National Grid

The Narragansett Electric Company

Gas Long-Range Resource and Requirements Plan for the Forecast Period 2017/18 to 2026/27

March 30, 2018

RIPUC Docket No. 4816

Submitted to:
Rhode Island Public Utilities Commission

Submitted by:

nationalgrid

Filing Letter

Robert J. Humm
Senior Counsel

March 30, 2018

VIA HAND DELIVERY & ELECTRONIC MAIL

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

RE: Docket 4816 - Gas Long-Range Resource and Requirements Plan for the Forecast Period 2017/18 to 2026/27

Dear Ms. Massaro:

Enclosed please find 10 copies of National Grid's[1] recently completed Gas Long-Range Resource and Requirements Plan (Long-Range Plan) for the forecast period 2017/18 to 2026/27, filed pursuant to R.I. Gen. Laws § 39-24-2. This Long-Range Plan is designed to demonstrate that the Company's gas-resource planning process has resulted in a reliable resource portfolio to meet the combined forecasted needs of the Company's Rhode Island customers at least-cost. As discussed during the most recent Gas Cost Recovery proceeding in Docket No. 4719, the Company would welcome an opportunity to present the enclosed Long-Range Plan to the Rhode Island Public Utilities Commission and the Division of Public Utilities and Carriers at a technical session.

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

Enclosure

cc: Leo Wold, Esq.
Al Mancini, Division
John Bell, Division
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[1] The Narragansett Electric Company d/b/a National Grid (National Grid or the Company).

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Section I
Introduction

I. Introduction

This filing presents the Long-Range Resource and Requirements Plan (Long-Range Plan) for The Narragansett Electric Company d/b/a National Grid (Company), for the gas supply forecast period November 1, 2017 through October 31, 2027. The Company is submitting this Long-Range Plan to the Rhode Island Public Utilities Commission (PUC) pursuant to R.I. Gen. Laws § 39-24-2. The Company is a public utility under the provisions of R.I. Gen. Laws § 39-1-2 and provides natural gas sales and transportation service to approximately 267,000 residential and commercial customers in 33 cities and towns. The statute requires the Company to submit to the PUC every two years a long-range energy plan for the five year period subsequent to the date the plan is submitted, and to include all assumptions and methodologies that the Company used in formulating the plan.

Although the statute requires only a 5-year forecast period, the Company has expanded the instant Long-Range Plan to include a 10-year forecast period in order to encompass the period over which the Company has made decisions to enter into long-term arrangements in order to continue to provide a least-cost, reliable portfolio.

This Long-Range Plan is designed to demonstrate that the Company's gas-resource planning process has resulted in a reliable resource portfolio to meet the combined forecasted needs of the Company's Rhode Island customers at least-cost. To make this demonstration, the Long-Range Plan presented herein includes the following information: (i) a step-by-step description of the methodology the Company uses to forecast demand on its system; (ii) a discussion of the process and assumptions that the Company uses to develop its resource portfolio to meet customer requirements under design-weather conditions; and (iii) a complete inventory of the expected available resources in the Company's portfolio, and a demonstration of the adequacy of the portfolio to meet customer demands under a range of weather.

Section II
Planning Results Overview

II. Overview of Planning Results

As described in detail in this filing, the Company's planning process is based on a comprehensive methodology for forecasting customer load requirements using a series of econometric models to determine the annual growth expected for Residential Heating, Residential Non-Heating, and Commercial and Industrial markets for both Sales and Transportation services. To determine the projected growth over the forecast period, the econometric models used historical economic, demographic, and energy price data, as well as weather data to determine total energy demand. The Company then analyzed load reductions expected to be achieved through the implementation of its revised energy-efficiency programs, because such reductions are exogenous to the demand forecast generated by the econometric models.

The results of the Company's Base Case retail demand forecast (see Chart III-B-3) indicates that, over the 10-year forecast period, the residential heating market is projected to increase by an average of 177 billion British thermal units (BBtu) per year, the Residential Non-Heating market is projected to decrease by an average of 15 BBtu per year, and the Commercial and Industrial market is projected to grow by 44 BBtu per year. The Company projects that growth opportunities in non-traditional markets over the forecast period are reflected in the results of the econometric models. The Company is not projecting any incremental growth in these markets beyond what it experienced in the historical period upon which the models are based.

As explained below, the Company's demand forecast is then converted to supply requirements at the Company's citygates. The end result of the forecasting process is that projected sendout requirements increase over the forecast period, averaging 300 BBtu (approximately 0.8 percent) per year under normal weather conditions (see Section III.D.2.).

To ensure that the Company maintains adequate supplies in its portfolio to meet the projected customer load requirements, the next step in the planning process involves an analysis to define the planning standards for the coldest planning year, known as the "design year", and the coldest planning day, known as the "design day". The results of the analysis support the Company's determination to define a design year at 6,250 heating degree days (HDD) with a probability of occurrence of 1 in 37.47 years, and a design day at 68 HDD with a probability of occurrence of 1 in 58.92 years. Combining the results of the design planning standards definition and the load forecasting process, the Company is projecting its Base Case design year sendout requirements to increase over the forecast period by an average of 339 BBtu, or approximately 0.8 percent, per year (see Section III.F.), and design day sendout to increase by an average of 3.4 BBtu, or 0.9 percent, per year.

After the forecast of customer requirements are determined, the next step in the Company's planning process is to design a resource portfolio to meet those requirements in the most reliable and least-cost manner possible. To that end, the Company uses the SENDOUT® Model (a proprietary linear programming model) to determine the adequacy of the existing portfolio in meeting the forecasted requirements and to identify any shortfalls during the forecast period. SENDOUT® allows the Company to determine the least- cost, economic dispatch of its

existing resources, subject to contractual and operating constraints, and identifies the need for and type of additional resources during the forecast period, if any. To evaluate the flexibility and adequacy of the resource portfolio under a range of reasonably foreseeable conditions, the portfolio is assessed under design and normal weather conditions, as well as a cold snap weather scenario. The Company's resource plan is sufficient to meet design year load requirements throughout the forecast period with the addition of incremental capacity, citygate delivered purchases, and/or incremental liquefied natural gas (LNG) resources.

For the cold-snap weather scenario, the Company used a 14-day cold snap occurring in the coldest 14-day period of the Company's normal year (8 January - 21 January) by evaluating January weather data from 1977/78 to 2016/17. The Company uses the results of the cold snap scenario to test the adequacy of inventories and refill requirements. The Company's resource plan shows that it has adequate resources available to meet cold-snap sendout requirements in all years of the forecast, with the addition of incremental capacity, citygate delivered purchases, and/or incremental LNG resources.

Communications regarding this Long-Range Plan should be directed as follows:

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As discussed briefly above, this document is organized into the following principal sections:

- Section III reviews the Company's econometric demand forecasting methodology and discusses the development of the forecast of customer sendout requirements;
- Section IV discusses the design of the resource portfolio, the analytical process and assumptions, the expected available resources, and the adequacy of the portfolio in terms of meeting forecasted customer requirements under design weather conditions; and
- Section V contains the charts and tables referenced within the document.

Section III
Forecast Methodology

III. Forecast Methodology

III.A. Introduction

The Company's forecast methodology supports its supply planning goal to ensure that it maintains sufficient supply deliverability in its resource portfolio to meet customers' requirements on the design day and that it maintains sufficient supply under contract and in storage (underground storage and LNG) to meet customers' requirements over the design year. Each year, the Company employs the same process of preparing a multi-year forecast in order to ensure that the portfolio has sufficient resources for the upcoming winter period, as well as sufficient time to contract for additional resources should they be required. The term "customer" as used herein means those customers for whom the Company must make capacity planning decisions.[1]

The Company develops its underlying demand forecast from econometric models of its customer billing data. This data is available by month and by rate class. The Company developed the retail forecast presented herein in mid-2017, which is the same forecast used in the Company's 2017 Gas Cost Recovery filing (Docket No. 4719), approved on October 30, 2017.

The Company models its daily resources and requirements with its SENDOUT® linear programming software modeling package and, hence, it needs as input a forecast of daily customer requirements.

Accordingly, the Company developed its 10-year forecast of customer requirements under design-weather planning conditions using the following process:

1. <u>Forecast Retail Demand Requirements</u>

   Retail demand requirements are based on customer billing data, which is available by rate class and by month. The Company uses a series of econometric models to develop a forecast of retail demand requirements for traditional markets (i.e., Residential Heating, Residential Non-Heating, and Commercial and Industrial customers). The forecast of retail demand requirements for traditional markets is summed to determine the total retail demand requirements over the forecast period. This forecast of retail demand is disaggregated into monthly billed and unbilled volumes and, hence, can be calendarized for supply planning purposes.

2. <u>Develop Reference Year Sendout Using Regression Equations</u>

   The daily values of the Company's wholesale sendout in the reference year (April 2016 – March 2017) serves as the basis of allocating the monthly retail demand forecast to the daily level. Because actual sendout data for the reference year is a function of the weather conditions experienced in that year, the Company develops this allocator for sendout using regression equations to normalize the sendout in the reference year based on normalized weather data.

[1] The Company makes capacity planning decisions for its Sales and non-grandfathered Transportation (Customer Choice) customers.

3. Normalize Forecast of Customer Requirements

   The Company's monthly retail demand forecast is allocated to the daily level based on the use of its daily wholesale sendout regression equation and its normal daily heating degree day data. This step sets the Company's total normalized forecast of customer requirements over the 10-year forecast period.

4. Determine Design Weather Planning Standards

   The Company performs an analysis to determine the appropriate design day and design year planning standards for the development of a least-cost reliable supply portfolio over the forecast period.

5. Determine Customer Requirements Under Design Weather Conditions

   Using the applicable design day and design year weather planning standards, the Company determines the design year sendout requirements and the design day sendout requirements. These design sendout requirements establish the Company's resource requirements over the forecast period.

To test the sensitivity of the resource portfolio to variations away from the Company's Base Case forecasted customer requirements, the Company developed a High Case customer requirements scenario. In the Company's experience, developing a High Case scenario based on a HighCase economic forecast does not necessarily lead to higher natural gas consumption. For this filing, the Company's High Case scenario is based on a 50 percent increase in net residential meter growth (3,000 meters per year compared to 2,000 meters per year in its Base Case).

Based on the forecast, the Company projects Base Case growth in customer requirements for its Sales and Customer Choice customers of 3,002 BBtu over the forecast period, or 300 BBtu per year (assuming normal weather) (see Section III.D.2.). Overall, this growth in firm sales represents a 8.5 percent total increase in sendout requirements over the forecast period, or 0.8 percent per year on average.

Based on the forecast, the Company projects High Case growth in customer requirements for its Sales and Customer Choice customers of 3,709 BBtu over the forecast period, or 371 BBtu per year (assuming normal weather) (see Section III.G.). Overall, this growth in firm sales represents a 10.5 percent total increase in sendout requirements over the forecast period, or 1.0 percent per year on average.

The development of the Company's 10-year forecast of customer sendout requirements, based on the steps set forth above, is described in the following sections.

III.B. Retail Demand Forecast

The first step in the Company's forecasting methodology is the generation of its retail demand forecast, which is prepared through econometric and statistical modeling.

III.B.1. Demand Forecast for Traditional Markets

III.B.1.a. Service Territory Specific Data Availability

The Company used its monthly customer billing data (volume and number of customers) for the period August 2010 through February 2017 to define the dependent variables in its econometric models. The billing data was modeled at the Company's internal rate code level for the various classes of customers (Residential Heating, Residential Non-Heating, Commercial and Industrial Heating, Commercial and Industrial Non-Heating, etc.). Additionally, the data was also divided into the Sales customer classes, the Customer Choice customer classes, and the "zero-capacity" (i.e., grandfathered Transportation) customer classes. The table below lists the relevant customer classes and rate classes used in the Company's analysis.

	Sales	**Customer Choice**	**Zero-Capacity**
Residential Heating	400, 402		
Residential Non-Heating	401, 403		
Commercial &Industrial Heating	404, 405, 408, 409, 412, 413, 416, 444	406, 407, 410, 411, 414, 415, 443	Z407, Z411, Z415
Commercial &Industrial Non-Heating	417, 420, 421, 424	418, 419, 422, 423	Z419, Z423
Non-Firm	433, 435, 437, 439, 441	434, 436, 438, 440, 442	

III.B.1.b. Econometric Models

With volume and customer data as identified above, the Company developed econometric models for the number of customers and use-per-customer (the quotient of the division of volume and number of customers) for each rate code. The Company's econometric modeling effort was to regress each of the two dependent variables against an array of possible independent variables and select the equation with the best fit.

By using historical economic, demographic, and energy price data listed in Chart III-B-1 as the independent variables, the Company estimated statistically valid econometric equations for each customer class. The Company obtained the economic and demographic data from Moody's Analytics, Inc. (Moody's), https://economy.com (economy.com), using forecasts from March 2017 (Chart III-B-2).

Additionally, the Company tested time variables, actual Heating Degree Days, actual Billing Degree Days, and natural gas and oil prices from the Department of Energy/Energy Information Administration.

The Company then reduced the results of its statistical forecast models to account for the incremental impact of the energy efficiency programs sponsored by the Company. The energy efficiency programs that the Company analyzed for this forecast were those submitted by the

Company in Docket No. 4654 in its Energy Efficiency Program Plan for 2017, dated October 17, 2016, which was the most recent data available at the time of the forecast's preparation. The Company subtracted the incremental savings from the programs that are not embedded in the historical data used to derive the statistical models, because such savings are exogenous to the modeling effort.

III.B.2. Final econometric models for the Company's demand forecast

The Company develops its retail demand forecast from econometric models of its customer billing data. The Company developed the retail forecast presented herein in mid-2017, which is the same forecast used in the Company's 2017 Gas Cost Recovery filing (Docket No. 4719), approved on October 30, 2017. Summary charts and tables comparing this forecast with the Company's 2016 forecast are presented in Appendix A. The detailed specifications of the Company's meter count and use-per-customer models are listed in Appendix B.

III.B.2.a. Residential Heating Class

The Residential Heating class represents approximately 56 percent of the Company's total firm sendout to Sales and Customer Choice customers in 2017/18 (Chart III-B-3). The Company prepared the demand forecast for the Residential Heating class by developing separate econometric models for numbers of customers and use-per-customer. There is a separate model for each Residential Heating class (rate codes 400 and 402). The Company multiplied the results of the econometric number of customer equations by the results of the corresponding econometric use-per-customer equations to calculate total sales in dekatherms (Dth). Finally, the Company applied any estimated incremental impact of the Company-sponsored energy efficiency programs to derive the annual net sales volumes.

Base Case Residential Heating deliveries are forecast to increase by an average of 178 BBtu per year, or 0.9% per year, over the forecast period 2017/18 through 2026/27, driven primarily by an increase in the number of customers. The forecast of retail natural gas volumes for the Sales and Customer Choice Residential Hheating class are presented in Chart III-B-3.

The Base Case net Residential Heating customer count is forecast to increase by an average of 2,504 customers per year, or 1.1 percent per year, over the forecast period 2017/18 through 2026/27. The forecast results for the Base Case Residential Heating customers are presented in Chart III-B-4. The Company modeled customer counts for the Residential Heating class as a function of time trends. The Company modeled monthly variation in customer counts using dummy variables within the linear regression equations to capture the seasonal decline in customer counts that occurs during the summer months and the subsequent increase during the winter months.

The average Base Case Residential Heating use-per-customer is forecast to decrease by an average of 0.1 Dth per customer per year, or a decrease of 0.2 percent per year, over the forecast period 2017/18 through 2026/27. The forecast results for the Base Case Residential Heating class use-per-customer are presented in Chart III-B-5. The Company modeled use-per-customer for the Residential Heating class as a function of degree days and time trends.

The Company then multiplied the results of the customer count forecasts and the use-per-customer forecasts to derive the volume delivery forecast presented in Chart III-B-3.

III.B.2.b. Residential Non-Heating Class

The Residential Non-Heating class represents approximately one percent of the Company's total firm sendout to Sales and Customer Choice customers in 2017/18 (Chart III-B-3). The Company prepared the demand forecast for the Residential Non-Heating class by developing separate econometric models for numbers of customers and use-per-customer. There is a separate model for each Residential Non-Heating class (rate codes 401 and 403). The Company multiplied the results of the econometric equations for the number of customers by the results of the corresponding econometric equations for use-per-customer to calculate total sales. Lastly, the Company reduced the results of its statistical forecast models to account for any incremental impact of the energy efficiency programs sponsored by the Company.

Base Case Residential Non-Heating deliveries are forecast to decrease by an average of 15 BBtu per year, or a decrease of 4.7 percent per year, over the forecast period 2017/18 through 2026/27, driven primarily by a decrease in the number of customers. The forecast of retail natural gas volumes for the Sales and Customer Choice Residential Non-Heating class are presented in Chart III-B-3.

The Base Case net Residential Non-Heating customer count is forecast to decrease by an average of 666 per year, or a decrease of 4.6 percent per year, over the forecast period 2017/18 through 2026/27. The forecast results for the Base Case Residential Non-Heating customers are presented in Chart III-B-4. The Company modeled customer counts for the Residential Non-Heating class as a function of time trends. The Company modeled the monthly variation in customer counts using dummy variables within the linear regression equations to capture the seasonal decline in customer counts that occurs during the summer months and the subsequent increase during the winter months.

The average Base Case Residential Non-Heating use-per-customer is forecast to decrease by an average of 0.0 Dth per customer per year, or a decrease of 0.1 percent per year, over the forecast period 2017/18 through 2026/27. The forecast results for the Base Case Residential Non-Heating use-per-customer are presented in Chart III-B-5. The Company modeled the use-per-customer for the Residential Non-Heating class as a function of degree days and time trends.

The Company then multiplied the results of the customer count forecasts and the use-per-customer forecasts to derive the volume delivery forecast presented in Chart III-B-3.

III.B.2.c. Commercial and Industrial Heating Class

The Commercial and Industrial Heating class represents approximately 32 percent of the Company's total firm sendout to Sales and Customer Choice customers in 2017/18 (Chart III-B-3). The Company prepared the demand forecast for the Commercial and Industrial Heating class by developing separate econometric models for numbers of customers and use-per-

customer. The Company multiplied the results of the econometric equations for number of customers by the results of the corresponding econometric equations for use-per-customer to calculate total sales. Lastly, the Company reduced the results of its statistical forecast models to account for any incremental impact of the energy efficiency programs sponsored by the Company.

There are separate models for the Commercial and Industrial Heating classes (Sales: 404, 405, 408, 409, 412, 413, 416; Customer Choice: 406, 407, 410, 411, 414, 415, 443; and Capacity Exempt: Z407, Z411, Z415).

The Base Case Commercial and Industrial Heating class demand is forecast to increase by an average of 63 BBtu per year, or 0.6% per year, over the forecast period 2017/18 through 2026/27, driven primarily by an increase in customer count. The forecast of retail natural gas volumes for the Sales and Customer Choice Commercial and Industrial heating class are presented in Chart III-B-3.

The Base Case net Commercial and Industrial Heating class customer count is forecast to increase by an average of 99 per year, or 0.4 percent per year, over the forecast period 2017/18 through 2026/27. The forecast results for the Base Case Commercial and Industrial Heating class customers are presented in Chart III-B-4. The Company modeled the customer counts for the Commercial and Industrial Heating class as a function of gas price and personal income.

The average Base Case Commercial and Industrial Heating class use-per-customer is forecast to increase by an average of 0.8 Dth per customer per year, or 0.2% per year, over the forecast period 2017/18 through 2026/27. The forecast results for the Base Case Commercial and Industrial Heating class use-per-customer are presented in Chart III-B-5. The Company modeled the use-per-customer for the Commercial and Industrial Heating class as a function of retail sales, Gross Domestic Product, gas/oil price ratios, degree days, and time trends.

The Company then multiplied the results of the customer count forecasts and the use-per-customer forecasts to derive the volume delivery forecast presented in Chart III-B-3.

III.B.2.d. Commercial and Industrial Non-Heating Class

The Commercial and Industrial Non-Heating class represents approximately 10 percent of the Company's total firm sendout to Sales and Customer Choice customers in 2017/18 (Chart III-B-3). The Company first prepared the demand forecast for the Commercial and Industrial Non-Heating class by developing separate econometric models for numbers of customers and use-per-customer. The Company then multiplied the results of the econometric equations for number of customers by the results of the corresponding econometric equations for use-per-customer to calculate total sales. Lastly, the Company reduced the results of its statistical forecast models to account for the incremental impact of the energy efficiency programs sponsored by the Company.

There are separate models for the Commercial and Industrial Non-Heating classes (Sales: 417, 420, 421, 424; Customer Choice: 418, 419, 422, 423; and Capacity Exempt: Z419, Z423).

The Commercial and Industrial Non-Heating class demand is forecast to decrease by an average of 19 BBtu per year, or a decrease of 0.6% per year, over the forecast period 2017/18 through 2026/27, driven primarily by an decrease in use-per-customer. The forecast of retail natural gas volumes for the Sales and Customer Choice Commercial and Industrial Non-Heating class are presented in Chart III-B-3.

The Base Case net Commercial and Industrial Non-Heating class customer count is forecast to increase by an average of two meters per year, or 1.0% per year, over the forecast period 2017/18 through 2026/27. The forecast results for the Base Case Commercial and Industrial non-heating class customers are presented in Chart III-B-4. The Company modeled customer counts for the Commercial and Industrial Non-Heating classes as a function of time trends.

The average Base Case Commercial and Industrial Non-Heating class use-per-customer is forecast to decrease by an average of 207.5 Dth per customer per year, or a decrease of 1.5 percent per year, over the forecast period 2017/18 through 2026/27. The forecast results for the Base Case Commercial and Industrial Non-Heating class use-per-customer are presented in Chart III-B-5. The Company modeled use-per-customer for the Commercial and Industrial Non-Heating classes as a function of gas/oil price ratios, degree days, and time trends.

The Company then multiplied the results of the customer count forecasts and the use-per-customer forecasts to derive the volume delivery forecast presented in Chart III-B-3.

III.B.3. The Impact of the Energy Efficiency Programs

On October 17, 2016, the Company filed its Energy Efficiency Program Plan for 2017 in Docket No. 4654. The primary goal of the 2017 Energy Efficiency Program Plan is to create energy (both gas and electric) and economic cost savings for Rhode Island consumers as required by the least cost procurement law, R.I. Gen. Laws § 39-1-27.7. The goal of the natural gas energy efficiency programs is annual reduction in usage; there are no programs that are specifically targeted toward peak reduction.

Because the Company's econometric forecast is based on historical data, which does not fully incorporate the increasing penetration of the Company's energy efficiency programs in the Residential and Commercial and Industrial sectors, the Company reviewed its historical energy efficiency efforts and adjusted its retail demand forecast (downward) to reflect the increases in energy efficiency efforts.

Analysis of the Company's historical energy efficiency programs shows that historical data should have embedded within annual savings of 219,830 MMBtu for Residential customers and 195,723 MMBtu for Commercial and Industrial customers. These figures are based on the three-year average of 2014 through 2016 actual energy efficiency savings. The Company uses a three-year average in lieu of the most recent year to smooth out the year-to-year fluctuations that

may occur. Therefore, the Company reduced its demand forecast by the incremental savings over the historical average.

For each year of the Company's forecast, 2017 and beyond, the Company's demand forecast was reduced by an incremental 0 MMBtu for Residential customers and 53,814 MMBtu for Commercial and Industrial customers.

III.C. Translation of Retail Forecast into Customer Requirements

In the second step of the Company's forecasting methodology, the Company uses linear regression equations of total daily sendout versus daily temperature for the most recent 12 months to calculate a reference-year by division. This serves as the most accurate way for the Company to allocate its monthly demand forecast into its future daily customer requirements. This step is used to determine the Company's normal year forecast of customer requirements over the forecast period for gas cost recovery purposes, and to determine the Company design year forecast of customer requirements over the forecast period for resource planning purposes. To perform its regression analysis, the Company used version 3.4.2 of the "R" statistical software package.[2]

III.C.1. Wholesale Volume by Division

To establish normal-year springboard sendout requirements, the Company developed a linear-regression equation for each of its four divisions (formerly Providence Gas, Westerly Gas, Bristol and Warren Gas, and Valley Gas) using data for the reference-year period April 1, 2016 through March 31, 2017. The Company's regression equation uses sendout as its dependent variable and temperature as its independent variable.[3]

Through the use of the linear-regression equation, the Company is able to normalize total daily sendout. Specifically, the actual daily firm sendout is regressed against HDD data as provided by its weather service vendor Weather Services International, HDD data lagged over two days, and a weekend dummy variable. These data elements were selected for the regression analysis since these elements have been, and continue to be, the major explanatory variables underlying the Company's daily sendout requirements.

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[2] "R is a language and environment for statistical computing and graphics. It is a GNU project which is similar to the S language and environment which was developed at Bell Laboratories (formerly AT&T, now Lucent Technologies). R can be considered as a different implementation of S. There are some important differences, but much code written for S runs unaltered under R. . . . R is available as Free Software under the terms of the Free Software Foundation's GNU General Public License in source code form. It compiles and runs on a wide variety of UNIX platforms and similar systems (including FreeBSD and Linux), Windows and MacOS." Source: https://www.r-project.org/about.html (The R Project for Statistical Computing).

[3] Sendout includes both Sales and supplier service (Customer Choice) customer requirements, as well as the Company's Capacity Exempt customers.

The Company selected the T.F. Green International Airport weather station (KPVD or T.F. Green) as the source of the weather data used as the principal explanatory variable in its regression equations. The Company selected the T.F. Green weather station because it is close to the center of the Company's service territory, on a load-weighted basis, and it is highly correlated with surrounding weather stations. Specifically, the Company used the HDD value for each 24-hour period of 10:00 a.m. to 10:00 a.m., which constitutes the gas day and, therefore, corresponds to the same daily time period of observation of the sendout data.

Based on its observations of the historical relationship between total sendout and HDD, the Company chose to develop its regression equation as a segmented model, i.e., a "regression model where the relationships between the response and one or more explanatory variables are piecewise linear, namely represented by two or more straight lines connected at unknown values: these values are usually referred as breakpoints".[4]

Since a significant portion of the Company's sendout is due to space heating usage and space heating only occurs when average air temperatures fall below a certain level, the segmented model serves as an excellent starting point for modeling the relationship between sendout and HDD. Linear modeling of sendout is appropriate since the Company has not observed any non-linear characteristics in sendout at cold temperatures, as demonstrated in Chart III-C.

In the tables below, Intercept is the MMBtu sendout predicted at HDD=0, Slope1 is the MMBtu/HDD usage below the Breakpoint HDD level, Slope2 is the incremental MMBtu/HDD usage above the Breakpoint HDD level, the Standard Error is expressed in MMBtus, and the Breakpoint HDD is the HDD value at which space heating equipment is observed to turn on. The signs of the Slope1 and Slope2 coefficients (positive) imply that as temperatures get colder and HDD increases in value, the sendout will increase, which agrees with what the Company typically observes.

Based on observations of daily sendout, the Company has observed that weekday and weekend sendout requirements are different at similar HDD levels. The Company's regression equations include a second independent variable, a weekday/weekend dummy variable, set to 0 for Mondays through Thursdays, 1 on Fridays and Sundays, and 2 on Saturdays. The sign of the coefficient (negative) implies that, for a given HDD level, loads will be lower on Friday through Sunday as compared to Monday through Thursday (i.e., weekend compared to the workweek).

Finally, the Company has observed a correlation between lagged temperature and the residuals of the above equation, so the Company has added a third independent variable: the difference between HDD on day *t* and mean of the HDD on day *t-1* and day *t-2*. The differences were used in lieu of the actual lagged values to avoid correlation among the independent variables. The underlying theory of this analysis is that heating requirements increase as two consecutive days of cold weather occur, which cools down structures to a greater degree than would be experienced on a single day. The introduction of the third independent variable added another incremental improvement in the adjusted R^2 of the equations. The sign of the coefficient

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[4] Source: "Segmented: an R package to fit regression models with broken-line relationships," R News, Volume 8/1, May 2008, at page 20.

(negative) implies that, if a day is colder than the average of the previous two days, the increase in sendout will be somewhat lower than what would be forecast without the coefficient, and vice versa.

The table below lists the Providence regression results from 2007/08 through 2016/17.

Split Year	Intercept	Slope1	Slope2	Weekend	Lagged Delta HDD	Standard Error	Adjusted R^2	Breakpoint HDD
2007/08	39,487.0	463.4	3,568.1	-2,020.4	-527.4	6,983	0.9806	7.37
2008/09	39,516.8	468.8	3,595.2	-1,913.2	-665.7	6,217	0.9864	7.83
2009/10	38,099.3	443.6	3,832,1	-1,409.3	-710.1	6,440	0.9838	7.24
2010/11	38.961.9	543.5	3,866.8	-2,481.8	-712.0	6.823	0.9859	8.20
2011/12	39,220,4	633.6	3,876.2	-2,696.6	-818.1	6,528	0.9792	8.69
2012/13	37,170.7	639.3	4,194.6	-2,584.1	-792.9	7,065	0.9825	8.56
2013/14	39,317.6	721.5	4,096.3	-2,057.9	-755.0	7,097	0.9883	8.86
2014/15	42,967.0	844.8	3,864.4	-3,077.8	-715.7	8,569	0.9884	7.68
2015/16	41,947.9	44.3	4,459.8	-3,965.9	-36.4	8,006	0.9757	5.57
2016/17	42,125.5	407.6	4362.6	-2,621.6	-751.9	7,098	0.9841	6.73

Segmented Regression Results for Providence Sendout vs. HDD and Weekend and Lagged Delta HDD

Similarly, the tables below list the coefficients for the final regression equation form for the Company's Westerly, Bristol and Warren, and Valley divisions.

Split Year	Intercept	Slope1	Slope2	Weekend	Lagged Delta HDD	Standard Error	Adjusted R^2	Breakpoint HDD
2007/08	1,103.6	1.3	74.4	-187.8	-6.1	261	0.9180	8.48
2008/09	1,227.1	12.2	59.1	-257.8	-9.0	196	0.9513	12.42
2009/10	1,070.2	10.3	72.7	-239.9	-11.9	191	0.9600	9.58
2010/11	1,115.6	2.3	79.3	-199.0	-9.6	174	0.9712	8.94
2011/12	1,024.5	14.4	66.3	-220.7	-15.3	190	0.9467	9.39
2012/13	1,046.9	17.0	79.7	-210.5	-16.1	187	0.9684	11.66
2013/14	1,123.9	17.7	78.5	-192.0	-15.3	193	0.9758	12.26
2014/15	1,133.1	23.6	78.9	-202.6	-16.3	197	0.9806	11.02
2015/16	1,055.4	2.0	73.4	-158.7	-1.4	199	0.9498	5.26
2016/17	1,170.3	15.0	74.7	-168.6	-11.6	221	0.9540	9.79

Segmented Regression Results for Westerly Sendout vs. HDD and Weekend and Lagged Delta HDD

Split Year	Intercept	Slope1	Slope2	Weekend	Lagged Delta HDD	Standard Error	Adjusted R^2	Breakpoint HDD
2007/08	1,127.3	22.4	131.3	-149.4	-22.0	304	0.9737	8.60
2008/09	122.5	22.7	137.7	-149.9	-30.5	301	0.9780	9.65
2009/10	865.4	21.7	157.9	-109.6	-30.9	340	0.9713	9.64
2010/11	1,081.1	23.1	105.0	-135.8	-19.2	210	0.9847	8.43
2011/12	848.8	18.3	120.2	-89.9	-27.3	265	0.9619	9.31
2012/13	939.3	16.2	106.0	-65.3	-20.0	181	0.9825	8.56
2013/14	1,089.9	12.7	159.0	-63.3	-17.3	448	0.9673	6.02
2014/15	1,473.8	29.0	132.6	-105.6	-24.6	294	0.9884	7.68
2015/16	654.0	0.8	178.3	-175.9	-1.0	588	0.9355	1.65
2016/17	1,141.5	25.9	241.0	-94.7	-55.2	596	0.9593	9.24

Segmented Regression Results for Bristol and Warren Sendout vs. HDD and Weekend and Lagged Delta HDD

Split Year	Intercept	Slope1	Slope2	Weekend	Lagged Delta HDD	Standard Error	Adjusted R^2	Breakpoint HDD
2007/08	9,844.4	-133.9	1,228.2	-1,406.4	-180.2	2,589	0.9621	5.71
2008/09	9.613.5	57.3	977.1	-1,352.5	-179.2	2,480	0.9650	8.33
2009/10	8,898.7	-7.5	1,109.0	-1,068.9	-229.6	2,266	0.9693	6.66
2010/11	10,201.6	-145.7	1,053.2	-1,420.7	-116.4	2,806	0.9481	4.37
2011/12	9,638.8	106.2	965.9	-1,176.9	-190.7	2,262	0.9556	8.50
2012/13	12,078.1	70.2	993.2	-972.7	-167.7	3,066	0.9348	9.22
2013/14	9,324.2	-23.9	1,095.7	-912.2	-155.3	3,474	0.9435	7.58
2014/15	7,950.5	51.3	1,037.7	-1,276.2	-201.7	3,238	0.9587	6.39
2015/16	9,980.6	12.3	1,012.0	-1,383.3	-11.3	2,811	0.9424	6.11
2016/17	9,214.2	62.5	1,035.1	-944.4	-156.7	2,931	0.9470	7.60

Segmented Regression Results for Valley Sendout vs. HDD and Weekend and Lagged Delta HDD

The tables above set forth the 2016/17 springboard regression coefficients for the Company's four gas divisions. The functional form of the equation, in pseudo code, is then:

```
Sendout = Intercept Coefficient +
          Weekend Dummy Coefficient * Weekend Dummy Variable +
          Slope1 Coefficient * min(HDDt, Breakpoint HDD) +
          if(HDDt<=Breakpoint HDD) {0} else {(Slope1 Coefficient
            + Slope2 Coefficient) *
            (HDDt - Breakpoint HDD)} +
          Lagged Delta HDD Coefficient * (HDDt - average(HDDt-1, HDDt-2)
```

As seen above, the adjusted R-squared values for all 2016/17 regressions are all in the range of 0.95 to 0.98, and all of the t-statistics of the independent variables are greater than 2.0, indicating that these variables are significant to the explanatory power of the equation.

These regression equations capture the observed characteristics of the Company's sendout requirements by gas division. The observed characteristics include the following: (1) sendout requirements are directly related to HDD; (2) sendout requirements are affected by HDDs that occur over a multi-day period; and (3) sendout requirements differ by day of the week. Thus, the Company has developed a set of reliable regression equations to describe wholesale gas sendout by division. Using a series of daily normal HDDs, these equations allow

the Company to calculate its history of normalized wholesale gas sendout for each of its four gas divisions.

III.C.2. Wholesale Volume by End-Use

In addition to its segmented regression equations for each gas division, the Company runs similar regression equations for the sum of its four divisions for its capacity-eligible FT-1, capacity-exempt, and non-firm sales customers to best characterize the daily usage patterns of each of these customer groups. Subtracting the daily actual volumes for each of these groups from total daily wholesale sendout, the Company can also characterize the daily usage patterns of its remaining customers: Sales and FT-2. The Sales and FT-2 data are combined since they are not daily-metered customers and their volumes can only be inferred.

The table below lists the FT-1 regression results from 2014/15 through 2016/17.

