit of the Company's ratepayers.
21 This is the largest ratepayer benefit derived from the NGPMP program to date. The

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1 balance of National Grid's net asset management revenue for the twelve months
2 ended March 31, 2015 (i.e., \$2.1 million) represents the incentive earned by
3 National Grid.

4

5 **Q. DO YOU FIND ANY REASON TO CHALLENGE THE COMMISSION'S**
6 **APPROVAL OF THE NGPMP INCENTIVE THAT NATIONAL GRID REQUESTS?**

7 A. No, I do not.

8

9 **Q. WHAT LEVEL OF NET ASSET MANAGEMENT REVENUE FROM THE NGPMP**
10 **DOES THE COMPANY ASSUME IN THE DEVELOPMENT OF ITS PROPOSED**
11 **2015/16 GCR RATES?**

12 A. National Grid assumes that net asset management credits to ratepayers over the
13 2015/16 GCR year will roughly equate to the \$9.4 million level of NGPMP benefits
14 computed for ratepayers for the twelve months ended March 31, 2015.

15

16 **Q. IS THE LEVEL OF NGPMP CREDITS THAT THE COMPANY ASSUMES IN THE**
17 **DEVELOPMENT OF ITS PROPOSED 2015/16 GCR CHARGES REASONABLE?**

18 A. There is no guarantee that net asset management revenue over the next year will
19 equal or exceed the Company's actual experience for the twelve months ended
20 March 31, 2015. However, given existing constraints on gas pipeline capacity into
21 the New England market area and the lead times for acquiring new interstate

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1 pipeline capacity or alternative sources of reliable gas supply, it is reasonable to
2 expect that the value of National Grid's natural gas supply portfolio and the asset
3 management revenues that can be derived from that portfolio will be sustained over
4 at least the next couple of years. Thus, I have no problem with National Grid's
5 assumption that ratepayer benefits for the 2015/16 GCR period will approximate its
6 recent actual experience.

7
8 **F. Forecasted Sales and Throughput**

9
10 **Q. WHAT IS THE ROLE OF THE COMPANY'S FORECASTS OF SALES AND**
11 **THROUGHPUT REQUIREMENTS IN THE GCR PROCESS?**

12 A. In the determination of GCR charges, forecasts of sales and throughput
13 requirements under normal weather conditions and under design winter conditions
14 serve three purposes. First, they provide key inputs for the computation of National
15 Grid's projected GCR costs. Second, the Company's forecasts of design winter
16 requirements form the basis for the Company's allocation of Fixed Costs between
17 high load factor and low load factor service classifications. Third, forecasts of total
18 annual sales and throughput requirements provide the denominators for used in the
19 Company's computation of applicable charges on a dollars per therm basis. The
20 Company's forecasts of future gas service requirements also serve as important
21 indicators of the need for additional capacity to ensure the reliability of its service,

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1 particularly during periods of extreme weather, as reflected in measures of design
2 winter, cold snap, and design day requirements. The Company's long-range
3 forecasts of service requirements also play an important role in National Grid's
4 assessment of the economics of alternative gas supply resources.

5 In this proceeding, the Company's forecasts of gas service requirements are
6 major drivers of decisions regarding commitments to additional gas supply
7 resources. The September 1, 2015 testimony of National Grid witness Arangio
8 discusses a number of changes to the Company's gas supply resources that have
9 been made or are under consideration that could have large long-term impacts on
10 gas costs for the Company's Rhode Island gas consumers. Among the major
11 commitments National Grid has made, or is considering, are: (1) AIM project
12 capacity; (2) Tennessee Gas Pipeline ("TGP") Northeast Energy Direct ("NED")
13 project capacity; and (3) plans to construct facilities to liquefy pipeline gas as a
14 replacement for, or supplement to, existing sources of LNG supply. Furthermore,
15 the Company's forecasts of its requirements to serve its current firm capacity-
16 assigned customers may have substantial influence on determinations regarding
17 whether, when, and/or to what extent National Grid should accept applications from
18 current Capacity Exempt customers to revert to Capacity Assigned service.

19

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1 **Q. WHY SHOULD THE COMMISSION DIRECT PARTICULAR ATTENTION TO THE**
2 **COMPANY'S FORECASTS OF GAS SERVICE REQUIREMENTS IN THIS**
3 **PROCEEDING?**

4 A. In this proceeding, the testimony of National Grid witness Arangio discuss the
5 Company's long-term plans for meeting its natural gas requirements including its
6 commitment to a long-term purchase of additional pipeline capacity that will be part
7 of the Tennessee Gas Pipeline ("TGP") Northeast Direct ("NED") project, as well as
8 its pursuit of on-system gas liquefaction capability. Witness Arangio's testimony
9 also references the Company's proposed Customer Choice Program changes
10 which, if adopted, could have a significant impact on National Grid's future gas
11 supply and capacity requirements.

12 National Grid last addressed its long-term gas supply requirements in its
13 March 2014 long-range gas supply plan.² The purpose of that plan was to
14 *"demonstrate that the Company's gas-resource planning process has resulted in a*
15 *reliable resource portfolio to meet the combined forecasted needs of the Company's*
16 *Rhode Island customers at least-cost."*³ However, it now becomes apparent that
17 National Grid considers the forecast upon which it demonstrated the adequacy of its
18 gas resource planning in March 2014 to be substantially out-of-date. The forecasts
19 upon which it now relies for its long-range gas supply planning decisions projects

² National Grid's "Gas Long-Range Resource and Requirements Plan for the Forecast Period 2013/24 to 2022/23," dated March 10, 2014.

³ Ibid. at 3.

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1 substantially greater long-term growth particularly in design day and design winter
2 requirements than was previously foreseen. The forecasts of 2015/16 requirements
3 presented in Attachment AEL-1 at pages 10 and 11 depict only the first year of a
4 new ten year forecast that the Company has developed. It has relied on that new
5 forecast, which to date is not fully documented on the record of this proceeding (nor
6 in any prior proceeding), as the basis for capacity planning and policy recom-
7 mendations which could have substantial impacts on both the Company's reliability
8 of service and its costs of providing service in the coming years.

9 From the Division's perspective, a key role of the long-range gas supply plan
10 that the Company filed in March 2014 was to provide the Commission, the Division,
11 and other interested parties an understanding of the considerations and criteria the
12 Company relies upon to make its long-range gas supply planning decisions.
13 However, as the Company presents its plans in this proceeding for major new
14 commitments to fixed pipeline capacity costs and possibly further costs for LNG
15 liquefaction facilities, we find that the forecasts of long-range service requirements
16 upon which National Grid's March 2014 long-range plan was premised have been
17 supplanted by a new substantially different set of forecasts. Moreover, our review of
18 the information that has been provided with respect to the Company's new forecasts
19 finds numerous reasons to question the reasonableness of the forecasts upon
20 which National Grid now relies.

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Q. IS IT YOUR POSITION THAT NATIONAL GRID SHOULD BE BARRED FROM MAKING MAJOR REVISIONS TO ITS FORECASTS OF GAS SERVICE REQUIREMENTS OUTSIDE THE LONG-RANGE GAS SUPPLY PLAN FILING CYCLE?

A. Certainly not! Although it would be helpful if such changes are kept within the established biennial long-range planning reporting process. Still, I recognize that occasionally events and circumstances may necessitate an earlier re-examination of the forecasts that underlie the Company’s long-term planning decisions. However, if National Grid develops a new, substantially altered, set of forecasts for Rhode Island between the filing of its scheduled long-range gas supply planning reports and intends to use such forecasts as the foundation for major cost commitments, the Company should understand that it has a responsibility to: (1) identify major changes in its forecasts and the drivers of those changes; (2) detail any changes in the data and methods used to generate the new forecasts; and (3) justify the reasonableness of new forecast results in terms of: (a) the aggregate levels of requirements forecasted; (b) the details of the forecast results by customer classification; and (c) the forecasted distribution of usage over seasonal and monthly periods under normal weather and design winter conditions.

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1 **Q. WHAT MEASURES OF FORECASTED GAS SERVICE REQUIREMENTS ARE**
2 **PRESENTED BY NATIONAL GRID IN THIS PROCEEDING?**

3 A. Attachment AEL-1, page 11 of 15, provides the Company's estimates of monthly
4 and annual gas use by rate classification for the 2015-16 GCR year with Sales
5 service volumes and Transportation service volumes shown separately. In addition,
6 page 12 of 15 in Attachment AEL-1 provides forecasted Design Winter sales for the
7 coming winter (November 2015 – March 2016), as well as the Company's
8 forecasted Design Day Sendout requirement for the winter of 2015/16.

9

10 **Q. DOES WITNESS LEARY'S TESTIMONY PROVIDE SUPPORT FOR THE**
11 **REASONABLENESS OF THE FORECAST DATA INCLUDED IN ATTACHMENT**
12 **AEL-1?**

13 A. No. The Company's only support for those its forecast in this proceeding is
14 provided in a separate piece of testimony sponsored by witness Theodore Poe.