Split Year	Intercept	Slope1	Slope2	Weekend	Lagged Delta HDD	Standard Error	Adjusted R^2	Breakpoint HDD
2014/15	6,447.5	84.5	217.7	-922.5	-52.9	640	0.9816	4.946
2015/16	7,021.9	78.3	230.4	-1,020.8	-54.4	597	0.9738	6.601
2016/17	7,157.1	66.6	224.2	-983.0	-40.1	507	0.9821	5.615

Segmented Regression Results for FT-1 Wholesale Sendout vs. HDD and Weekend and Lagged Delta HDD

Similarly, the tables below list the coefficients for the final regression equation form for the Company's capacity-exempt, non-firm sales, and Sales plus FT-2 customers

Split Year	Intercept	Slope1	Slope2	Weekend	Lagged Delta HDD	Standard Error	Adjusted R^2	Breakpoint HDD
2014/15	11,947.9	128.7	193.8	-1,068.7	-77.8	1,504	0.9202	5.00
2015/16	12,964.9	24.0	254.4	-805.2	-36.7	662	0.9578	5.84
2016/17	12,188.9	-29.5	322.9	-842.5	-53.4	646	0.9699	2.76

Segmented Regression Results for Capacity Exempt Wholesale Sendout vs. HDD and Weekend and Lagged Delta HDD

Split Year	Intercept	Slope1	Slope2	Weekend	Lagged Delta HDD	Standard Error	Adjusted R^2	Breakpoint HDD
2014/15	4,007.4	15.1	-310.1	-220.3	32.5	871	0.6332	33.79
2015/16	4,335.3	-5.4	-216.1	17.1	38.5	781	0.3914	33.01
2016/17	3,881.2	-2.0	-228.5	80.4	25.4	876.4	0.3691	31.38

Segmented Regression Results for Non-Firm Sales Wholesale Sendout vs. HDD and Weekend and Lagged Delta HDD

Split Year	Intercept	Slope1	Slope2	Weekend	Lagged Delta HDD	Standard Error	Adjusted R^2	Breakpoint HDD
2014/15	31,400.8	772.6	4,754.5	-2,576.7	-849.8	8.837	0.9871	8.062
2015/16	32,306.5	817.1	4,804.0	-2,639.4	-999.2	7,369	0.9847	8.599
2016/17	30,532.3	492.3	5231.9	-2,039.7	-904.0	7,741	0.9862	7.624

Segmented Regression Results for Sales plus FT-2 Wholesale Sendout vs. HDD and Weekend and Lagged Delta HDD

These regression equations capture the observed characteristics of the Company's sendout requirements by end-use. The observed characteristics include the following: (1) sendout requirements are directly related to HDDs; (2) sendout requirements are affected by HDDs that occur over a multi-day period; and (3) sendout requirements differ by day of the week. Thus, the Company has developed reliable regression equations to establish the basis upon which future sendout requirements can be forecast. Moreover, the Company has further developed a set of reliable regression equations to describe wholesale gas sendout by end-use. Using a series of daily normal HDDs, these equations allow the Company to calculate its history of normalized wholesale gas sendout by end-use.

Using its forecast of retail demand and an appropriate set of daily HDD values for a design year, the Company can successfully plan its operational requirements to provide a low-cost, adequate, and reliable supply of natural gas to its customers.

III.C.3. Comparison of Historical Retail and Wholesale Volumes to Determine Unaccounted For Gas

In the sections above, the Company established the 2016/17 regression equations for total the variable SFT2 (Sales and FT-2 customers) in its service territory. The Company's monthly retail volumes match the wholesale volumes to within 2.8 percent; hence, the Company has adequately captured all customer volumes.

III.D. Normalized Forecast of Customer Requirements

The third step in the Company's forecasting methodology is to develop a forecast of customer requirements under normal weather conditions for its demand forecast.

III.D.1. Defining Normal Year for Ratemaking Purposes

To establish the normal year's daily HDD data for ratemaking purposes, the Company calculated the average annual number of HDDs for the T.F. Green (KPVD) weather station for the 10-year period ending December 31, 2011, with an average of 5,458 HDD.

The Company then prepared a "Typical Meteorological Year" by selecting, for each calendar month, the month in the T.F. Green weather database that most closely approximated the 10-year average HDD and standard deviation for each month. A summary of the monthly averages for the T.F. Green weather site is listed in the chart below.

Month	HDD	Standard Deviation
Jan	1,102	9.2
Feb	936	8.3
Mar	796	7.0
Apr	452	6.7
May	224	5.3
Jun	44	3.2
Jul	0	0.2
Aug	1	0.2
Sep	53	2.2
Oct	340	7.1
Nov	579	7.2
Dec	930	6.9
Total	5,458	

Average Monthly HDD and Average of Monthly Standard Deviations for the T.F. Green International Airport Weather Station

III.D.2. Defining Load Attributed to Customers Using Utility Capacity

For the third step of the Company's forecasting methodology set forth in Section III.A, above, the Company allocated the monthly retail volumes to the daily level based on the 2016/17 reference-year regression equations, using normal year HDD, to yield the forecast of Sales, FT-2 (Customer Choice), and FT-1 (pipeline) customer requirements under normal weather conditions for its demand forecast, based on a 365-day year.

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
Heating Season	24,887	25,263	25,531	25,749	26,146	26,140	26,448	26,745	26,997	27,209	27,162
Non-Heating Season	10,363	10,482	10,687	10,827	10,818	10,918	11,014	11,089	11,154	11,122	11,091
Total	35,251	35,746	36,219	36,577	36,965	37,058	37,462	37,834	38,151	38,332	38,253
Per-Annum Growth		495	472	357	388	92	404	372	316	180	-78
Per-Annum Growth (%)		1.4%	1.3%	1.0%	1.1%	0.3%	1.1%	1.0%	0.8%	0.5%	-0.2%

Base Case Normal Year Customer Requirements for Capacity Planning (BBtu)

III.E. Design Planning Standards

In the fourth step of the Company's forecasting methodology, the Company determines the appropriate design day and design year planning standards to develop a least-cost, reliable supply portfolio over the forecast period.

III.E.1. Normal Year for Standards Purposes

To establish the design year's daily HDD data, the Company began by calculating the average annual number of HDDs for the T.F. Green (KPVD) weather station for the 40 calendar years 1978 through 2017, with an average of 5,557.2 HDD and a standard deviation of 358.6 HDD.

The Company then prepared a "Typical Meteorological Year" by selecting, for each calendar month, the month in the T.F. Green weather database that most closely approximated the average HDD and standard deviation for each month.

III.E.2. Design Year and Design Day Planning Standards

The Company's planning standards represent the defined weather conditions and consequent sendout requirement that must be met by the Company's resource portfolio. The Company's design year and design day standards are listed in the chart below.

Element	Value
Design Year HDD	6,250
Frequency of Occurrence	1 / 37.47 years
Design Day HDD	68
Frequency of Occurrence	1 / 58.92 years

Design Year and Design Day Criteria

As described below, the Company's analysis of the design year and design day standards demonstrate that these standards are appropriate.

III.E.2.a. Design Day Standard

The purpose of a design day standard is to establish the amount of system-wide throughput (interstate pipeline and underground-storage capacity plus local supplemental capacity) that is required to maintain the integrity of the distribution system. In this filing, the Company defines its design day standard at 68 HDD with a probability of occurrence of once in 58.92 years, as a result of its ongoing review of planning standards.

The Company established its design day standard using a three-step process. First, the Company performed a statistical analysis of the coldest days recorded over a historical period. Second, the Company conducted a cost-benefit analysis to evaluate the cost of maintaining the resources necessary to meet design day demand versus the cost to customers of experiencing service curtailments. Third, the Company identified a design day standard that would maintain reliability at the lowest cost.

To perform the statistical analysis necessary to identify the appropriate design day standard, the Company used recorded daily HDD values based on 6,040 observations at the T.F. Green weather site for the November through March periods of 1977/78 through 2016/17. In previous long-range supply plan submissions, the Company had selected the coldest day of each of the most recent 40 heating seasons reflected in the T.F. Green weather data. The change to evaluating a larger data set was necessitated because the distribution of coldest days in the earlier methodology is trending away from a normal distribution. Using its new methodology, the Company found that these 6,040 data points fell within a normal distribution with an average of 55.00 HDD and a standard deviation of 6.13 HDD.

In its design day standard, the Company examined the cost of potential customer curtailments through a cost-benefit analysis. Chart III-E-1 shows the cumulative probability distribution and the frequency of occurrence of HDD levels greater than the mean peak day. Chart III-E-1 also shows, given the current peak period heating coefficient of 5,664.03 MMBtu per HDD, the supply (Delta Supply) required at such levels. The Company then translated these supply levels into the "Equivalent Number of Customers" that would be represented by a shortfall at a given HDD level.[5]

In the event of a service disruption, there are several types of damages that customers could experience. For example, the Company's residential customers would potentially incur re-light costs and freeze-up damages. The Company's Commercial and Industrial customers would potentially incur economic damages associated with the loss of production on the day of the event (which is further documented in Section III.E.2.b. - Design Year Standard).

For this filing, the Company priced its potential re-light costs based on its experience in outage restoration at $1,069 per customer.

For this filing, the Company updated its 2008 cost estimate for freeze-up damages from Marsh & McLennan. According to Marsh & McLennan, in 2008, the average cost estimate of remodeling was $20,000 per customer. The Company applied the most recent (2014) U.S. Construction Price Deflator to this value to arrive at a new figure of $22,392 per customer. The Company has made the assumption that, in the event of freeze-up damages, only a portion of a residence would require remodeling, so the Company's analysis considers three levels of resulting damages: 25 percent, 50 percent, and 75 percent. Accordingly, the Company multiplied the freeze-up damages figure by two to represent the cost of a full remodel, so that the midpoint of the damages would align with the average cost estimate of $22,392 per customer.

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[5] The Company determined the equivalent number of customers using the following formula: Delta Supply/[(Heating Increment/Number of Customers)*HDD].

Given the ratio of Commercial and Industrial customers to the total number of customers at February 2016, the Company divided the "Equivalent Number of Customers" into the number of Residential and Commercial and Industrial customers. For the Commercial and Industrial customers, the Company computed the cost of the service disruption by multiplying the ratio of affected customers by the total number of Commercial and Industrial customers by the estimated cost of one day's service disruption to the Company's entire group of Commercial and Industrial customers. As the actual number of Residential customers that would suffer freeze-up damage in a real emergency is unknown, the Company analyzed three levels of damages, assuming 25 percent, 50 percent, and 75 percent of potentially affected Residential customers would suffer damages (as mentioned in the previous paragraph). The computed values for these three scenarios of probability-weighted costs of damages are presented in Chart III-E-2 and are shown graphically in Chart III-E-3.

Chart III-E-4 takes the HDD levels and the associated Delta Supply to estimate the costs associated with maintaining adequate deliverability at the HDD levels. The low-upgrade cost scenario is based on the cost of adding LNG vaporization capacity and the high-upgrade cost scenario is based on the cost of adding 365-day interstate pipeline service (with many other potential options falling in between). This is shown graphically in Chart III-E-5.

III.E.2.a.3. Design Day Selection

In Chart III-E-5, the cost of maintaining adequate throughput capacity and the benefit of avoiding damage costs that would be incurred in relation to customer premises are compared. The intersection of the curves sets a range for design day planning purposes from approximately 64.3 to 71.0 HDD, with a midpoint of 67.3 HDD. Thus, the Company's design day standard of 68 HDD is within the range of values based on cost and benefit. Chart III-E-1 indicates that the frequency of occurrence of the Company's design day standard is once in 58.92 years.

III.E.2.b. Design Year Standard

In this filing, the Company defines its design year standard as 6,250 HDD, with a probability of occurrence of once in 37.47 years.

The Company maintains a design year standard for planning purposes to identify the amount of seasonal supplies of natural gas that will be required to provide continuous service under all reasonable weather conditions. If the Company were to have a shortfall in supply during the winter season, the amount of supply in deficit can be translated into an equivalent number of customers whose service would be disrupted for more than one day. For a supply disruption of a multi-day duration, service would be curtailed on a priority basis and would likely fall on Commercial and Industrial establishments before affecting the Residential sector, since supply to the Residential sector is more likely to involve health and personal safety. To establish an estimated annual level of HDDs for which the Company should plan, the Company compared the benefit of maintaining an adequate quantity of natural gas supply under all reasonable weather conditions to the probability-weighted cost of losses that might occur if supplies are not adequate.

The Company has established its design year standard using a three-step process. First, the Company performed a statistical analysis of annual HDD data recorded over a historical period. Second, the Company conducted a cost-benefit analysis to evaluate the cost of maintaining the resources necessary to meet design year demand versus the cost to customers of experiencing service curtailments. Third, the Company identified a design year standard that would maintain reliability at the lowest cost.

To complete the first step in the process of determining its design year standard, the Company computed the calendar year totals for HDD at the T.F. Green weather site for the 40 years 1976 through 2015, and calculated the mean (5,557.2 HDD) and standard deviation (358.6 HDD). To evaluate the design year standard, the Company analyzed the impact of planning over a range of annual HDD values from 5,700 to 6,900 HDD.

To complete the second step in the development of the design year standard, the Company performed a cost-benefit analysis by examining the cost of potential customer curtailments in relation to the cost of maintaining adequate supplies to meet the design year standard. Because a failure to perform on a seasonal basis would mean that adequate supplies were not available to meet customer needs, for this theoretical analysis, the Company views the cost of failure to deliver as the economic penalty within the service territory associated with the need to curtail gas sales for a period of time. Service would be rationed among the Company's customers for a number of days in order to husband any remaining gas supplies. The Company estimated the potential losses based on the product of the potential economic cost per day of interruption multiplied by the number of days of interruption.

To calculate this estimate of potential losses, the Company determined the average Gross State Product (GSP) per day for 2016 from data from the Bureau of Economic Analysis. The economic cost to the Company's customer base per day was then calculated on the basis of the total GSP per day. First, the value for the GSP per day for the Company's service territory was estimated by multiplying the GSP per day by the ratio of the number of employees within the service territory to the total number of employees within the state, based on 2015 employment estimates from Moody's. Then, the value for the GSP per day for the Company's customer base was estimated by multiplying the GSP per day figure for its service territory by the Company's estimated market share of natural gas in relation to all fuel types in its service territory.

To determine the number of days of interruption that a supply shortfall would represent, the Company analyzed its supply requirements at various HDD levels; assigned requirements to supply sources; and using 5,557 HDD as the baseline, estimated when supply sources would be in deficit, as well as the quantity and duration of such deficit.

The Company established a baseline of the normal annual HDD (5,597.2), and then determined sendout requirements for the split year 2016/17 by assigning all sendout requirements below 206,787 MMBtu per day to pipeline supply; all requirements between 206,787 and 245,543 MMBtu per day to underground storage supplies; and all requirements above 245,543 MMBtu per day to supplemental resources. The Company then analyzed the

sendout requirements for HDD levels of 5,700 to 6,900 on 100 HDD increments. The Company computed these HDD scenarios by multiplying each of the days of its normal HDD days by the ratio of the desired annual total to 5,597.2 HDD. Using the same method of assignment of supply sources, the Company determined the annual shortfalls by supply source (Chart III-E-6).

Chart III-E-7 shows that the timing of when the shortfalls occur varies among the supply sources. Pipeline shortfalls occur late in the heating season when alternative supplies would be fairly easy to arrange. The underground storage and supplemental-resource shortfalls occur during the heating season when arranging alternative supplies would be more difficult. Chart III-E-8 summarizes the HDD levels, the probabilities of occurrence, and the shortfall by supply type.

Analysis indicates that sendout for the Company during the heating season was 58 percent Residential and 42 percent Commercial and Industrial. Therefore, the total daily shortfall of underground storage and supplemental supplies at all HDD levels in this study can be assigned to Commercial and Industrial customers. For each forecast day under each HDD scenario, the daily sendout requirement was multiplied by 42 percent to derive the Commercial and Industrial portion. If the day had a supply shortfall, the shortfall value was divided by the Commercial and Industrial requirement to derive that day's fractional amount of the Company's Commercial and Industrial customers that would suffer curtailment. Summing all of these values for a given HDD scenario, the Company determined the total number of day-equivalents of interruption. This value is less than or equal to the number of calendar days during which interruption occurred, since not all days will have 100 percent interruption. Multiplying the number of day-equivalents by the GSP per day for the Commercial and Industrial customer base yields an estimate of the economic damage that would occur. Chart III-E-9 lists the HDD levels, the probabilities of occurrence, the days of interruption, the cost of the interruption, the probability-weighted cost of the interruption, and the quantity of interrupted winter supply (via pipeline capacity from the Marcellus Basin).

There are two damages scenarios presented in Chart III-E-9: (1) where 25 percent of the Commercial and Industrial establishments are actually affected, and (2) where 75 percent of the establishments are affected. Chart III-E-9 also sets forth one scenario of capacity that the Company acquires on behalf of its customers to avoid such damages (traditional long-haul capacity). Chart III-E-10 demonstrates that a planning range of 6,100 to 6,400 HDD is appropriate.

III.E.2.b.3. Design Year Selection

As a result of this analysis, the Company has determined that a design year standard of 6,250 HDD is an appropriate level. Chart III-E-8 indicates that the frequency of occurrence of the Company's design year standard is once in 37.47 years.

III.E.2.c. Specification of Daily Design Year HDD

To generate the daily HDD values for its design year, the Company scaled the daily values for its normal year by the ratio of the annual normal year total to the annual design year total, making any minor adjustment necessary to ensure the peak day of the design year equaled the Company's design day standard.

III.F. Forecast of Base Case Design Year Customer Requirements

In the fifth, and final, step of the Company's forecasting methodology set forth in Section III.A., above, the Company uses the applicable design day and design year planning standards to determine the design day and design year sendout requirements. To accomplish this, the Company combines the springboard equations, which are derived from the sendout regression analysis, with its normal year daily HDD pattern and its design year daily HDD pattern to yield two springboard year estimates of normal year and design year daily customer requirements. Below are the resulting design year requirements for the demand forecast.

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
Heating Season	28,139	28,542	28,839	29,083	29,540	29,534	29,889	30,230	30,522	30,766	30,716
Non-Heating Season	11,473	11,607	11,819	11,977	11,967	12,081	12,191	12,278	12,352	12,319	12,286
Total	39,613	40,149	40,658	41,060	41,507	41,615	42,080	42,509	42,875	43,086	43,002
Per-Annum Growth		536	509	401	446	108	464	428	365	210	-83
Per-Annum Growth (%)		1.4%	1.3%	1.0%	1.1%	0.3%	1.1%	1.0%	0.9%	0.5%	-0.2%

Base Case Design Year Customer Requirements for Capacity Planning (BBtu)

III.G. Forecast of High Case Customer Requirements: Normal Year and Design Year

To test the sensitivity of the Company's resource portfolio to changes in growth around its Base Case, the Company also developed High Case customer requirements scenario for both normal and design year weather. For its High Case, the Company assumed that requirements would increase at a rate approximating a 50 percent increase in its Base Case Residential customer growth.

The Company did not run a Low Case scenario knowing that, if the portfolio was able to support the Company's Base Case forecast, then the portfolio would also be able to support a Low Case scenario.

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
Heating Season	24,887	25,368	25,698	25,962	26,466	26,467	26,866	27,256	27,580	27,855	27,794
Non-Heating Season	10,363	10,490	10,699	10,861	10,849	10,968	11,085	11,172	11,248	11,207	11,166
Total	35,251	35,858	36,397	36,824	37,316	37,435	37,952	38,428	38,829	39,062	38,960
Per-Annum Growth		607	538	426	491	119	516	476	401	233	-101
Per-Annum Growth (%)		1.7%	1.5%	1.2%	1.3%	0.3%	1.4%	1.3%	1.0%	0.6%	-0.3%

High Case Normal Year Customer Requirements for Capacity Planning (BBtu)

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
Heating Season	28,139	28,658	29,026	29,323	29,903	29,903	30,363	30,809	31,184	31,501	31,436
Non-Heating Season	11,473	11,639	11,868	12,060	12,061	12,210	12,358	12,468	12,563	12,522	12,481
Total	39,613	40,298	40,894	41,384	41,964	42,114	42,721	43,278	43,747	44,023	43,917
Per-Annum Growth		685	596	489	580	149	607	556	469	275	-106
Per-Annum Growth (%)		1.7%	1.5%	1.2%	1.4%	0.4%	1.4%	1.3%	1.1%	0.6%	-0.2%

High Case Design Year Customer Requirements for Capacity Planning (BBtu)

III.H. Capacity Exempt Customer Requirements

Capacity Exempt customers are transporters on the Company's distribution system, but the Company does not plan for their resources outside of the citygate. Supply for capacity exempt customers is provided by third-party marketers. The Company's forecasting process also includes a forecast of capacity exempt load for distribution system planning purposes (see table below).

Capacity Exempt Load Summary (Dth)
Base Case Forecast

Normal Year

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
HS	2,854,023	2,994,868	3,045,332	3,085,376	3,087,414	3,096,644	3,113,927	3,138,374	3,145,708	3,159,201	3,169,168
NHS	2,695,775	2,828,810	2,876,476	2,914,301	2,916,225	2,924,943	2,941,268	2,964,360	2,971,287	2,984,032	2,996,832
Total	5,549,798	5,823,678	5,921,808	5,999,677	6,003,639	6,021,587	6,055,196	6,102,734	6,116,995	6,143,233	6,166,000
PA Growth		273,881	98,129	77,869	3,962	17,949	33,608	47,538	14,261	26,239	22,766
Pct Growth		4.9%	1.7%	1.3%	0.1%	0.3%	0.6%	0.8%	0.2%	0.4%	0.4%

Design Year

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
HS	3,016,142	3,164,988	3,218,318	3,260,638	3,262,791	3,272,545	3,290,810	3,316,646	3,324,396	3,338,656	3,349,189
NHS	2,764,938	2,901,387	2,950,275	2,989,070	2,991,044	2,999,986	3,016,730	3,040,414	3,047,518	3,060,591	3,073,719
Total	5,781,080	6,066,374	6,168,593	6,249,708	6,253,834	6,272,531	6,307,540	6,357,059	6,371,914	6,399,246	6,422,907
PA Growth		285,294	102,219	81,115	4,127	18,697	35,009	49,519	14,855	27,332	23,661
Pct Growth		4.9%	1.7%	1.3%	0.1%	0.3%	0.6%	0.8%	0.2%	0.4%	0.4%
Peak Day	28,859	30,283	30,794	31,199	31,219	31,313	31,487	31,734	31,809	31,945	32,046

Capacity Exempt Customer Requirements (MMBtu)

Section IV
Resource Portfolio Design

IV. Design of the Resource Portfolio

IV.A. Portfolio Design

To meet load requirements under design weather conditions, the Company maintains a resource portfolio consisting of pipeline transportation, underground storage, and peaking resources. By resource type, the Company's currently available resources to meet deliverability requirements on the peak day are as follows:

	Available Resources 2017/18 (Citygate quantity in Dth)
Pipeline Transportation	206,625[6]
Underground Storage	38,918
Peaking Resources	119,000
TOTAL	**364,543**

Having established its forecast of design year customer requirements, the Company evaluates its existing resource portfolio to determine if it has adequate resources over the forecast period. As part of this evaluation, the Company reviews the possible strategies for meeting customer requirements using the existing resource portfolio in a variety of circumstances. Using the SENDOUT® model (described below), the Company is able to (1) determine the least-cost portfolio that will meet forecasted customer demand, and (2) test the sensitivity of the portfolio to key inputs and assumptions, as well as its ability to meet all of the Company's planning standards and contingencies. Based on the results of this analysis, the Company is able to make preliminary decisions on the adequacy of the resource portfolio and its ability to meet system requirements in the near term and over the longer term.

Since 1996, the Company has been using the SENDOUT® model as its primary analytical tool in the portfolio design process. The SENDOUT® model is a linear-programming optimization software tool used to assist in evaluating, selecting. and explaining long-term portfolio strategies. SENDOUT® has several advantages over previous models. For instance, there is no limit to the number of resources that can be defined. This allows the Company to model its resources more realistically and to receive more meaningful output. Second, the model allows the Company to examine the effect of various contracts on the total portfolio cost.

In that regard, the Company utilizes the SENDOUT® model to determine the best use of a given portfolio of supply, capacity, and storage contracts to meet a specified demand. That is, it can solve for the dispatch of resources that minimizes the cost of serving the specified demand given the existing resource and system-operating constraints. The model dispatches resources based on the lowest variable cost to meet demand, assuming that demand charges are fixed.

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[6] The Company also maintains 96,000 Dth per day of incremental firm transportation on the Algonquin Gas Transmission pipeline from the Dey Street citygate to the Crary Street citygate. However, this capacity is not incremental to the total delivered citygate volume.

IV.B. Analytical Process and Assumptions

For the purpose of preparing this Long-Range Plan filing, the Company analyzed its design year and a normal year demand under Base Case and High Case growth scenarios, as described in Section III. In addition, the Company analyzed a cold-snap scenario using the Company's existing resource portfolio. The examination of these various scenarios enables the Company to test the adequacy and flexibility of the resource portfolio.

To perform the analysis of these three scenarios, the Company incorporated several key assumptions. First, the Company assumed that, throughout the forecast period, there is no change in the Company's service obligation to plan for the capacity requirements of firm, non-grandfathered Capacity Exempt customers. Therefore, for the purposes of this filing the Company has included both Firm Sales and Firm Transportation customers that utilize the Company's firm capacity in the SENDOUT® model. Second, the Company's analysis assumes that all transportation and storage contracts expiring during the forecast period are renewed at the same cost, the same volume, and with the same operating characteristics. Third, the Company assumed that its LNG supply contracts, as well as its citygate supply arrangements if required, will expire on the contract termination date, and are therefore not assumed to be available after the respective date.

IV.C. Available Resources

This section describes the Company's current resource portfolio, as well as the Company's expected resource portfolio given certain portfolio decisions the Company has made. This section also discusses any modifications that the Company anticipates making to the portfolio during the forecast period to meet sendout requirements. As discussed in more detail below, to meet design day and design year sendout requirements, the Company's resource portfolio is composed of the following categories of available resources: (1) transportation contracts; (2) underground storage contracts; and (3) peaking resources. In addition, a discussion of the Company's Natural Gas Portfolio Management Plan is included. Chart IV-C-2 is a schematic of the Company's transportation and underground storage contracts effective as of April 1, 2018. Chart IV-C-3 is a table listing and description of each transportation and storage contract in the Company's resource portfolio as of April 1, 2018.

IV.C.1. Transportation Contracts

The Company has capacity entitlements on multiple upstream pipelines that allow for the delivery of gas to its citygates in Rhode Island. These contracts provide access to domestic production fields, as well as liquid trading points that afford the Company a level of operational flexibility to ensure the least-cost dispatch and reliable delivery of gas supplies. In general, the Company's transportation agreements provide the following: (a) transportation to the Company's citygates for Gulf Coast, Market Area, and Canadian supplies; (b) transportation for underground storage withdrawal and injections; and (c) the flexibility to meet any balancing and no-notice requirements.

The Company's pipeline capacity contracts fall into three primary categories. First, the Company has contract entitlements to long-haul capacity that is used to transport gas from production areas in the Gulf of Mexico and the Northeast Market Area to underground storage facilities located in central Pennsylvania, New York, and West Virginia, and to the Company's Rhode Island citygates. Second, the Company has contract entitlements to short-haul capacity that is used to transport gas from underground storage fields to the Company's Rhode Island citygates. These short-haul capacity entitlements are also used to ensure the deliverability of non-storage supplies to the Company's citygates, when the capacity is not being used to transport underground storage supplies. Third, the Company has entitlements to short-haul capacity that is used to transport gas sourced in Canada to the Company's Rhode Island citygates. The Company's transportation contract entitlements are described below.

Algonquin Gas Transmission Company: The Company has total firm capacity entitlements of 248,705 Dth per day on the Algonquin Gas Transmission Company (Algonquin) pipeline system. Because Algonquin is not directly connected with any production or underground storage area, the Company also holds firm capacity entitlements on interstate pipelines upstream of the Algonquin system for transport to interconnects with the Algonquin system for delivery to the Company's distribution system.

Columbia Gas Transmission, LLC: The Company has total firm capacity entitlements of 50,000 Dth per day on the Columbia Gas Transmission, LLC (Columbia) pipeline system. The Columbia system is a large network spanning from the Gulf Coast to the Midwest, Mid-Atlantic, and Northeast. The Company's contracts provide for specific entitlements at the following four different receipt points within the system, which interconnect with other major pipelines: (1) Maumee, Ohio (30,000 Dth per day) interconnects with Western supply; (2) Broad Run, West Virginia (10,000 Dth per day) interconnects with the Tennessee Gas Pipeline (Tennessee); (3) Eagle, Pennsylvania (3,600 Dth per day) interconnects with Texas Eastern Transmission, L.P. (Texas Eastern); and (4) Downingtown, Pennsylvania (3,855 Dth per day) to Pennsburg, Pennsylvania (Texas Eastern), effective April 1, 2018, as amended by the Company. The decision to amend the receipt point from the interconnect with Transcontinental Gas Pipe Line Company (Transco) at Downington resulted from the fact that Transco no longer allowed nominations into Columbia, as Columbia operates its pipeline at a much higher pressure than Transco operates its pipeline. The Company moved the receipt point to Pennsburg to ensure primary take away from a liquid trading point. All of the Company's transportation contracts with Columbia deliver into the interconnection with Algonquin at Hanover, New Jersey.

Dominion Energy Transmission Inc.: The Company has total firm capacity entitlements of 7,922 Dth per day on the Dominion Energy Transmission Inc. (Dominion) pipeline system. A portion (537 Dth per day) of the capacity originates at the interconnection with Texas Eastern at Oakford, Pennsylvania and delivers into Texas Eastern at Leidy, Pennsylvania. The remaining capacity (7,385 Dth per day) originates at Dominion storage fields and delivers into either the M3 Market Area on Texas Eastern or into the Zone 4 Market Area at Ellisburg, Pennsylvania into Tennessee.

Iroquois Gas Transmission System: The Company has total firm capacity entitlements of 1,012 Dth per day on the Iroquois Gas Transmission (Iroquois) pipeline system. Firm supplies from Dawn, Ontario in Canada are transported via the Iroquois system from the interconnect at Waddington, New York to the Tennessee interconnect at Wright, New York.

Tennessee Gas Pipeline: The Company has total firm capacity entitlements of 92,838 Dth per day on the Tennessee Gas Pipeline (Tennessee) system to its citygates. Tennessee originates in the Gulf of Mexico on the following three separate pipeline segments: (1) the 100 leg, (2) the 800 leg, and (3) the 500 leg. In addition, the Tennessee system is divided into six market zones, from Zone 0 and Zone 1 in Texas and Louisiana, where the three legs merge into the Tennessee mainline, to Zone 6 in New England. The Company's contract entitlements consist of transport volumes from Zone 0 and Zone 1 of up to 40,935 Dth per day to the Company's citygates located in Zone 6 and to the Company's storage fields located in Zone 4. From the Zone 4 storage market area, the Company's contract entitlements consist of transport volumes of up to 10,836 Dth per day to the Company's citygates. From the interconnection at Niagara in Zone 5, the Company's contract entitlements transport volumes of up to 1,067 Dth per day to the Company's citygates. From the interconnect at Wright, New York with Iroquois in Zone 5, the Company's contract entitlements transport volumes of up to 1,000 Dth per day to the Company's citygates. Finally, the Company has contract entitlements of up to 39,000 Dth per day from Dracut, Massachusetts located in Zone 6 to the Company's citygates.

Texas Eastern Transmission, L.P.: The Company has total firm contract entitlements of 63,501 Dth per day of capacity directly connected to supply and storage areas on the Texas Eastern pipeline system. Texas Eastern is a large network stretching from South Texas to New Jersey, comprised of a production area and a market area. The production area, south of Arkansas and Kosciusko, Mississippi, is divided into the following four access areas: (1) South Texas (STX), (2) East Texas (ETX), (3) West Louisiana (WLA), and (4) East Louisiana (ELA). The Company's contracts provide for specific entitlements within and through each access area. The market area is divided into the following three market zones, beginning with the access-area boundary: (1) Arkansas-Mississippi, north to the Tennessee-Kentucky border and the Ohio River (M1); (2) continuing north to the Pennsylvania – New York storage fields and market area production region (M2); and (3) from storage fields to the eastern terminus in New Jersey (M3). Contract entitlements are expressed in terms of these market zones. All of the Company's transportation contracts with Texas Eastern deliver into Texas Eastern Market Areas or the interconnection with Algonquin at either Lambertville or Hanover, New Jersey.

TransCanada Pipeline Ltd.: The Company has total firm capacity entitlements of 1,012 Dth per day on the TransCanada Pipeline Ltd. (TransCanada) system. The capacity path originates at the interconnection with Union Gas Limited (Union) at Parkway, Ontario in Canada and delivers into Iroquois at Waddington, New York.

Transcontinental Gas Pipe Line Company, LLC: The Company has total firm capacity entitlements of 1,240 Dth per day on the Transco pipeline system. The capacity path originates at Wharton, Pennsylvania and delivers into Algonquin at Centerville, New Jersey.

Union Gas Limited: The Company has total firm capacity entitlements of 1,025 Dth per day on the Union Gas (Union) pipeline system. The capacity path originates at Dawn, Ontario and delivers into TransCanada at Parkway, Ontario.

IV.C.2. Underground Storage Services

Underground storage capacity plays a critical role in the Company's ability to minimize costs. The Company's underground storage assets provide the Company with the ability to meet winter-season loads, while avoiding the expense of adding 365-day long-haul transportation capacity. Underground storage supplies also allow the Company to serve peak-period requirements with off-peak priced gas supplies. By using long-haul capacity to fill storage, the Company is able to use those resources at a higher load factor. Additionally, underground storage greatly enhances the flexibility of the Company's portfolio, allowing the Company to manage fluctuations in weather from day to day. One underground storage service of note within the Company's portfolio is its storage swing service under Rate Schedule Firm Storage Market Area (FS-MA) on the Tennessee pipeline. This storage swing option is designed to allow a daily imbalance tolerance that is equal to the Maximum Daily Withdrawal Quantity (MDWQ), as stated in the Company's storage contract (10,920 Dth per day). The imbalance is treated as an automatic storage injection or withdrawal under the specific contract and assessed applicable charges under the FS-MA contract. The Company has elected one of its firm storage contracts (FS-MA #501) as a storage swing option. This swing option provides vital flexibility to the Company's portfolio in order to manage daily fluctuations in load and avoid imbalance charges and/or penalties. A summary of the Company's storage services is provided in the table below.

Pipeline Company	Rate Schedule	MDWQ	MSQ	MDIQ
Columbia	FSS	2,545	203,957	2,545
Dominion	GSS-TE	14,337	1,376,324	7,647
Dominion	GSS	11,403	1,039,304	5,774
Tennessee	FS-MA (Storage Swing)	10,920	605,343	4,036
Tennessee	FS-MA	10,249	210,000	1,400

Pipeline Company	Rate Schedule	MDWQ	MSQ	MDIQ
Texas Eastern	SS-1 Storage	14,802	1,240,023	6,374
Texas Eastern	FSS-1 Storage	944	56,640	291
TOTAL		**65,200**	**4,731,591**	**28,067**

IV.C.3. Peaking Resources

In addition to interstate pipeline and underground storage resources, the Company utilizes peaking resources to meet its design requirements. Peaking supplies are a critical component of the resource mix in that these supplies provide the Company with the ability to respond to fluctuations in weather, economics, and other factors driving the Company's sendout requirements on the coldest days.

IV.C.3.a. LNG Facilities

The Company maintains two on-system LNG facilities. The Company's on-system supplemental facilities enhance service reliability and provide a source of supply for the distribution system. Chart IV-C-4 shows the location of these facilities. Because these resources can be brought on line quickly, these plants can be used to meet hourly fluctuations in demand, maintain deliveries to customers, and balance pressures across portions of the distribution system during periods of high demand. These supplemental volumes are the supplies that must be available to the Company's distribution system to ensure service to customers when the Company has exhausted its available pipeline supplies. It is the Company's practice to have its supplemental storage facilities full as of December 1 of each year.

The Company's LNG storage and vaporization capacities are summarized in the table below:

Location	Facility Type	Maximum Vaporization [Dth per day]	Gross Storage Capacity [Dth]
Providence	LNG	95,000	600,000
Exeter	LNG	24,000	202,000
Total	**LNG**	**119,000**	**802,000**

IV.C.3.b. LNG Supply Contracts

Please see the Table below for a listing of the LNG agreements that are currently part of the Company's portfolio. The ENGIE Gas & LNG contracts were all executed via North American Energy Standards Board (NAESB) agreements.