15 .

16 **Q. WHAT IS THE STATED PURPOSE OF WITNESS POE'S TESTIMONY IN THIS**
17 **PROCEEDING?**

18 A. At page 3, lines 1-3, of witness Poe's testimony, he indicates that the purpose of his
19 testimony is to *"provide support for the underlying retail and wholesale forecasts of*
20 *natural gas customer requirements that is used to estimated gas costs in the*
21 *Company's submission."*

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Q. HOW WOULD YOU SUMMARIZE THE CONTENT OF THE TESTIMONY THAT WITNESS POE PRESENTS IN SUPPORT OF THE COMPANY’S FORECASTS IN THIS PROCEEDING?

A. Witness Poe’s testimony is primarily descriptive of the general forecasting process. He provides little or no insight to the drivers of the substantial changes that can be observed when the details of the Company’s forecasts in this proceeding are compared to the comparable information by rate class, month and season from the Company’s forecast in Docket 4520. Although witness Poe’s testimony at page 5 provides a few basic observations regarding differences between the Company’s forecasts in this docket and the forecasts presented in Docket 4520, his discussion fails to highlight a number of more important and dramatic changes in the composition of the Company’s forecasts. For example, he fails to identify a **1.6% decline** in forecasted annual **Residential Sales**. Likewise, witness Poe’s notes an **11.3% increase** in National Grid’s forecasted growth in annual throughput requirements for **Commercial and Industrial (“C&I”) Transportation Service**, but he fails to address the manner in which that increase is distributed across C&I Transportation Service rate classifications. Moreover, the 11.3% increase in C&I Transportation Service volumes that he observes pales in comparison to the **21.7% increase** in annual volume requirements that the Company’s new forecasts project for **Medium C&I Sales Service** customers and the **22.9% increase** predicted for

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1 **Extra Large C&I High Load Factor Sales Service** customers. Likewise, his broad
2 brush comparisons fail to disclose many more substantial changes that are
3 embedded in the detail of the Company's forecasts.

4

5 **Q. DOES WITNESS POE'S TESTIMONY FULFILL ITS STATED PURPOSE?**

6 A. No. Witness Poe's only "*support*" for the Company's forecasts is found at page 6,
7 lines 1-7. The remainder of his testimony is merely descriptive of the Company's
8 general approach to forecasting process and a high level comparison of the results
9 of the forecasts the Company presents in this proceeding with the forecasts
10 National Grid presented in Docket 4520. At page 6, lines 3-4, of his Direct
11 Testimony, witness Poe submits that "[the Company's] *forecasted increase in*
12 *commercial and Industrial sales is indicative of projected improvement in Rhode*
13 *Island's remaining industrial base.*" However, he offers no information regarding the
14 composition of "*Rhode Island's remaining industrial base,*" the factors that will drive
15 or are driving the referenced "*improvement,*" or what causes that "improvement" in
16 Rhode Island's industrial base to translate into a dramatic year-over-year increase in
17 the Company's sales forecasted annual throughput volumes. Witness Poe also
18 testifies that "*Moody's continues to predict a turnaround in housing beginning in the*
19 *second half of this year,*" but he provides no citation to a specific Moody's study or
20 report and offers no information from which we can evaluate the reasonableness of
21 that prediction. Likewise, references to unquantified and documented "*increases in*

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1 *personal income, commercial output and total employment*” should not be accepted
2 as appropriate or substantial support for the Company’s substantially revised
3 forecasts. In response to Division data requests, witness Poe has provided large
4 amounts of data that purportedly served as inputs to the Company’s forecasting
5 models, but several of the annual data series used only include actuals through
6 2009 or 2010 and insufficient documentation of forecasted economic parameters is
7 provided to allow for independent verification or evaluation of those critical inputs.

8 In addition, the Company’s response to Division Data Request 3-4, page 3,
9 offers the following statement:

10
11 *“,, the difference between the 2014Q2 and 2015Q2 forecasts*
12 *of Commercial/Industrial Transportation are primarily driven by*
13 *the increased use per customer observations in the Company’s*
14 *actual historical data from the two very cold winters of PY2014*
15 *and PY 2015. While the UPC increases are coincidental with*
16 *the cold winters they could be caused by either the severity of*
17 *the weather, increased economic activity, or both.”*

18
19 This statement reveals a major flaw in the Company’s forecasts which could
20 explain and heavily discount the credibility of the large increases in Commercial and
21 Industrial throughput requirements that National Grid presents in this proceeding.

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1 The Company's forecasts of annual sales and throughput requirements in
2 Attachment AEL-1, page 11, are supposed to be reflective of normal weather
3 requirements. The statement cited above suggests that the Company is unable to
4 determine the extent to which its forecasts for the Commercial/Industrial service are
5 influenced by conditions that were clearly not indicative of normal weather. On this
6 basis alone National Grids new (2015Q2) forecast should be discarded.

7
8 **Q. HAVE YOU MADE ANY FURTHER OBSERVATIONS REGARDING THE**
9 **FORECASTS THAT NATIONAL GRID PRESENTS IN THIS PROCEEDING?**

10 A. Yes. The pages of Attachments BRO-3 and BRO-4 provide detailed comparisons
11 of the forecasts National Grid offers in this proceeding with the forecasts it
12 submitted to the Commission in Docket 4520 as part of its 2014 annual GCR filing.
13 Page 1 of Attachment BRO-3 compares the Company's forecasts of monthly and
14 annual normal weather throughput (i.e., combined sales and transportation service
15 volumes) by rate class in this docket and in Docket 4520. Page 2 of Attachment
16 BRO-3 separately examines National Grid's forecasts of sales volumes by rate class
17 and in aggregate. Page 3 of Attachment BRO-3 contrasts the Company's forecasts
18 of monthly and annual transportation service volumes by rate class. Attachment
19 BRO-4 offers similar comparisons of National Grid's forecasts of Design Winter
20 Sales from this docket and from Docket 4520.

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1 From the comparisons of forecast data in the pages of Exhibit BRO-3 and
2 other information provided to the Division through discovery, I have derived a
3 number of additional observations that amplify my concerns regarding the
4 reasonableness and reliability of National Grid's forecasts in this docket. Among the
5 observations that I developed are:

6

7 ➤ National Grid's forecast of Residential Non-Heating sales in this
8 proceeding fails to properly reflect the Company's transfer of 3,600
9 customers from Non-Heating service to Residential Heating service.
10 As a result, its forecasted sales volumes for the Residential Non-
11 Heating class are significantly overstated.

12

13 ➤ For unexplained reasons, the Company's forecasts in this proceeding
14 dramatically alter the monthly distribution of sales for nearly all of its
15 firm service rate classifications.

16

17 ➤ The Company's forecasts reflect substantial unexplained changes in
18 the proportions of annual service requirements for the Large C&I High
19 Load Factor Class and the Extra Large C&I Low Load Factor class
20 that are attributed to winter season (i.e., November – March) usage.

21

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1 ➤ The Company's forecast projects very large percentage increases in
2 Small C&I Transportation service volumes. Those large percentage
3 changes are indicative of a trend to increased use of transportation
4 services by small customers since the opening of transportation
5 options for those customers. However, that trend depicts transfers of
6 customers from sales service to transportation and not more rapid
7 growth in overall Small C&I throughput as suggested by the Com-
8 pany's forecasts in this proceeding.

9
10 ➤ While there is a general pattern of substantial increases in National
11 Grid's forecasted **normal weather** throughput for the month of
12 November, the Company's forecasts of **Design Winter** volumes
13 decrease for the same month for nearly all rate classes. The
14 opposing direction of these forecast changes is not explained or
15 justified.

16
17 **Q. PLEASE EXPLAIN THE BASIS FOR YOUR FINDING THAT NATIONAL GRID'S**
18 **FORECAST IN THIS PROCEEDING SUBSTANTIALLY OVERSTATES RESI-**
19 **DENTIAL NON-HEATING SALES?**

20 A. As indicated in Attachment BRO-3, page 2, the normal weather sales National Grid
21 projects for Residential Non-Heating service for 2015/16 totals **698,046 Dth** on an

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1 annual basis. That represents an **8.4% reduction** from the sales level forecasted
2 for that class in Docket 4520. However, the Company's response to Division Data
3 Request DIV 4-4, Attachment 4-4-c-ii shows the number of customers and sales
4 volumes associated with the transferred customers for twelve months prior to their
5 transfers. Those transfers from Residential Non-Heating Service to Residential
6 Heating Service since the start of the Company's current GCR year represent much
7 greater percentages of both the numbers of customers and sales volumes for the
8 Residential Non-Heating class than National Grid's forecast recognizes.

9 According to the Company, the transfers were implemented in two tranches.
10 The first tranche included approximately 2,600 customers and was completed in
11 November 2014. The second tranche which included a little over 1,000 customers
12 was transferred in June 2015. In total over 3,600 customers were transferred. That
13 equates to **14%** of the number of customers for that class in October 2014 (i.e.,
14 immediately prior to the start of the planned transfers). If the Use Per Customer
15 (UPC) for the transferred customers equaled the UPC for the overall Residential
16 Non-Heating class, the expectation would be that the affected transfers would yield
17 a roughly proportionate decrease in annual sales for that class (i.e., a 14%
18 reduction).

19 However, the information National Grid has provided regarding the annual
20 sales volumes for transferred customers suggests that average use per customer
21 for the transferred customers was nearly three times the average use for the overall

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1 Residential Non-Heating class. In fact, the customers selected for inclusion in those
2 transfers were identified based on their usage characteristics being more closely
3 aligned with those for the Residential Heating Service class. In aggregate, the
4 customers transferred had annual sales for the twelve months prior to their transfers
5 totaling 436,787 Dth. Under the extreme weather conditions experience by the
6 Company during the winter of 2013/14, the Residential Non-Heating class used a
7 total 943,570 Dth for Planning Year (PY)2013/14. Thus, even if the volumes
8 associated with transferred Residential Non-Heating customers are examined in the
9 context of the extremely high usage reported for the Residential Non-Heating class
10 PY2013/14, the transferred volumes equate to **over 46%** of total annual extreme
11 weather sales for that class. Clearly, the Company's forecasted 8.4% reduction in
12 Residential Non-Heating sales does not adequately reflect the effects of the
13 Company's recent customer transfers. Simply subtracting the transferred sales
14 from the Company's reported 2013/14 total sales for the Residential Non-Heating
15 class would lower that classes annual sales to **less than 507,000 Dth** as opposed
16 to the 698,046 Dth that National Grid projects for 2015/16.

17 Witness Poe's response to Division Data Request DIV 3-2 indicates that the
18 Company forecasts Residential Non-Heating use per customer to drop 41.6%
19 "*driven by migration from non-heating to heating service.*" Yet unlike the effects of
20 the Company's recent customer transfers, that forecasted reduction occurs
21 gradually over time and would not be fully realized until the last year of the

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1 Company's ten-year forecast period. National Grid's recent Residential customer
2 transfers necessitate a substantial current adjustment to its Residential Non-Heating
3 Use Per Customer. I compute that given the numbers of customers and volumes
4 transferred to Residential Heating service within the last year, the post-transfer
5 annual UPC for the Residential Non-Heating class should be not greater than 22.8
6 Dth as opposed to 36.3 Dth per customer reflected in National Grid's actual data for
7 the Residential Heating class for PY2013/14.

8
9 **Q. WHAT ARE THE DRAMATIC CHANGES IN THE MONTHLY DISTRIBUTIONS OF**
10 **SALES AND THROUGHPUT REQUIREMENTS THAT YOU HAVE FOUND IN**
11 **NATIONAL GRID'S FORECASTS IN THIS PROCEEDING?**

12 A. The comparisons presented in Attachments BRO-3 and BRO-4 identify numerous
13 very large percentage changes in the Company's monthly forecasted sales and
14 throughput volumes by rate class. The shifts in gas use among the months of the
15 year for nearly all class of sales and transportation service represent marked
16 departures from the monthly usage patterns reflected in National Grid's filed
17 forecasts in Docket 4520, and can only be characterized as dramatic. Monthly
18 percentage changes in forecasted gas use by rate class vary widely and frequently
19 represent multiples of the average annual increase for a rate class. On an
20 aggregate basis the overall average increase in forecasted annual throughput for
21 2015/16 for all service classifications is 6.1%. However, the aggregate changes in

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1 monthly throughput volumes for all service classifications range from -4.4% to
2 +36.3% with double digit increases forecasted in volumes for November, December,
3 June and September. Forecasted increases in November gas use average **over**
4 **36%** for all classes. That is roughly **six times** the 6.1% overall average annual
5 increase in sales and throughput volumes that National Grid projects. Further, the
6 Company's forecasted increases in gas use for the month of June average **over**
7 **18%** for all service classification or three times the Company's annual average
8 growth projection.

9 When the Company's forecasts of annual throughput and November
10 throughput by rate class in this proceeding are compared with its forecasts of
11 November throughput by rate class from Docket 4520, we find the following:

12		Projected	Projected
13		November	Annual
14		Increase	Increase
15	Rate Class		
16			
17	Residential Non-Heating	+6.6%	-8.4%
18	Residential Heating	+40.0%	-1.3%
19	Small C&I	+39.8%	+7.5%
20	Medium C&I	+35.9%	+16.4%
21	Large C&I Low Load Factor	+36.6%	+1.0%
22	Large C&I High Load Factor	-29.6%	+2.4%
23	Extra Large C&I Low Load Factor	+115.3%	+21.5%
24	Extra Large C&I High Load Factor	+40.3%	+14.1%
25			

26 **Q. DO YOU HAVE ANY FURTHER OBSERVATIONS REGARDING THE FORE-**
27 **CASTS OF GAS SALES AND THROUGHPUT VOLUMES FOR 2015/16 THAT**

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1 **ARE SET FORTH IN ATTACHMENT AEL-1, PAGES 11 AND 12, IN THIS**
2 **PROCEEDING?**

3 A. Yes. Comparisons of the details of the Company's forecasts in this docket and the
4 forecasts the Company presented one year ago in Docket 4520 raise numerous
5 questions regarding the reasonableness and validity of the forecasts that National
6 Grid offers in this proceeding. As discussed above, Attachment BRO-3 to this
7 testimony documents substantial changes in forecasted load growth by rate class,
8 as well as changes in shifts in the distribution of volume requirements across the
9 months of the year for nearly every rate class. I recognize that large changes in
10 forecasts do not necessitate a finding that a forecast is erroneous or unreliable.
11 However, where large increases can be observed, the forecaster bears consider-
12 able burden for demonstrating the reasonableness and appropriateness of
13 forecasted changes. In the absence of documented structural changes (e.g., the
14 transfer of customers between rate classes) and/or clearly identified and explained
15 changes in forecasting methods, assumptions, or data inputs, then the large
16 changes in forecasted requirements lack credibility.

17 To the contrary, witness Poe's testimony at page 4, lines 1-8, gives the
18 impression that the forecasts the Company presents in this proceeding simply
19 replicate the methods used by the Company in the preparation of its last (i.e., March
20 2014) Gas Long-Range Resource and Requirements Plan ("Long-Range Plan").
21 Yet, given the forecast changes documented in the pages of Attachments BRO-3

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1 and BRO-4, it is difficult to accept that National Grid's new forecast is derived from
2 the same basic methods and data sources relied upon to develop the Company's
3 prior forecasts in its prior GCR filings and its March 2014 Long-Range Plan. If
4 forecasted inputs from a source such as Moody's significantly change the
5 Company's growth expectations, then the basis for such changes in forecasted
6 input needs to be disclosed and subjected to independent verification of their
7 applicability.

8 In fact, witness Poe's response to Division Data Request 3-4 provides clear
9 indication that elements of the Company's forecasting methods and data have been
10 altered. For example, Division Data Request DIV 3-4, page 2, explains that the
11 Company has "*clarified its definition of meters*" in a manner that results in reductions
12 in the numbers of meters included in its forecasting analyses. The number of
13 residential meters is reduced by approximately 5,000 meters per year. The number
14 of meters for C&I sales service is lowered by 500 meters per year.

15 It is also unclear from witness Poe's response to Division Data Request DIV
16 3-1 whether requirements of Capacity Exempt customers have been included in the
17 Company's forecasts for Rhode Island. At page 4 of his response to DIV 3-1,
18 witness Poe states, "*Additionally, capacity-exempt customer classes were modeled*
19 *separately by rate code.*" The Company indicates that its forecasts are developed
20 by rate code, but no information regarding forecasted requirements by rate code
21 has been presented. Thus, it is not possible to verify the treatment of Capacity

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1 Exempt customers within National Grid's forecasts for Rhode Island. The Company
2 reiterated on a number of occasions that the requirements of Capacity Exempt
3 customers are not included in its forecasts and long-range capacity planning for
4 Rhode Island. However, Massachusetts requires National Grid to include capacity
5 exempt customers' requirements in its forecasts and capacity planning.

6

7 **Q. HOW SHOULD THE COMMISSION RESPOND TO THE CHANGES IN NATIONAL**
8 **GRID'S FORECASTS IN THIS PROCEEDING?**

9 A. Sound forecasting of future service requirements is particularly critical to both the
10 Company and the Commission at this time. With the Commission faced with
11 important policy decisions regarding the treatment of current Capacity Exempt
12 customers and the Company's consideration of costly long-term commitments to
13 additional pipeline capacity and/or LNG liquefaction projects, the Company's
14 forecasts of future service requirements can be expected to have a major influence
15 on the costs and reliability of the service it provides.