Contract	Description	MDQ (dt)	ACQ (dt)	Term
ENGIE Gas & LNG NAESB	Firm Liquid Service	7,000	19,000	Dec. 1, 2017 – Mar. 31, 2018
ENGIE Gas & LNG NAESB	Firm Liquid Service	5,000	100,000	Jan. 10, 2018 – Sep. 30, 2018
ENGIE Gas & LNG NAESB	Firm Combination Service	10,000	150,000	Jan. 10, 2018 – Sep. 30, 2018
ENGIE Gas & LNG NAESB	Firm Liquid Service	4,000	508,000	May 15, 2016 – Nov. 30, 2020
Gaz Metro LNG, L.P.	Firm Liquid Service	1,614	190,500	Apr. 1, 2016 – Nov. 30, 2018

In addition, as has been the practice for the last several years, the Company has contracted for trucking arrangements in order to guarantee the availability of both trailers and drivers to truck LNG from the source point to the Company's LNG facilities throughout the year.

IV.C.4. Citygate Delivered Supply

From time to time the Company can also contract for citygate delivered supplies to meet customer requirements during the peak season. These supplies represent additional resources that are needed over and above the available assets in the Company's portfolio. These resources allow for a certain volume to be called upon on a daily basis, coupled with a seasonal delivery limitation, and are delivered to the Company's citygates by a third party. The purchasing of citygate delivered supplies minimizes the cost of the resource portfolio because the Company is able to avoid annual demand charges for capacity. However, the level at which the Company can depend on such resources varies due to a number of factors, including, but not limited to, current market conditions, capacity availability, and supply availability and overall reliability of the portfolio. As such, the Company will ultimately fill unserved needs through the addition of long-term capacity contracts or other long-term arrangements.

IV.C.5. Asset Management Arrangements

At times, the Company may seek to enter into an asset management arrangement (AMA) for certain of the Company's assets. An AMA affords the Company the opportunity to place firm pipeline capacity into the control of a third party that is better able to manage the asset(s) without compromising access to liquid and reliable resources to firm gas customers. Currently, the only assets being managed under an AMA are the Company's Canadian transportation

contracts on Union and TransCanada. The third party managing these assets is more active in the Canadian markets than the Company, and is therefore able to provide value to the Company's firm customers for the opportunity to manage the assets.

IV.C.6 Changes to the Company's Resource Portfolio

There have been several changes to the Company's gas supply portfolio since its last Long-Range Plan filing in March 2016. First, the Company's Algonquin Incremental Market (AIM) contract went fully into service effective January 7, 2017. Second, the Company's Crary Street (f/k/a Manchester Street) lateral service contract with Algonquin was placed into service effective July 17, 2017. Third, the Company provided notice that National Fuel Contract No. E11395 will terminate effective March 31, 2018. Fourth, the Company's LNG tank in Cumberland, Rhode Island had been taken out of service in 2016. Fifth, the Company entered into an agreement with Tennessee for additional transportation service from Dracut to the Company's Lincoln citygate to replace the majority of supplies previously provided by the Cumberland LNG facility. Sixth, Texas Eastern Contract No. 800173 terminated as of October 31, 2017.

Provided below is a brief description of each of the changes to the Company's resource portfolio.

(1) Algonquin AIM (Contract No. 510801)

As mentioned in previous filings, the Company has contracted for 18,000 Dth per day of capacity from the AIM Project. The Company's 18,000 Dth per day of AIM capacity represents the sum of the Company's previous HubLine and East-to-West capacity on the Algonquin pipeline, with a new receipt point at Ramapo, New York. The AIM Project was fully placed into service on January 7, 2017.

(2) Algonquin Crary Street (Contract No. 510985)

The Company entered into a firm transportation agreement with Algonquin for firm natural gas transportation capacity on the Company's existing Manchester Street lateral off of the Algonquin main line to a new meter station at Crary Street. The Crary Street gate station went into service on July 17, 2017. The meter is sized to move up to 96,000 Dth per day. While this is capacity does not serve as incremental supply to the portfolio, the new gate station provides enhanced reliability for the Company's distribution system, as it allows for a new feed into the system at higher pipeline pressures.

(3) National Fuel (Contract No. E11395)

The Company has provided a notice of termination for the National Fuel Contract No. E11395, effective March 31, 2018. The contract provided 1,177 Dth per day of transportation from the interconnect with Texas Eastern to the interconnect with Transcontinental Pipeline at Wharton. As mentioned previously, the marketplace has evolved such that gas is readily available downstream of National Fuel at competitive

pricing, so it is no longer necessary to maintain the National Fuel contract. Terminating the National Fuel contract provides an annual demand charge savings of $53,765 for the Company's customers.

(4) Cumberland LNG

The Company's LNG tank in Cumberland was taken out of service in the 2016 off-peak season. This facility had provided for 80,000 Dth of storage and up to 30,000 Dth of daily deliverability.

(5) Tennessee Dracut (Contract No. 322983)

The Company entered into a firm transportation agreement with Tennessee for firm transportation capacity from Dracut in Zone 6 to the Company's gate station in Lincoln for 24,000 Dth per day. The contract, which began on November 1, 2016, replaced the majority of the supply previously provided by the Cumberland LNG facility. This contract expires on October 31, 2018.

(6) Texas Eastern (Contract No. 800173)

The Company terminated Texas Eastern Contract No. 800173, effective October 31, 2017. The contract provided 1,474 Dth per day of transportation from Texas Eastern Access Fields in the Gulf of Mexico to the interconnect with National Fuel at Holbrook and the interconnect with Dominion at Oakford. The marketplace has evolved such that gas is readily available downstream of Texas Eastern at competitive pricing, so it is no longer necessary to maintain the Texas Eastern contract. Terminating the Texas Eastern contract provides an annual demand charge savings of $88,708 for the Company's customers.

IV.C.7. Future Portfolio Resources

In order to maintain the ability to continue to serve existing customer requirements on a least-cost, reliable basis, as well as the ability to serve forecasted future customer requirements on a least-cost, reliable basis, the Company has contracted for several portfolio resources that are expected to be in service within the next couple of years.

(1) Millennium Expansion Project (Millennium Project)

The Company has entered into a Precedent Agreement for 9,000 Dth per day as part of the Millennium Project for an initial term of 15 years, with service expected to commence on November 1, 2018. The Company's 9,000 Dth per day of Millennium capacity represents half of the Company's AIM Project volume.

(2) National Grid LNG (NGLNG)

The Company has entered into a Precedent Agreement for up to 2,616 Dth per day and 507,504 Dth per refill season for a term of 20 years, commencing upon completion of facilities to expand NGLNG's currently existing storage facilities located in Providence, Rhode Island. Based upon the schedule established by the Federal Energy Regulatory Commission (FERC) for environmental review and the federal authorization deadline, the liquefaction facilities will be available for refill in the 2020 off=peak season. The NGLNG facilities will access Algonquin and allow for the Company to utilize its existing Algonquin capacity to transport volumes to the proposed liquefaction facility. Currently, the Company has a storage agreement with NGLNG for LNG storage at the Providence site pursuant to an agreement dated November 30, 1998. This agreement is not expected to change.

(3) Northeast Energy Center, LLC (Northeast Energy)

The Company has entered into a Precedent Agreement for up to 1,780 Dth per day and 380,920 Dth per refill season for a term of 15 years, commencing upon completion of the necessary facilities. The Northeast Energy project is located in central Massachusetts and has an expected in service date of April 1, 2020. The Northeast Energy Project will connect to the Tennessee pipeline and allow for the Company to utilize its existing Tennessee capacity to transport volumes from the Zone 4 producing region to the proposed liquefaction facility located in Zone 6. The LNG with be trucked from the facility to the Company's LNG facilities in Rhode Island.

IV.C.8. Pending Portfolio Additions

On November 30, 2017, the Company submitted the following firm gas transportation agreements for review and support by the Division of Public Utilities and Carriers (the Division) prior to May 31, 2018: (1) two long term gas transportation agreements between National Grid and Tennessee to deliver an additional 44,000 Dth per day to existing into Rhode Island citygates in Cranston and Lincoln; and (2) one precedent agreement with Portland Natural Gas Transmission System (PNGTS). Collectively, the Tennessee and PNGTS agreements are necessary for the Company to secure long term access to gas supplies to replace the lost capacity from the cancellation of the Tennessee Northeast Energy Direct (NED) Project and the decommissioning of the Company's Cumberland LNG tank.

Tennessee Agreements

(1) Tennessee Agreement for 20,000 Dth per day: The Company's commitment in the NED Project included an incremental 20,000 Dth per day of firm pipeline capacity in order to meet forecasted requirements. No material changes in customer requirements have occurred that would mitigate or eliminate the need for such capacity. This capacity is necessary to ensure that the Company will have adequate pipeline capacity to transport gas supplies and be able to meet forecasted peak day and peak season customer requirements. The capacity has a primary receipt point at the interconnect with ENGIE at Everett, Massachusetts for delivery to the Company's citygate in Cranston. In order to

satisfy this incremental need, the Company was able to negotiate for a phased-in quantity to more closely coincide with the forecasted incremental need of the Company's firm gas customers in southern Rhode Island. The phased-in contract volumes are set forth in the table below.

Effective Date	Nov-2018	Nov-2019	Nov-2023
Maximum Daily Quantity (Dth/day)	5,000	10,000	20,000

(2) Tennessee Agreement for 24,000 Dth per day: The second firm transportation agreement between the Company and Tennessee represents a continuation of the existing 24,000 Dth per day of capacity that the Company originally contracted for in November 2016. After the Company took the Cumberland LNG tank out of service in the summer of 2016, the Company secured an incremental 24,000 Dth per day of pipeline capacity from Tennessee for the period of November 1, 2016 through October 31, 2017 from Dracut to its citygate in Lincoln. Because such capacity was, at that time, reserved as part of the NED Project, the Company negotiated the term of the capacity for one year, but maintained a "right of first refusal" on the capacity for an additional year. The Company exercised its right of first refusal for the period of November 1, 2017 through October 31, 2018. Now, Tennessee has offered the Company to acquire such capacity for a 20-year term beginning November 1, 2018, with primary receipts allocated between Dracut (14,000 Dth per day) and Everett (10,000 Dth per day) and primary delivery to the Lincoln citygate.

PNGTS Agreement

Once fully phased in, the addition of the PNGTS Agreement will eliminate the Company's exposure at Dracut and allow the Company to access up to 29,000 Dth per day from Dawn, Ontario by way of agreements with Union, TransCanada, and PNGTS to deliver firm supplies into Dracut. The PNGTS Agreement will feed into the Company's existing Dracut capacity (15,000 Dth per day), as well as a portion of the proposed Tennessee agreement with a primary receipt point of Everett (10,000 Dth per day).

IV.C.9. Future Portfolio Renewal Decisions

During the forecast period, the Company will be faced with critical decisions regarding the expiration of a significant number of its transportation, underground storage, and peaking contracts in the supply portfolio. As of March 30, 2018, the following contracts require a decision within the 10-year term of this Long-Range Plan:

- 44 of the Company's 47 transportation contracts; and
- 10 of the Company's 11 underground storage contracts.

During the forecast period, the Company will employ a two-step analysis to reach its conclusions on contract renewals, as well as the addition of new resources. First, depending on the type of need, the Company will canvas the marketplace to determine the availability of a replacement or new resource. And, where appropriate, the Company will solicit competitive bids to determine the lowest-cost available resource.

Then, the Company will evaluate non-price factors associated with the available replacement or new resource option. The Company will consider the flexibility, diversity, reliability, and contract term to determine the least-cost, most reliable option to meet the Company's resource need.

Absent the development of new incremental capacity projects or upgrades to on-system facilities that present cost-effective alternatives to the existing resource portfolio, the Company expects to renew its existing contracts for an extended time period to maintain flexibility, diversity, and reliability consistent with least-cost principles. As discussed above, pipeline rates for legacy capacity[7] are advantaged by the significant depreciation of plant and rate base associated with legacy capacity, as well as by revenue requirement recovery at average cost-based rates. Moreover, the respective interstate pipelines flow natural gas at higher load factors (with greater billing determinants), which helps to maintain the low rates associated with these pipelines.

IV.C.10. Long-Term Cumberland Solution

The Company has considered multiple options for selecting a permanent solution to address the capacity needs in Northern Rhode Island. The solution will focus on securing additional supplies delivered to the Northern Rhode Island region. The Company has held discussions with Algonquin and Tennessee to review available options for expanding various pipeline laterals that feed the Rhode Island distribution system. The Company expects to have a final agreement in place by September 1, 2018.

IV.C.11. Natural Gas Portfolio Management Plan (NGPMP)

The PUC initially approved the Company's NGPMP in 2009 in Docket No. 4038, and subsequently approved modifications to the management of the Company's gas portfolio in March 2016 within Docket 4038. These modifications were designed to provide various financial, regulatory, and risk management benefits over previous asset management arrangements. The Company changed the management of the gas portfolio from an external third-party asset management agreement to a portfolio managed primarily by the Company. The Company uses its transportation contracts, underground storage contracts, peaking supplies, and supply contracts first to purchase gas supplies to economically and reliably serve Sales customers, and then to make additional purchases and sales that generate revenue by extracting value from any assets that are not required to serve customers on any day. The mix of supply, transportation, and storage contracts creates flexibility and opportunities for optimization to create value for the Company's customers. This potential optimization value is subject to the following market variables: the fluctuation of gas pricing, the value of temporarily unused assets, the existence of excess transportation and storage capacity, and the opportunity to optimize delivered supplies as storage fill opportunities arise. Unless otherwise directed by the PUC, the Company will continue to manage its gas portfolio as specified in the NGPMP.

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[7] "Legacy capacity" is defined herein as firm interstate pipeline transportation and storage service provided to the Company and other local distribution companies under FERC-approved rate schedules that were in effect upon, or soon after, the unbundling of the U.S. interstate pipeline system resulting from FERC Order No. 636.

IV.C.12. Impact of the Customer Choice Program

On September 8, 2014, the Company filed a proposal to make certain changes to its Customer Choice Program in Docket No. 4523. In summary, the Company proposed three specific changes. First, regarding pipeline delivery requirements, the Company proposed to require a certain level of daily pipeline receipts on each of the upstream pipelines, Algonquin and Tennessee. Second, regarding the peaking assets calculation, the Company proposed to modify the FT-2 Demand Rate and associated peaking purchases to include certain pipeline assets and associated supplies in the calculations to more accurately reflect the usage of such assets. Third, regarding daily nominations under operational flow order conditions, the Company proposed to require a certain level of pipeline deliveries before FT-2 storage and peaking assets could be nominated. The Company proposed such changes to address the overall design of the Company's Customer Choice Program, as well as the impact to the reliability of the overall gas resource portfolio and the appropriate allocation of costs among all customers. The proposed changes were accepted and went into effect on November 1, 2014. Since then, no other substantive changes have been made to the Customer Choice Program. However, as load on the distribution system continues to grow, the disconnect with how customers that have opted for Transportation service are actually served, as compared to how third party marketers are obligated to serve them under the Customer Choice Program, continues to grow. This disconnect exists for all Transportation customers, including both those eligible for capacity assignment and those that are capacity exempt and, therefore, not eligible for capacity assignment. For example, under the Customer Choice Program, a third party marketer can elect to take assignment of a capacity path that delivers to the Algonquin-fed side of the distributions system on behalf of a customer that is physically served from the Tennessee-fed portion of the distribution system. Then, on a day-to-day basis, to serve that customer the marketer only has to deliver a minimum of 40 percent of the customer's supply on Tennessee, with the remainder delivered on Algonquin.[8] In these circumstances, the overall portfolio of assets, including on-system peaking, is allowing for the entire system to remain in-balance with the pipelines at the end of the day. Capacity-eligible customers share in the overall cost of the portfolio through mandatory capacity assignment; Capacity Exempt customers do not. This disconnect between where loads are and how they are served was only exacerbated with the decommissioning of the Company's Cumberland LNG plant. The Company no longer has the on-system resource to balance loads in that "pocket" of the distribution system and has to rely on pipeline deliveries from third parties that do not have primary point capacity to the Company's citygates in Rhode Island. This is not sustainable for the long-term reliability of the distribution system, especially given the capacity constraints that exist on the interstate pipelines serving New England, specifically Algonquin and Tennessee. The Company is in the initial stages of analysis and will present its findings and recommendations once completed.

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[8] Marketers are required to deliver a minimum of 40 percent on each pipeline and the remaining 20 percent on either or both pipelines.

IV.D. Adequacy of the Resource Portfolio

IV.D.1. The Base Design Year Forecast

For the design days shown in Chart IV-C-1 (page 1 of 18), the Company's forecast demonstrates that it relies on its pipeline and underground storage transportation contracts and LNG resources to meet the bulk of its customer requirements. The forecast shows an unserved need between 26 BBtu in 2018/19 and 11 BBtu in 2026/27 for a design day. This need represents additional resources that are needed over and above the available assets in the portfolio that must be acquired by the Company. The Company will look to fill this need through procurement of incremental capacity, citygate delivered purchases, and/or incremental LNG resources.

Over the Base Case design heating season shown in Chart IV-C-1 (page 2 of 18), the Company's forecasted customer requirements over and above its transportation, underground storage, and LNG resource deliverability to the Company's citygate ranges between 1,243 BBtu in 2018/19 and 762 BBtu in 2026/27 per year, which needs to be met by incremental capacity, citygate delivered purchases, and/or incremental LNG resources.

IV.D.2. Cold Snap Analysis

In addition to the design year, design day, and normal year planning standards, the Company also evaluates the capability of its resource portfolio to meet sendout requirements during a protracted period of very cold weather, which is referred to as a "cold snap." The cold snap evaluation is performed by modeling daily sendout and observing the predicted resource usage over a specified set of HDD. The Company has used a 14-day cold snap, occurring during the coldest 14-day period of the Company's normal year (January 8 through January 21) to test the adequacy of inventories and refill requirements.

From the evaluation of January weather data from the 40 years of 1977/78 through 2016/17, the mean total HDD for the coldest 14-day periods of these years is 595.4 HDD with a standard deviation of 72.1 HDD. Selecting a test value of the mean plus 2.06 times the standard deviation for a once-in-50 year occurrence yields a 14-day cold snap total of 744 HDD, which is just 5 HDD greater than the January 2 through January 15, 1981 figure of 739 HDD.

For the Company's current cold snap HDD pattern, the Company took the actual HDD data for January 2 through January 15, 1981 and added five HDD to the actual data to arrive at its cold snap weather pattern. The Company then assumed normal weather up until January 7, followed by the cold snap period data, then followed by normal weather after the cold snap interval. For the normal year, the annual HDDs are 5,398. The annual HDDs for the cold snap scenario are 5,604 HDD (5,398 - 538 + 744).

For the cold snap heating season shown in Chart IV-C-1 (page 15 of 18), the Company's forecasted customer requirements over and above its transportation, underground storage, and LNG resource deliverability to the Company's citygate ranges between 1,226 BBtu in 2018/19 and 825 BBtu in 2026/27 per year, which needs to be met by incremental capacity, citygate delivered purchases, and/or incremental LNG resources Given the cold snap experience in the 2017/18 winter season, the Company will incorporate the results of the cold snap analysis in its annual portfolio planning process.

Section V
Charts & Tables

V. Charts and Tables

Economic, Demographic, and Price Input Variables

Variable	Description	Units
FE23A	Employment: Construction	Ths.
FEMFA	Employment: Manufacturing	Ths.
FETA	Employment: Total Nonfarm Payroll	Ths.
FGDP$A	Gross Product: Total	Mil. Chained 2009$ $
FHHOLDA	Number of Households: Total	Ths.
FPOPA	Total Population	Ths.
FRTFSA	Total Retail Sales	Mil $2009
FYPA	Income: Total Personal	Mil $2009
FYPCPIA	Income: Per Capita	$2009
Calculated	Non-Manufacturing Empl	Ths.
FHSTKA	Housing Stock: Total	Ths. of units
FHSTKMFA	Housing Stock: Multi-family	Ths. of units
NGPRCR	Natural Gas Residential Price	2017 $/dth
NGPRCC	Price of Natural Gas Sold to Commercial Consumers	2017 $/dth
NGPRCI	Natural Gas Industrial Price	2017 $/dth
OILPRCR	No 2 Distillate Residential Price by All Sellers	2017 $/dth
OILPRCC	No 2 Distillate Commercial Price by All Sellers	2017 $/dth
OILPRCI	No 2 Distillate Industrial Price by All Sellers	2017 $/dth
NGPRCCI	Commercial and Industrial Natural Gas Price	2017 $/dth
OILPRCCI	Commercial and Industrial No 2 Distillate Oil Price	2017 $/dth
GORR	Natural Gas and Oil Ratio for Residential sector	-
GORC	Natural Gas and Oil Ratio for Commercial sector	-
GORI	Natural Gas and Oil Ratio for Industrial sector	-
GORCI	Natural Gas and Oil Ratio for Commercial and Industrial	-

Mnemonic:	FE23A.NarragansettGas	FEMFA.NarragansettGas	FETA.NarragansettGas	FGDP$A.NarragansettGas	FHHOLDA.NarragansettGas	FPOPA.NarragansettGas
Concept:	**FE23A**	**FEMFA**	**FETA**	**FGDP$A**	**FHHOLDA**	**FPOPA**
Description:	**Employment: Construction, (Ths.)**	**Employment: Manufacturing, (Ths.)**	**Employment: Total Nonfarm Payroll, (Ths.)**	**Gross Product: Total, (Mil. Chained 2009 $)**	**Number of Households: Total, (Ths.)**	**Total Population, (Ths.)**
Source:	U.S. Bureau of Labor Statistics: Census of Employment & Wages (QCEW - ES202); Moody's Analytics (ECCA) Forecast	U.S. Bureau of Labor Statistics: Census of Employment & Wages (QCEW - ES202); Moody's Analytics (ECCA) Forecast	U.S. Bureau of Labor Statistics: Census of Employment & Wages (QCEW - ES202); Moody's Analytics (ECCA) Forecast	U.S. Bureau of Economic Analysis (BEA); Moody's Analytics (ECCA) Forecast	U.S. Census Bureau (BOC); Moody's Analytics (ECCA) Forecast	U.S. Census Bureau (BOC); Moody's Analytics (ECCA) Forecast
1990	18.47	95.23	454.22	34953.58	378.93	1005.99
1991	13.49	87.54	424.28	33697.73	381.95	1010.65
1992	12.28	84.74	424.05	34189.24	383.96	1012.58
1993	12.61	83.52	429.93	34571.99	386.21	1015.11
1994	13.13	82.58	434.21	34880.05	387.83	1015.96
1995	13.40	80.40	439.12	35782.17	389.54	1017.00
1996	14.01	77.41	440.77	36395.20	392.35	1020.89
1997	14.64	76.23	450.06	38701.00	395.41	1025.35
1998	15.99	74.79	457.95	40071.00	399.00	1031.16
1999	17.80	72.12	465.50	41461.00	403.95	1040.40
2000	18.16	71.24	476.91	43266.00	409.32	1050.27
2001	19.00	67.80	478.51	44212.00	412.35	1057.14
2002	19.42	62.31	479.43	45754.00	416.22	1066.00
2003	20.76	58.72	484.28	47670.00	418.66	1071.34
2004	20.97	56.93	488.48	49526.00	420.25	1074.58
2005	21.77	54.95	491.12	49923.00	417.95	1067.92
2006	22.83	52.75	492.98	50931.00	416.26	1063.10
2007	22.15	50.75	492.02	49755.00	414.78	1057.31
2008	20.42	47.94	481.06	48381.00	414.54	1055.00
2009	17.19	41.74	459.35	47854.00	414.46	1053.65
2010	15.97	40.32	458.00	48792.00	414.50	1053.22
2011	15.72	40.11	460.54	48650.00	415.54	1051.86
2012	16.08	39.64	465.57	49016.00	417.07	1052.39
2013	16.14	40.03	471.62	49943.00	417.59	1052.86
2014	16.43	40.92	477.73	50544.00	416.60	1054.91
2015	15.64	41.86	483.41	50632.13	417.34	1055.21
2016	16.67	41.99	490.10	51481.42	419.96	1057.12
2017	18.29	41.80	496.81	52695.02	422.49	1058.70
2018	19.17	41.61	502.83	53499.41	424.28	1060.43
2019	19.59	41.29	507.25	54221.57	425.71	1062.14
2020	19.70	40.67	508.92	54792.12	426.86	1063.90
2021	19.79	39.99	510.39	55561.19	427.54	1065.57
2022	19.91	39.40	512.83	56449.62	428.53	1067.19
2023	20.01	38.84	515.41	57327.28	429.79	1068.73
2024	20.07	38.29	517.60	58150.12	430.72	1070.16
2025	20.06	37.77	519.82	58952.50	431.87	1071.46
2026	20.04	37.27	522.08	59761.33	432.77	1072.66
2027	20.08	36.82	524.41	60626.97	433.84	1073.81
2028	20.15	36.40	526.88	61521.02	435.04	1074.88
2029	20.24	36.01	529.60	62436.50	436.21	1075.84
2030	20.36	35.64	532.50	63386.56	437.42	1076.70

Mnemonic:	FRTFSA.NarragansettGas	FYPA.NarragansettGas	FYPCPIA.NarragansettGas		FHSTKA.NarragansettGas	FHSTKMFA.NarragansettGas
Concept:	**FRTFSA**	**FYPA**	**FYPCPIA**	**Calculated**	**FHSTKA**	**FHSTKMFA**
Description:	**Total Retail Sales, (Mil $2009)**	**Income: Total Personal, (Mil. $2009)**	**Income: Per Capita, ($2009)**	**Non-Manufacturing Empl**	**Housing Stock: Total, (Ths. of units)**	**Housing Stock: Multi-family, (Ths. of units)**
Source:	U.S. Census Bureau (BOC); Moody's Analytics	U.S. Bureau of Economic Analysis (BEA); Moody's Analytics (ECCA) Forecast	U.S. Bureau of Economic Analysis (BEA); U.S. Census Bureau (BOC); Moody's Analytics (ECCA) Forecast		U.S. Census Bureau (BOC); Moody's Analytics (ECCA) Forecast	U.S. Census Bureau (BOC); Moody's Analytics (ECCA) Forecast
1990	12029.44	33348.84	175682.19	358.99	415.37	176.06
1991	10561.93	32198.96	168955.10	336.74	418.25	176.89
1992	10665.25	32711.59	172764.00	339.31	420.93	177.62
1993	11015.47	33129.21	175343.78	346.41	423.38	178.18
1994	11317.22	33101.51	176457.63	351.62	425.65	178.56
1995	11609.54	33949.80	183033.54	358.72	427.94	178.97
1996	11254.41	34172.75	184437.84	363.36	430.14	179.44
1997	11485.46	35357.25	189155.08	373.83	432.66	179.99
1998	11943.23	37220.43	198764.91	383.16	435.14	180.48
1999	12576.70	38011.74	204915.59	393.38	437.74	180.95
2000	13422.68	39541.53	210955.19	405.67	440.67	181.44
2001	13676.61	40452.62	212855.02	410.71	443.25	181.29
2002	14397.70	41579.41	216591.82	417.12	445.85	180.96
2003	14916.39	42646.97	223062.13	425.56	448.66	180.95
2004	15099.03	43404.34	227732.91	431.55	451.04	180.70
2005	15142.28	42938.70	227897.12	436.17	453.70	180.48
2006	15104.65	43885.59	234012.19	440.23	456.47	180.25
2007	14838.86	44521.46	239696.22	441.27	458.78	180.11
2008	13652.91	44051.76	236218.82	433.12	460.61	179.95
2009	12771.56	43285.22	228571.00	417.61	461.90	179.76
2010	13065.63	44280.20	234696.04	417.67	463.51	179.65
2011	13364.73	44450.47	237389.76	420.43	462.99	179.09
2012	13448.26	45333.45	245386.09	425.92	462.21	178.51
2013	13463.43	44768.38	241025.10	431.59	461.41	177.81
2014	13748.07	46252.16	247974.07	436.80	460.64	177.12
2015	13943.60	48103.48	258444.43	441.55	459.90	176.44
2016	14428.04	48971.44	263129.11	448.11	459.36	175.80
2017	14787.51	49360.10	265277.62	455.01	459.30	175.23
2018	14944.25	49710.37	266930.48	461.21	459.71	174.72
2019	14981.94	49917.07	267727.90	465.96	460.23	174.23
2020	15023.26	50036.94	268093.76	468.25	460.80	173.79
2021	15117.35	50383.19	269997.01	470.40	461.42	173.39
2022	15203.02	50790.43	272135.94	473.44	462.12	173.02
2023	15274.10	51235.17	274415.13	476.56	462.84	172.66
2024	15326.76	51759.34	277084.06	479.30	463.47	172.30
2025	15383.65	52352.03	280138.35	482.05	463.94	171.92
2026	15435.46	52957.44	283316.32	484.81	464.27	171.52
2027	15485.29	53620.06	286789.56	487.59	464.50	171.12
2028	15562.91	54303.31	290372.45	490.48	464.69	170.71
2029	15649.84	55027.83	294190.98	493.59	464.84	170.30
2030	15744.22	55789.12	298245.44	496.86	464.97	169.89

Mnemonic:	NGPRCR	NGPRCC	NGPRCI	OILPRCR	OILPRCC	OILPRCI	NGPRCCI	OILPRCCI	GORR	GORC	GORI	GORCI
Concept:												
Description:	**Natural Gas Residential Price**	**Price of Natural Gas Sold to Commercial Consumers**	**Natural Gas Industrial Price**	**No 2 Distillate Residential Price by All Sellers**	**No 2 Distillate Commercial Price by All Sellers**	**No 2 Distillate Industrial Price by All Sellers**	**Commercial and Industrial Natural Gas Price**	**Commercial and Industrial No 2 Distillate Oil Price**	**Natural Gas and Oil Ratio for Residential sector**	**Natural Gas and Oil Ratio for Commercial sector**	**Natural Gas and Oil Ratio for Industrial sector**	**Natural Gas and Oil Ratio for Commercial and Industrial**
Source:	US DOE/EIA	US DOE/EIA	US DOE/EIA	US DOE/EIA	US DOE/EIA	US DOE/EIA	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated
1990	13.26	11.76	9.99	14.34	12.01	11.68	10.87	11.85	0.92	0.98	0.86	0.92
1991	13.37	11.31	9.39	13.08	10.61	10.29	10.35	10.45	1.02	1.07	0.91	0.99
1992	13.09	11.14	9.40	11.48	9.53	8.59	10.27	9.06	1.14	1.17	1.09	1.13
1993	13.52	11.82	10.34	11.00	8.95	8.19	11.08	8.57	1.23	1.32	1.26	1.29
1994	14.78	12.42	10.66	10.41	8.77	7.79	11.54	8.28	1.42	1.42	1.37	1.39
1995	12.56	10.16	8.82	10.12	8.39	7.60	9.49	8.00	1.24	1.21	1.16	1.19
1996	12.94	11.52	10.20	11.04	8.91	8.77	10.86	8.84	1.17	1.29	1.16	1.23
1997	14.31	12.29	10.87	10.99	8.61	8.17	11.58	8.39	1.30	1.43	1.33	1.38
1998	13.98	11.97	10.70	9.52	7.06	6.50	11.34	6.78	1.47	1.70	1.65	1.67
1999	13.70	11.79	10.68	8.89	7.01	6.70	11.23	6.86	1.54	1.68	1.59	1.64
2000	13.57	11.94	10.82	12.67	11.16	10.45	11.38	10.80	1.07	1.07	1.04	1.05
2001	16.50	14.57	9.29	12.38	9.91	9.39	11.93	9.65	1.33	1.47	0.99	1.24
2002	15.74	13.49	6.42	10.97	8.62	8.43	9.96	8.53	1.43	1.57	0.76	1.17
2003	15.40	13.61	10.64	13.08	10.94	10.14	12.12	10.54	1.18	1.24	1.05	1.15
2004	16.87	15.20	12.24	13.86	11.71	11.98	13.72	11.85	1.22	1.30	1.02	1.16
2005	18.22	16.57	13.75	17.68	16.17	16.71	15.16	16.44	1.03	1.02	0.82	0.92
2006	20.90	19.11	15.88	20.79	18.52	19.35	17.49	18.94	1.01	1.03	0.82	0.92
2007	19.34	17.47	14.59	21.68	19.50	20.04	16.03	19.77	0.89	0.90	0.73	0.81
2008	18.90	17.68	14.74	27.14	25.68	26.64	16.21	26.16	0.70	0.69	0.55	0.62
2009	19.10	17.09	14.16	19.15	16.97	16.42	15.63	16.70	1.00	1.01	0.86	0.94
2010	18.73	16.35	13.34	23.39	20.42	20.19	14.84	20.30	0.80	0.80	0.66	0.73
2011	16.74	14.60	11.65	28.97	25.95	25.81	13.12	25.88	0.58	0.56	0.45	0.51
2012	15.20	13.21	10.17	30.84	27.59	27.31	11.69	27.45	0.49	0.48	0.37	0.43
2013	15.52	13.18	9.34	30.30	27.04	26.62	11.26	26.83	0.51	0.49	0.35	0.42
2014	15.47	13.60	10.33	29.19	25.96	25.24	11.96	25.60	0.53	0.52	0.41	0.47
2015	14.58	12.51	9.41	20.38	18.12	17.57	10.96	17.85	0.72	0.69	0.54	0.61
2016	13.86	11.54	8.92	16.18	14.51	14.44	10.23	14.47	0.86	0.80	0.62	0.71
2017	14.31	12.73	10.14	19.73	17.65	17.49	11.44	17.57	0.73	0.72	0.58	0.65
2018	14.11	12.84	10.28	20.18	18.03	17.78	11.56	17.91	0.70	0.71	0.58	0.65
2019	14.54	13.70	11.11	22.62	20.26	20.06	12.41	20.16	0.64	0.68	0.55	0.62
2020	14.87	14.07	11.55	23.77	21.19	20.96	12.81	21.07	0.63	0.66	0.55	0.61
2021	15.08	14.25	11.72	24.78	22.00	21.77	12.99	21.89	0.61	0.65	0.54	0.59
2022	15.37	14.50	11.96	25.71	22.73	22.47	13.23	22.60	0.60	0.64	0.53	0.59
2023	15.62	14.73	12.20	26.12	23.12	22.87	13.46	22.99	0.60	0.64	0.53	0.59
2024	15.87	14.98	12.51	26.44	23.44	23.21	13.74	23.33	0.60	0.64	0.54	0.59
2025	16.09	15.17	12.72	26.87	23.86	23.64	13.95	23.75	0.60	0.64	0.54	0.59
2026	16.17	15.18	12.73	27.38	24.36	24.15	13.96	24.25	0.59	0.62	0.53	0.58
2027	16.29	15.25	12.81	27.78	24.75	24.56	14.03	24.66	0.59	0.62	0.52	0.57
2028	16.39	15.29	12.86	28.07	25.04	24.86	14.07	24.95	0.58	0.61	0.52	0.56
2029	16.65	15.51	13.12	28.56	25.51	25.33	14.31	25.42	0.58	0.61	0.52	0.56
2030	16.78	15.56	13.18	28.88	25.82	25.64	14.37	25.73	0.58	0.60	0.51	0.56

Narragansett Electric Company d/b/a NATIONAL GRID
Forecasted Retail Gas Deliveries by Rate Code in Dth (2017/18 - 2026/27)