16 As is apparent in this proceeding, the absence of timely updates of National
17 Grid's long-range planning analyses leaves unacceptable gaps between National
18 Grid's forecasts and its long-range planning decisions. It also renders the
19 Company's biennial filing of long-range planning reports a rather meaningless
20 exercise. Witness Poe testifies that the Company now prepares new ten-year
21 forecasts of service requirements on an **annual basis**. Given that frequency for

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1 new long-term requirements forecasts, it would make sense for the Commission to
2 require annual updates of the Company's long-range plans.

3 In addition, the Commission should provide for a continuation of this
4 proceeding to allow for further investigation of forecasting related issues, many of
5 which have only been identified through discovery responses received within the
6 last week. The new 2015Q2 forecast on which the Company now relies needs to be
7 fully vetted before the Commission with the goal of providing the Commission a
8 more complete understanding of key policy issues and their cost and service
9 reliability implications.

10

11 **G. Gas Supply Portfolio Considerations**

12

13 **Q. HOW HAVE NATURAL GAS MARKET CONDITIONS CHANGED OVER THE**
14 **LAST YEAR?**

15 A. The most dramatic development in the U.S. natural gas industry has been the
16 continued expansion of gas production from the Marcellus and Utica shale
17 formations. Production from those formations (primarily in Pennsylvania, Ohio, and
18 West Virginia) now represents roughly 40% of total U.S. natural gas production and
19 exceeds the combined natural gas production from Texas and the Gulf of Mexico.
20 Continued growth in gas production from those and other shale formations has
21 generally exerted downward pressure on U.S. natural gas prices. It has also begun

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1 to erode the importance of the Henry Hub (in Louisiana) as the point from which
2 U.S. natural gas prices are indexed. National Grid is one of several utilities that has
3 explicitly recognized the diminished correlation between natural gas prices from the
4 Marcellus/Utica production areas and pricing at the Henry Hub. The overall
5 reductions in natural gas commodity prices that National Grid has experienced over
6 the last three years are at least partially attributable to the Company's ability to
7 access lower cost gas supplies from eastern U.S. production areas.

8 However, the general decline in natural gas prices has led to increased
9 natural gas demand, particularly for the generation of electricity, and increased
10 natural gas demands during peak winter periods have highlighted limitations on the
11 amount of interstate gas pipeline capacity currently available to the New England
12 market. This does not necessarily imply that either National Grid or other gas
13 distribution utilities in New England has had inadequate capacity contracted to
14 supply their firm service customers under extreme winter weather conditions.
15 Rather, the effects of constraints on available interstate pipeline capacity in New
16 England have been perhaps most noticeable for large customers who have
17 attempted to operate without long-term commitments to interstate pipeline capacity
18 contracts. Those customers include many electric generators, as well as gas
19 transportation service customers who have elected not to receive assignments of
20 utility pipeline capacity and associated pipeline capacity costs.

21

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1 **Q. HAS NATIONAL GRID PROPOSED CHANGES IN ITS CUSTOMER CHOICE**
2 **PROGRAM TO REFLECT CONSIDERATIONS RELATING TO THE POSSIBLE**
3 **RETURN TO CAPACITY ASSIGNED SERVICE OF CURRENT CAPACITY**
4 **EXEMPT TRANSPORTATION SERVICE CUSTOMERS?**

5 A. Yes, it has. In Docket 4323 National Grid has proposed to modify its Customer
6 Choice Program to provide a one-time opportunity for current Capacity Exempt
7 customers to revert to Capacity Assigned status.

8

9 **Q. IF THE COMPANY'S CUSTOMER CHOICE PROGRAM PROPOSALS ARE**
10 **ADOPTED AS PROPOSED, HOW WOULD NATIONAL GRID'S OPERATIONS**
11 **AND CAPACITY PLANNING BE AFFECTED?**

12 A. National Grid has indicated that it has 111 current Capacity Exempt customers. The
13 Company also indicates that the aggregate capacity requirements of those 111
14 customers if they all returned to Capacity Assigned service would be approximately
15 38,000 Dth. That would represent more than a 10% addition to design day capacity
16 requirements that National Grid forecasts in in this proceeding for the winter of
17 2015/16.⁴ However, the Company suggests that it may only have about 2,000 Dth
18 of capacity currently available in its supply portfolio that could be used to meet the
19 capacity requirements of current Capacity Exempt customers who may seek to
20 relinquish their Capacity Exempt status.

⁴ Attachment AEL-1, page 12, reflects a Total Projected 2015/16 Design Day requirement of 341,091 Dth.

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1 These observations imply that National Grid is not currently positioned to
2 absorb large amounts of firm requirements for current Capacity Exempt customers.
3 Further, the extent to which National Grid will be capable of meeting those
4 customers' firm service requirements in the future will depend on:

5
6 (1) National Grid's ability to obtain additional reliable
7 capacity resources; and

8
9 (2) The amount of growth the Company foresees in the
10 design day requirements of existing and new firm
11 service customers without consideration of the potential
12 requirements of current Capacity Exempt customers.

13
14 The testimony of witness Arangio discusses National Grid's plans to: (a) add
15 capacity through a long-term commitment to the TGP NED project; and (b) possibly
16 add on-system LNG liquefaction capability. However, there are noticeable lead
17 times for adding such capacity.⁵ There are also substantial economic issues
18 associated with plans for additional capacity commitments that should be carefully
19 considered by the Company. Included among those considerations are questions

⁵ The referenced TGP NED project capacity is not expected to be available until the fall of 2018 (i.e., three years from now). The lead times for planning and constructing LNG liquefaction capability may be even longer.

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1 relating to both the affordability of gas service and the equitable distribution among
2 customers of cost responsibilities associated with new capacity additions.
3 Importantly, neither National Grid nor its existing firm sales service and capacity
4 assigned transportation service customers should be required to speculatively take
5 on additional cost burdens to facilitate the Company's ability to serve the potential
6 design day and design winter requirements of customers who have not made long-
7 term commitments to the support National Grid's procurement of additional capacity
8 resources.

9 It is at best unclear how much of the capacity added through such projects
10 would be available to serve customers who may elect to relinquish their present
11 Capacity Exempt status. If the Company's new 10-year forecast of service require-
12 ments is accepted (i.e., a position that I cannot readily endorse at this point), most
13 of the proposed TGP NED project capacity could be required to serve existing and
14 projected firm service customer requirements without any consideration of the
15 potential needs of current Capacity Exempt customers.

16 Decisions regarding the type of capacity to be added to the system and the
17 amount of capacity, if any, to be added by the Company are also likely to be
18 influenced by the characteristics of loads expected to be imposed on the
19 Company's system in Rhode Island. For example, growth in high load factor service
20 requirements may improve the economics of pipeline capacity additions while
21 growth in lower load factor service requirements could favor commitments to the

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1 construction or purchase of storage and/or peaking resources. In either case, it will
2 be essential for the Company and the Commission to have a well-developed
3 understanding of the details of National Grid's load growth expectations and the
4 costs associated with alternative capacity expansion projects.

5

6 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

7 A. Yes, it does.

National Grid- RI Gas

Docket No. 4576

National Grid's Proposed Changes in GCR Charges by Rate Class

Rate Classification	Current GCR Rate 1/ (\$/Therm)	Ngrid Proposed GCR Rate 2/ (\$/Therm)	Increase (Decrease)	
			\$ (\$/Therm)	%
Residential				
Non-Heating	\$ 0.6692	\$ 0.5174	(\$0.1518)	-22.7%
Low Income- Non Heating	\$ 0.6692	\$ 0.5174	(\$0.1518)	-22.7%
Heating	\$ 0.6871	\$ 0.5446	(\$0.1425)	-20.7%
Low income- Heating	\$ 0.6871	\$ 0.5446	(\$0.1425)	-20.7%
Commercial & Industrail				
Small	\$ 0.6871	\$ 0.5446	(\$0.1425)	-20.7%
Medium	\$ 0.6871	\$ 0.5446	(\$0.1425)	-20.7%
Large Low Load Factor	\$ 0.6871	\$ 0.5446	(\$0.1425)	-20.7%
Large High Load Factor	\$ 0.6692	\$ 0.5174	(\$0.1518)	-22.7%
Extra Large Low Load Factor	\$ 0.6871	\$ 0.5446	(\$0.1425)	-20.7%
Extra Large High Load Factor	\$ 0.6692	\$ 0.5174	(\$0.1518)	-22.7%

1/ GCR charges effective November 1, 2014.

2/ From Attachment AEL-1, Page 1, filed 9/1/15 with charges to become effective November 1, 2015.