Rate Code	Rate Code Name	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
400	Residential Heating	17,573,922	17,790,118	18,018,639	18,472,905	18,486,057	18,796,897	19,071,993	19,415,696	19,613,238	19,630,505
401	Residential Non-Heating	382,177	366,250	353,663	338,569	322,771	307,296	294,017	278,886	262,260	246,429
402	Residential Low Income Heating	1,476,031	1,426,683	1,378,439	1,333,968	1,275,156	1,234,157	1,179,137	1,137,118	1,078,804	1,019,385
403	Residential Low Income Non-Heating	11,531	10,122	8,696	8,182	8,096	8,126	7,908	7,957	7,957	7,957
404	C&I Small	2,312,451	2,285,312	2,273,976	2,254,765	2,246,500	2,234,133	2,226,286	2,205,520	2,182,304	2,163,471
405	C&I Medium	3,076,172	3,097,645	3,153,587	3,171,589	3,196,338	3,231,469	3,274,048	3,289,368	3,295,826	3,307,936
406	FT2 Medium	1,776,919	1,844,403	1,938,455	2,025,206	2,107,030	2,195,243	2,286,806	2,361,839	2,425,924	2,490,536
407	FT1 Medium	541,662	521,224	504,538	485,815	468,737	450,854	434,391	415,158	396,392	375,062
408	TSS Medium	47,086	46,649	46,950	46,377	46,245	46,114	45,988	45,859	45,729	45,646
409	C&I Low Load - Large	570,425	560,183	557,111	547,692	537,928	533,072	525,975	514,886	500,806	486,282
410	FT2 Large Low	1,218,829	1,229,251	1,253,323	1,275,349	1,289,161	1,305,732	1,330,943	1,340,876	1,343,418	1,346,284
411	FT1 Large Low	577,677	559,138	543,962	529,717	518,395	504,018	489,789	475,056	460,556	446,688
412	TSS Large Low Load	39,050	38,879	37,151	30,703	29,681	22,739	21,607	14,988	12,682	6,237
413	C&I Low Load - Extra Large	45,150	42,941	42,484	42,345	41,596	31,454	31,044	30,712	20,481	18,926
414	FT2 Exlarge Low	58,790	58,338	58,019	58,162	57,667	57,611	57,610	57,300	56,736	55,854
415	FT1 Exlarge Low	349,538	318,817	318,265	337,431	350,280	349,059	347,932	346,605	344,798	342,605
416	TSS Extra Large Low Load	0	0	0	0	0	0	0	0	0	0
417	C&I High Load - Large	266,629	258,022	251,906	244,123	235,298	228,549	223,580	215,469	205,933	196,953
418	FT2 Large High	499,388	524,265	549,987	574,968	595,877	619,711	643,730	671,142	685,875	702,494
419	FT1 Large High	287,554	280,279	274,029	265,300	257,795	249,752	243,058	233,984	226,231	217,902
420	TSS Large High Load	9,456	9,414	7,958	6,894	6,197	6,153	6,094	4,471	3,307	2,964
421	C&I High Load - Extra Large	76,683	75,795	75,526	75,626	75,199	74,946	72,832	74,853	74,640	74,471
422	FT2 Exlarge High	542,989	543,714	546,064	550,011	546,181	548,049	544,723	549,737	545,408	542,016
423	FT1 Exlarge High	1,831,919	1,770,721	1,729,598	1,704,530	1,684,060	1,662,879	1,640,359	1,614,840	1,610,140	1,603,279
424	TSS Extra Large High Load	0	0	0	0	0	0	0	0	0	0
443	FT2 Small	152,213	176,209	192,752	202,813	209,197	221,979	232,340	243,553	251,460	255,724
444	TSS Small	8,705	8,238	7,947	7,382	6,513	5,538	4,644	3,697	2,476	1,333
	TOTAL	33,732,946	33,842,613	34,123,020	34,590,420	34,597,954	34,925,529	35,236,834	35,549,568	35,653,381	35,586,940
RH	Residential Heating	19,049,952	19,216,802	19,397,078	19,806,872	19,761,213	20,031,054	20,251,130	20,552,813	20,692,042	20,649,890
RN	Residential Non-heating	393,708	376,373	362,358	346,751	330,866	315,422	301,925	286,843	270,217	254,386
CH	Comm & Ind Heating	10,774,668	10,787,229	10,928,517	11,015,346	11,105,268	11,189,015	11,309,404	11,345,417	11,339,587	11,342,584
CN	Comm & Ind Non-heating	3,514,618	3,462,210	3,435,067	3,421,451	3,400,607	3,390,039	3,374,374	3,364,495	3,351,534	3,340,080
	TOTAL	33,732,946	33,842,613	34,123,020	34,590,420	34,597,954	34,925,529	35,236,834	35,549,568	35,653,381	35,586,940
	ANNUAL CHANGE										
	Residential Heating		166,849	180,276	409,794	-45,659	269,841	220,076	301,684	139,229	-42,153
	Residential Non-heating		-17,335	-14,015	-15,607	-15,885	-15,444	-13,497	-15,082	-16,626	-15,831
	Comm & Ind Heating		12,561	141,288	86,828	89,922	83,747	120,390	36,012	-5,830	2,997
	Comm & Ind Non-heating		-52,408	-27,143	-13,616	-20,844	-10,568	-15,664	-9,879	-12,961	-11,454
	TOTAL		109,667	280,407	467,400	7,534	327,575	311,304	312,735	103,812	-66,441
	ANNUAL AVERAGE CHANGE										
	Residential Heating										177,771
	Residential Non-heating										-15,480
	Comm & Ind Heating										63,102
	Comm & Ind Non-heating										-19,393
	TOTAL										205,999
	ANNUAL PERCENTAGE CHANGE										
	Residential Heating		0.9%	0.9%	2.1%	-0.2%	1.4%	1.1%	1.5%	0.7%	-0.2%
	Residential Non-heating		-4.4%	-3.7%	-4.3%	-4.6%	-4.7%	-4.3%	-5.0%	-5.8%	-5.9%
	Comm & Ind Heating		0.1%	1.3%	0.8%	0.8%	0.8%	1.1%	0.3%	-0.1%	0.0%
	Comm & Ind Non-heating		-1.5%	-0.8%	-0.4%	-0.6%	-0.3%	-0.5%	-0.3%	-0.4%	-0.3%
	TOTAL		0.3%	0.8%	1.4%	0.0%	0.9%	0.9%	0.9%	0.3%	-0.2%
	ANNUAL AVERAGE PERCENTAGE CHANGE										
	Residential Heating										0.9%
	Residential Non-heating										-4.7%
	Comm & Ind Heating										0.6%
	Comm & Ind Non-heating										-0.6%
	TOTAL										0.6%

Narragansett Electric Company d/b/a NATIONAL GRID
Forecasted Number of Customers by Rate Code at End of Planning Year (2017/18 - 2026/27)

Rate Code	Rate Code Name	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
400	Residential Heating	206,552	209,863	213,086	216,229	219,308	222,326	225,285	228,192	231,046	233,936
401	Residential Non-Heating	17,083	16,433	15,776	15,115	14,452	13,787	13,120	12,452	11,783	11,150
402	Residential Low Income Heating	17,477	16,991	16,480	15,949	15,409	14,859	14,302	13,740	13,172	12,627
403	Residential Low Income Non-Heating	231	201	171	167	167	167	167	167	167	167
404	C&I Small	18,217	18,130	18,071	18,028	17,977	17,924	17,866	17,813	17,773	17,733
405	C&I Medium	3,286	3,345	3,396	3,442	3,485	3,527	3,571	3,611	3,648	3,685
406	FT2 Medium	1,497	1,565	1,644	1,725	1,804	1,880	1,956	2,032	2,106	2,183
407	FT1 Medium	324	313	303	294	284	273	263	253	242	231
408	TSS Medium	39	39	39	39	39	39	39	39	39	39
409	C&I Low Load - Large	112	112	111	110	109	108	107	105	103	101
410	FT2 Large Low	215	220	224	229	233	236	240	243	246	249
411	FT1 Large Low	94	91	89	87	85	83	81	79	77	75
412	TSS Large Low Load	5	5	4	4	3	3	2	2	1	1
413	C&I Low Load - Extra Large	4	4	4	4	3	3	3	2	2	2
414	FT2 Exlarge Low	3	3	3	3	3	3	3	3	3	3
415	FT1 Exlarge Low	9	9	9	10	10	10	10	10	10	10
416	TSS Extra Large Low Load	0	0	0	0	0	0	0	0	0	0
417	C&I High Load - Large	54	54	53	53	52	51	51	50	50	50
418	FT2 Large High	84	89	93	97	101	106	110	114	118	122
419	FT1 Large High	44	43	42	41	40	39	38	36	35	34
420	TSS Large High Load	3	3	3	2	2	2	2	2	1	1
421	C&I High Load - Extra Large	3	3	3	3	3	3	3	3	3	3
422	FT2 Exlarge High	16	16	16	16	16	16	16	16	16	16
423	FT1 Exlarge High	37	37	37	37	37	37	37	37	37	37
424	TSS Extra Large High Load	0	0	0	0	0	0	0	0	0	0
443	FT2 Small	664	748	795	827	867	912	954	994	1,035	1,078
444	TSS Small	34	34	32	29	25	21	17	12	6	3
	TOTAL	266,087	268,351	270,484	272,540	274,514	276,415	278,243	280,007	281,719	283,536
RH	Residential Heating	224,029	226,854	229,566	232,178	234,717	237,185	239,587	241,932	244,218	246,563
RN	Residential Non-heating	17,314	16,634	15,947	15,282	14,619	13,954	13,287	12,619	11,950	11,317
CH	Comm & Ind Heating	24,503	24,618	24,724	24,831	24,927	25,022	25,112	25,198	25,291	25,393
CN	Comm & Ind Non-heating	241	245	247	249	251	254	257	258	260	263
	TOTAL	266,087	268,351	270,484	272,540	274,514	276,415	278,243	280,007	281,719	283,536
	ANNUAL CHANGE										
	Residential Heating		2,825	2,712	2,612	2,539	2,468	2,402	2,345	2,286	2,345
	Residential Non-heating		-680	-687	-665	-663	-665	-667	-668	-669	-633
	Comm & Ind Heating		115	106	107	96	95	90	86	93	102
	Comm & Ind Non-heating		4	2	2	2	3	3	1	2	3
	TOTAL		2,264	2,133	2,056	1,974	1,901	1,828	1,764	1,712	1,817
	ANNUAL AVERAGE CHANGE										
	Residential Heating										2,504
	Residential Non-heating										-666
	Comm & Ind Heating										99
	Comm & Ind Non-heating										2
	TOTAL										1,939
	ANNUAL PERCENTAGE CHANGE										
	Residential Heating		1.3%	1.2%	1.1%	1.1%	1.1%	1.0%	1.0%	0.9%	1.0%
	Residential Non-heating		-3.9%	-4.1%	-4.2%	-4.3%	-4.5%	-4.8%	-5.0%	-5.3%	-5.3%
	Comm & Ind Heating		0.5%	0.4%	0.4%	0.4%	0.4%	0.4%	0.3%	0.4%	0.4%
	Comm & Ind Non-heating		1.7%	0.8%	0.8%	0.8%	1.2%	1.2%	0.4%	0.8%	1.0%
	TOTAL		0.9%	0.8%	0.8%	0.7%	0.7%	0.7%	0.6%	0.6%	0.6%
	ANNUAL AVERAGE PERCENTAGE CHANGE										
	Residential Heating										1.1%
	Residential Non-heating										-4.6%
	Comm & Ind Heating										0.4%
	Comm & Ind Non-heating										1.0%
	TOTAL										0.7%

Narragansett Electric Company d/b/a NATIONAL GRID
Forecasted Retail Use Per Customers by Rate Code in Dth/customer (2017/18 - 2026/27)

		235	236	237	238	239	240	241	242	243	244
Rate Code	Rate Code Name	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
400	Residential Heating	85.1	84.8	84.6	85.4	84.3	84.5	84.7	85.1	84.9	83.9
401	Residential Non-Heating	22.4	22.3	22.4	22.4	22.3	22.3	22.4	22.4	22.3	22.1
402	Residential Low Income Heating	84.5	84.0	83.6	83.6	82.8	83.1	82.4	82.8	81.9	80.7
403	Residential Low Income Non-Heating	49.9	50.4	50.9	49.0	48.5	48.7	47.4	47.6	47.6	47.6
404	C&I Small	126.9	126.1	125.8	125.1	125.0	124.6	124.6	123.8	122.8	122.0
405	C&I Medium	936.1	926.1	928.6	921.4	917.2	916.2	916.8	910.9	903.5	897.6
406	FT2 Medium	1187.0	1178.5	1179.1	1174.0	1168.0	1167.7	1169.1	1162.3	1151.9	1141.0
407	FT1 Medium	1671.8	1665.3	1665.1	1652.4	1650.5	1651.5	1651.7	1640.9	1638.0	1620.3
408	TSS Medium	1207.3	1196.1	1203.8	1189.2	1185.8	1182.4	1179.2	1175.9	1172.5	1170.4
409	C&I Low Load - Large	5093.1	5001.6	5019.0	4979.0	4935.1	4935.8	4915.7	4903.7	4862.2	4812.9
410	FT2 Large Low	5669.0	5587.5	5595.2	5569.2	5532.9	5532.8	5545.6	5518.0	5461.0	5406.0
411	FT1 Large Low	6145.5	6144.4	6111.9	6088.7	6098.8	6072.5	6046.8	6013.4	5981.2	5951.8
412	TSS Large Low Load	7810.0	7775.9	9287.8	7675.6	9893.7	7579.7	10803.5	7494.2	12682.3	12473.6
413	C&I Low Load - Extra Large	11287.6	10735.2	10621.0	10586.3	13865.3	10484.7	10348.1	15356.0	10240.6	9463.0
414	FT2 Exlarge Low	19596.8	19446.0	19339.6	19387.4	19222.2	19203.6	19203.4	19100.1	18911.9	18618.1
415	FT1 Exlarge Low	38837.5	35424.2	35362.8	33743.1	35028.0	34905.9	34793.2	34660.5	34479.8	34260.5
416	TSS Extra Large Low Load	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
417	C&I High Load - Large	4937.6	4778.2	4752.9	4606.1	4525.0	4481.3	4383.9	4309.4	4118.7	3939.1
418	FT2 Large High	5945.1	5890.6	5913.8	5927.5	5899.8	5846.3	5852.1	5887.2	5812.5	5751.5
419	FT1 Large High	6535.3	6518.1	6524.5	6470.7	6444.9	6403.9	6396.3	6499.6	6463.7	6403.7
420	TSS Large High Load	3152.0	3138.2	2652.6	3446.8	3098.5	3076.4	3046.8	2235.4	3306.5	5928.4
421	C&I High Load - Extra Large	25561.1	25264.9	25175.3	25208.6	25066.3	24981.9	24277.2	24950.9	24880.1	24823.7
422	FT2 Exlarge High	33936.8	33982.1	34129.0	34375.7	34136.3	34253.1	34045.2	34358.5	34088.0	33876.0
423	FT1 Exlarge High	49511.3	47857.3	46745.9	46068.4	45515.1	44942.7	44334.0	43644.3	43517.3	43331.9
424	TSS Extra Large High Load	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
443	FT2 Small	229.2	235.6	242.5	245.2	241.3	243.4	243.5	245.0	243.0	237.3
444	TSS Small	256.0	242.3	248.3	254.6	260.5	263.7	273.2	308.1	412.7	444.4
	AVERAGE	126.8	126.1	126.2	126.9	126.0	126.4	126.6	127.0	126.6	125.5
RH	Residential Heating	85.0	84.7	84.5	85.3	84.2	84.5	84.5	85.0	84.7	83.8
RN	Residential Non-heating	22.7	22.6	22.7	22.7	22.6	22.6	22.7	22.7	22.6	22.5
CH	Comm & Ind Heating	439.7	438.2	442.0	443.6	445.5	447.2	450.4	450.3	448.4	446.7
CN	Comm & Ind Non-heating	14583.5	14131.5	13907.2	13740.8	13548.2	13346.6	13129.9	13040.7	12890.5	12716.0
	AVERAGE	126.8	126.1	126.2	126.9	126.0	126.4	126.6	127.0	126.6	125.5
	ANNUAL CHANGE										
	Residential Heating		-0.3	-0.2	0.8	-1.1	0.3	0.1	0.4	-0.2	-1.0
	Residential Non-heating		-0.1	0.1	0.0	-0.1	0.0	0.1	0.0	-0.1	-0.1
	Comm & Ind Heating		-1.5	3.8	1.6	1.9	1.7	3.2	-0.1	-1.9	-1.7
	Comm & Ind Non-heating		-452.0	-224.3	-166.4	-192.5	-201.6	-216.7	-89.2	-150.2	-174.5
	AVERAGE		-0.7	0.0	0.8	-0.9	0.3	0.3	0.3	-0.4	-1.0
	ANNUAL AVERAGE CHANGE										
	Residential Heating										-0.1
	Residential Non-heating										0.0
	Comm & Ind Heating										0.8
	Comm & Ind Non-heating										-207.5
	AVERAGE										-0.1
	ANNUAL PERCENTAGE CHANGE										
	Residential Heating		-0.4%	-0.3%	1.0%	-1.3%	0.3%	0.1%	0.5%	-0.3%	-1.2%
	Residential Non-heating		-0.5%	0.4%	-0.1%	-0.3%	-0.1%	0.5%	0.0%	-0.5%	-0.6%
	Comm & Ind Heating		-0.4%	0.9%	0.4%	0.4%	0.4%	0.7%	0.0%	-0.4%	-0.4%
	Comm & Ind Non-heating		-3.1%	-1.6%	-1.2%	-1.4%	-1.5%	-1.6%	-0.7%	-1.2%	-1.4%
	AVERAGE		-0.5%	0.0%	0.6%	-0.7%	0.3%	0.2%	0.3%	-0.3%	-0.8%
	ANNUAL AVERAGE PERCENTAGE CHANGE										
	Residential Heating										-0.2%
	Residential Non-heating										-0.1%
	Comm & Ind Heating										0.2%
	Comm & Ind Non-heating										-1.5%
	AVERAGE										-0.1%

Narragansett Electric Company d/b/a NATIONAL GRID
Historical Actual Retail Gas Deliveries by Rate Code in Dth (2010/11 - 2016/17)

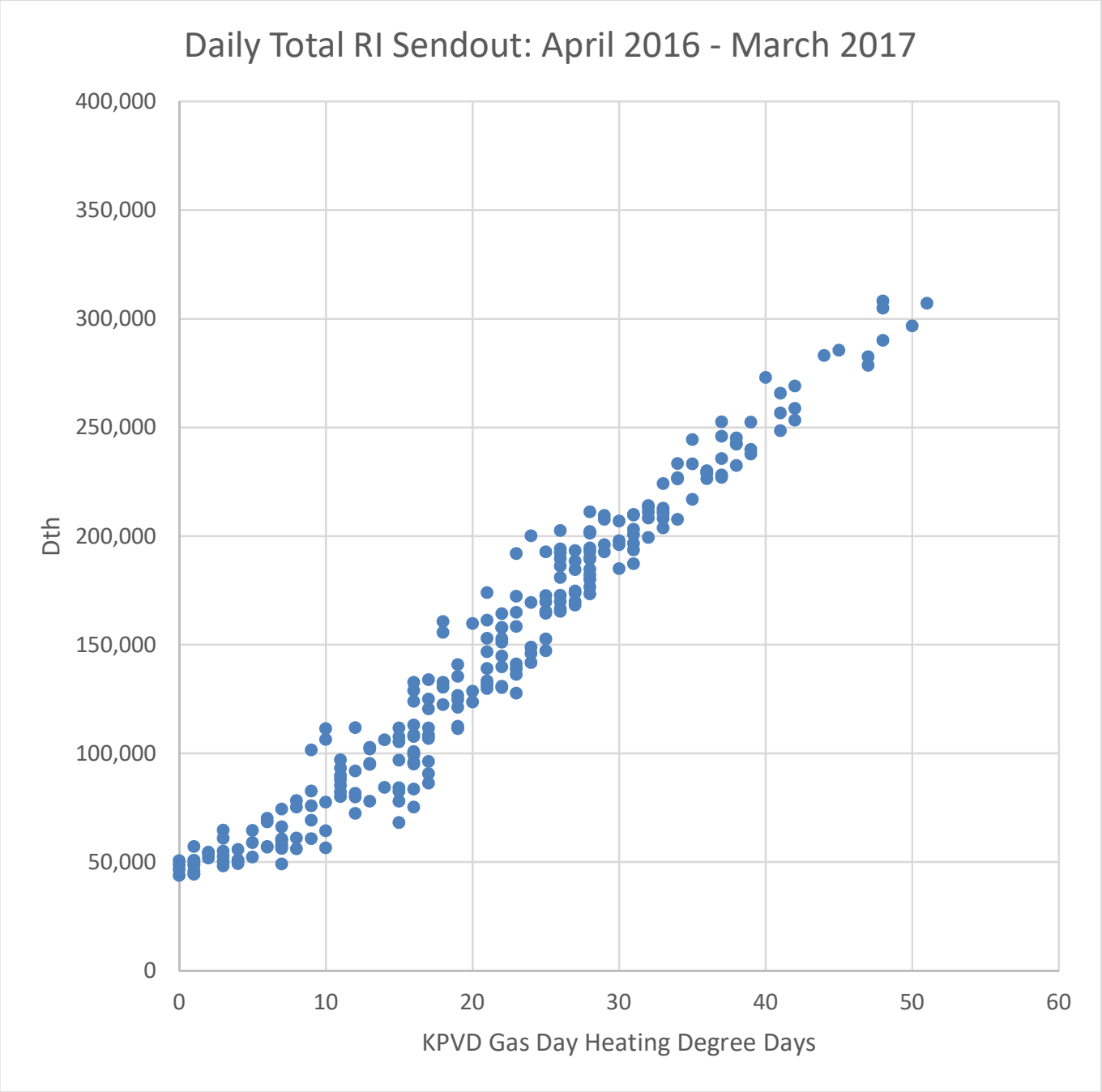
Rate Code	Rate Code Name	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
400	Residential Heating	16,043,671	13,378,738	15,762,157	17,811,013	18,519,777	15,274,762	16,878,099
401	Residential Non-Heating	584,266	583,069	719,864	902,630	707,618	531,214	412,469
402	Residential Low Income Heating	1,694,618	1,405,019	1,553,631	1,762,828	1,869,633	1,398,636	1,460,188
403	Residential Low Income Non-Heating	22,084	18,330	27,023	41,506	29,285	19,984	11,794
404	C&I Small	2,375,884	1,839,395	2,272,631	2,643,966	2,701,391	2,031,805	2,229,265
405	C&I Medium	3,186,394	2,598,255	2,955,695	3,320,756	3,424,669	2,802,261	3,031,499
406	FT2 Medium	1,273,193	1,175,305	1,494,843	1,707,784	1,708,249	1,552,085	1,715,237
407	FT1 Medium	715,274	634,556	693,059	727,117	708,031	602,498	573,833
408	TSS Medium	21,786	31,925	44,581	106,147	210,865	123,807	44,538
409	C&I Low Load - Large	633,241	548,670	569,263	716,760	745,823	567,354	570,519
410	FT2 Large Low	824,234	757,158	1,033,798	1,173,218	1,180,379	1,052,396	1,168,605
411	FT1 Large Low	886,694	731,944	734,171	818,917	772,517	564,366	560,635
412	TSS Large Low Load	13,220	37,156	32,018	51,315	55,480	45,263	32,135
413	C&I Low Load - Extra Large	52,467	90,943	104,776	104,619	89,498	64,635	56,212
414	FT2 Exlarge Low	65,380	41,009	29,199	72,734	65,030	70,291	48,990
415	FT1 Exlarge Low	248,381	228,422	289,169	204,003	318,932	306,192	328,908
416	TSS Extra Large Low Load	4,884	1,719	6,880	3,762	4,509	0	0
417	C&I High Load - Large	266,526	236,670	288,138	280,988	208,322	195,530	256,763
418	FT2 Large High	258,903	230,338	333,694	420,185	470,549	404,115	469,529
419	FT1 Large High	362,833	324,113	369,384	352,511	332,477	308,112	297,666
420	TSS Large High Load	6,394	4,287	3,318	19,341	27,369	18,402	8,394
421	C&I High Load - Extra Large	162,962	231,352	294,293	360,061	353,258	95,259	74,447
422	FT2 Exlarge High	147,449	130,074	158,336	174,461	256,628	485,819	532,279
423	FT1 Exlarge High	1,105,905	1,150,101	1,227,190	1,339,861	1,659,086	1,568,361	1,764,933
424	TSS Extra Large High Load	0	1,254	9,105	13,085	38,100	5,005	0
443	FT2 Small	0	123	12,388	37,000	64,860	76,548	116,713
444	TSS Small	0	0	276	1,799	8,870	1,006	7,870
	TOTAL	30,956,639	26,409,925	31,018,881	35,168,369	36,531,205	30,165,706	32,651,518
RH	Residential Heating	17,738,289	14,783,757	17,315,788	19,573,841	20,389,410	16,673,399	18,338,287
RN	Residential Non-heating	606,350	601,399	746,888	944,136	736,903	551,198	424,262
CH	Comm & Ind Heating	10,301,030	8,716,580	10,272,746	11,689,897	12,059,102	9,860,507	10,484,958
CN	Comm & Ind Non-heating	2,310,970	2,308,189	2,683,459	2,960,495	3,345,790	3,080,602	3,404,011
	TOTAL	30,956,639	26,409,925	31,018,881	35,168,369	36,531,205	30,165,706	32,651,518
	ANNUAL CHANGE							
	Residential Heating		-2,954,532	2,532,031	2,258,053	815,569	-3,716,012	1,664,889
	Residential Non-heating		-4,951	145,489	197,248	-207,233	-185,705	-126,936
	Comm & Ind Heating		-1,584,450	1,556,166	1,417,151	369,205	-2,198,595	624,451
	Comm & Ind Non-heating		-2,781	375,270	277,036	385,295	-265,187	323,409
	TOTAL		-4,546,714	4,608,956	4,149,487	1,362,837	-6,365,499	2,485,812

Narragansett Electric Company d/b/a NATIONAL GRID
Historical Number of Customers by Rate Class at End of Planning Year (2010/11 - 2016/17)

Rate Code	Rate Code Name	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
400	Residential Heating	175,587	181,100	185,011	186,270	192,099	199,651	203,155
401	Residential Non-Heating	26,239	25,563	25,547	25,328	21,868	19,087	17,730
402	Residential Low Income Heating	20,827	19,363	19,509	20,296	20,787	18,545	17,943
403	Residential Low Income Non-Heating	331	392	495	630	444	246	259
404	C&I Small	17,866	17,961	18,192	18,220	18,192	18,057	18,254
405	C&I Medium	2,889	2,925	3,025	3,081	3,037	3,205	3,242
406	FT2 Medium	1,046	1,162	1,249	1,220	1,283	1,382	1,436
407	FT1 Medium	427	417	406	388	382	372	338
408	TSS Medium	23	30	39	123	147	12	39
409	C&I Low Load - Large	115	115	121	123	116	119	113
410	FT2 Large Low	151	171	179	188	189	206	212
411	FT1 Large Low	137	117	120	117	106	99	97
412	TSS Large Low Load	3	7	7	6	12	1	5
413	C&I Low Load - Extra Large	5	5	6	6	7	5	4
414	FT2 Exlarge Low	3	1	5	4	3	3	3
415	FT1 Exlarge Low	9	10	9	7	9	10	10
416	TSS Extra Large Low Load	0	1	0	1	0	0	0
417	C&I High Load - Large	42	53	51	36	36	52	53
418	FT2 Large High	39	57	60	67	64	74	80
419	FT1 Large High	51	58	52	49	46	47	46
420	TSS Large High Load	0	2	1	3	5	0	3
421	C&I High Load - Extra Large	7	6	6	9	5	3	3
422	FT2 Exlarge High	5	8	6	7	13	15	16
423	FT1 Exlarge High	30	31	28	33	32	37	37
424	TSS Extra Large High Load	0	0	1	1	1	1	0
443	FT2 Small	0	13	114	135	290	453	562
444	TSS Small	0	0	2	41	2	2	38
	TOTAL	245,832	249,568	254,241	256,389	259,175	261,684	263,678
RH	Residential Heating	196,414	200,463	204,520	206,566	212,886	218,196	221,098
RN	Residential Non-heating	26,570	25,955	26,042	25,958	22,312	19,333	17,989
CH	Comm & Ind Heating	22,674	22,935	23,474	23,660	23,775	23,926	24,353
CN	Comm & Ind Non-heating	174	215	205	205	202	229	238
	TOTAL	245,832	249,568	254,241	256,389	259,175	261,684	263,678
	ANNUAL CHANGE							
	Residential Heating		4,049	4,057	2,046	6,320	5,310	2,902
	Residential Non-heating		-615	87	-84	-3,646	-2,979	-1,344
	Comm & Ind Heating		261	539	186	115	151	427
	Comm & Ind Non-heating		41	-10	0	-3	27	9
	TOTAL		3,736	4,673	2,148	2,786	2,509	1,994

Narragansett Electric Company d/b/a NATIONAL GRID
Historical Retail Use Per Customer by Rate Code in Dth/customer (2010/11 - 2016/17)

Rate Code	Rate Code Name	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
400	Residential Heating	91.4	73.9	85.2	95.6	96.4	76.5	83.1
401	Residential Non-Heating	22.3	22.8	28.2	35.6	32.4	27.8	23.3
402	Residential Low Income Heating	81.4	72.6	79.6	86.9	89.9	75.4	81.4
403	Residential Low Income Non-Heating	66.7	46.8	54.6	65.9	66.0	81.2	45.5
404	C&I Small	133.0	102.4	124.9	145.1	148.5	112.5	122.1
405	C&I Medium	1102.9	888.3	977.1	1077.8	1127.6	874.3	935.1
406	FT2 Medium	1217.2	1011.5	1196.8	1399.8	1331.4	1123.1	1194.5
407	FT1 Medium	1675.1	1521.7	1707.0	1874.0	1853.5	1619.6	1697.7
408	TSS Medium	947.2	1064.2	1143.1	863.0	1434.5	10317.2	1142.0
409	C&I Low Load - Large	5506.4	4771.0	4704.7	5827.3	6429.5	4767.7	5048.8
410	FT2 Large Low	5458.5	4427.8	5775.4	6240.5	6245.4	5108.7	5512.3
411	FT1 Large Low	6472.2	6255.9	6118.1	6999.3	7287.9	5700.7	5779.7
412	TSS Large Low Load	4406.6	5308.0	4574.0	8552.6	4623.3	45263.2	6427.0
413	C&I Low Load - Extra Large	10493.4	18188.5	17462.7	17436.4	12785.4	12926.9	14052.9
414	FT2 Exlarge Low	21793.2	41009.4	5839.7	18183.5	21676.8	23430.4	16330.1
415	FT1 Exlarge Low	27597.9	22842.2	32129.9	29143.3	35436.8	30619.2	32890.8
416	TSS Extra Large Low Load	0.0	1718.7	0.0	3762.4	0.0	0.0	0.0
417	C&I High Load - Large	6345.8	4465.5	5649.8	7805.2	5786.7	3760.2	4844.6
418	FT2 Large High	6638.5	4041.0	5561.6	6271.4	7352.3	5461.0	5869.1
419	FT1 Large High	7114.4	5588.1	7103.5	7194.1	7227.8	6555.6	6471.0
420	TSS Large High Load	0.0	2143.4	3318.0	6447.1	5473.9	0.0	2797.9
421	C&I High Load - Extra Large	23280.4	38558.7	49048.9	40006.8	70651.5	31752.8	24815.6
422	FT2 Exlarge High	29489.7	16259.2	26389.3	24923.0	19740.6	32387.9	33267.5
423	FT1 Exlarge High	36863.5	37100.0	43828.2	40601.9	51846.4	42388.1	47700.9
424	TSS Extra Large High Load	0.0	0.0	9104.9	13085.4	38099.9	5005.1	0.0
443	FT2 Small	0.0	9.5	108.7	274.1	223.7	169.0	207.7
444	TSS Small	0.0	0.0	137.9	43.9	4435.0	503.1	207.1
	TOTAL	125.9	105.8	122.0	137.2	141.0	115.3	123.8
RH	Residential Heating	90.3	73.7	84.7	94.8	95.8	76.4	82.9
RN	Residential Non-heating	22.8	23.2	28.7	36.4	33.0	28.5	23.6
CH	Comm & Ind Heating	454.3	380.1	437.6	494.1	507.2	412.1	430.5
CN	Comm & Ind Non-heating	13281.4	10735.8	13090.0	14441.4	16563.3	13452.4	14302.6
	TOTAL	125.9	105.8	122.0	137.2	141.0	115.3	123.8
	ANNUAL CHANGE							
	Residential Heating		-16.6	10.9	10.1	1.0	-19.4	6.5
	Residential Non-heating		0.4	5.5	7.7	-3.3	-4.5	-4.9
	Comm & Ind Heating		-74.3	57.6	56.5	13.1	-95.1	18.4
	Comm & Ind Non-heating		-2545.7	2354.3	1351.4	2121.9	-3110.9	850.2
	TOTAL		-20.1	16.2	15.2	3.8	-25.7	8.6


Daily Total RI Sendout: April 2016 - March 2017
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
Dth
0
10
20
30
40
50
60
KPVD Gas Day Heating Degree Days

National Grid Rhode Island
2018 Long Range Plan

Assumptions:

Mean Peak Day = **55.00 HDD**
Std Dev Peak Day = **6.13 HDD**

Heating Increment = **5,664.03 MMBtu/HDD**
No. of Firm Customers = **267,530**

HDD Level	Cumulative Probability Of Occurrence (p)	Probability Of Exceeding (1-p)	Frequency of Occurrence 1/(1-p) (years)	HDD Excess	Delta Supply (MMBtu)	Requirements Of An Average Customer At HDD Level (MMBtu/cust)	Equivalent Number of Customers
55.0	0.5000	0.5000	2.00	0.0	0	1.16	0
56.0	0.5648	0.4352	2.30	1.0	5,664	1.19	4,777
57.0	0.6279	0.3721	2.69	2.0	11,328	1.21	9,387
58.0	0.6877	0.3123	3.20	3.0	16,992	1.23	13,838
59.0	0.7430	0.2570	3.89	4.0	22,656	1.25	18,138
60.0	0.7927	0.2073	4.82	5.0	28,320	1.27	22,294
61.0	0.8362	0.1638	6.10	6.0	33,984	1.29	26,314
62.0	0.8733	0.1267	7.89	7.0	39,648	1.31	30,205
63.0	0.9041	0.0959	10.42	8.0	45,312	1.33	33,972
64.0	0.9290	0.0710	14.08	9.0	50,976	1.35	37,621
65.0	0.9486	0.0514	19.45	10.0	56,640	1.38	41,158
66.0	0.9636	0.0364	27.49	11.0	62,304	1.40	44,588
67.0	0.9749	0.0251	39.78	12.0	67,968	1.42	47,916
68.0	0.9830	0.0170	58.92	13.0	73,632	1.44	51,145
69.0	0.9888	0.0112	89.36	14.0	79,296	1.46	54,281
70.0	0.9928	0.0072	138.83	15.0	84,960	1.48	57,328
71.0	0.9955	0.0045	220.97	16.0	90,624	1.50	60,288
72.0	0.9972	0.0028	360.36	17.0	96,288	1.52	63,167
73.0	0.9983	0.0017	602.28	18.0	101,952	1.55	65,966
74.0	0.9990	0.0010	1031.78	19.0	107,617	1.57	68,690
75.0	0.9994	0.0006	1811.95	20.0	113,281	1.59	71,341
76.0	0.9997	0.0003	3262.39	21.0	118,945	1.61	73,923
77.0	0.9998	0.0002	6022.88	22.0	124,609	1.63	76,437
78.0	0.9999	0.0001	11402.37	23.0	130,273	1.65	78,887
				(EDD Level MINUS Mean Peak)	**(EDD Excess TIMES Heating Increment) (MMBtu)**	**(Heating Increment DIVIDED BY No. of Firm Customers TIMES EDD Level)**	**(Delta Supply DIVIDED BY Requirements of Average Customer)**
68.0	0.9830	0.0170	58.92				

National Grid Rhode Island
2018 Long Range Plan

Chart III-E-2

Assumptions:

Mean Peak Day =	55.00	EDD
Std Dev Peak Day =	6.13	EDD
SCC Heating Increment =	5,664.03	MMBtu/EDD
No. of SCC Customers =	267,530	

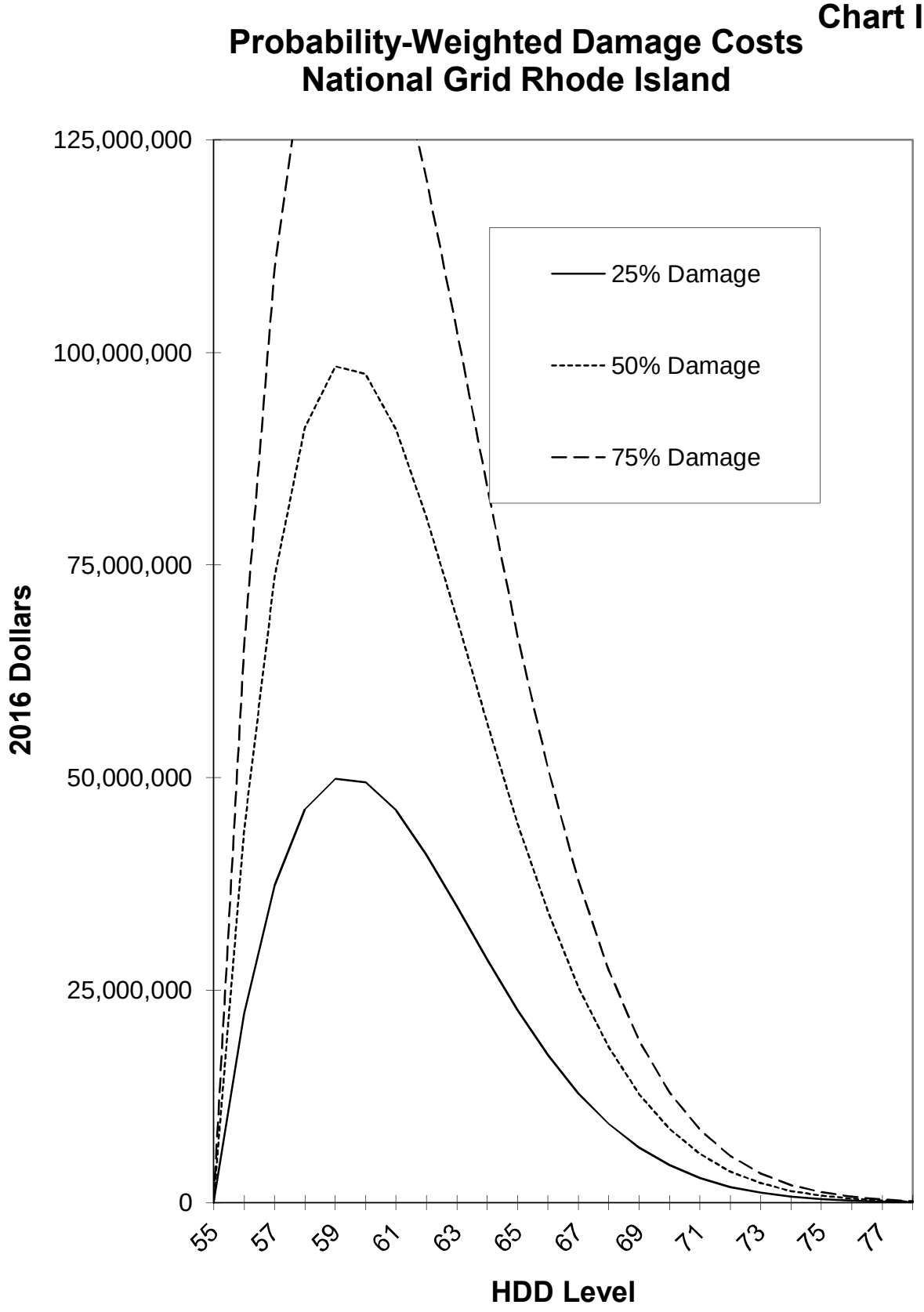
	2016 dollars	
Relight Costs =	$1,069.00	/customer
Freeze-Up Damages =	$44,785.05	/customer
Total =	$45,854.05	/customer

Feb 2017:	
Residential Customers	242,488
Comm/Ind Customers	25,042
Total Customers	267,530
Percent C&I of Total	9.4%
Cost of Interruption/Day = (2016 dollars)	$83,463,702

EDD Level	Probability Of Exceeding (1-p)	Equivalent Number of Customers	Residential Customers	Comm/Ind Customers	Cost Of Interruption to Comm/Ind Customers	Probability-Weighted Cost Of Damages Given X% of Residential Customers With Damages PLUS Cost of Interruption to Comm/Ind Customers (2016 dollars) 25%	50%	75%
55.0	0.5000	0	0	0	$0	0	0	0
56.0	0.4352	4,777	4,330	447	$1,490,423	22,251,738	43,854,833	65,457,927
57.0	0.3721	9,387	8,508	879	$2,928,551	37,383,929	73,678,109	109,972,289
58.0	0.3123	13,838	12,542	1,295	$4,317,088	46,248,119	91,148,095	136,048,071
59.0	0.2570	18,138	16,440	1,698	$5,658,556	49,893,952	98,333,485	146,773,018
60.0	0.2073	22,294	20,207	2,087	$6,955,308	49,473,501	97,504,838	145,536,176
61.0	0.1638	26,314	23,851	2,463	$8,209,544	46,142,420	90,939,779	135,737,137
62.0	0.1267	30,205	27,378	2,827	$9,423,321	40,971,784	80,749,232	120,526,680
63.0	0.0959	33,972	30,792	3,180	$10,598,565	34,881,096	68,745,400	102,609,704
64.0	0.0710	37,621	34,100	3,522	$11,737,083	28,598,175	56,362,706	84,127,238
65.0	0.0514	41,158	37,306	3,853	$12,840,569	22,646,485	44,632,821	66,619,156
66.0	0.0364	44,588	40,415	4,174	$13,910,617	17,356,126	34,206,317	51,056,509
67.0	0.0251	47,916	43,431	4,485	$14,948,723	12,891,872	25,407,943	37,924,013
68.0	0.0170	51,145	46,358	4,787	$15,956,296	9,290,590	18,310,358	27,330,125
69.0	0.0112	54,281	49,200	5,081	$16,934,664	6,500,874	12,812,247	19,123,619
70.0	0.0072	57,328	51,962	5,366	$17,885,079	4,419,331	8,709,838	13,000,344
71.0	0.0045	60,288	54,645	5,643	$18,808,721	2,920,073	5,755,025	8,589,977
72.0	0.0028	63,167	57,254	5,913	$19,706,707	1,876,014	3,697,341	5,518,669
73.0	0.0017	65,966	59,792	6,175	$20,580,091	1,172,206	2,310,241	3,448,276
74.0	0.0010	68,690	62,260	6,430	$21,429,869	712,513	1,404,256	2,095,998
75.0	0.0006	71,341	64,663	6,678	$22,256,987	421,385	830,487	1,239,589
76.0	0.0003	73,923	67,003	6,920	$23,062,339	242,508	477,947	713,386
77.0	0.0002	76,437	69,282	7,155	$23,846,772	135,826	267,693	399,560
78.0	0.0001	78,887	71,503	7,384	$24,611,092	74,045	145,931	217,817

(Probability of Exceeding TIMES
[Comm/Ind Cost of Interruption PLUS
No. Of Residential Customers TIMES Percent TIMES
Total Damage Costs])

Chart III-E-3


Probability-Weighted Damage Costs
National Grid Rhode Island
125,000,000
100,000,000
75,000,000
50,000,000
25,000,000
0
2016 Dollars
25% Damage
50% Damage
75% Damage
55
57
59
61
63
65
67
69
71
73
75
77
HDD Level

National Grid Rhode Island
2018 Long Range Plan

Chart III-E-4

Assumptions:

Mean Peak Day =	**55.00**	**EDD**
Std Dev Peak Day =	**6.13**	**EDD**

	2016 dollars	
Cost of Incr. LNG Vaporization =	**$71.44**	**/MMBtu**
Cost of New Pipeline Capacity =	**$510.90**	**/MMBtu**

		Low Upgrade Costs Case	**High Upgrade Costs Case**
EDD Level	**Delta Supply (MMBtu)**	**LNG Vaporization Costs**	**Pipeline Capacity Costs**
55.0	0	$0	$0
56.0	5,664	$404,610	$2,893,752
57.0	11,328	$809,221	$5,787,503
58.0	16,992	$1,213,831	$8,681,255
59.0	22,656	$1,618,441	$11,575,007
60.0	28,320	$2,023,051	$14,468,758
61.0	33,984	$2,427,662	$17,362,510
62.0	39,648	$2,832,272	$20,256,261
63.0	45,312	$3,236,882	$23,150,013
64.0	50,976	$3,641,493	$26,043,765
65.0	56,640	$4,046,103	$28,937,516
66.0	62,304	$4,450,713	$31,831,268
67.0	67,968	$4,855,323	$34,725,020
68.0	73,632	$5,259,934	$37,618,771
69.0	79,296	$5,664,544	$40,512,523
70.0	84,960	$6,069,154	$43,406,274
71.0	90,624	$6,473,764	$46,300,026
72.0	96,288	$6,878,375	$49,193,778
73.0	101,952	$7,282,985	$52,087,529
74.0	107,617	$7,687,595	$54,981,281
75.0	113,281	$8,092,206	$57,875,033
76.0	118,945	$8,496,816	$60,768,784
77.0	124,609	$8,901,426	$63,662,536
78.0	130,273	$9,306,036	$66,556,287

Chart III-E-5

Probability-Weighted Damage Costs vs System Upgrade Costs National Grid Rhode Island

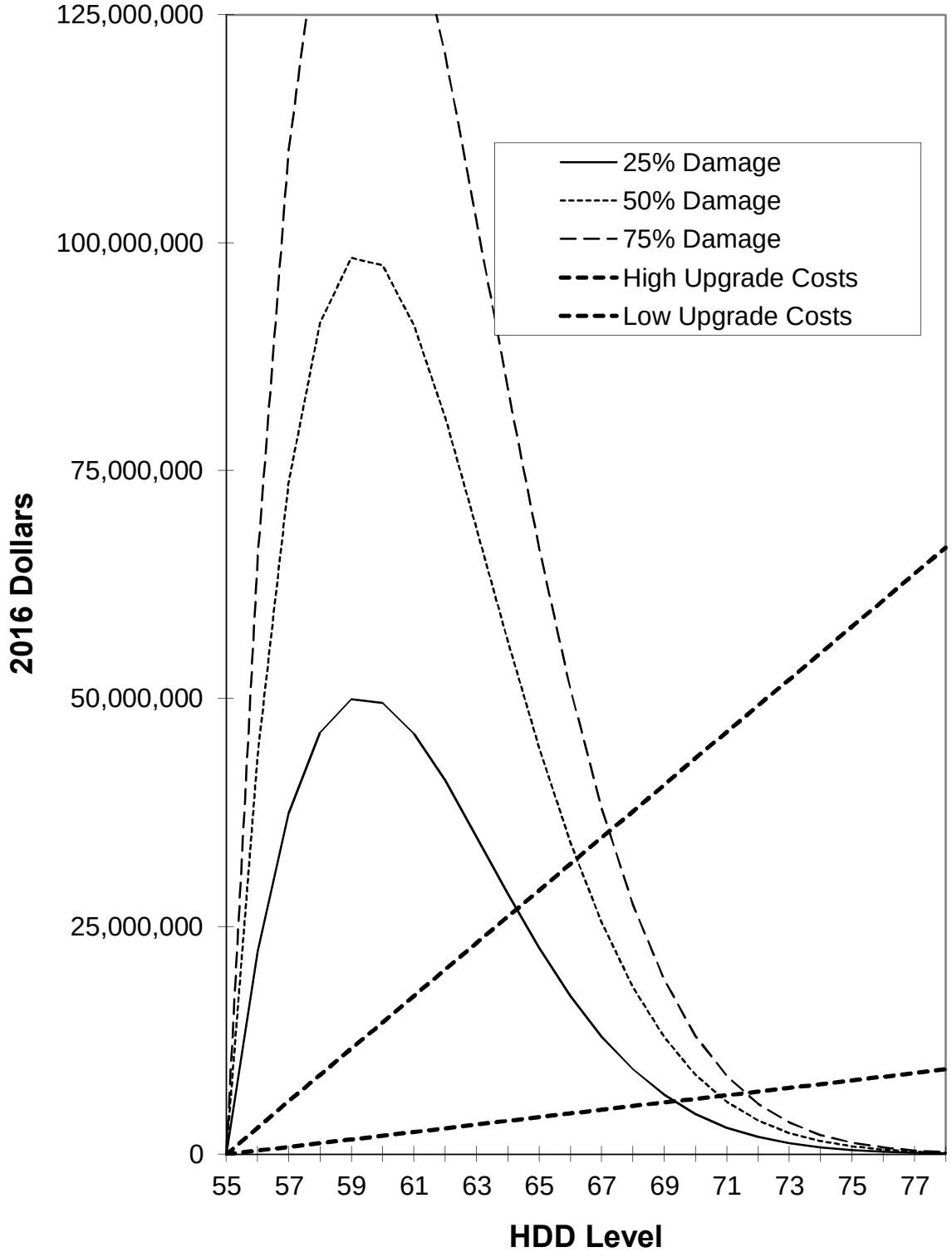
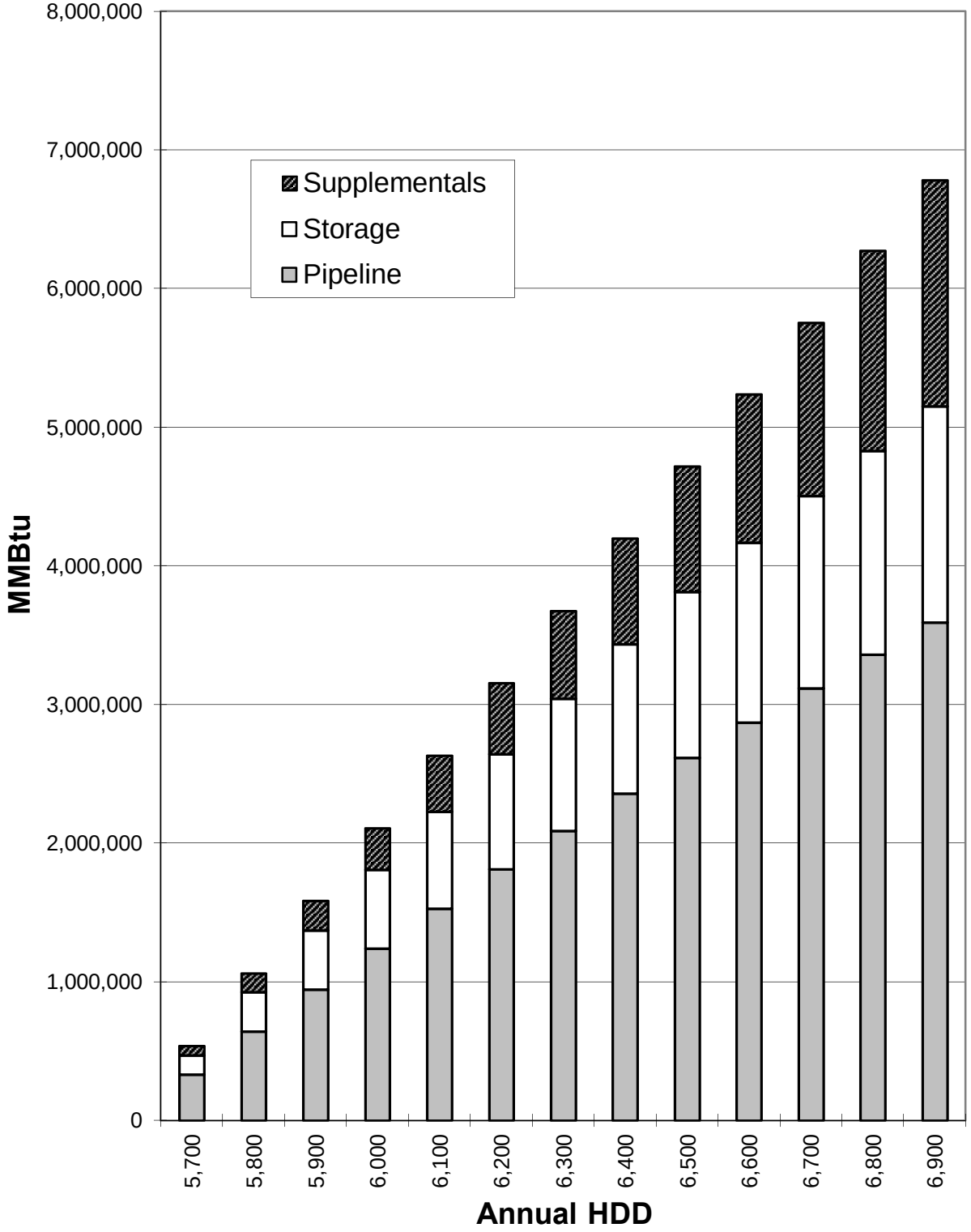


Chart III-E-6

Supply Shortfall Versus Annual HDD Level of Design
National Grid Rhode Island



National Grid Rhode Island
2018 Long Range Plan

Chart III-E-7

Pipeline Shortfall At HDD Level Above 5,557 40-Year Normal Annual HDD
By Month

	Annual HDD Level													
	5,557	5,700	5,800	5,900	6,000	6,100	6,200	6,300	6,400	6,500	6,600	6,700	6,800	6,900
Nov	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jan	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0	164,316	389,909	610,293	821,661	1,026,948
Oct	0	330,065	641,835	943,693	1,241,134	1,529,419	1,812,228	2,089,841	2,357,194	2,451,583	2,479,933	2,508,309	2,536,687	2,565,182
Total	0	330,065	641,835	943,693	1,241,134	1,529,419	1,812,228	2,089,841	2,357,194	2,615,899	2,869,842	3,118,602	3,358,348	3,592,131

Storage Shortfall At HDD Level Above 5,557 40-Year Normal Annual HDD
By Month

	Annual HDD Level													
	5,557	5,700	5,800	5,900	6,000	6,100	6,200	6,300	6,400	6,500	6,600	6,700	6,800	6,900
Nov	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jan	0	0	0	0	0	30,566	102,775	167,230	236,413	301,791	351,876	392,951	436,085	481,482
Feb	0	54,089	176,836	296,240	411,457	496,284	536,442	578,923	617,191	654,103	687,736	716,896	741,112	763,099
Mar	0	86,347	105,728	130,807	154,131	172,295	189,909	208,129	225,241	242,141	255,649	270,254	285,632	302,096
Apr	0	0	0	0	0	0	0	0	0	0	1,286	4,318	7,350	10,382
May	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	140,436	282,564	427,047	565,589	699,144	829,125	954,282	1,078,844	1,198,035	1,296,547	1,384,419	1,470,179	1,557,058

Supplementals Shortfall At HDD Level Above 5,557 40-Year Normal Annual HDD
By Month

	Annual HDD Level													
	5,557	5,700	5,800	5,900	6,000	6,100	6,200	6,300	6,400	6,500	6,600	6,700	6,800	6,900
Nov	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0	0	0	0	0	15,374
Jan	0	0	5,240	66,996	133,787	204,582	276,206	356,218	439,776	527,138	629,038	737,854	849,574	943,769
Feb	0	67,640	130,969	145,544	163,662	188,596	218,773	248,950	283,341	327,737	378,886	434,509	495,075	557,870
Mar	0	0	0	0	2,117	9,395	17,222	25,599	37,149	48,913	64,067	79,222	97,658	116,302
Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	67,640	136,209	212,540	299,567	402,573	512,201	630,767	760,267	903,788	1,071,992	1,251,585	1,442,307	1,633,316

National Grid Rhode Island
2018 Long Range Plan

Chart III-E-8

Assumptions:

Mean Annual HDD = **5,557.2 HDD**
Std Dev Annual HDD = **358.6 HDD**

EDD Level	Cumulative Probability Of Occurrence (p)	Probability Of Exceeding (1-p)	Frequency of Occurrence 1/(1-p) (years)	HDD Excess	Delta Supply (MMBtu) Pipeline	Storage	Supplementals	Total
5,700	0.6548	0.3452	2.90	142.8	330,065	140,436	67,640	538,141
5,800	0.7508	0.2492	4.01	242.8	641,835	282,564	136,209	1,060,607
5,900	0.8304	0.1696	5.90	342.8	943,693	427,047	212,540	1,583,281
6,000	0.8915	0.1085	9.22	442.8	1,241,134	565,589	299,567	2,106,289
6,100	0.9349	0.0651	15.37	542.8	1,529,419	699,144	402,573	2,631,136
6,200	0.9635	0.0365	27.37	642.8	1,812,228	829,125	512,201	3,153,554
6,300	0.9808	0.0192	52.17	742.8	2,089,841	954,282	630,767	3,674,890
6,400	0.9906	0.0094	106.56	842.8	2,357,194	1,078,844	760,267	4,196,306
6,500	0.9957	0.0043	233.51	942.8	2,615,899	1,198,035	903,788	4,717,721
6,600	0.9982	0.0018	549.46	1,042.8	2,869,842	1,296,547	1,071,992	5,238,381
6,700	0.9993	0.0007	1389.46	1,142.8	3,118,602	1,384,419	1,251,585	5,754,605
6,800	0.9997	0.0003	3778.60	1,242.8	3,358,348	1,470,179	1,442,307	6,270,834
6,900	0.9999	0.0001	11056.83	1,342.8	3,592,131	1,557,058	1,633,316	6,782,504
6,250	0.9733	0.0267	37.47					
				(EDD Level MINUS Mean Peak)	(EDD Excess TIMES Heating Increment) (MMBtu)			

National Grid Rhode Island
2018 Long Range Plan

Chart III-E-9

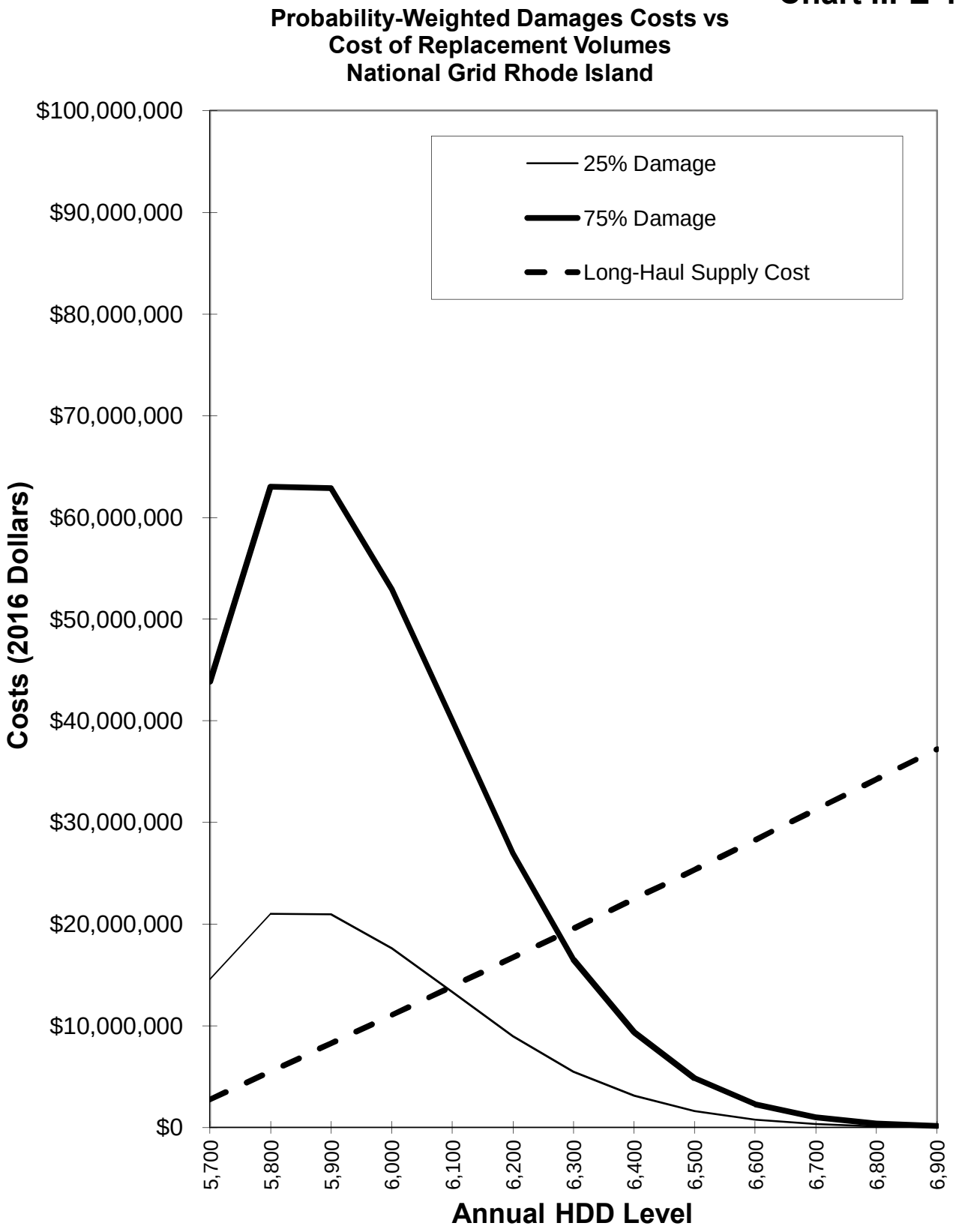
Assumptions:

Mean Annual HDD =	**5,557.2**	
Std Dev Annual HDD =	**358.6**	
Cost of Interruption/Day =	**$83,463,702**	(2016 dollars)
Peak Period Supply Cost	**$3.189**	**$/MMBtu**
Long-Haul Capacity Cost	**$510.90**	**$/MMBtu**
Offpeak Period Supply Cost	**$2.585**	
Short-Haul Capacity Cost	**$101.875**	**$/MMBtu**
Storage D1 Cost	**$18.480**	**$/MMBtu**
Storage D2 Cost	**$0.253**	**$/MMBtu**

HDD Level	Cumulative Probability Of Occurrence (p)	Probability Of Exceeding (1-p)	Frequency of Occurrence 1/(1-p) (years)	Days Of Interruption	Costs in 2016 Dollars: Cost of 25% Interruption	Costs in 2016 Dollars: Prob Wghted Cost	Required Incremental Capacity (MMBtu)	Required Incremental Winter Volume (MMBtu)	Costs in 2016 Dollars: Short-Haul Supply Cost	Costs in 2016 Dollars: Long-Haul Supply Cost
5,700	0.6548	0.3452	2.90	2	$42,334,760	$14,615,876	4,146	208,076	[illegible]	$2,781,871
5,800	0.7508	0.2492	4.01	4	$84,293,463	$21,005,285	8,182	418,773	$2,173,456	$5,515,693
5,900	0.8304	0.1696	5.90	6	$123,652,040	$20,967,308	12,224	639,587	$3,286,741	$8,285,009
6,000	0.8915	0.1085	9.22	8	$162,576,127	$17,634,149	16,267	865,155	$4,413,517	$11,069,483
6,100	0.9349	0.0651	15.37	10	$204,861,402	$13,329,918	20,319	1,101,717	$5,572,646	$13,893,879
6,200	0.9635	0.0365	27.37	12	$245,967,244	$8,986,081	24,372	1,341,326	$6,740,643	$16,728,926
6,300	0.9808	0.0192	52.17	14	$287,741,534	$5,515,292	28,426	1,585,049	$7,920,319	$19,577,094
6,400	0.9906	0.0094	106.56	16	$332,357,825	$3,118,921	32,490	1,839,111	$9,130,620	$22,463,653
6,500	0.9957	0.0043	233.51	18	$377,229,774	$1,615,502	36,562	2,101,822	$10,366,390	$25,381,691
6,600	0.9982	0.0018	549.46	20	$420,141,785	$764,651	40,637	2,368,539	$11,613,946	$28,314,269
6,700	0.9993	0.0007	1389.46	22	$461,083,751	$331,843	44,721	2,636,004	$12,864,719	$31,253,882
6,800	0.9997	0.0003	3778.60	24	$503,117,095	$133,149	48,833	2,912,486	$14,144,302	$34,235,886
6,900	0.9999	0.0001	11056.83	26	$545,530,055	$49,339	52,964	3,190,374	$15,430,380	$37,233,014
					Days Of Interruption times Cost of Interruption/Day	Cost of Interruption times Prob. of Exceeding			(Incremental Vol times Supply+D2 Costs) + (Incr Capacity times Short-Haul+ D1 Costs)	(Incremental Vol times Supply Cost) + (Incr Capacity times Long-Haul Cost)

EDD Level	Cost of 75% Interruption	Prob Wghted Cost
5,700	$127,004,281	$43,847,629
5,800	$252,880,389	$63,015,854
5,900	$370,956,121	$62,901,923
6,000	$487,728,382	$52,902,447
6,100	$614,584,206	$39,989,754
6,200	$737,901,732	$26,958,244
6,300	$863,224,602	$16,545,877
6,400	$997,073,476	$9,356,763
6,500	$1,131,689,323	$4,846,507
6,600	$1,260,425,356	$2,293,953
6,700	$1,383,251,253	$995,529
6,800	$1,509,351,286	$399,447
6,900	$1,636,590,164	$148,016

Chart III-E-10



National Grid Rhode Island
Comparison of Resources and Requirements
Base Design Year
(BBtu)

		Base Design Day									
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
REQUIREMENTS											
Firm Sendout	Valley	62	62	63	64	64	64	65	66	67	66
	Providence	286	289	291	296	296	300	304	307	310	309
	Warren	12	12	12	12	12	12	12	12	13	13
	Westerly	6	6	6	6	6	6	6	6	6	6
Fuel Reimbursement		5	5	6	6	6	6	6	6	6	6
Underground Storage Refill		0	0	0	0	0	0	0	0	0	0
LNG Storage Refill		0	0	0	0	0	0	0	0	0	0
TOTAL		370	374	377	384	384	389	393	397	401	400
RESOURCES											
TGP	Dawn	1	12	27	31	31	31	31	31	31	31
	Niagara	1	1	1	1	1	1	1	1	1	1
	Zone 4	41	41	41	41	41	41	41	41	41	41
	Dracut	39	18	3	0	0	0	0	0	0	0
	TGP Citygate	0	0	0	0	0	0	0	0	0	0
	TGP Everett	0	13	19	20	20	20	30	30	30	30
	Storage	11	11	11	11	11	11	11	11	11	11
TET/AGT	M2	48	48	48	48	48	48	48	48	48	48
	TCO	48	48	48	48	48	48	48	48	48	48
	Transco	2	2	2	2	2	2	2	2	2	2
	AIM (Ramapo)	18	9	9	9	9	9	9	9	9	9
	AIM (Millennium)	0	9	9	9	9	9	9	9	9	9
	M3	15	12	13	12	12	12	14	12	12	12
	AGT Citygate	10	0	0	0	0	0	0	0	0	0
	Storage	25	28	27	28	28	28	26	28	28	27
Liquid	ENGIE	0	0	0	0	0	0	0	0	0	0
	Gaz Met	0	0	0	0	0	0	0	0	0	0
LNG From Storage		111	95	119	119	119	119	119	119	119	119
Unserved	Valley	0	0	0	0	0	0	1	2	3	2
	Providence	0	26	0	5	4	8	3	5	8	8
	Warren	0	0	0	0	1	1	0	1	1	0
	Westerly	0	0	0	0	0	0	0	0	0	0
		0	26	0	5	5	9	4	8	11	11
TOTAL		370	374	377	384	384	389	393	397	401	400

National Grid Rhode Island
Comparison of Resources and Requirements
Base Design Year
(BBtu)

		Base Design Heating Season (Nov-Mar)									
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
REQUIREMENTS											
Firm Sendout	Valley	4,828	4,862	4,930	4,968	4,967	5,027	5,126	5,135	5,176	5,168
	Providence	22,344	22,598	22,986	23,162	23,158	23,435	23,891	23,930	24,122	24,082
	Warren	909	916	928	936	935	947	965	967	975	973
	Westerly	461	464	471	474	474	480	489	490	494	493
Fuel Reimbursement		590	644	672	673	672	677	683	681	671	661
Underground Storage Refill		0	0	0	0	0	0	0	0	0	0
LNG Storage Refill		119	0	0	0	0	0	0	0	0	0
TOTAL		29,251	29,483	29,987	30,213	30,206	30,566	31,155	31,203	31,438	31,377
RESOURCES											
TGP	Dawn	97	1,774	3,049	3,145	2,989	3,155	3,119	3,097	2,312	1,727
	Niagara	113	162	164	162	162	162	164	162	162	162
	Zone 4	5,108	4,207	3,479	3,402	3,587	3,472	3,692	3,739	4,493	5,054
	Dracut	2,092	346	13	0	0	0	0	0	0	0
	TGP Citygate	0	0	0	0	0	0	0	0	0	0
	TGP Everett	0	321	632	651	650	668	1,282	1,294	1,317	1,312
	Storage	1,320	1,302	1,293	1,293	1,320	1,315	1,298	1,280	1,293	1,285
TET/AGT	M2	7,187	7,183	7,173	7,121	7,186	7,184	7,234	7,186	7,186	7,186
	TCO	5,929	6,096	6,169	6,164	6,161	6,191	6,273	6,252	6,270	6,265
	Transco	252	252	224	253	269	269	271	269	270	270
	AIM (Ramapo)	1,547	461	529	489	514	508	549	554	564	564
	AIM (Millennium)	0	1,367	1,376	1,367	1,367	1,367	1,376	1,367	1,367	1,367
	M3	2,156	1,736	1,784	1,897	1,733	1,858	1,912	1,905	2,009	2,007
	AGT Citygate	150	0	0	0	0	0	0	0	0	0
	Storage	2,498	2,659	2,665	2,661	2,660	2,661	2,652	2,661	2,661	2,661
Liquid	ENGIE	119	0	0	0	0	0	0	0	0	0
	Gaz Met	0	0	0	0	0	0	0	0	0	0
LNG From Storage		683	374	753	753	753	753	753	753	753	753
Unserved	Valley	0	0	0	0	0	0	1	2	3	2
	Providence	0	1,243	683	856	854	1,003	578	680	775	760
	Warren	0	0	0	0	1	1	0	1	1	0
	Westerly	0	0	0	0	0	0	0	0	0	0
		0	1,243	683	856	855	1,004	579	683	779	762
TOTAL		29,251	29,483	29,987	30,213	30,206	30,566	31,155	31,203	31,438	31,377

National Grid Rhode Island
Comparison of Resources and Requirements
Base Design Year
(BBtu)