National Grid- RI Gas
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Changes in Forecasted Gas Costs by GCR Cost Component
Without Adjustments and Reconciliations

GCR Cost Component	Forecasted Annual Cost	Forecasted Annual Cost	Forecasted Annual Cost	Forecasted Annual Cost	Change 2014-15 to 2015-16		Change 2013-14 to 2014-15		Change 2012-13 to 2013-14	
	2015-16	2014-15	2013-14	2012-13	\$	%	\$	%	\$	%
Supply Fixed Costs	\$ 28,975,016	\$ 28,022,697	\$ 29,048,581	\$ 28,645,415	\$ 952,319	3.4%	\$ (1,025,884)	-3.5%	\$ 403,166	1.4%
Storage Fixed Costs	\$ 16,307,226	\$ 15,825,144	\$ 15,830,032	\$ 11,398,130	\$ 482,082	3.0%	\$ (4,888)	0.0%	\$ 4,431,902	38.9%
Supply Variable Costs	\$ 82,733,795	\$ 91,932,137	\$ 103,784,247	\$ 107,717,133	\$ (9,198,342)	-10.0%	\$ (11,852,110)	-11.4%	\$ (3,932,886)	-3.7%
Storage Variable Costs	\$ 15,653,838	\$ 18,191,427	\$ 12,062,659	\$ 16,438,331	\$ (2,537,589)	-13.9%	\$ 6,128,768	50.8%	\$ (4,375,672)	-26.6%
TOTAL	\$ 143,669,875	\$ 153,971,405	\$ 160,725,519	\$ 164,199,009	\$ (10,301,530)	-17.5%	\$ (6,754,114)	-4.2%	\$ (3,473,490)	10.0%
Total Fixed Costs	\$ 45,282,242	\$ 43,847,841	\$ 44,878,613	\$ 40,043,545	\$ 1,434,401	6.4%	\$ (1,030,772)	-2.3%	\$ 4,835,068	40.3%
Total Variable Costs	\$ 98,387,633	\$ 110,123,564	\$ 115,846,906	\$ 124,155,464	\$ (11,735,931)	-24.0%	\$ (5,723,342)	-4.9%	\$ (8,308,558)	-30.3%

1/ Source: Docket No. 4576, Attachment AEL-1, September 1, 2015, pages 2-5.
2/ Source: Docket No. 4520, Attachment AEL-1S, September 16, 2014, pages 2-5.
3/ Source: Docket No. 4436, Attachment AEL-1, September 3, 2013, pages 2-5.
4/ Source: Docket No. 4346, Attachment AEL-1, September 4, 2012, pages 2-5.

National Grid - Gas

Docket 4576

Changes in Forecasted Normal Weather Annual Throughput by Rate Classification

Docket 4576 vs Docket 4520

TOTAL THROUGHPUT	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov - Oct	Nov - Mar	Percent Nov - Mar
Residential Non-Heating															
Forecasted 2015-16	48,049	71,423	92,942	107,427	113,117	87,291	46,799	31,200	24,471	22,307	24,221	28,799	698,046	432,958	62.0%
Forecasted 2014-15	45,060	82,938	115,737	119,268	108,822	83,093	55,290	37,237	28,824	27,104	27,648	30,965	761,986	471,825	61.9%
Difference	2,989	(11,515)	(22,795)	(11,841)	(108,822)	(83,093)	(8,491)	(6,037)	(4,353)	(4,797)	(3,427)	(2,166)	(63,940)	(38,867)	
% Difference	6.6%	-13.9%	-19.7%	-9.9%	-100.0%	-100.0%	-15.4%	-16.2%	-15.1%	-17.7%	-12.4%	-7.0%	-8.4%	-8.2%	
Residential Heating															
Forecasted 2015-16	1,462,287	2,349,767	3,119,896	3,107,497	2,828,266	2,124,881	1,241,085	751,389	425,245	352,061	402,675	561,110	18,726,159	12,867,713	68.7%
Forecasted 2014-15	1,044,744	2,226,624	3,239,393	3,325,991	2,989,103	2,151,864	1,342,728	702,519	482,963	461,730	466,391	539,594	18,973,644	12,825,855	67.6%
Difference	417,543	123,143	(119,497)	(218,494)	(160,837)	(26,983)	(101,643)	48,870	(57,718)	(109,669)	(63,716)	21,516	(247,485)	41,858	
% Difference	40.0%	5.5%	-3.7%	-6.6%	-5.4%	-1.3%	-7.6%	7.0%	-12.0%	-23.8%	-13.7%	4.0%	-1.3%	0.3%	
Small C&I															
Forecasted 2015-16	155,461	421,163	514,559	456,333	406,403	284,086	183,207	98,723	59,708	45,821	48,940	71,448	2,745,852	1,953,919	71.2%
Forecasted 2014-15	111,923	292,538	478,552	500,985	439,148	285,357	169,179	63,730	51,244	56,204	44,858	61,560	2,555,278	1,823,146	71.3%
Difference	43,538	128,625	36,007	(44,652)	(32,745)	(1,271)	14,028	34,993	8,464	(10,383)	4,082	9,888	190,574	130,773	
% Difference	38.9%	44.0%	7.5%	-8.9%	-7.5%	-0.4%	8.3%	54.9%	16.5%	-18.5%	9.1%	16.1%	7.5%	7.2%	
Medium C&I															
Forecasted 2015-16	420,216	727,334	950,360	1,061,970	914,720	646,050	395,507	243,192	202,482	178,069	180,123	246,393	6,166,416	4,074,600	66.1%
Forecasted 2014-15	309,258	610,866	851,711	887,116	791,417	580,482	351,817	198,990	167,225	171,714	170,770	207,323	5,298,689	3,450,368	65.1%
Difference	110,958	116,468	98,649	174,854	123,303	65,568	43,690	44,202	35,257	6,355	9,353	39,070	867,727	624,232	
% Difference	35.9%	19.1%	11.6%	19.7%	15.6%	11.3%	12.4%	22.2%	21.1%	3.7%	5.5%	18.8%	16.4%	18.1%	
Large C&I LLF															
Forecasted 2015-16	246,341	448,979	532,256	473,022	413,083	277,780	177,315	90,375	57,303	47,629	62,819	133,210	2,960,112	2,113,681	71.4%
Forecasted 2014-15	180,283	367,806	488,888	541,440	423,116	358,587	201,379	60,055	40,524	64,859	74,482	130,722	2,932,141	2,001,533	68.3%
Difference	66,058	81,173	43,368	(68,418)	(10,033)	(80,807)	(24,064)	30,320	16,779	(17,230)	(11,663)	2,488	27,971	112,148	
% Difference	36.6%	22.1%	8.9%	-12.6%	-2.4%	-22.5%	-11.9%	50.5%	41.4%	-26.6%	-15.7%	1.9%	1.0%	5.6%	
Large C&I HLF															
Forecasted 2015-16	93,247	124,616	142,560	139,652	125,841	106,329	87,435	81,426	76,676	77,129	74,284	82,377	1,211,572	625,916	51.7%
Forecasted 2014-15	132,397	130,735	133,311	269,344	151,914	122,401	37,546	37,149	40,531	34,245	47,942	45,929	1,183,444	817,701	69.1%
Difference	(39,150)	(6,119)	9,249	(129,692)	(26,073)	(16,072)	49,889	44,277	36,145	42,884	26,342	36,448	28,128	(191,785)	
% Difference	-29.6%	-4.7%	6.9%	-48.2%	-17.2%	-13.1%	132.9%	119.2%	89.2%	125.2%	54.9%	79.4%	2.4%	-23.5%	
Extra Large C&I LLF															
Forecasted 2015-16	120,455	194,112	229,125	185,748	164,866	109,942	77,209	40,969	28,653	20,455	25,797	88,741	1,286,072	894,306	69.5%
Forecasted 2014-15	55,948	120,465	132,332	139,838	99,538	99,897	113,255	43,717	37,340	38,593	82,408	95,275	1,058,606	548,121	51.8%
Difference	64,507	73,647	96,793	45,910	65,328	10,045	(36,046)	(2,748)	(8,687)	(18,138)	(56,611)	(6,534)	227,466	346,185	
% Difference	115.3%	61.1%	73.1%	32.8%	65.6%	10.1%	-31.8%	-6.3%	-23.3%	-47.0%	-68.7%	-6.9%	21.5%	63.2%	
Extra Large C&I HLF															
Forecasted 2015-16	562,576	624,790	649,518	576,616	537,808	465,428	426,966	412,940	410,885	456,166	473,724	505,396	6,102,813	2,951,308	48.4%
Forecasted 2014-15	401,085	489,331	550,461	602,817	446,104	513,898	361,510	335,563	423,462	462,415	381,289	378,795	5,346,730	2,489,798	46.6%
Difference	161,491	135,459	99,057	(26,201)	91,704	(48,470)	65,456	77,377	(12,577)	(6,249)	92,435	126,601	756,083	461,510	
% Difference	40.3%	27.7%	18.0%	-4.3%	20.6%	-9.4%	18.1%	23.1%	-3.0%	-1.4%	24.2%	33.4%	14.1%	18.5%	
Total Throughput															
Forecasted 2015-16	3,108,632	4,962,184	6,231,216	6,108,265	5,390,987	4,014,496	2,635,523	1,750,214	1,285,423	1,199,637	1,292,583	1,717,474	39,696,634	25,914,401	65.3%
Forecasted 2014-15	2,280,698	4,321,303	5,990,385	6,386,799	5,449,162	4,195,579	2,632,704	1,478,960	1,272,113	1,316,864	1,295,788	1,490,163	38,110,518	24,428,347	64.1%
Difference	827,934	640,881	240,831	(278,534)	(58,175)	(181,083)	2,819	271,254	13,310	(117,227)	(3,205)	227,311	1,586,116	1,486,054	
% Difference	36.3%	14.8%	4.0%	-4.4%	-1.1%	-4.3%	0.1%	18.3%	1.0%	-8.9%	-0.2%	15.3%	4.2%	6.1%	