		Base Design Non-Heating Season (Apr-Oct)									
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
REQUIREMENTS											
Firm Sendout	Valley	1,956	1,962	1,987	1,985	2,004	2,023	2,038	2,050	2,045	2,039
	Providence	9,096	9,301	9,427	9,419	9,509	9,594	9,663	9,721	9,695	9,669
	Warren	368	369	374	374	377	381	384	386	385	384
	Westerly	187	187	190	189	191	193	195	196	195	195
Fuel Reimbursement		363	335	395	381	407	408	409	411	410	409
Underground Storage Refill		3,971	4,094	4,125	3,964	3,984	3,981	3,960	3,969	3,969	3,969
LNG Storage Refill		698	508	914	888	888	888	888	888	888	888
TOTAL		16,641	16,756	17,411	17,200	17,361	17,469	17,536	17,620	17,587	17,553
RESOURCES											
TGP	Dawn	42	154	131	398	407	415	423	417	428	417
	Niagara	230	230	230	230	230	230	230	230	230	230
	Zone 4	3,115	2,901	3,249	3,130	3,175	3,193	3,192	3,200	3,195	3,190
	Dracut	38	6	0	0	0	0	0	0	0	0
	TGP Citygate	0	0	0	0	0	0	0	0	0	0
	TGP Everett	0	0	0	0	0	0	0	0	0	0
	Storage	31	14	20	6	0	0	6	23	10	19
TET/AGT	M2	9,558	6,874	7,131	5,658	6,783	6,805	6,811	6,833	6,824	6,816
	TCO	488	683	797	906	1,110	1,122	1,134	1,147	1,142	1,138
	Transco	11	9	7	23	19	19	20	20	20	20
	AIM (Ramapo)	564	59	485	741	473	473	480	482	483	476
	AIM (Millennium)	0	1,590	1,656	1,113	1,385	1,385	1,385	1,385	1,385	1,385
	M3	1,607	3,451	3,251	4,829	3,613	3,657	3,684	3,710	3,697	3,691
	AGT Citygate	0	0	0	0	0	0	0	0	0	0
	Storage	123	118	146	4	4	4	4	4	4	4
Liquid	ENGIE	508	508	146	0	0	0	0	0	0	0
	Gaz Met	191	0	0	0	0	0	0	0	0	0
LNG From Storage		134	134	161	135	135	135	135	135	135	135
Unserved	Valley	0	0	0	0	0	0	0	0	0	0
	Providence	0	24	0	25	28	30	32	33	33	33
	Warren	0	0	0	0	0	0	0	0	0	0
	Westerly	0	0	0	0	0	0	0	0	0	0
		0	24	0	25	28	30	32	33	33	33
TOTAL		16,641	16,756	17,411	17,200	17,361	17,469	17,536	17,620	17,587	17,553

National Grid Rhode Island
Comparison of Resources and Requirements
Base Design Year
(BBtu)

		Base Design Annual									
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
REQUIREMENTS											
Firm Sendout	Valley	6,784	6,824	6,916	6,953	6,971	7,050	7,164	7,185	7,221	7,207
	Providence	31,440	31,899	32,413	32,581	32,666	33,030	33,554	33,651	33,816	33,751
	Warren	1,278	1,285	1,303	1,309	1,313	1,328	1,349	1,353	1,360	1,357
	Westerly	648	651	660	664	665	673	684	686	689	688
Fuel Reimbursement		954	978	1,067	1,053	1,078	1,085	1,092	1,091	1,081	1,070
Underground Storage Refill		3,971	4,094	4,125	3,964	3,984	3,981	3,960	3,969	3,969	3,969
LNG Storage Refill		817	508	914	888	888	888	888	888	888	888
TOTAL		45,892	46,239	47,398	47,413	47,567	48,035	48,691	48,824	49,024	48,930
RESOURCES											
TGP	Dawn	139	1,928	3,180	3,543	3,396	3,571	3,542	3,514	2,740	2,144
	Niagara	344	393	394	393	393	393	394	393	393	393
	Zone 4	8,223	7,108	6,729	6,532	6,762	6,664	6,885	6,939	7,688	8,244
	Dracut	2,130	352	13	0	0	0	0	0	0	0
	TGP Citygate	0	0	0	0	0	0	0	0	0	0
	TGP Everett	0	321	632	651	650	668	1,282	1,294	1,317	1,312
	Storage	1,351	1,317	1,314	1,299	1,320	1,316	1,304	1,304	1,304	1,304
TET/AGT	M2	16,745	14,056	14,304	12,779	13,969	13,988	14,045	14,019	14,011	14,002
	TCO	6,417	6,780	6,966	7,070	7,271	7,313	7,407	7,398	7,413	7,404
	Transco	263	261	231	276	287	288	291	290	289	289
	AIM (Ramapo)	2,111	520	1,014	1,230	986	980	1,029	1,036	1,047	1,041
	AIM (Millennium)	0	2,957	3,033	2,480	2,752	2,752	2,761	2,752	2,752	2,752
	M3	3,763	5,187	5,036	6,726	5,346	5,515	5,596	5,615	5,706	5,698
	AGT Citygate	150	0	0	0	0	0	0	0	0	0
	Storage	2,621	2,777	2,812	2,665	2,664	2,665	2,656	2,665	2,665	2,665
Liquid	ENGIE	627	508	146	0	0	0	0	0	0	0
	Gaz Met	191	0	0	0	0	0	0	0	0	0
LNG From Storage		817	508	914	888	888	888	888	888	888	888
Unserved	Valley	0	0	0	0	0	0	1	2	3	2
	Providence	0	1,266	683	881	882	1,033	610	714	808	792
	Warren	0	0	0	0	1	1	0	1	1	0
	Westerly	0	0	0	0	0	0	0	0	0	0
		0	1,267	683	881	882	1,034	611	717	812	795
TOTAL		45,892	46,239	47,398	47,413	47,567	48,035	48,691	48,824	49,024	48,930

National Grid Rhode Island
Comparison of Resources and Requirements
Base Normal Year
(BBtu)

		Base Normal Heating Season (Nov-Mar)									
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
REQUIREMENTS											
Firm Sendout	Valley	4,258	4,286	4,346	4,377	4,376	4,429	4,516	4,521	4,557	4,549
	Providence	19,818	20,049	20,405	20,548	20,543	20,784	21,193	21,215	21,380	21,344
	Warren	774	779	790	796	795	805	821	822	828	827
	Westerly	414	417	423	426	426	431	439	440	443	443
Fuel Reimbursement		558	608	631	631	629	636	642	639	631	620
Underground Storage Refill		0	0	0	0	0	0	0	0	0	0
LNG Storage Refill		119	0	0	0	0	0	0	0	0	0
TOTAL		25,941	26,140	26,596	26,778	26,770	27,085	27,611	27,637	27,841	27,782
RESOURCES											
TGP	Dawn	72	1,667	2,648	2,664	2,463	2,707	2,631	2,627	1,942	1,252
	Niagara	96	162	164	162	162	162	164	162	162	162
	Zone 4	4,708	3,435	2,787	2,808	2,999	2,859	3,085	3,100	3,732	4,394
	Dracut	719	155	3	0	0	0	0	0	0	0
	TGP Citygate	0	0	0	0	0	0	0	0	0	0
	TGP Everett	0	187	291	390	390	426	658	746	831	815
	Storage	1,311	1,302	1,293	1,297	1,320	1,293	1,293	1,280	1,314	1,311
TET/AGT	M2	7,158	7,133	7,128	7,088	7,142	7,139	7,194	7,150	7,153	7,152
	TCO	5,396	5,572	5,684	5,696	5,697	5,738	5,820	5,790	5,831	5,806
	Transco	249	235	210	236	252	253	255	253	254	253
	AIM (Ramapo)	1,158	305	359	322	343	343	380	383	394	397
	AIM (Millennium)	0	1,367	1,376	1,367	1,367	1,367	1,376	1,367	1,367	1,367
	M3	1,625	1,189	1,244	1,319	1,206	1,292	1,345	1,373	1,455	1,466
	AGT Citygate	150	0	0	0	0	0	0	0	0	0
	Storage	2,497	2,646	2,656	2,651	2,651	2,651	2,657	2,652	2,653	2,652
Liquid	ENGIE	119	0	0	0	0	0	0	0	0	0
	Gaz Met	0	0	0	0	0	0	0	0	0	0
LNG From Storage		683	374	753	753	753	753	753	753	753	753
Unserved	Valley	0	0	0	0	0	0	0	0	0	0
	Providence	0	410	0	25	24	101	0	0	0	0
	Warren	0	0	0	0	0	0	0	0	0	0
	Westerly	0	0	0	0	0	0	0	0	0	0
		0	410	0	25	24	101	0	0	0	0
TOTAL		25,941	26,140	26,596	26,778	26,770	27,085	27,611	27,637	27,841	27,782

National Grid Rhode Island
Comparison of Resources and Requirements
Base Normal Year
(BBtu)

		Base Normal Non-Heating Season (Apr-Oct)									
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
REQUIREMENTS											
Firm Sendout	Valley	1,759	1,764	1,786	1,784	1,801	1,817	1,830	1,841	1,835	1,830
	Providence	8,232	8,432	8,544	8,537	8,615	8,690	8,749	8,800	8,775	8,751
	Warren	320	321	325	324	327	330	333	335	334	333
	Westerly	171	172	174	174	175	177	178	179	179	178
Fuel Reimbursement		347	316	375	364	390	391	392	393	393	392
Underground Storage Refill		3,912	4,036	4,088	3,956	3,973	3,967	3,973	3,968	3,971	3,968
LNG Storage Refill		698	508	887	887	887	887	887	887	887	887
TOTAL		15,440	15,547	16,178	16,026	16,168	16,259	16,342	16,402	16,374	16,339
RESOURCES											
TGP	Dawn	34	124	99	294	300	290	293	283	309	308
	Niagara	230	230	230	230	230	230	230	230	230	230
	Zone 4	2,729	2,639	2,969	2,932	2,969	2,972	2,985	2,997	2,999	2,990
	Dracut	0	0	0	0	0	0	0	0	0	0
	TGP Citygate	0	0	0	0	0	0	0	0	0	0
	TGP Everett	0	0	0	0	0	0	0	0	0	0
	Storage	13	9	18	5	0	18	18	31	0	1
TET/AGT	M2	9,488	6,737	7,026	5,592	6,708	6,733	6,756	6,766	6,756	6,746
	TCO	336	413	505	688	881	893	902	908	906	904
	Transco	10	8	6	15	13	13	13	13	13	13
	AIM (Ramapo)	391	29	439	711	436	435	441	443	443	438
	AIM (Millennium)	0	1,574	1,656	1,113	1,384	1,385	1,385	1,385	1,385	1,385
	M3	1,284	3,064	2,845	4,308	3,110	3,152	3,181	3,208	3,195	3,187
	AGT Citygate	0	0	0	0	0	0	0	0	0	0
	Storage	91	79	121	3	3	4	4	4	4	4
Liquid	ENGIE	508	508	130	0	0	0	0	0	0	0
	Gaz Met	191	0	0	0	0	0	0	0	0	0
LNG From Storage		134	134	134	134	134	134	134	134	134	134
Unserved	Valley	0	0	0	0	0	0	0	0	0	0
	Providence	0	0	0	0	0	0	0	0	0	0
	Warren	0	0	0	0	0	0	0	0	0	0
	Westerly	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0
TOTAL		15,440	15,547	16,178	16,026	16,168	16,259	16,342	16,402	16,374	16,339

National Grid Rhode Island
Comparison of Resources and Requirements
Base Normal Year
(BBtu)

		Base Normal Annual									
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
REQUIREMENTS											
Firm Sendout	Valley	6,017	6,050	6,132	6,161	6,177	6,246	6,346	6,362	6,393	6,379
	Providence	28,050	28,481	28,949	29,085	29,157	29,474	29,942	30,014	30,156	30,094
	Warren	1,094	1,100	1,115	1,120	1,123	1,135	1,153	1,156	1,162	1,159
	Westerly	585	589	597	600	601	608	617	619	622	621
Fuel Reimbursement		905	924	1,006	996	1,019	1,027	1,034	1,033	1,024	1,012
Underground Storage Refill		3,912	4,036	4,088	3,956	3,973	3,967	3,973	3,968	3,971	3,968
LNG Storage Refill		817	508	887	887	887	887	887	887	887	887
TOTAL		41,381	41,688	42,774	42,805	42,938	43,344	43,953	44,040	44,215	44,122
RESOURCES											
TGP	Dawn	106	1,790	2,747	2,958	2,763	2,997	2,924	2,910	2,251	1,560
	Niagara	326	393	394	393	393	393	394	393	393	393
	Zone 4	7,437	6,074	5,756	5,740	5,968	5,830	6,070	6,097	6,730	7,384
	Dracut	719	155	3	0	0	0	0	0	0	0
	TGP Citygate	0	0	0	0	0	0	0	0	0	0
	TGP Everett	0	187	291	390	390	426	658	746	831	815
	Storage	1,324	1,312	1,312	1,302	1,320	1,312	1,312	1,312	1,314	1,312
TET/AGT	M2	16,646	13,870	14,155	12,681	13,850	13,871	13,950	13,916	13,909	13,898
	TCO	5,733	5,985	6,189	6,384	6,578	6,631	6,722	6,698	6,737	6,710
	Transco	260	243	216	251	265	266	268	266	267	267
	AIM (Ramapo)	1,549	333	797	1,033	779	778	821	825	837	835
	AIM (Millennium)	0	2,941	3,032	2,480	2,751	2,752	2,761	2,752	2,752	2,752
	M3	2,909	4,253	4,089	5,627	4,316	4,445	4,526	4,582	4,650	4,654
	AGT Citygate	150	0	0	0	0	0	0	0	0	0
	Storage	2,588	2,724	2,777	2,654	2,654	2,655	2,662	2,657	2,657	2,657
Liquid	ENGIE	627	508	130	0	0	0	0	0	0	0
	Gaz Met	191	0	0	0	0	0	0	0	0	0
LNG From Storage		817	508	887	887	887	887	887	887	887	887
Unserved	Valley	0	0	0	0	0	0	0	0	0	0
	Providence	0	410	0	25	24	101	0	0	0	0
	Warren	0	0	0	0	0	0	0	0	0	0
	Westerly	0	0	0	0	0	0	0	0	0	0
		0	410	0	25	24	101	0	0	0	0
TOTAL		41,381	41,688	42,774	42,805	42,938	43,344	43,953	44,040	44,215	44,122

National Grid Rhode Island
Comparison of Resources and Requirements
High Design Year
(BBtu)

		High Design Day									
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
REQUIREMENTS											
Firm Sendout	Valley	62	63	63	64	64	66	67	67	68	68
	Providence	287	291	294	300	300	305	310	314	317	317
	Warren	12	12	12	12	12	12	13	13	13	13
	Westerly	6	6	6	6	6	6	6	6	7	6
Fuel Reimbursement		5	5	6	6	6	6	6	6	6	6
Underground Storage Refill		0	0	0	0	0	0	0	0	0	0
LNG Storage Refill		0	0	0	0	0	0	0	0	0	0
TOTAL		371	376	380	388	388	395	401	406	410	410
RESOURCES											
TGP	Dawn	1	12	27	31	31	31	31	31	31	31
	Niagara	1	1	1	1	1	1	1	1	1	1
	Zone 4	41	41	41	41	41	41	41	41	41	41
	Dracut	39	18	3	0	0	0	0	0	0	0
	TGP Citygate	0	0	0	0	0	0	0	0	0	0
	TGP Everett	0	14	19	20	20	20	30	30	30	30
	Storage	11	11	11	11	11	11	11	11	11	11
TET/AGT	M2	48	48	48	48	48	48	48	48	48	48
	TCO	48	48	48	48	48	48	48	48	48	48
	Transco	2	2	2	2	2	2	2	2	2	2
	AIM (Ramapo)	18	9	9	9	9	9	9	9	9	9
	AIM (Millennium)	0	9	9	9	9	9	9	9	9	9
	M3	15	12	15	12	12	12	14	12	12	12
	AGT Citygate	10	0	0	0	0	0	0	0	0	0
	Storage	25	28	25	28	28	28	26	28	28	27
Liquid	ENGIE	0	0	0	0	0	0	0	0	0	0
	Gaz Met	0	0	0	0	0	0	0	0	0	0
LNG From Storage		112	95	119	119	119	119	119	119	119	119
Unserved	Valley	0	0	0	0	0	1	3	3	4	4
	Providence	0	28	2	9	8	13	9	12	15	16
	Warren	0	0	0	0	1	1	0	1	1	0
	Westerly	0	0	0	0	0	0	0	0	0	0
		0	28	2	9	9	15	11	16	21	20
TOTAL		371	376	380	388	388	395	401	406	410	410

National Grid Rhode Island
Comparison of Resources and Requirements
High Design Year
(BBtu)

		High Design Heating Season (Nov-Mar)									
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
REQUIREMENTS											
Firm Sendout	Valley	4,848	4,894	4,971	5,030	5,030	5,108	5,225	5,247	5,301	5,290
	Providence	22,435	22,744	23,175	23,446	23,446	23,806	24,347	24,448	24,696	24,645
	Warren	913	922	936	947	947	962	984	988	998	996
	Westerly	463	467	474	480	480	488	499	501	506	505
Fuel Reimbursement		591	645	674	676	675	681	688	686	677	667
Underground Storage Refill		0	0	0	0	0	0	0	0	0	0
LNG Storage Refill		119	0	0	0	0	0	0	0	0	0
TOTAL		29,369	29,671	30,231	30,579	30,579	31,044	31,743	31,871	32,179	32,104
RESOURCES											
TGP	Dawn	98	1,776	3,066	3,180	3,031	3,196	3,176	3,162	2,389	1,823
	Niagara	114	162	164	162	162	162	164	162	162	162
	Zone 4	5,118	4,245	3,530	3,475	3,650	3,567	3,797	3,854	4,606	5,143
	Dracut	2,158	363	14	0	0	0	0	0	0	0
	TGP Citygate	0	0	0	0	0	0	0	0	0	0
	TGP Everett	0	327	647	668	668	687	1,341	1,365	1,398	1,392
	Storage	1,324	1,302	1,293	1,293	1,320	1,315	1,298	1,280	1,293	1,285
TET/AGT	M2	7,187	7,183	7,173	7,123	7,186	7,186	7,235	7,187	7,188	7,187
	TCO	5,939	6,115	6,190	6,199	6,197	6,238	6,324	6,303	6,325	6,319
	Transco	252	253	224	254	269	269	271	270	270	270
	AIM (Ramapo)	1,558	468	541	503	528	527	577	586	598	600
	AIM (Millennium)	0	1,367	1,376	1,367	1,367	1,367	1,376	1,367	1,367	1,367
	M3	2,171	1,759	1,817	1,937	1,782	1,909	1,984	1,983	2,097	2,094
	AGT Citygate	150	0	0	0	0	0	0	0	0	0
	Storage	2,498	2,659	2,666	2,661	2,661	2,661	2,652	2,661	2,661	2,661
Liquid	ENGIE	119	0	0	0	0	0	0	0	0	0
	Gaz Met	0	0	0	0	0	0	0	0	0	0
LNG From Storage		683	374	753	753	753	753	753	753	753	753
Unserved	Valley	0	0	0	0	0	1	3	3	4	4
	Providence	0	1,317	777	1,004	1,004	1,203	794	933	1,065	1,042
	Warren	0	0	0	0	1	1	0	1	1	0
	Westerly	0	0	0	0	0	0	0	0	0	0
		0	1,317	777	1,005	1,005	1,205	797	938	1,071	1,046
TOTAL		29,369	29,671	30,231	30,579	30,579	31,044	31,743	31,871	32,179	32,104

National Grid Rhode Island
Comparison of Resources and Requirements
High Design Year
(BBtu)

		High Design Non-Heating Season (Apr-Oct)									
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
REQUIREMENTS											
Firm Sendout	Valley	1,962	1,970	2,001	2,001	2,026	2,051	2,070	2,086	2,079	2,072
	Providence	9,121	9,339	9,492	9,493	9,609	9,725	9,811	9,885	9,853	9,821
	Warren	369	371	377	377	382	386	390	393	392	390
	Westerly	187	188	191	191	193	196	198	199	198	198
Fuel Reimbursement		364	335	396	382	409	411	413	414	414	413
Underground Storage Refill		3,976	4,094	4,127	3,962	3,985	3,981	3,960	3,968	3,968	3,969
LNG Storage Refill		698	508	915	888	888	888	888	888	888	888
TOTAL		16,678	16,806	17,499	17,294	17,493	17,639	17,729	17,834	17,793	17,751
RESOURCES											
TGP	Dawn	43	156	134	404	416	429	442	441	450	438
	Niagara	230	230	230	230	230	230	230	230	230	230
	Zone 4	3,128	2,911	3,269	3,148	3,201	3,223	3,223	3,233	3,228	3,220
	Dracut	38	6	0	0	0	0	0	0	0	0
	TGP Citygate	0	0	0	0	0	0	0	0	0	0
	TGP Everett	0	0	0	0	0	0	0	0	0	0
	Storage	32	14	21	4	0	1	6	23	10	19
TET/AGT	M2	9,566	6,886	7,149	5,680	6,811	6,839	6,849	6,875	6,864	6,853
	TCO	491	690	813	918	1,124	1,145	1,164	1,180	1,175	1,170
	Transco	11	9	7	24	19	20	21	21	21	21
	AIM (Ramapo)	568	60	487	742	478	477	483	486	486	480
	AIM (Millennium)	0	1,591	1,656	1,113	1,385	1,385	1,385	1,385	1,385	1,385
	M3	1,616	3,467	3,277	4,864	3,659	3,717	3,751	3,784	3,768	3,759
	AGT Citygate	0	0	0	0	0	0	0	0	0	0
	Storage	123	119	147	4	4	4	4	4	4	4
Liquid	ENGIE	508	508	147	0	0	0	0	0	0	0
	Gaz Met	191	0	0	0	0	0	0	0	0	0
LNG From Storage		134	134	162	135	135	135	135	135	135	135
Unserved	Valley	0	0	0	0	0	0	0	0	0	0
	Providence	0	24	0	27	30	33	35	38	37	36
	Warren	0	0	0	0	0	0	0	0	0	0
	Westerly	0	0	0	0	0	0	0	0	0	0
		0	24	0	27	30	33	35	38	37	36
TOTAL		16,678	16,806	17,499	17,294	17,493	17,639	17,729	17,834	17,793	17,751

National Grid Rhode Island
Comparison of Resources and Requirements
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		High Design Annual									
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
REQUIREMENTS											
Firm Sendout	Valley	6,810	6,864	6,972	7,031	7,056	7,159	7,295	7,333	7,380	7,362
	Providence	31,556	32,083	32,667	32,939	33,056	33,531	34,159	34,333	34,549	34,466
	Warren	1,282	1,293	1,313	1,324	1,329	1,348	1,374	1,381	1,390	1,387
	Westerly	650	655	665	671	674	683	696	700	705	703
Fuel Reimbursement		955	981	1,070	1,058	1,084	1,092	1,101	1,101	1,091	1,080
Underground Storage Refill		3,976	4,094	4,127	3,962	3,985	3,981	3,960	3,968	3,968	3,969
LNG Storage Refill		817	508	915	888	888	888	888	888	888	888
TOTAL		46,047	46,477	47,730	47,874	48,071	48,683	49,472	49,705	49,971	49,855
RESOURCES											
TGP	Dawn	140	1,932	3,200	3,584	3,446	3,625	3,618	3,603	2,839	2,261
	Niagara	344	393	394	393	393	393	394	393	393	393
	Zone 4	8,246	7,156	6,799	6,623	6,850	6,790	7,020	7,087	7,834	8,364
	Dracut	2,196	369	14	0	0	0	0	0	0	0
	TGP Citygate	0	0	0	0	0	0	0	0	0	0
	TGP Everett	0	327	647	668	668	687	1,341	1,365	1,398	1,392
	Storage	1,356	1,317	1,314	1,297	1,320	1,316	1,304	1,303	1,303	1,304
TET/AGT	M2	16,754	14,070	14,322	12,803	13,997	14,025	14,083	14,062	14,051	14,041
	TCO	6,429	6,805	7,003	7,117	7,321	7,383	7,488	7,483	7,500	7,489
	Transco	263	261	231	277	288	289	292	291	291	290
	AIM (Ramapo)	2,125	529	1,028	1,246	1,006	1,004	1,060	1,072	1,084	1,080
	AIM (Millennium)	0	2,958	3,033	2,480	2,752	2,752	2,761	2,752	2,752	2,752
	M3	3,787	5,226	5,094	6,801	5,442	5,626	5,736	5,766	5,865	5,853
	AGT Citygate	150	0	0	0	0	0	0	0	0	0
	Storage	2,621	2,778	2,813	2,665	2,665	2,665	2,656	2,665	2,665	2,665
Liquid	ENGIE	627	508	147	0	0	0	0	0	0	0
	Gaz Met	191	0	0	0	0	0	0	0	0	0
LNG From Storage		817	508	915	888	888	888	888	888	888	888
Unserved	Valley	0	0	0	0	0	1	3	3	4	4
	Providence	0	1,341	777	1,031	1,034	1,236	829	971	1,102	1,079
	Warren	0	0	0	0	1	1	0	1	1	0
	Westerly	0	0	0	0	0	0	0	0	0	0
		0	1,342	777	1,031	1,035	1,238	832	976	1,108	1,083
TOTAL		46,047	46,477	47,730	47,874	48,071	48,683	49,472	49,705	49,971	49,855

National Grid Rhode Island
Comparison of Resources and Requirements
High Normal Year
(BBtu)

		High Normal Heating Season (Nov-Mar)									
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
REQUIREMENTS											
Firm Sendout	Valley	4,275	4,314	4,383	4,432	4,432	4,499	4,603	4,620	4,667	4,656
	Providence	19,900	20,180	20,574	20,798	20,799	21,112	21,596	21,671	21,886	21,839
	Warren	777	784	797	805	805	818	837	840	848	846
	Westerly	416	420	426	431	431	438	448	450	454	453
Fuel Reimbursement		559	610	634	635	634	641	648	646	638	627
Underground Storage Refill		0	0	0	0	0	0	0	0	0	0
LNG Storage Refill		119	0	0	0	0	0	0	0	0	0
TOTAL		26,046	26,309	26,813	27,101	27,101	27,508	28,132	28,227	28,493	28,421
RESOURCES											
TGP	Dawn	73	1,677	2,676	2,711	2,521	2,771	2,722	2,720	2,008	1,339
	Niagara	96	162	164	162	162	162	164	162	162	162
	Zone 4	4,719	3,486	2,826	2,858	3,042	2,917	3,144	3,177	3,849	4,489
	Dracut	776	165	3	0	0	0	0	0	0	0
	TGP Citygate	0	0	0	0	0	0	0	0	0	0
	TGP Everett	0	196	357	427	427	470	858	914	961	951
	Storage	1,302	1,285	1,293	1,297	1,320	1,293	1,293	1,280	1,314	1,311
TET/AGT	M2	7,161	7,135	7,132	7,091	7,147	7,149	7,202	7,156	7,158	7,157
	TCO	5,403	5,604	5,722	5,742	5,746	5,777	5,879	5,855	5,905	5,878
	Transco	249	235	210	236	253	253	256	257	257	257
	AIM (Ramapo)	1,176	313	367	336	358	359	403	413	425	426
	AIM (Millennium)	0	1,367	1,376	1,367	1,367	1,367	1,376	1,367	1,367	1,367
	M3	1,641	1,212	1,277	1,368	1,252	1,368	1,423	1,460	1,553	1,562
	AGT Citygate	150	0	0	0	0	0	0	0	0	0
	Storage	2,498	2,647	2,656	2,652	2,651	2,652	2,658	2,652	2,654	2,654
Liquid	ENGIE	119	0	0	0	0	0	0	0	0	0
	Gaz Met	0	0	0	0	0	0	0	0	0	0
LNG From Storage		683	374	753	753	753	753	753	753	753	753
Unserved	Valley	0	0	0	0	0	0	0	0	0	0
	Providence	0	451	0	102	102	216	0	60	127	114
	Warren	0	0	0	0	0	0	0	0	0	0
	Westerly	0	0	0	0	0	0	0	0	0	0
		0	451	0	102	102	216	0	60	127	114
TOTAL		26,046	26,309	26,813	27,101	27,101	27,508	28,132	28,227	28,493	28,421

National Grid Rhode Island
Comparison of Resources and Requirements
High Normal Year
(BBtu)

		High Normal Non-Heating Season (Apr-Oct)									
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
REQUIREMENTS											
Firm Sendout	Valley	1,761	1,766	1,791	1,789	1,809	1,829	1,844	1,857	1,850	1,843
	Providence	8,239	8,441	8,570	8,561	8,654	8,746	8,814	8,874	8,842	8,810
	Warren	320	321	326	325	329	332	335	337	336	335
	Westerly	171	172	174	174	176	178	179	181	180	179
Fuel Reimbursement		347	316	376	365	391	392	394	395	394	394
Underground Storage Refill		3,904	4,038	4,094	3,957	3,974	3,968	3,974	3,968	3,972	3,970
LNG Storage Refill		699	508	887	887	887	887	887	887	887	887
TOTAL		15,441	15,561	16,218	16,059	16,220	16,333	16,427	16,499	16,461	16,417
RESOURCES											
TGP	Dawn	34	124	99	296	302	293	298	288	314	313
	Niagara	230	230	230	230	230	230	230	230	230	230
	Zone 4	2,723	2,625	2,975	2,938	2,977	2,985	3,002	3,017	3,017	3,006
	Dracut	0	0	0	0	0	0	0	0	0	0
	TGP Citygate	0	0	0	0	0	0	0	0	0	0
	TGP Everett	0	0	0	0	0	0	0	0	0	0
	Storage	14	27	18	5	0	18	18	31	0	1
TET/AGT	M2	9,489	6,740	7,038	5,598	6,718	6,747	6,772	6,783	6,772	6,759
	TCO	337	415	511	692	890	902	911	919	915	912
	Transco	10	8	6	15	13	13	13	14	14	13
	AIM (Ramapo)	393	29	440	711	438	436	443	445	445	440
	AIM (Millennium)	0	1,574	1,656	1,113	1,384	1,385	1,385	1,385	1,385	1,385
	M3	1,287	3,067	2,854	4,323	3,130	3,184	3,217	3,249	3,232	3,220
	AGT Citygate	0	0	0	0	0	0	0	0	0	0
	Storage	90	79	126	3	3	4	4	4	4	4
Liquid	ENGIE	508	508	130	0	0	0	0	0	0	0
	Gaz Met	191	0	0	0	0	0	0	0	0	0
LNG From Storage		134	134	134	134	134	134	134	134	134	134
Unserved	Valley	0	0	0	0	0	0	0	0	0	0
	Providence	0	0	0	0	0	0	0	0	0	0
	Warren	0	0	0	0	0	0	0	0	0	0
	Westerly	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0
TOTAL		15,441	15,561	16,218	16,059	16,220	16,333	16,427	16,499	16,461	16,417

National Grid Rhode Island
Comparison of Resources and Requirements
High Normal Year
(BBtu)

		High Normal Annual									
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
REQUIREMENTS											
Firm Sendout	Valley	6,036	6,080	6,174	6,221	6,241	6,328	6,447	6,477	6,516	6,499
	Providence	28,139	28,621	29,144	29,359	29,453	29,858	30,410	30,545	30,728	30,648
	Warren	1,097	1,105	1,122	1,131	1,134	1,150	1,172	1,177	1,184	1,181
	Westerly	587	592	601	605	607	616	627	630	634	632
Fuel Reimbursement		906	926	1,010	1,000	1,024	1,033	1,042	1,041	1,033	1,020
Underground Storage Refill		3,904	4,038	4,094	3,957	3,974	3,968	3,974	3,968	3,972	3,970
LNG Storage Refill		818	508	887	887	887	887	887	887	887	887
TOTAL		41,486	41,870	43,032	43,160	43,321	43,840	44,560	44,726	44,955	44,838
RESOURCES											
TGP	Dawn	107	1,800	2,776	3,006	2,824	3,064	3,019	3,008	2,322	1,651
	Niagara	326	393	394	393	393	393	394	393	393	393
	Zone 4	7,441	6,111	5,801	5,796	6,019	5,902	6,146	6,194	6,866	7,495
	Dracut	776	165	3	0	0	0	0	0	0	0
	TGP Citygate	0	0	0	0	0	0	0	0	0	0
	TGP Everett	0	196	357	427	427	470	858	914	961	951
	Storage	1,316	1,312	1,312	1,302	1,320	1,312	1,312	1,312	1,314	1,312
TET/AGT	M2	16,651	13,875	14,170	12,689	13,864	13,896	13,974	13,939	13,929	13,916
	TCO	5,741	6,019	6,232	6,434	6,635	6,679	6,791	6,774	6,820	6,791
	Transco	260	243	216	251	266	266	269	271	271	271
	AIM (Ramapo)	1,568	342	806	1,047	796	795	846	858	870	866
	AIM (Millennium)	0	2,941	3,032	2,480	2,752	2,752	2,761	2,752	2,752	2,752
	M3	2,928	4,279	4,132	5,691	4,382	4,552	4,640	4,708	4,785	4,782
	AGT Citygate	150	0	0	0	0	0	0	0	0	0
	Storage	2,588	2,726	2,782	2,655	2,655	2,656	2,663	2,657	2,658	2,658
Liquid	ENGIE	627	508	130	0	0	0	0	0	0	0
	Gaz Met	191	0	0	0	0	0	0	0	0	0
LNG From Storage		817	508	887	887	887	887	887	887	887	887
Unserved	Valley	0	0	0	0	0	0	0	0	0	0
	Providence	0	451	0	102	102	216	0	60	127	114
	Warren	0	0	0	0	0	0	0	0	0	0
	Westerly	0	0	0	0	0	0	0	0	0	0
		0	451	0	102	102	216	0	60	127	114
TOTAL		41,486	41,870	43,032	43,160	43,321	43,840	44,560	44,726	44,955	44,838

National Grid Rhode Island
Comparison of Resources and Requirements
Cold Snap Year
(BBtu)