National Grid - Gas

Docket 4576

Changes in Forecasted Normal Weather Annual Sales by Rate Classification

Docket 4576 vs Docket 4520

TOTAL SALES	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov - Oct	Nov - Mar	Percent Nov - Mar
Residential Non-Heating															
Forecasted 2015-16	48,049	71,423	92,942	107,427	113,117	87,291	46,799	31,200	24,471	22,307	24,221	28,799	698,046	432,958	62.0%
Forecasted 2014-15	45,060	82,938	115,737	119,268	108,822	83,093	55,290	37,237	28,824	27,104	27,648	30,965	761,986	471,825	61.9%
Difference	2,989	(11,515)	(22,795)	(11,841)	(108,822)	(83,093)	(8,491)	(6,037)	(4,353)	(4,797)	(3,427)	(2,166)	(63,940)	(38,867)	
% Difference	6.6%	-13.9%	-19.7%	-9.9%	-100.0%	-100.0%	-15.4%	-16.2%	-15.1%	-17.7%	-12.4%	-7.0%	-8.4%	-8.2%	
Residential Heating															
Forecasted 2015-16	1,462,287	2,349,767	3,119,896	3,107,497	2,828,266	2,124,881	1,241,085	751,389	425,245	352,061	402,675	561,110	18,726,159	12,867,713	68.7%
Forecasted 2014-15	1,044,744	2,226,624	3,239,393	3,325,991	2,989,103	2,151,864	1,342,728	702,519	482,963	461,730	466,391	539,594	18,973,644	12,825,855	67.6%
Difference	417,543	123,143	(119,497)	(218,494)	(160,837)	(26,983)	(101,643)	48,870	(57,718)	(109,669)	(63,716)	21,516	(247,485)	41,858	
% Difference	40.0%	5.5%	-3.7%	-6.6%	-5.4%	-1.3%	-7.6%	7.0%	-12.0%	-23.8%	-13.7%	4.0%	-1.3%	0.3%	
Small C&I															
Forecasted 2015-16	150,098	412,467	502,968	445,399	395,993	275,911	177,969	95,230	57,312	44,037	46,985	68,102	2,672,471	1,906,925	71.4%
Forecasted 2014-15	111,656	291,880	477,466	499,885	438,170	284,646	168,646	63,417	50,994	55,947	44,572	61,132	2,548,411	1,819,057	71.4%
Difference	38,442	120,587	25,502	(54,486)	(42,177)	(8,735)	9,323	31,813	6,318	(11,910)	2,413	6,970	124,060	87,868	
% Difference	34.4%	41.3%	5.3%	-10.9%	-9.6%	-3.1%	5.5%	50.2%	12.4%	-21.3%	5.4%	11.4%	4.9%	4.8%	
Medium C&I															
Forecasted 2015-16	226,941	423,681	566,157	652,912	564,095	387,529	229,766	134,838	110,007	97,621	98,729	129,347	3,621,623	2,433,786	67.2%
Forecasted 2014-15	168,278	348,704	483,327	511,636	462,400	333,663	189,887	116,572	85,200	88,992	87,441	100,796	2,976,896	1,974,345	66.3%
Difference	58,663	74,977	82,830	141,276	101,695	53,866	39,879	18,266	24,807	8,629	11,288	28,551	644,727	459,441	
% Difference	34.9%	21.5%	17.1%	27.6%	22.0%	16.1%	21.0%	15.7%	29.1%	9.7%	12.9%	28.3%	21.7%	23.3%	
Large C&I LLF															
Forecasted 2015-16	52,508	109,572	132,377	117,870	103,702	71,427	44,582	22,548	12,314	8,822	12,359	21,893	709,974	516,029	72.7%
Forecasted 2014-15	34,040	79,793	117,993	119,645	112,741	81,173	52,135	15,221	10,637	10,939	14,588	20,838	669,743	464,212	69.3%
Difference	18,468	29,779	14,384	(1,775)	(9,039)	(9,746)	(7,553)	7,327	1,677	(2,117)	(2,229)	1,055	40,231	51,817	
% Difference	54.3%	37.3%	12.2%	-1.5%	-8.0%	-12.0%	-14.5%	48.1%	15.8%	-19.4%	-15.3%	5.1%	6.0%	11.2%	
Large C&I HLF															
Forecasted 2015-16	14,538	19,318	23,722	22,322	14,405	15,209	13,872	14,726	14,458	19,582	13,117	14,091	199,360	94,305	47.3%
Forecasted 2014-15	11,489	10,927	15,622	24,096	12,656	5,673	4,083	4,056	3,333	3,964	4,128	5,045	105,072	74,790	71.2%
Difference	3,049	8,391	8,100	(1,774)	1,749	9,536	9,789	10,670	11,125	15,618	8,989	9,046	94,288	19,515	
% Difference	26.5%	76.8%	51.8%	-7.4%	13.8%	168.1%	239.8%	263.1%	333.8%	394.0%	217.8%	179.3%	89.7%	26.1%	
Extra Large C&I LLF															
Forecasted 2015-16	4,205	14,733	20,770	14,692	13,574	9,759	7,268	3,689	2,026	608	880	4,676	96,880	67,974	70.2%
Forecasted 2014-15	10,538	26,053	35,502	35,280	30,836	23,576	14,740	12,769	7,516	10,037	30,179	23,257	260,283	138,209	53.1%
Difference	(6,333)	(11,320)	(14,732)	(20,588)	(17,262)	(13,817)	(7,472)	(9,080)	(5,490)	(9,429)	(29,299)	(18,581)	(163,403)	(70,235)	
% Difference	-60.1%	-43.4%	-41.5%	-58.4%	-56.0%	-58.6%	-50.7%	-71.1%	-73.0%	-93.9%	-97.1%	-79.9%	-62.8%	-50.8%	
Extra Large C&I HLF															
Forecasted 2015-16	28,920	35,960	25,159	16,451	15,315	18,775	20,994	22,523	20,767	18,159	33,250	29,065	285,338	121,805	42.7%
Forecasted 2014-15	12,198	10,051	18,078	30,213	19,422	39,501	17,735	18,949	18,121	18,121	18,673	11,097	232,159	89,962	38.8%
Difference	16,722	25,909	7,081	(13,762)	(4,107)	(20,726)	3,259	3,574	2,646	38	14,577	17,968	53,179	31,843	
% Difference	137.1%	257.8%	39.2%	-45.5%	-21.1%	-52.5%	18.4%	18.9%	14.6%	0.2%	78.1%	161.9%	22.9%	35.4%	
Total Sales															
Forecasted 2015-16	1,987,546	3,436,921	4,483,991	4,484,570	4,048,467	2,990,782	1,782,335	1,076,143	666,600	563,197	632,216	857,083	27,009,851	18,441,495	68.3%
Forecasted 2014-15	1,438,003	3,076,970	4,503,118	4,666,014	4,174,150	3,003,189	1,845,244	970,740	687,588	676,834	693,620	792,724	26,528,194	17,858,255	67.3%
Difference	549,543	359,951	(19,127)	(181,444)	(125,683)	(12,407)	(62,909)	105,403	(20,988)	(113,637)	(61,404)	64,359	481,657	583,240	
% Difference	38.2%	11.7%	-0.4%	-3.9%	-3.0%	-0.4%	-3.4%	10.9%	-3.1%	-16.8%	-8.9%	8.1%	1.8%	3.3%	