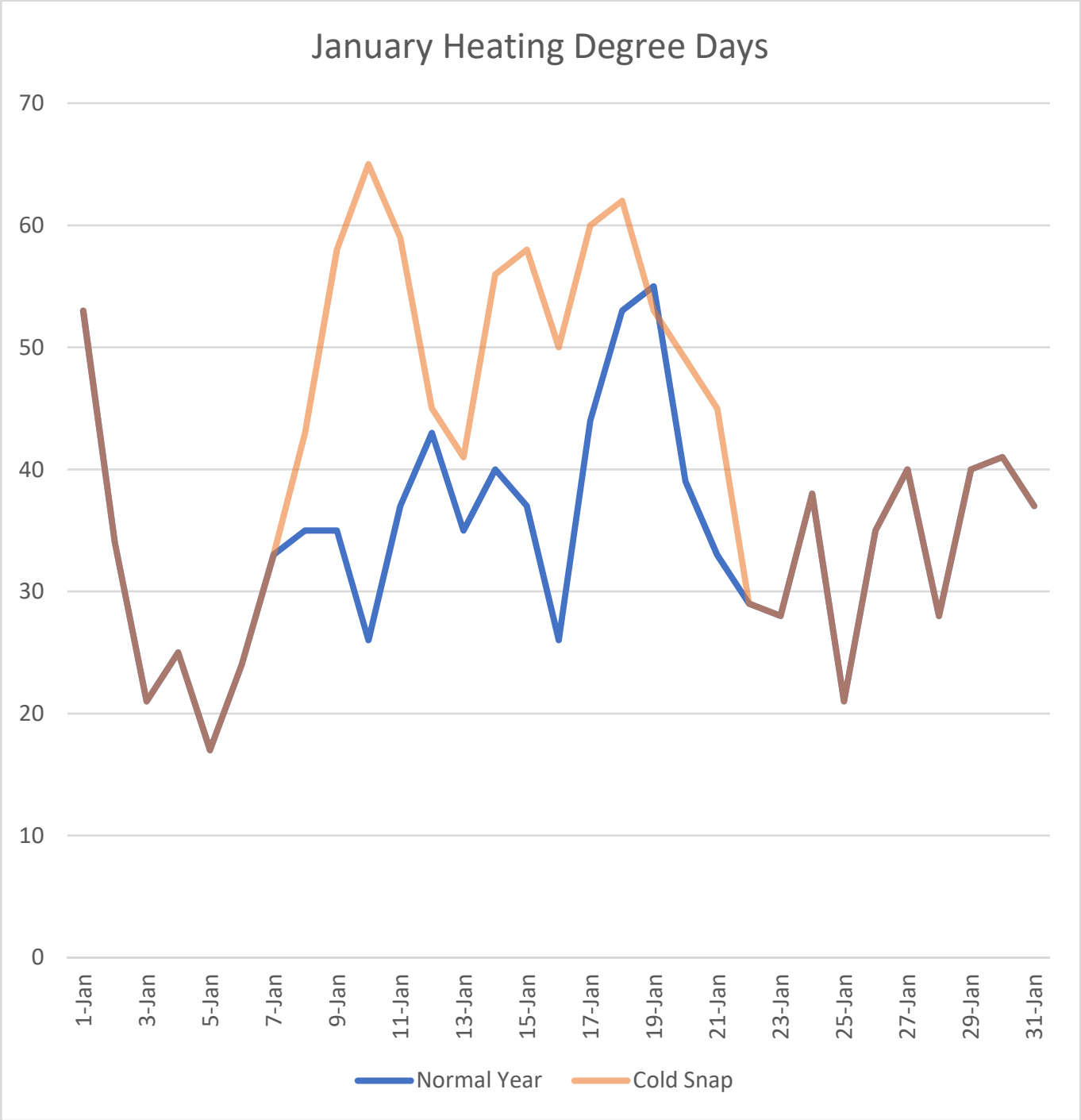
		Cold Snap Heating Season (Nov-Mar)									
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
REQUIREMENTS											
Firm Sendout	Valley	4,458	4,489	4,551	4,586	4,584	4,640	4,730	4,738	4,776	4,767
	Providence	20,748	20,988	21,351	21,511	21,506	21,762	22,183	22,216	22,391	22,354
	Warren	810	816	827	833	833	843	860	861	868	867
	Westerly	434	437	443	446	446	451	460	461	465	464
Fuel Reimbursement		561	612	636	636	635	641	647	644	636	626
Underground Storage Refill		0	0	0	0	0	0	0	0	0	0
LNG Storage Refill		119	0	0	0	0	0	0	0	0	0
TOTAL		27,130	27,341	27,808	28,012	28,005	28,337	28,880	28,920	29,136	29,078
RESOURCES											
TGP	Dawn	74	1,667	2,656	2,683	2,505	2,725	2,666	2,661	1,974	1,406
	Niagara	98	162	164	162	162	162	164	162	162	162
	Zone 4	4,708	3,468	2,937	2,962	3,131	3,008	3,214	3,228	3,859	4,402
	Dracut	1,406	309	26	0	0	0	0	0	0	0
	TGP Citygate	0	0	0	0	0	0	0	0	0	0
	TGP Everett	0	238	441	473	473	509	927	956	989	982
	Storage	1,315	1,302	1,293	1,297	1,320	1,293	1,293	1,280	1,314	1,311
TET/AGT	M2	7,158	7,133	7,128	7,088	7,142	7,139	7,194	7,150	7,153	7,152
	TCO	5,411	5,598	5,708	5,715	5,715	5,753	5,835	5,805	5,846	5,821
	Transco	249	235	210	236	252	253	255	253	254	253
	AIM (Ramapo)	1,230	351	404	367	388	388	425	429	442	444
	AIM (Millennium)	0	1,367	1,376	1,367	1,367	1,367	1,376	1,367	1,367	1,367
	M3	1,669	1,265	1,325	1,402	1,289	1,377	1,429	1,454	1,534	1,545
	AGT Citygate	150	0	0	0	0	0	0	0	0	0
	Storage	2,497	2,646	2,656	2,651	2,651	2,651	2,657	2,652	2,653	2,652
Liquid	ENGIE	119	0	0	0	0	0	0	0	0	0
	Gaz Met	0	0	0	0	0	0	0	0	0	0
LNG From Storage		683	374	753	753	753	753	753	753	753	753
Unserved	Valley	14	0	0	0	0	0	1	2	3	3
	Providence	348	1,226	731	855	855	958	691	767	833	822
	Warren	0	0	0	0	0	0	0	1	1	1
	Westerly	0	0	0	0	0	0	0	0	0	0
		362	1,226	731	855	855	958	692	769	837	825
TOTAL		27,130	27,341	27,808	28,012	28,005	28,337	28,880	28,920	29,136	29,078

National Grid Rhode Island
Comparison of Resources and Requirements
Cold Snap Year
(BBtu)

		Cold Snap Non-Heating Season (Apr-Oct)									
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
REQUIREMENTS											
Firm Sendout	Valley	1,759	1,764	1,786	1,784	1,801	1,817	1,830	1,841	1,835	1,830
	Providence	8,232	8,432	8,544	8,537	8,615	8,690	8,749	8,800	8,775	8,751
	Warren	320	321	325	324	327	330	333	335	334	333
	Westerly	171	172	174	174	175	177	178	179	179	178
Fuel Reimbursement		347	316	375	364	390	391	392	393	393	392
Underground Storage Refill		3,916	4,036	4,088	3,956	3,973	3,967	3,973	3,968	3,971	3,968
LNG Storage Refill		698	508	887	887	887	887	887	887	887	887
TOTAL		15,445	15,547	16,178	16,026	16,168	16,259	16,342	16,402	16,374	16,339
RESOURCES											
TGP	Dawn	34	124	99	294	300	290	293	283	309	308
	Niagara	230	230	230	230	230	230	230	230	230	230
	Zone 4	2,734	2,639	2,969	2,932	2,969	2,972	2,985	2,997	2,999	2,990
	Dracut	0	0	0	0	0	0	0	0	0	0
	TGP Citygate	0	0	0	0	0	0	0	0	0	0
	TGP Everett	0	0	0	0	0	0	0	0	0	0
	Storage	13	9	18	5	0	18	18	31	0	1
TET/AGT	M2	9,488	6,737	7,026	5,592	6,708	6,733	6,756	6,766	6,756	6,746
	TCO	336	413	505	688	881	893	902	908	906	904
	Transco	10	8	6	15	13	13	13	13	13	13
	AIM (Ramapo)	391	29	439	711	436	435	441	443	443	438
	AIM (Millennium)	0	1,574	1,656	1,113	1,384	1,385	1,385	1,385	1,385	1,385
	M3	1,284	3,064	2,845	4,308	3,110	3,152	3,181	3,208	3,195	3,187
	AGT Citygate	0	0	0	0	0	0	0	0	0	0
	Storage	91	79	121	3	3	4	4	4	4	4
Liquid	ENGIE	508	508	130	0	0	0	0	0	0	0
	Gaz Met	191	0	0	0	0	0	0	0	0	0
LNG From Storage		134	134	134	134	134	134	134	134	134	134
Unserved	Valley	0	0	0	0	0	0	0	0	0	0
	Providence	0	0	0	0	0	0	0	0	0	0
	Warren	0	0	0	0	0	0	0	0	0	0
	Westerly	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0
TOTAL		15,445	15,547	16,178	16,026	16,168	16,259	16,342	16,402	16,374	16,339

National Grid Rhode Island
Comparison of Resources and Requirements
Cold Snap Year
(BBtu)

		Cold Snap Annual									
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
REQUIREMENTS											
Firm Sendout	Valley	6,218	6,253	6,336	6,369	6,385	6,457	6,560	6,578	6,611	6,598
	Providence	28,980	29,419	29,895	30,048	30,121	30,452	30,932	31,016	31,167	31,104
	Warren	1,130	1,136	1,152	1,158	1,161	1,174	1,192	1,196	1,202	1,199
	Westerly	605	608	617	620	621	628	638	640	643	642
Fuel Reimbursement		908	927	1,011	1,000	1,024	1,032	1,039	1,037	1,029	1,019
Underground Storage Refill		3,916	4,036	4,088	3,956	3,973	3,967	3,973	3,968	3,971	3,968
LNG Storage Refill		817	508	887	887	887	887	887	887	887	887
TOTAL		42,575	42,888	43,986	44,039	44,173	44,596	45,222	45,323	45,510	45,418
RESOURCES											
TGP	Dawn	109	1,790	2,755	2,977	2,805	3,015	2,959	2,944	2,283	1,714
	Niagara	328	393	394	393	393	393	394	393	393	393
	Zone 4	7,442	6,107	5,905	5,894	6,099	5,980	6,199	6,225	6,858	7,392
	Dracut	1,406	309	26	0	0	0	0	0	0	0
	TGP Citygate	0	0	0	0	0	0	0	0	0	0
	TGP Everett	0	238	441	473	473	509	927	956	989	982
	Storage	1,329	1,312	1,312	1,302	1,320	1,312	1,312	1,312	1,314	1,312
TET/AGT	M2	16,646	13,870	14,155	12,681	13,850	13,871	13,950	13,916	13,909	13,898
	TCO	5,747	6,011	6,213	6,403	6,597	6,646	6,737	6,713	6,752	6,725
	Transco	260	243	216	251	265	266	268	266	267	267
	AIM (Ramapo)	1,621	379	843	1,078	825	824	866	872	885	882
	AIM (Millennium)	0	2,941	3,032	2,480	2,751	2,752	2,761	2,752	2,752	2,752
	M3	2,953	4,329	4,170	5,710	4,399	4,529	4,609	4,662	4,729	4,732
	AGT Citygate	150	0	0	0	0	0	0	0	0	0
	Storage	2,588	2,724	2,777	2,654	2,654	2,655	2,662	2,657	2,657	2,657
Liquid	ENGIE	627	508	130	0	0	0	0	0	0	0
	Gaz Met	191	0	0	0	0	0	0	0	0	0
LNG From Storage		817	508	887	887	887	887	887	887	887	887
Unserved	Valley	14	0	0	0	0	0	1	2	3	3
	Providence	348	1,226	731	855	855	958	691	767	833	822
	Warren	0	0	0	0	0	0	0	1	1	1
	Westerly	0	0	0	0	0	0	0	0	0	0
		362	1,226	731	855	855	958	692	769	837	825
TOTAL		42,575	42,888	43,986	44,039	44,173	44,596	45,222	45,323	45,510	45,418


January Heating Degree Days
70
60
50
40
30
20
10
0
1-Jan
3-Jan
5-Jan
7-Jan
9-Jan
11-Jan
13-Jan
15-Jan
17-Jan
19-Jan
21-Jan
23-Jan
25-Jan
27-Jan
29-Jan
31-Jan
Normal Year
Cold Snap

RHODE ISLAND COMPANIES - CONSOLIDATED PORTFOLIO SCHEMATIC

Peak Season Volumes

As of April 1, 2018

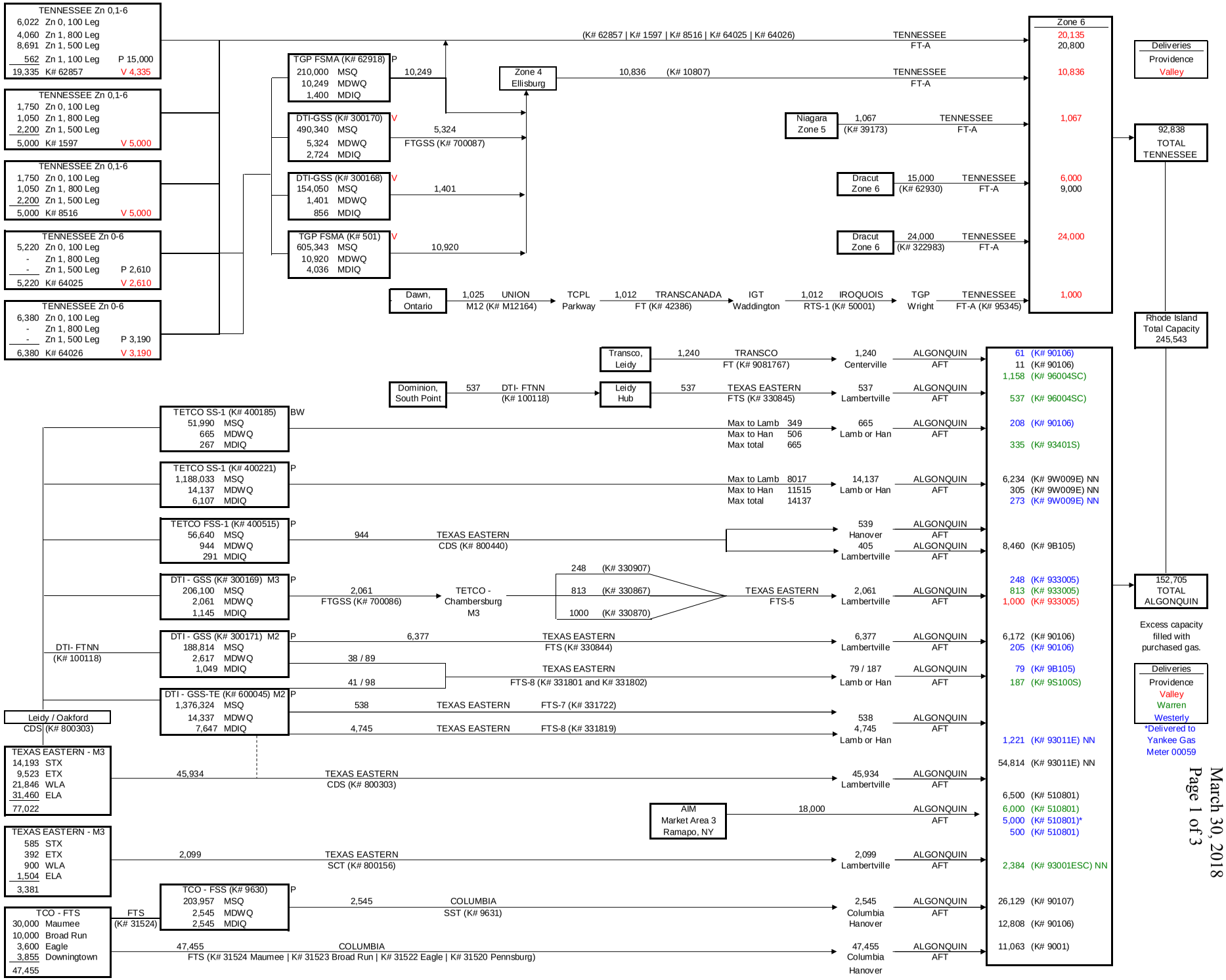


Chart IV-C-2
RIPUC Docket No. 4816
Long-Range Gas Supply Plan
March 30, 2018
Page 1 of 3

RHODE ISLAND COMPANIES - TENNESSEE GAS PIPELINE
PORTFOLIO SCHEMATIC

Peak Season Volumes

As of April 1, 2018

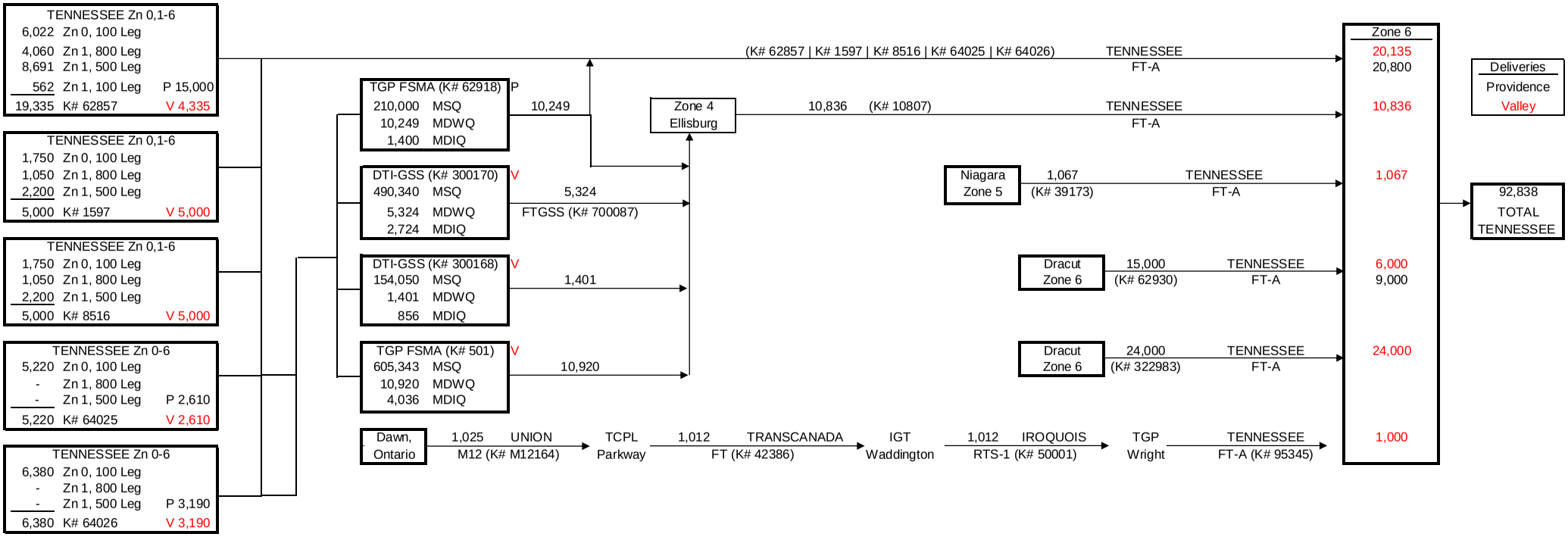


Chart IV-C-2
RIPUC Docket No. 4816
Long-Range Gas Supply Plan
March 30, 2018
Page 2 of 3

RHODE ISLAND COMPANIES - ALGONQUIN GAS TRANSMISSION PORTFOLIO SCHEMATIC

Peak Season Volumes

As of April 1, 2018

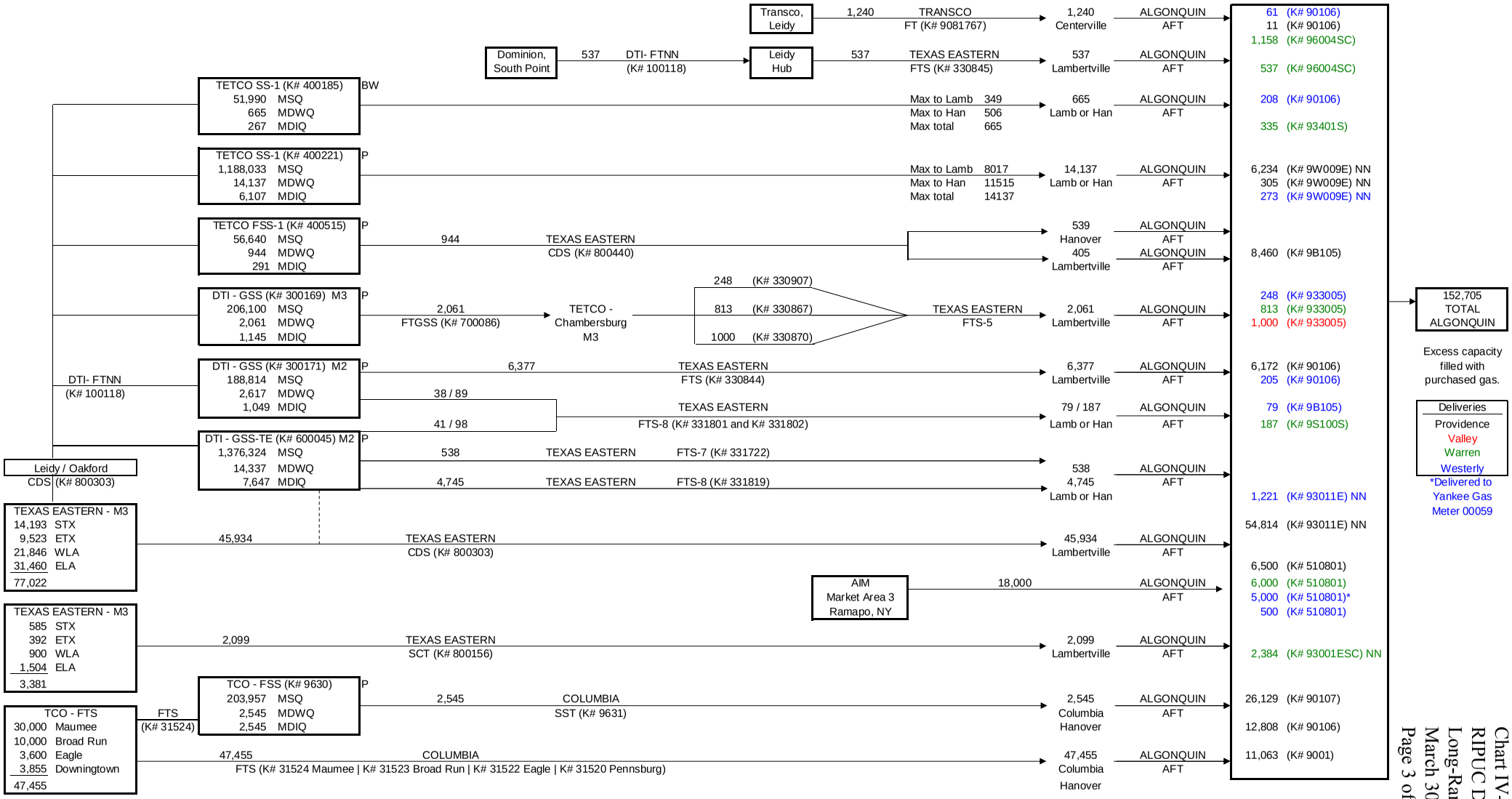


Chart IV-C-2
RIPUC Docket No. 4816
Long-Range Gas Supply Plan
March 30, 2018
Page 3 of 3

NATIONAL GRID - RHODE ISLAND ASSETS
Transportation Contracts

Legacy LDC	Shipper	Pipeline Company	Contract No.	Rate Schedule	City Gate MDQ	Annual Quantity	Expiration Date	Currently In Evergreen	Notes
PG	Narragansett Electric	Algonquin	9001	AFT1FT3	11,063	4,037,995	12/31/2021	No	Part-284 transportation service (365-day) used to transport gas from the Columbia interconnect at Hanover, NJ (11,063 MMBtu) to National Grid - Dey St (11,063 MMBtu).
PG	Narragansett Electric	Algonquin	90106	AFT-14	19,465	7,104,725	10/31/2019	Yes	Part-284 transportation service (365-day) used to transport gas from the Columbia interconnect at Hanover, NJ (12,808 MMBtu), TETCO interconnect at Lamberville (6,585 MMBtu) and Transco interconnect at Centerville (72 MMBtu) to National Grid - Dey St (9,223 MMBtu), National Grid - Tiverton (598 MMBtu), National Grid - Westerly (474 MMBtu), National Grid - E. Providence (4,092 Mmbtu), and National Grid - Portsmouth (5,078 MMBtu).
PG	Narragansett Electric	Algonquin	90107	AFT-1W	26,129	3,945,479	10/31/2019	Yes	Part-284 service with a seasonally adjusted MDQ of (26,129 MMBtu), used to transport gas from the Columbia interconnect at Hanover, NJ to National Grid - Dey St (19, 514 MMBtu) and National Grid - E. Providence (6,615 MMBtu).
VG	Narragansett Electric	Algonquin	933005	AFT-1P	2,061	752,265	3/31/2019	Yes	Part-284 transportation service (365-day) used to transport gas from the TETCO interconnect at Lamberville, NJ (2,061 MMBtu) to National Grid - Cumberland (1,000 MMBtu), Narragansett Lectric - Westerly (248 MMBtu), and National Grid - Warren (813 MMBtu).
BW	Narragansett Electric	Algonquin	93001ESC	AFT-ES1	2,384	771,904	10/31/2019	Yes	Part-284 NO NOTICE service with a seasonally adjusted MDQ of (2,384 MMBtu), used to transport gas from the TETCO interconnect at Lambertville, NJ (1,377 MMBtu) and Hanover, NJ (1,007 MMBtu) to National Grid - Warren (2,384 MMBtu).
PG	Narragansett Electric	Algonquin	93011E	AFT-E1	56,035	19,446,885	10/31/2019	Yes	Part-284 NO NOTICE service with a seasonally adjusted MDQ of (56,035 MMBtu), used to transport gas from the TETCO interconnect at Lambertville, NJ (34,668 MMBtu) and Hanover, NJ (21,367 MMBtu) to National Grid - Dey St (25,137 MMBtu), National Grid - Westerly (1,221 MMBtu), National Grid - E. Providence (48,147 MMBtu), National Grid - Warren (4,173 MMBtu), National Grid - Portsmouth (6,504 MMBtu), and National Grid - Tiverton (163 MMBtu).
BW	Narragansett Electric	Algonquin	93401S	AFT-1S4	335	122,275	10/31/2019	Yes	Part-284 transportation service (365-day) used to transport gas from the TETCO interconnect at Lambertville, NJ (335 MMBtu) to National Grid - Warren (335 MMBtu).
BW	Narragansett Electric	Algonquin	96004SC	AFT-1S3	1,695	618,675	10/31/2019	Yes	Part-284 firm transportation service (365-day) used to transport gas from the TETCO interconnect at Lambertville, NJ (537 MMBtu) and Centerville, NJ (1,158 MMBtu) to National Grid - Warren (1,695 MMBtu).
PG	Narragansett Electric	Algonquin	9B105	AFT-1B	8,539	1,813,145	10/31/2019	Yes	Part-284 service with a seasonally adjusted MDQ of (8,539 MMBtu), used to transport gas from the TETCO interconnect at Lambertville, NJ to National Grid - Dey St (4,258 MMBtu), National Grid - Portsmouth (4,202 MMBtu) and National Grid - Westerly (79 MMBtu).

Legacy LDC	Shipper	Pipeline Company	Contract No.	Rate Schedule	City Gate MDQ	Annual Quantity	Expiration Date	Currently In Evergreen	Notes
BW	Narragansett Electric	Algonquin	9S100S	AFT-1SX	187	39,737	10/31/2019	Yes	Part-284 service with a seasonally adjusted MDQ of (187 MMBtu), used to transport gas from the TETCO interconnect at Lambertville, NJ to National Grid - Warren (187 MMBtu).
PG	Narragansett Electric	Algonquin	9W009E	AFT-EW	6,812	1,446,384	10/31/2019	Yes	Part-284 NO NOTICE service with a seasonally adjusted MDQ of (6,812 MMBtu), used to transport gas from the TETCO interconnect at Hanover, NJ (4,222 MMBtu) and Lamberville, NJ (2,590 MMBtu) to National Grid - Dey St (6,234 MMBtu), National Grid - Westerly (273 MMBtu), and National Grid - Portsmouth (305 MMBtu).
NGRI	Narragansett Electric	Algonquin	510801	AFT-1	18,000	6,570,000	1/6/2032	No	Part-284 transportation service used to transport gas from Ramapo, Rockland Co., NY (Meter No. 00214) to National Grid City Gates (AIM Capacity).
NGRI	Narragansett Electric	Algonquin	510985	AFT-CL	96,000	35,040,000	7/16/2032	No	Part-284 transportation service used to transport gas from Manchester Street Lateral, Bristol Co., MA (Meter No. 80070) to Crary Street-Providence, RI (Meter No. 00842).
PG	Narragansett Electric	Columbia	31520	FTS	3,855	1,407,075	10/31/2020	No	Part-284 transportation service used to transport gas from Pennsburg-23 (3,855 MMBtu) to Columbia interconnect at Hanover, NJ (3,855 MMBtu).
PG	Narragansett Electric	Columbia	31522	FTS	3,600	1,314,000	10/31/2020	No	Part-284 transportation service used to transport gas from Eagle-25 (3,600 MMBtu) to Columbia interconnect at Hanover, NJ (3,600 MMBtu).
PG	Narragansett Electric	Columbia	31523	FTS	10,000	3,650,000	10/31/2020	No	Part-284 transportation service used to transport gas from Broad Run-19 (10,000 MMBtu) to Columbia interconnect at Hanover, NJ (10,000 MMBtu).
PG	Narragansett Electric	Columbia	31524	FTS	30,000	10,950,000	10/31/2020	No	Part-284 transportation service used to transport gas from Maumee-1 (30,000 MMBtu) to Columbia interconnect at Hanover, NJ (30,000 MMBtu).
PG	Narragansett Electric	Columbia	9631	SST	2,545	695,966	4/1/2040	No	Part-284 transportation service used to transport gas from RP Strorage Point TCO-FSS #9630 (2,545 MMBtu) to Columbia interconnect at Hanover, NJ (2,545 MMBtu). MDQ Seasonally adjusted to be 1,272 MDQ from Apr - Sep.
BW	Narragansett Electric	Dominion	100118	FTNN	537	196,005	3/31/2022	No	Part-284 transportation service used to transport gas from the TETCO interconnect at Oakford (537 MMBtu) to the Leidy Group Meter (537 MMBtu).
RI	Narragansett Electric	Dominion	700086	FTGSS	2,061	311,211	3/31/2022	No	Transportation contract used to transport gas from DTI-GSS #300169 (2,061MMBtu) to the TETCO interconnect at Chambersburg, PA (2,061 MMBtu).
VG	Narragansett Electric	Dominion	700087	FTGSS	5,324	803,924	3/31/2020	No	Transportation contract used to transport gas from DTI-GSS #300170 (5,324MMBtu) to Ellisburg, PA (5,324 MMBtu).
VG	Narragansett Electric	Iroquois	50001	RTS-1	1,012	369,380	11/1/2022	No	Transportation contract used to transport gas from Waddington (1,012 MMBtu) to the IGTS interconnect with TGP at Wright, NY.
VG	Narragansett Electric	Tennessee	1597	FT-A	5,000	1,825,000	10/31/2019	Yes	Transportation service used to transport gas from Zn1 800 Leg (1,050 MMBtu), Zn1 500 Leg (2,200 MMBtu), and Zn 0 100 Leg (1,750 MMBtu) to National Grid city gates at Pawtucket, RI (5,000 MMBtu).
VG	Narragansett Electric	Tennessee	8516	FT-A	5,000	1,825,000	10/31/2020	Yes	Transportation service used to transport gas from Zn1 800 Leg (1,050 MMBtu), Zn1 500 Leg (2,200 MMBtu), and Zn 0 100 Leg (1,750 MMBtu) to National Grid city gates at Pawtucket, RI (5,000 MMBtu).

Legacy LDC	Shipper	Pipeline Company	Contract No.	Rate Schedule	City Gate MDQ	Annual Quantity	Expiration Date	Currently In Evergreen	Notes
VG	Narragansett Electric	Tennessee	10807	FT-A	10,836	3,955,140	3/31/2022	Yes	Transportation service used to transport gas from Ellisburg (6,581 MMBtu) and Nothern Storage (4,255 MMBtu) to National Grid city gates at Pawtucket, RI (10,836 MMBtu).
VG	Narragansett Electric	Tennessee	39173	FT-A	1,067	389,455	10/31/2019	Yes	Transportation service (365-day) used to transport gas from Niagara River (1,067 MMBtu) to National Grid city gates at Pawtucket, RI (1,067 MMBtu).
PG	Narragansett Electric	Tennessee	62857	FT-A	19,335	7,057,275	4/30/2022	Yes	Transportation service used to transport gas from Zn1 800 Leg (4,060 MMBtu), Zn1 500 Leg (8,691 MMBtu), Zn0 100 Leg (6,022 MMBtu), and Zn1 100 Leg (562 MMBtu) to National Grid city gates at Pawtucket, RI (4,335 MMBtu), Cranston (10,000 MMBtu), and Smithfield (5,000 MMBtu).
PG	Narragansett Electric	Tennessee	62930	FT-A	15,000	5,475,000	8/31/2022	Yes	Transportstion service used to transport gas from the interconnect at Dracut (15,000 MMBtu) to National Grid city gate - Cranston (9,000) and National Grid city gate - Pawtucket, RI (6,000 MMBtu).
NGRI	Narragansett Electric	Tennessee	64025	FT-A	5,220	1,905,300	10/31/2027	No	TGP ConneXion - Transportation service used to transport gas from Tx Zone 0 (5,220 MMBtu) to National Grid city gates at Lincoln, RI (2,610 MMBtu) and Smithfield, RI (2,610). If volumes transported to points other than primary points as listed on the contract, maximum commodity rate per TGP's tariff apply.
NGRI	Narragansett Electric	Tennessee	64026	FT-A	6,380	2,328,700	10/31/2027	No	TGP ConneXion - Transportation service used to transport gas from Tx Zone 0 (6,380 MMBtu) to National Grid city gates at Lincoln, RI (3,190 MMBtu) and Smithfield, RI (3,190). If volumes transported to points other than primary points as listed on the contract, maximum commodity rate per TGP's tariff apply.
VG	Narragansett Electric	Tennessee	95345	FT-A	1,000	365,000	10/31/2022	Yes	Transportation service used to transport gas from interconnect at Wright, NY (1,000 MMBtu) to National Grid city gates at Lincoln (1,000 MMBtu).
NGRI	Narragansett Electric	Tennessee	322983	FT-A	24,000	8,760,000	10/31/2018	No	Part-284 transportation service, pursuant to a Pre-Arranged Letter Agreement & Open Season which awarded the capacitiy of 24,000 dth/day from Maritime/Dracut Middlesex TGP #412538 to Lincoln SMS Providence TGP #420758. *(Evergreen monthly.)*
PG	Narragansett Electric	Texas Eastern	330844	FTS	6,377	2,327,605	10/31/2019	Yes	Part-157 (7C) transportation service used to transport gas from Leidy, PA (6,377 MMBtu) to interconnect with AGT at Lambertville, NJ or Hanover, NJ (6,377 MMBtu).
BW	Narragansett Electric	Texas Eastern	330845	FTS	537	196,005	10/31/2019	Yes	Part-157 (7C) transportation service used to transport gas from Leidy, PA (537 MMBtu) to interconnect with AGT at Lambertville, NJ or Hanover, NJ (537 MMBtu).
BW	Narragansett Electric	Texas Eastern	330867	FTS-5	813	296,745	3/31/2019	Yes	Part-157 (7C) transportation service used to transport gas from Chambersburg, PA (813 MMBtu) to Lambertville, NJ (813 MMBtu).
VG	Narragansett Electric	Texas Eastern	330870	FTS-5	1,000	365,000	3/31/2019	Yes	Part-157 (7C) transportation service used to transport gas from Chambersburg, PA (1,000 MMBtu) to Lambertville, NJ (1,000 MMBtu).