National Grid - Gas

Docket 4576

Changes in Forecasted Normal Weather Annual Throughput by Rate Classification

Docket 4576 vs Docket 4520

TOTAL TRANSPORTATION	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov - Oct	Nov - Mar	Percent Nov - Mar
FT- Small C&I															
Forecasted 2015-16	5,363	8,696	11,591	10,934	10,410	8,175	5,238	3,493	2,396	1,784	1,955	3,346	73,379	46,993	64.04%
Forecasted 2014-15	267	658	1,086	1,100	978	711	533	313	250	257	286	428	6,866	4,089	59.55%
Difference	5,095	8,038	10,505	9,834	9,431	7,464	4,705	3,181	2,146	1,526	1,669	2,918	66,513	42,904	
% Difference	1905%	1222%	967%	894%	964%	1050%	884%	1018%	859%	593%	584%	681%	969%	1049%	
FT- Medium C&I															
Forecasted 2015-16	193,275	303,653	384,203	409,058	350,625	258,521	165,741	108,354	92,475	80,448	81,394	117,046	2,544,794	1,640,814	64.48%
Forecasted 2014-15	140,980	262,162	368,384	375,480	329,017	246,819	161,930	82,418	82,025	82,722	83,329	106,527	2,321,794	1,476,023	63.57%
Difference	52,294	41,492	15,819	33,578	21,608	11,702	3,811	25,936	10,451	(2,274)	(1,935)	10,519	223,000	164,791	
% Difference	37.1%	15.8%	4.3%	8.9%	6.6%	4.7%	2.4%	31.5%	12.7%	-2.7%	-2.3%	9.9%	9.6%	11.2%	
FT- Large C&I LLF															
Forecasted 2015-16	193,833	339,407	399,879	355,152	309,381	206,353	132,733	67,827	44,989	38,807	50,460	111,317	2,250,138	1,597,652	71.00%
Forecasted 2014-15	146,243	288,013	370,895	421,795	310,375	277,414	149,244	44,834	29,887	53,920	59,894	109,884	2,262,397	1,537,321	67.95%
Difference	47,591	51,395	28,984	(66,643)	(994)	(71,061)	(16,511)	22,993	15,102	(15,113)	(9,434)	1,433	(12,259)	60,332	
% Difference	32.5%	17.8%	7.8%	-15.8%	-0.3%	-25.6%	-11.1%	51.3%	50.5%	-28.0%	-15.8%	1.3%	-0.5%	3.9%	
FT- Large C&I HLF															
Forecasted 2015-16	78,709	105,298	118,838	117,330	111,436	91,120	73,563	66,700	62,218	57,547	61,167	68,286	1,012,211	531,610	52.52%
Forecasted 2014-15	120,908	119,808	117,689	245,248	139,258	116,728	33,463	33,093	37,198	30,281	43,814	40,884	1,078,372	742,909	68.89%
Difference	(42,199)	(14,509)	1,150	(127,918)	(27,822)	(25,608)	40,099	33,606	25,020	27,265	17,353	27,402	(66,161)	(211,299)	
% Difference	-34.9%	-12.1%	1.0%	-52.2%	-20.0%	-21.9%	119.8%	101.5%	67.3%	90.0%	39.6%	67.0%	-6.1%	-28.4%	
FT- Extra Large C&I LLF															
Forecasted 2015-16	116,250	179,379	208,355	171,056	151,292	100,183	69,941	37,280	26,627	19,847	24,917	84,065	1,189,192	826,332	69.49%
Forecasted 2014-15	45,410	94,412	96,830	104,558	68,702	76,321	98,515	30,948	29,824	28,556	52,229	72,018	798,324	409,912	51.35%
Difference	70,840	84,967	111,525	66,498	82,590	23,862	(28,574)	6,331	(3,197)	(8,710)	(27,312)	12,047	390,868	416,420	
% Difference	156.0%	90.0%	115.2%	63.6%	120.2%	31.3%	-29.0%	20.5%	-10.7%	-30.5%	-52.3%	16.7%	49.0%	101.6%	
FT- Extra Large C&I HLF															
Forecasted 2015-16	533,656	588,830	624,359	560,165	522,493	446,653	405,972	390,417	390,118	438,007	440,474	476,331	5,817,476	2,829,504	48.64%
Forecasted 2014-15	388,887	479,280	532,383	572,604	426,682	474,397	343,775	316,614	405,341	444,294	362,616	367,698	5,114,573	2,399,836	46.92%
Difference	144,769	109,550	91,976	(12,439)	95,811	(27,744)	62,197	73,802	(15,223)	(6,287)	77,857	108,633	702,903	429,667	
% Difference	37.2%	22.9%	17.3%	-2.2%	22.5%	-5.8%	18.1%	23.3%	-3.8%	-1.4%	21.5%	29.5%	13.7%	17.9%	
Total Transportation															
Forecasted 2015-16	1,121,086	1,525,264	1,747,225	1,623,694	1,455,637	1,111,005	853,188	674,071	618,824	636,439	660,367	860,391	12,887,190	7,472,905	57.99%
Forecasted 2014-15	842,695	1,244,332	1,487,267	1,720,784	1,275,012	1,192,390	787,461	508,221	584,525	640,032	602,169	697,439	11,582,327	6,570,089	56.73%
Difference	278,391	280,932	259,958	(97,090)	180,625	(81,385)	65,728	165,850	34,299	(3,593)	58,197	162,952	1,304,863	902,815	
% Difference	33.0%	22.6%	17.5%	-5.6%	14.2%	(-6.8%)	8.3%	32.6%	5.9%	-0.6%	9.7%	23.4%	11.3%	13.7%	

National Grid - Gas

Docket 4576

Comparison of National Grid's Forecasted Design Winter Sales

Docket No. 4576 vs Docket No. 4520 - by Rate Class by Month

TOTAL THROUGHPUT	Forecasted Design Winter Sales					Design Nov - Mar	Normal Nov - Mar	Ratio Design Winter to Normal
	Nov	Dec	Jan	Feb	Mar			
Residential Non-Heating								
Forecasted 2015-16	53,941	77,188	98,971	115,968	126,115	472,183	432,958	1.09
Forecasted 2014-15	82,450	108,645	120,286	104,840	98,469	514,690	471,825	1.09
Difference	(28,509)	(31,457)	(21,315)	11,128	27,646	(42,507)	(38,867)	
% Difference	-34.6%	-29.0%	-17.7%	10.6%	28.1%	-8.3%	-8.2%	
Residential Heating								
Forecasted 2015-16	1,717,242	2,586,711	3,357,695	3,382,220	3,182,483	14,226,351	12,867,713	1.11
Forecasted 2014-15	2,193,617	3,003,064	3,368,645	2,923,156	2,683,484	14,171,966	12,825,855	1.10
Difference	(476,375)	(416,353)	(10,950)	459,064	498,999	54,385	41,858	
% Difference	-21.7%	-13.9%	-0.3%	15.7%	18.6%	0.4%	0.3%	
Small C&I								
Forecasted 2015-16	174,169	456,463	542,538	485,434	446,417	2,105,021	1,906,925	1.10
Forecasted 2014-15	308,423	428,725	483,350	418,720	380,974	2,020,192	1,819,057	1.11
Difference	(134,254)	27,738	59,188	66,714	65,443	84,829	87,868	
% Difference	-43.5%	6.5%	12.2%	15.9%	17.2%	4.2%	4.8%	
Medium C&I								
Forecasted 2015-16	257,001	462,575	606,594	708,784	631,256	2,666,210	2,433,786	1.10
Forecasted 2014-15	340,133	459,710	513,449	446,196	412,732	2,172,220	1,974,345	1.10
Difference	(83,132)	2,865	93,145	262,588	218,524	493,990	459,441	
% Difference	-24.4%	0.6%	18.1%	58.9%	52.9%	22.7%	23.3%	
Large C&I LLF								
Forecasted 2015-16	62,348	121,502	142,955	128,647	117,169	572,621	516,029	1.11
Forecasted 2014-15	78,569	109,552	123,635	107,067	97,242	516,065	464,212	1.11
Difference	(16,221)	11,950	19,320	21,580	19,927	56,556	51,817	
% Difference	-20.6%	10.9%	15.6%	20.2%	20.5%	11.0%	11.2%	
Large C&I HLF								
Forecasted 2015-16	14,538	19,734	24,407	23,071	14,405	96,155	94,305	1.02
Forecasted 2014-15	12,968	17,327	19,276	16,773	15,623	81,967	74,790	1.10
Difference	1,570	2,407	5,131	6,298	(1,218)	14,188	19,515	
% Difference	12.1%	13.9%	26.6%	37.5%	-7.8%	17.3%	26.1%	
Extra Large C&I LLF								
Forecasted 2015-16	4,929	16,378	22,481	16,056	15,379	75,223	67,974	1.11
Forecasted 2014-15	25,439	30,481	32,564	28,732	28,661	145,877	138,209	1.06
Difference	(20,510)	(14,103)	(10,083)	(12,676)	(13,282)	(70,654)	(70,235)	
% Difference	-80.6%	-46.3%	-31.0%	-44.1%	-46.3%	-48.4%	-50.8%	
Extra Large C&I HLF								
Forecasted 2015-16	30,194	37,373	25,233	16,451	15,315	124,566	121,805	1.02
Forecasted 2014-15	17,879	18,463	18,457	16,673	18,468	89,940	89,962	1.00
Difference	12,315	18,910	6,776	(222)	(3,153)	34,626	31,843	
% Difference	68.9%	102.4%	36.7%	-1.3%	-17.1%	38.5%	35.4%	
Total Throughput								
Forecasted 2015-16	2,314,362	3,777,924	4,820,874	4,876,631	4,548,539	20,338,330	18,441,495	1.10
Forecasted 2014-15	3,059,478	4,175,967	4,679,662	4,062,157	3,735,653	19,712,917	17,858,255	1.10
Difference	(745,116)	(398,043)	141,212	814,474	812,886	625,413	583,240	
% Difference	-24.4%	-9.5%	3.0%	20.1%	21.8%	3.2%	3.3%	

National Grid - Gas

Docket 4576

History of National Grid Forecasts of Normal Weather Annual Sales and Throughput

	Nov 2010 - Oct 2011 <i>Dkt 4199</i>	Nov 2011 - Oct 2012 <i>Dkt 4283</i>	Nov 2012 - Oct 2013 <i>Dkt 4346</i>	Nov 2013 - Oct 2014 <i>Dkt 4436</i>	Nov 2014 - Oct 2015 <i>Dkt 4520</i>	Nov 2015 - Oct 2016 <i>Dkt 4576</i>
SALES						
Residential Non-Heating	698,210	572,364	568,413	722,127	761,987	698,046
Residential Heating	16,815,263	17,436,451	17,653,549	18,331,149	18,973,642	18,726,158
Small C&I	1,987,380	2,466,704	2,353,415	2,355,561	2,548,411	2,672,471
Medium C&I	3,252,891	3,125,172	3,146,273	3,182,627	2,976,895	3,621,622
Large C&I LLF	862,458	686,212	695,940	679,593	669,743	709,974
Extra Large C&I LLF	235,719	280,646	227,748	310,688	105,071	199,360
Large C&I HLF	264,369	38,886	78,434	169,463	260,283	96,881
Extra Large C&I HLF	139,872	214,510	156,107	268,785	232,158	285,339
Total Sales	24,256,162	24,820,945	24,879,879	26,019,993	26,528,190	27,009,851
FT-2 TRANSPORTATION						
FT-2 Small	-	-	-	15,122	-	-
FT-2 Medium	650,002	1,222,588	1,459,546	1,463,968	-	-
FT-2 Large LLF	606,975	1,033,368	974,700	1,148,201	-	-
FT-2 Large HLF	144,746	283,671	238,339	376,461	-	-
FT-2 Extra Large LLF	22,796	123,371	47,230	33,744	-	-
FT-2 Extra Large HLF	18,203	189,727	151,936	228,331	-	-
Total FT-2	1,442,722	2,852,725	2,871,751	3,265,827	-	-
FT-1 TRANSPORTATION						
FT-1 Medium	619,282	857,636	724,960	654,810	-	-
FT-1 Large LLF	960,238	1,085,313	1,054,881	1,068,028	-	-
FT-1 Large HLF	622,524	593,322	465,644	489,413	-	-
FT-1 Extra Large LLF	538,450	789,419	934,650	1,401,823	-	-
FT-1 Extra Large HLF	5,021,935	5,156,225	4,455,947	5,600,761	-	-
Total FT-1	7,762,429	8,481,915	7,636,082	9,214,835	-	-
TOTAL TRANSPORTATION						
Small C&I	-	-	-	15,122	6,866	73,379
Medium C&I	1,269,284	2,080,224	2,184,506	2,118,778	2,321,794	2,544,794
Large C&I LLF	1,567,213	2,118,681	2,029,581	2,216,229	2,262,397	2,250,138
Extra Large C&I LLF	767,270	876,993	703,983	865,874	1,078,372	1,012,211
Large C&I HLF	561,246	912,790	981,880	1,435,567	798,324	1,189,192
Extra Large C&I HLF	5,040,138	5,345,952	4,607,883	5,829,092	5,114,573	5,817,476
Total FT-2 & FT-1	9,205,151	11,334,640	10,507,833	12,480,662	11,582,326	12,887,190
TOTAL THROUGHPUT						
Residential Non-Heating	698,210	572,364	568,413	722,127	761,987	698,046
Residential Heating	16,815,263	17,436,451	17,653,549	18,331,149	18,973,642	18,726,158
Small C&I	1,987,380	2,466,704	2,353,415	2,370,683	2,555,277	2,745,850
Medium C&I	4,522,175	5,205,396	5,330,779	5,301,405	5,298,689	6,166,416
Large C&I LLF	2,429,671	2,804,893	2,725,521	2,895,822	2,932,140	2,960,112
Extra Large C&I LLF	1,002,989	1,157,639	931,731	1,176,562	1,183,443	1,211,571
Large C&I HLF	825,615	951,676	1,060,314	1,605,030	1,058,607	1,286,073
Extra Large C&I HLF	5,180,010	5,560,462	4,763,990	6,097,877	5,346,731	6,102,815
Total Throughput All Classes	33,461,313	36,155,585	35,387,712	38,500,655	38,110,516	39,897,041

National Grid - Gas

Docket 4576

History of National Grid Actual Annual Sales and Throughput

	Nov 2010 - Oct 2011 Dkt 4199	Nov 2011 - Oct 2012 Dkt 4283	Nov 2012 - Oct 2013 Dkt 4346 11&1	Nov 2013 - Oct 2014 Dkt 4436	Nov 2014 - Oct 2015 Dkt 4520 10 & 2	Nov 2015 - Oct 2016 Dkt 4576
SALES <i>(incls TSS)</i>						
Residential Non-Heating	607,631	597,697	767,080	943,570	758,832	-
Residential Heating	17,942,622	14,694,374	17,750,496	19,567,025	20,498,507	-
Small C&I	2,460,705	1,855,837	2,295,906	2,638,215	2,720,140	-
Medium C&I	3,233,924	2,662,569	3,061,200	3,417,554	3,615,826	-
Large C&I LLF	696,721	568,303	624,090	767,982	813,428	-
Extra Large C&I LLF	273,180	238,837	293,186	291,008	226,088	-
Large C&I HLF	35,493	81,695	107,412	104,068	138,969	-
Extra Large C&I HLF	220,229	198,619	286,545	383,411	409,868	-
Total Sales	25,470,505	20,897,931	25,185,915	28,112,833	29,181,658	-
FT-2 TRANSPORTATION						
FT-2 Small	-	-	16,128	37,016	61,553	-
FT-2 Medium	1,269,873	1,167,327	2,089,850	1,711,352	1,728,613	-
FT-2 Large LLF	765,185	757,823	1,039,175	1,161,076	1,220,719	-
FT-2 Large HLF	246,178	228,454	323,460	421,547	481,728	-
FT-2 Extra Large LLF	73,832	465,003	27,790	71,787	66,519	-
FT-2 Extra Large HLF	176,358	91,040	159,807	174,510	205,570	-
Total FT-2	2,531,426	2,709,647	3,656,210	3,577,288	3,764,702	-
FT-1 TRANSPORTATION						
FT-1 Medium	761,810	641,795	704,820	733,974	726,404	-
FT-1 Large LLF	1,078,897	938,669	1,011,330	1,131,853	1,165,282	-
FT-1 Large HLF	511,598	435,510	486,294	503,585	479,404	-
FT-1 Extra Large LLF	943,536	420,847	1,091,935	1,122,863	1,227,010	-
FT-1 Extra Large HLF <i>(incls Default)</i>	4,868,321	4,860,529	5,038,318	5,378,412	5,746,251	-
Total FT-1	8,164,162	7,297,350	8,332,697	8,870,687	9,344,351	-
TOTAL TRANSPORTATION						
Small C&I	-	-	16,128	37,016	61,553	-
Medium C&I	2,031,683	1,809,122	2,794,670	2,445,326	2,455,017	-
Large C&I LLF	1,844,082	1,696,492	2,050,505	2,292,929	2,386,001	-
Extra Large C&I LLF	757,776	663,964	809,754	925,132	961,132	-
Large C&I HLF	1,017,368	885,850	1,119,725	1,194,650	1,293,529	-
Extra Large C&I HLF	5,044,679	4,951,569	5,198,125	5,552,922	5,951,821	-
Total FT-2 & FT-1	10,695,588	10,006,997	11,988,907	12,447,975	13,109,053	-
TOTAL THROUGHPUT						
Residential Non-Heating	607,631	597,697	767,080	943,570	758,832	-
Residential Heating	17,942,622	14,694,374	17,750,496	19,567,025	20,498,507	-
Small C&I	2,460,705	1,855,837	2,312,034	2,675,231	2,781,693	-
Medium C&I	5,265,607	4,471,691	5,855,870	5,862,880	6,070,843	-
Large C&I LLF	2,540,803	2,264,795	2,674,595	3,060,911	3,199,429	-
Extra Large C&I LLF	1,030,956	902,801	1,102,940	1,216,140	1,187,220	-
Large C&I HLF	1,052,861	967,545	1,227,137	1,298,718	1,432,498	-
Extra Large C&I HLF	5,264,908	5,150,188	5,484,670	5,936,333	6,361,689	-
Total Throughput All Classes	36,166,093	30,904,928	37,174,822	40,560,808	42,290,711	-