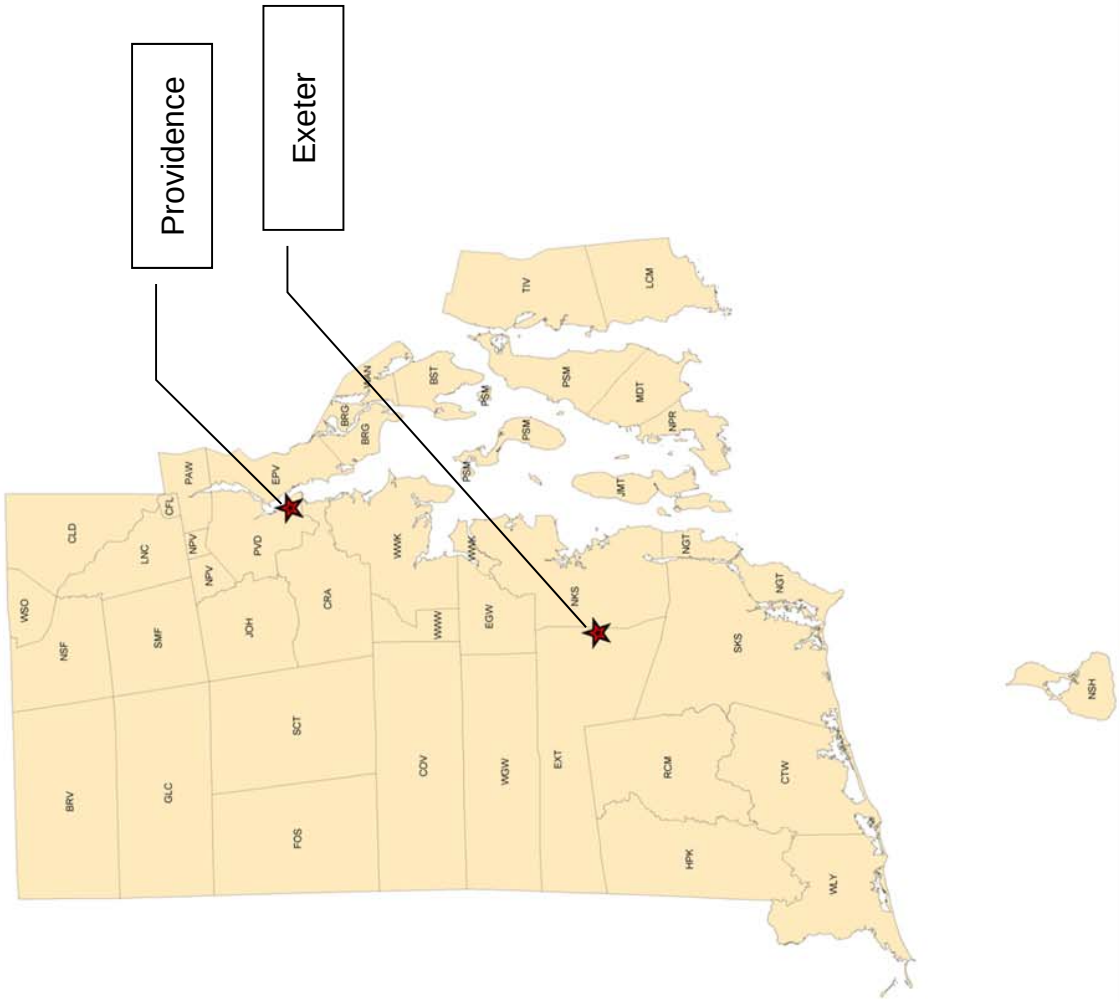
Legacy LDC	Shipper	Pipeline Company	Contract No.	Rate Schedule	City Gate MDQ	Annual Quantity	Expiration Date	Currently In Evergreen	Notes
PG	Narragansett Electric	Texas Eastern	330907	FTS-5	248	90,520	3/31/2019	Yes	Part-157 (7C) transportation service used to transport gas from Chambersburg, PA (248 MMBtu) to Lambertville, NJ (248 MMBtu).
PG	Narragansett Electric	Texas Eastern	331722	FTS-7	538	196,370	3/31/2019	Yes	Part- 157 (7C) transportation service used to transport gas from Oakford, PA (538 MMBtu) to either interconnects at Lambertville or Hanover, NJ (538 MMBtu).
PG	Narragansett Electric	Texas Eastern	331801	FTS-8	79	28,835	3/31/2019	Yes	Part-157 (7C) transportation service used to transport gas from Leidy, PA (38 MMBtu) to either interconnects at Lambertville or Hanover, NJ. In addition, Oakford, PA (41 MMBtu) to either interconnects at Lamberville or Hanover, NJ.
BW	Narragansett Electric	Texas Eastern	331802	FTS-8	187	68,255	3/31/2019	Yes	Part-157 (7C) transportation service used to transport gas from Leidy, PA (89 MMBtu) to either interconnects at Lambertville or Hanover, NJ. In addition, Oakford, PA (98 MMBtu) to either interconnects at Lamberville or Hanover, NJ.
PG	Narragansett Electric	Texas Eastern	331819	FTS-8	4,745	1,731,925	3/31/2019	Yes	Part- 157 (7C) transportation service used to transport gas from Oakford, PA (4,745 MMBtu) to either interconnects at Lambertville or Hanover, NJ (4,745 MMBtu).
BW	Narragansett Electric	Texas Eastern	800156	SCT	2,099	766,135	10/31/2019	Yes	Part-284 transportation contract used to transport gas from the access areas at STX (585 MMBtu oper. entitle.), ETX (392 MMBtu oper. entitle.), WLA (900 MMBtu oper. entitle.), and ELA (1,504 MMBtu oper. entitle.) to the TETCO interconnect with AGT at Lambertville, NJ (2,099 MMBtu).
PG	Narragansett Electric	Texas Eastern	800303	CDS	45,934	16,765,910	10/31/2019	Yes	Part-284 transportation contract used to transport gas from the access areas at STX (14,193 MMBtu oper. entitle.), ETX (9,523 MMBtu oper. entitle.), WLA (21,846 MMBtu oper. entitle.), and ELA (31,460 MMBtu oper. entitle.) to the TETCO interconnect with AGT at Lambertville, NJ (45,934 MMBtu) or Hanover, NJ (18,656 MMBtu) or Zone M3 Storage Point (6,665 MMBtu).
PG	Narragansett Electric	Texas Eastern	800440	CDS	944	344,560	10/31/2019	Yes	Part-284 transportation contract used to transport gas from TETCO FSS-1 #400515 to the TETCO interconnects at Lambertville, NJ (405 MMBtu) and Hanover, NJ (539 MMBtu).
NGRI	Narragansett Electric	TransCanada	42386	FT	1,012	369,380	10/31/2024	No	Transportation service used to transport gas from the Union Gas interconnect at Parkway to the interconnect with Iroquois Gas Transmission at Waddington, NY (1,012 MMBtu).
PG	Narragansett Electric	Transco	9081767	FT	1,240	452,600	3/31/2019	Yes	Part-284 transportation service used to transport gas from the National Fuel interconnect at Wharton (1,240 MMBtu) to the Algonquin interconnect at Centerville, NJ (1,240 MMBtu).
NGRI	Narragansett Electric	Union Gas	M12164	FT	1,025	374,125	10/31/2020	Yes	Transportation service used to transport gas from Dawn, Ontario to the interconnect with TransCanade Pipeline at Parkway (1,025 MMBtu).

NATIONAL GRID - RHODE ISLAND ASSETS
Storage Contracts

Legacy LDC	Shipper	Pipeline Company	Contract No.	Rate Schedule	MDWQ	Annual Quantity	Expiration Date	Currently In Evergreen	Notes
PG	Narragansett Electric	Columbia	9630	FSS	2,545	203,957	4/1/2040	No	Part-284 storage service that provides storage capacity with an injection rate of 2,545 MMBtu/day.
RI	Narragansett Electric	Dominion	300168	GSS	1,401	154,050	3/31/2020	No	Part-284 storage service that provides storage capacity with an injection rate of 856 MMBtu/day.
RI	Narragansett Electric	Dominion	300169	GSS	2,061	206,100	3/31/2022	Yes	Part-284 storage service that provides storage capacity with an injection rate of 1,145 MMBtu/day.
RI	Narragansett Electric	Dominion	300170	GSS	5,324	490,340	3/31/2020	No	Part-284 storage service that provides storage capacity with an injection rate of 2,724 MMBtu/day.
RI	Narragansett Electric	Dominion	300171	GSS	2,617	188,814	3/31/2022	No	Part-284 storage service that provides storage capacity with an injection rate of 1,049 MMBtu/day.
RI	Narragansett Electric	Dominion	600045	GSS-TE	14,337	1,376,324	3/31/2022	No	Part-157 (7C) storage service that provides storage capacity with an injection rate of 7,647 MMBtu/day.
RI	Narragansett Electric	Tennessee	501	FSMA	10,920	605,343	10/31/2020	Yes	Storage service that provides storage capacity at an injection rate of 4,036 MMBtu/day.
PG	Narragansett Electric	Tennessee	62918	FSMA	10,249	210,000	10/31/2020	Yes	Storage service that provides storage capacity at an injection rate of 1,400 MMBtu/day.
BW	Narragansett Electric	Texas Eastern	400185	SS-1	665	51,990	4/30/2019	Yes	Part-284 storage service that provides storage capacity with an injection rate of 267 MMBtu/day. [from Oakford and Leidy storage fields to interconnect at Lambertville, NJ (349 MMBtu) and interconnect at Hanover, NJ (506 MMBtu).]
PG	Narragansett Electric	Texas Eastern	400221	SS-1	14,137	1,188,033	4/30/2019	Yes	Part-284 storage service that provides storage capacity with an injection rate of 6,107 MMBtu/day. [from Oakford and Leidy storage fields to interconnect at Lambertville, NJ (8,017 MMBtu) and interconnect at Hanover, NJ (11,515 MMBtu).]
PG	Narragansett Electric	Texas Eastern	400515	FSS-1	944	56,640	4/30/2019	Yes	Part-284 storage service that provides storage capacity with an injection rate of 291 MMBtu/day.

nationalgrid

Rhode Island LNG Facilities



Appendix A

National Grid RI Retail Volume Forecast

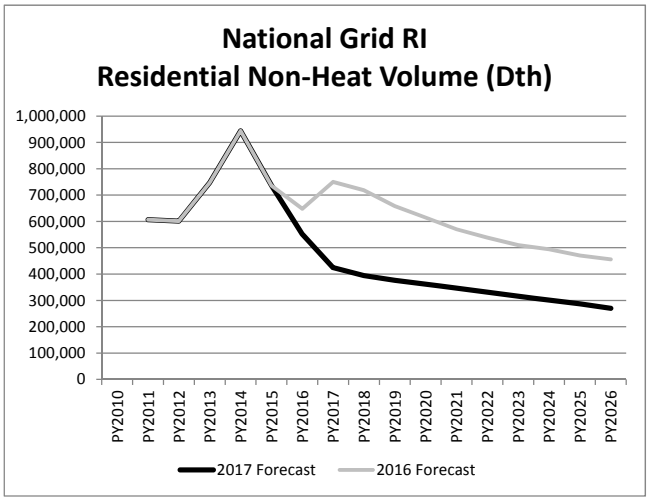
2017 vs 2016 Forecast

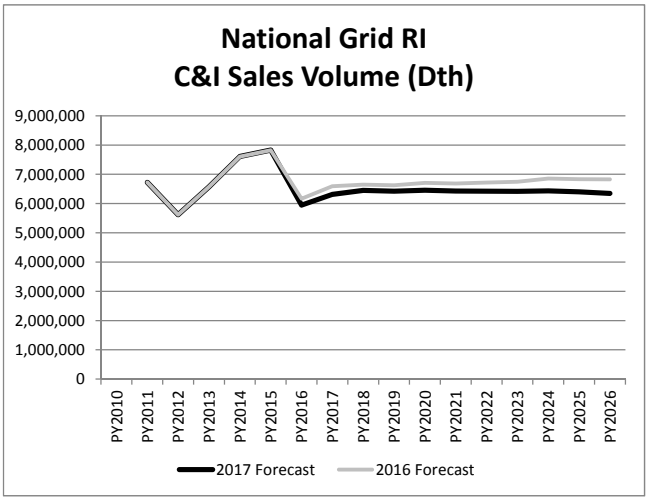
2017 National Grid RI Volume Forecast (Dth)
Planning Year (Nov-Oct)

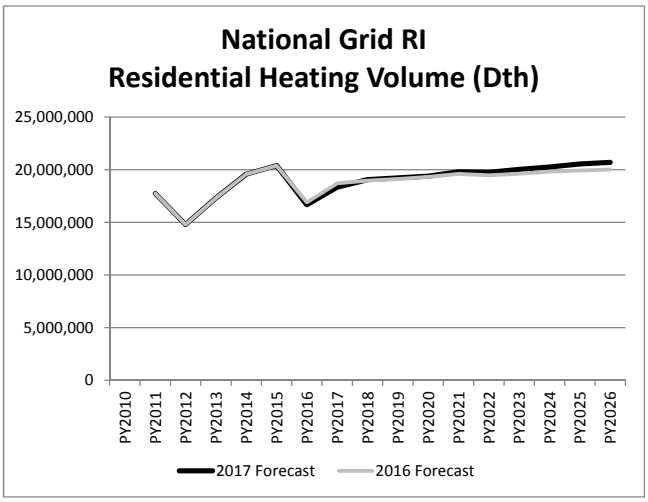
	RNH	RH	CI_Sales	FT1	FT2	Subtotal	Other	Total
PY2011	606,350	17,738,289	6,723,757	7,680,544	2,569,158	35,318,097	2,205,233	37,523,331
PY2012	601,399	14,783,757	5,620,373	7,611,679	2,334,007	30,951,215	2,169,374	33,120,589
PY2013	746,888	17,315,788	6,571,870	8,287,587	3,062,257	35,984,391	1,985,725	37,970,115
PY2014	944,136	19,573,841	7,609,514	8,576,758	3,585,382	40,289,632	1,734,538	42,024,170
PY2015	736,903	20,389,410	7,830,054	9,454,625	3,745,696	42,156,688	1,736,206	43,892,893
PY2016	551,198	16,673,399	5,945,321	8,661,948	3,641,254	35,473,120	1,769,137	37,242,257
PY2017	424,262	18,338,287	6,311,641	9,012,744	4,051,353	38,138,287	1,703,799	39,842,086
PY2018	393,708	19,049,952	6,451,808	9,285,305	4,249,127	39,429,900	1,657,412	41,087,312
PY2019	376,373	19,216,802	6,423,079	9,230,260	4,376,180	39,622,694	1,728,442	41,351,136
PY2020	362,358	19,397,078	6,454,594	9,193,871	4,538,598	39,946,500	1,731,682	41,678,182
PY2021	346,751	19,806,872	6,427,496	9,146,714	4,686,508	40,414,342	1,754,295	42,168,636
PY2022	330,866	19,761,213	6,421,496	9,131,238	4,805,112	40,449,925	1,820,125	42,270,050
PY2023	315,422	20,031,054	6,414,166	9,102,594	4,948,325	40,811,561	1,851,672	42,663,233
PY2024	301,925	20,251,130	6,432,099	9,083,744	5,096,152	41,165,049	1,892,104	43,057,153
PY2025	286,843	20,552,813	6,399,823	9,027,347	5,224,446	41,491,274	1,890,048	43,381,322
PY2026	270,217	20,692,042	6,344,184	9,003,962	5,308,820	41,619,226	1,884,413	43,503,639
PY23/PY18	-4.3%	1.0%	-0.1%	-0.4%	3.1%	0.7%	2.2%	0.8%

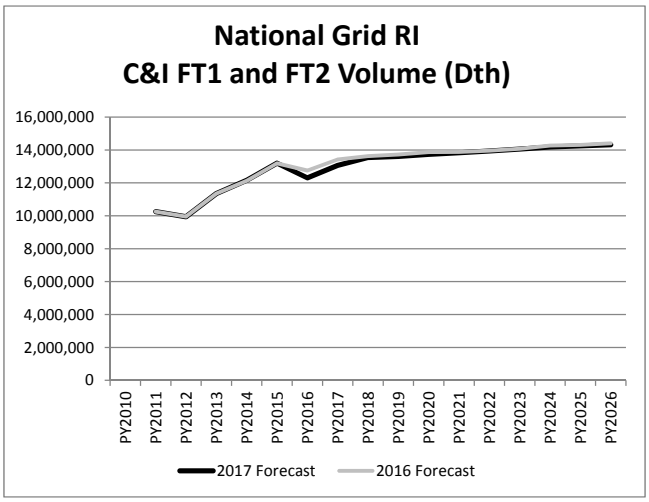
2016 National Grid RI Volume Forecast (Dth)
Planning Year (Nov-Oct)

	RNH	RH	CI_Sales	FT1	FT2	Subtotal	Other	Total
PY2011	606,350	17,738,246	6,724,603	7,682,320	2,569,158	35,320,677	2,205,233	37,525,910
PY2012	601,399	14,783,554	5,619,669	7,611,780	2,334,007	30,950,409	2,169,927	33,120,335
PY2013	746,883	17,315,410	6,571,372	8,290,212	3,062,191	35,986,068	1,985,725	37,971,793
PY2014	944,026	19,572,368	7,605,915	8,555,987	3,573,643	40,251,940	1,734,538	41,986,478
PY2015	736,095	20,380,961	7,825,043	9,454,626	3,733,973	42,130,698	1,736,206	43,866,904
PY2016	648,129	16,900,136	6,162,677	8,984,536	3,769,812	36,465,290	1,789,821	38,255,111
PY2017	749,942	18,714,342	6,592,001	9,196,810	4,220,646	39,473,742	1,781,012	41,254,754
PY2018	718,188	18,961,056	6,646,761	9,276,631	4,352,911	39,955,545	1,781,012	41,736,558
PY2019	658,501	19,111,356	6,625,814	9,295,944	4,426,722	40,118,336	1,780,216	41,898,552
PY2020	614,499	19,315,886	6,706,838	9,326,588	4,542,606	40,506,417	1,785,689	42,292,106
PY2021	570,129	19,604,633	6,687,237	9,265,138	4,614,887	40,742,024	1,781,012	42,523,036
PY2022	538,315	19,467,566	6,718,058	9,267,733	4,692,547	40,684,219	1,781,012	42,465,231
PY2023	510,264	19,622,568	6,745,028	9,278,073	4,795,866	40,951,799	1,780,216	42,732,015
PY2024	494,431	19,822,007	6,853,837	9,339,777	4,924,829	41,434,881	1,785,689	43,220,570
PY2025	470,521	19,924,270	6,832,502	9,313,161	4,992,428	41,532,882	1,781,012	43,313,894
PY2026	455,851	20,015,444	6,827,206	9,311,656	5,088,749	41,698,906	1,781,012	43,479,918
PY23/PY18	-6.6%	0.7%	0.3%	0.0%	2.0%	0.5%	0.0%	0.5%


National Grid RI
Residential Non-Heat Volume (Dth)
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
PY2010
PY2011
PY2012
PY2013
PY2014
PY2015
PY2016
PY2017
PY2018
PY2019
PY2020
PY2021
PY2022
PY2023
PY2024
PY2025
PY2026
2017 Forecast
2016 Forecast


National Grid RI
C&I Sales Volume (Dth)
9,000,000
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
PY2010
PY2011
PY2012
PY2013
PY2014
PY2015
PY2016
PY2017
PY2018
PY2019
PY2020
PY2021
PY2022
PY2023
PY2024
PY2025
PY2026
2017 Forecast
2016 Forecast


National Grid RI
Residential Heating Volume (Dth)
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
PY2010
PY2011
PY2012
PY2013
PY2014
PY2015
PY2016
PY2017
PY2018
PY2019
PY2020
PY2021
PY2022
PY2023
PY2024
PY2025
PY2026
2017 Forecast
2016 Forecast


National Grid RI
C&I FT1 and FT2 Volume (Dth)
16,000,000
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
PY2010
PY2011
PY2012
PY2013
PY2014
PY2015
PY2016
PY2017
PY2018
PY2019
PY2020
PY2021
PY2022
PY2023
PY2024
PY2025
PY2026
2017 Forecast
2016 Forecast

National Grid RI Retail Meter Count Forecast

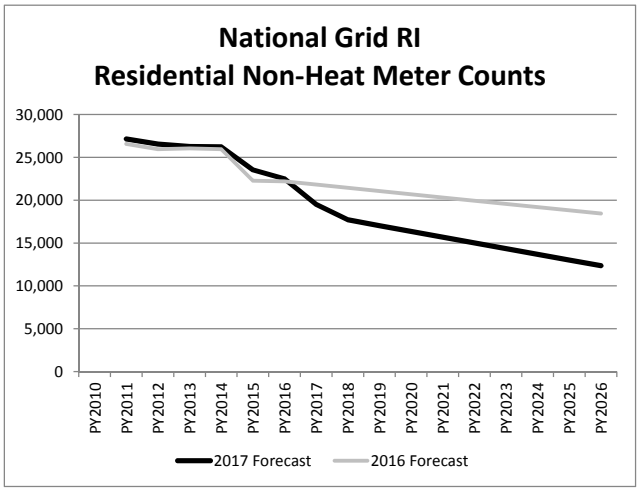
2017 vs 2016 Forecast

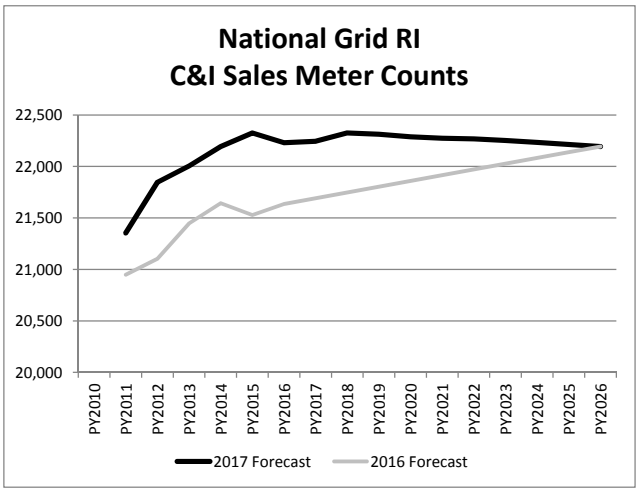
2017 National Grid RI Meter Count Forecast
End of Planning Year (Nov-Oct)

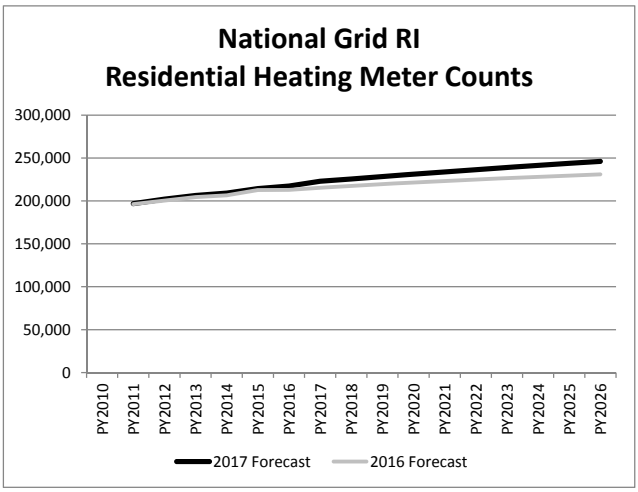
	RNH	RH	CI_Sales	FT1	FT2	Subtotal	Other	Total
PY2011	27,144	196,895	21,354	710	1,173	247,276	29	247,305
PY2012	26,543	202,168	21,847	758	1,279	252,595	29	252,624
PY2013	26,271	206,330	22,006	731	1,545	256,883	26	256,909
PY2014	26,226	209,271	22,193	713	1,710	260,113	25	260,138
PY2015	23,545	214,476	22,326	698	1,763	262,808	17	262,825
PY2016	22,488	217,434	22,231	682	2,008	264,843	16	264,859
PY2017	19,502	222,986	22,245	648	2,256	267,637	18	267,655
PY2018	17,710	225,577	22,326	627	2,376	268,616	18	268,634
PY2019	17,034	228,466	22,313	609	2,545	270,967	18	270,985
PY2020	16,351	231,248	22,288	594	2,699	273,180	18	273,198
PY2021	15,680	233,920	22,275	582	2,825	275,282	18	275,300
PY2022	15,017	236,505	22,268	571	2,947	277,308	20	277,328
PY2023	14,353	239,014	22,252	557	3,076	279,252	20	279,272
PY2024	13,688	241,457	22,234	542	3,205	281,126	20	281,146
PY2025	13,020	243,839	22,214	529	3,329	282,931	20	282,951
PY2026	12,352	246,161	22,194	516	3,452	284,675	20	284,695
PY23/PY18	-4.1%	1.2%	-0.1%	-2.3%	5.3%	0.8%	2.1%	0.8%

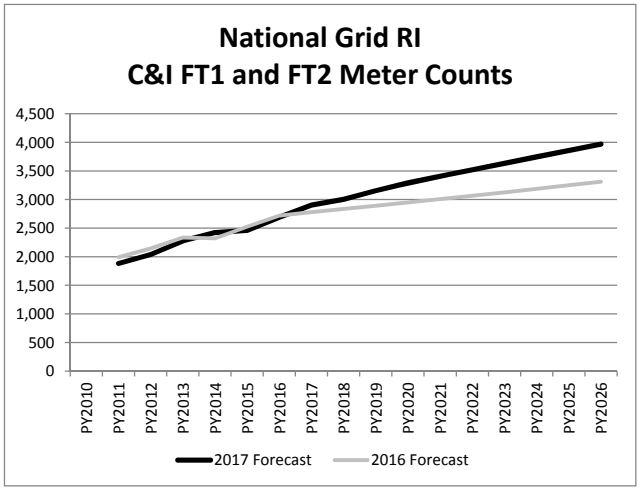
2016 National Grid RI Meter Count Forecast
End of Planning Year (Nov-Oct)

	RNH	RH	CI_Sales	FT1	FT2	Subtotal	Other	Total
PY2011	26,570	196,413	20,949	747	1,244	245,923	26	245,949
PY2012	25,955	200,461	21,104	734	1,412	249,666	25	249,691
PY2013	26,040	204,511	21,448	722	1,613	254,334	20	254,354
PY2014	25,951	206,515	21,644	700	1,621	256,431	16	256,447
PY2015	22,274	212,670	21,529	685	1,841	258,999	12	259,011
PY2016	22,188	212,848	21,636	673	2,044	259,389	12	259,401
PY2017	21,814	215,319	21,691	668	2,111	261,603	12	261,615
PY2018	21,440	217,575	21,747	661	2,178	263,601	12	263,613
PY2019	21,066	219,651	21,803	648	2,243	265,411	12	265,423
PY2020	20,692	221,574	21,859	638	2,310	267,073	12	267,085
PY2021	20,318	223,365	21,915	631	2,374	268,603	12	268,615
PY2022	19,944	225,040	21,971	626	2,439	270,020	12	270,032
PY2023	19,570	226,614	22,028	622	2,505	271,339	12	271,351
PY2024	19,196	228,099	22,083	619	2,569	272,566	12	272,578
PY2025	18,822	229,503	22,139	615	2,634	273,713	12	273,725
PY2026	18,448	231,061	22,194	612	2,699	275,014	12	275,026
PY23/PY18	-1.8%	0.8%	0.3%	-1.2%	2.8%	0.6%	0.0%	0.6%


National Grid RI
Residential Non-Heat Meter Counts
30,000
25,000
20,000
15,000
10,000
5,000
0
PY2010
PY2011
PY2012
PY2013
PY2014
PY2015
PY2016
PY2017
PY2018
PY2019
PY2020
PY2021
PY2022
PY2023
PY2024
PY2025
PY2026
2017 Forecast
2016 Forecast


National Grid RI
C&I Sales Meter Counts
22,500
22,000
21,500
21,000
20,500
20,000
PY2010
PY2011
PY2012
PY2013
PY2014
PY2015
PY2016
PY2017
PY2018
PY2019
PY2020
PY2021
PY2022
PY2023
PY2024
PY2025
PY2026
2017 Forecast
2016 Forecast


National Grid RI
Residential Heating Meter Counts
300,000
250,000
200,000
150,000
100,000
50,000
0
PY2010
PY2011
PY2012
PY2013
PY2014
PY2015
PY2016
PY2017
PY2018
PY2019
PY2020
PY2021
PY2022
PY2023
PY2024
PY2025
PY2026
2017 Forecast
2016 Forecast


National Grid RI
C&I FT1 and FT2 Meter Counts
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
PY2010
PY2011
PY2012
PY2013
PY2014
PY2015
PY2016
PY2017
PY2018
PY2019
PY2020
PY2021
PY2022
PY2023
PY2024
PY2025
PY2026
2017 Forecast
2016 Forecast

National Grid RI Economic Forecast

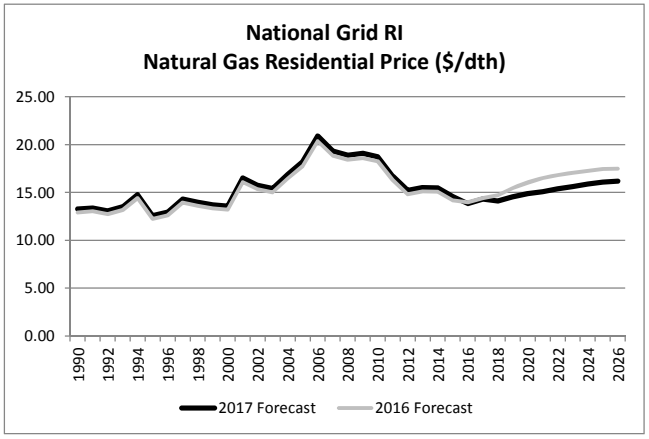
2017 vs 2016 Forecast

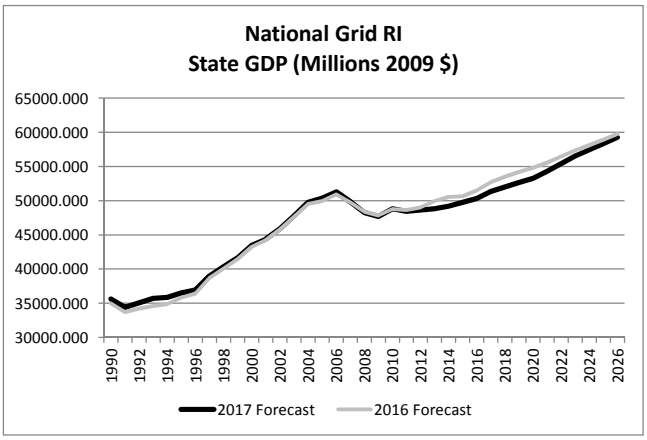
2017 National Grid RI Economic Data
(Prices in 2017 $/Dth)

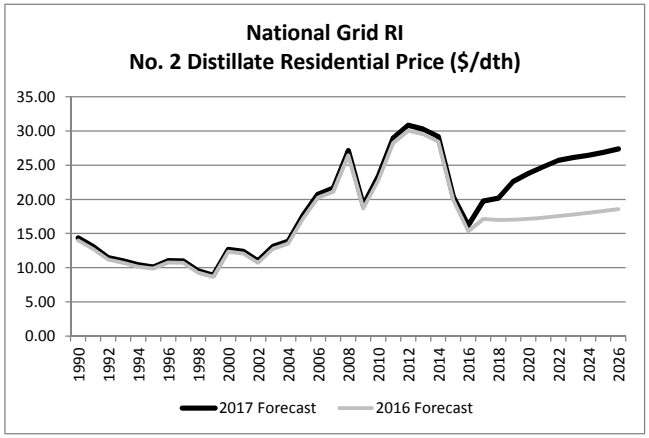
Year	NGPRCR Natural Gas Residential Price	OILPRCR No 2 Distillate Residential Price by All Sellers	*GORR* *Residential Gas-to-Oil Price Ratio*	GDP GDP (2009 Millions of $)	HH Households (thousands)	EMPL Non-Farm Employment (thousands)
1990	13.26	14.34	*0.92*	35615.771	378.930	454.225
1991	13.37	13.08	*1.02*	34371.943	381.950	424.283
1992	13.09	11.48	*1.14*	35062.800	383.960	424.050
1993	13.52	11.00	*1.23*	35716.335	386.209	429.925
1994	14.78	10.41	*1.42*	35826.380	387.830	434.208
1995	12.56	10.12	*1.24*	36504.762	389.537	439.125
1996	12.94	11.04	*1.17*	36926.368	392.354	440.767
1997	14.31	10.99	*1.30*	38989.000	395.405	450.058
1998	13.98	9.52	*1.47*	40360.000	398.997	457.950
1999	13.70	8.89	*1.54*	41651.000	403.951	465.500
2000	13.57	12.67	*1.07*	43476.000	410.045	476.908
2001	16.50	12.38	*1.33*	44388.000	407.441	478.508
2002	15.74	10.97	*1.43*	45881.000	410.048	479.433
2003	15.40	13.08	*1.18*	47809.000	410.555	484.275
2004	16.87	13.86	*1.22*	49763.000	412.028	488.483
2005	18.22	17.68	*1.03*	50380.000	411.296	491.125
2006	20.90	20.79	*1.01*	51304.000	411.219	492.983
2007	19.34	21.68	*0.89*	49838.000	411.301	492.017
2008	18.90	27.14	*0.70*	48262.000	413.966	481.058
2009	19.10	19.15	*1.00*	47709.000	413.913	459.350
2010	18.73	23.39	*0.80*	48803.000	414.285	458.000
2011	16.74	28.97	*0.58*	48424.000	417.094	460.517
2012	15.20	30.84	*0.49*	48631.000	421.216	465.433
2013	15.52	30.30	*0.51*	48815.000	425.041	471.500
2014	15.47	29.19	*0.53*	49210.000	428.212	478.592
2015	14.58	20.38	*0.72*	49738.000	429.591	485.142
2016	13.86	16.18	*0.86*	50327.000	431.837	490.183
2017	14.31	19.73	*0.73*	51329.438	433.410	496.024
2018	14.11	20.18	*0.70*	52012.470	435.339	500.497
2019	14.54	22.62	*0.64*	52665.851	437.173	504.477
2020	14.87	23.77	*0.63*	53276.505	439.296	506.575
2021	15.08	24.78	*0.61*	54294.337	441.129	507.817
2022	15.37	25.71	*0.60*	55444.328	443.097	511.697
2023	15.62	26.12	*0.60*	56551.884	445.035	516.027
2024	15.87	26.44	*0.60*	57445.270	447.102	518.347
2025	16.09	26.87	*0.60*	58337.461	449.329	520.112
2026	16.17	27.38	*0.59*	59275.819	451.528	522.040
PY23/PY18	2.0%	5.3%	-3.1%	1.7%	0.4%	0.6%

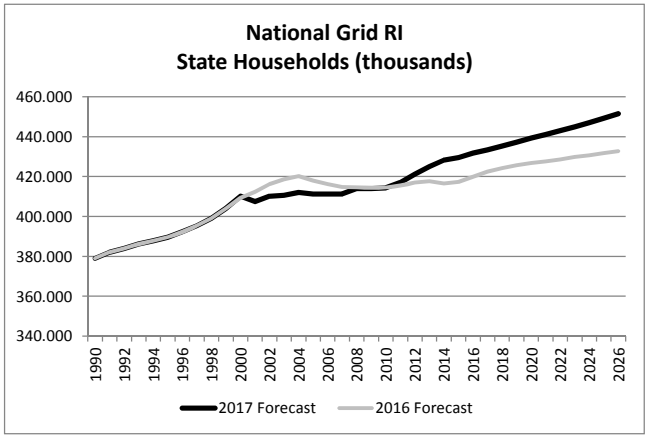
2016 National Grid RI Economic Data
(Prices in 2015 $/Dth)

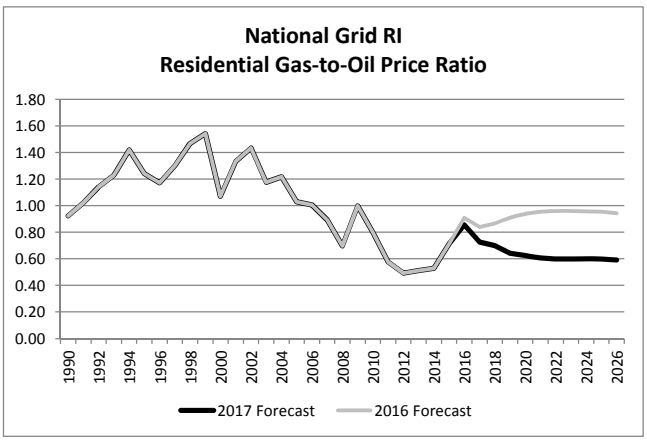
Year	NGPRCR Natural Gas Residential Price	OILPRCR No 2 Distillate Residential Price by All Sellers	*GORR*	GDP (2005 Millions of $)	Households (thousands)	Non-Farm Employment (thousands)
1990	12.92	13.97	*0.92*	34953.580	378.930	454.220
1991	13.03	12.74	*1.02*	33697.730	381.950	424.280
1992	12.75	11.18	*1.14*	34189.240	383.960	424.050
1993	13.18	10.72	*1.23*	34571.990	386.210	429.930
1994	14.40	10.15	*1.42*	34880.050	387.830	434.210
1995	12.24	9.86	*1.24*	35782.170	389.540	439.120
1996	12.61	10.76	*1.17*	36395.200	392.350	440.770
1997	13.94	10.71	*1.30*	38701.000	395.410	450.060
1998	13.62	9.28	*1.47*	40071.000	399.000	457.950
1999	13.35	8.66	*1.54*	41461.000	403.950	465.500
2000	13.22	12.35	*1.07*	43266.000	409.320	476.910
2001	16.08	12.06	*1.33*	44212.000	412.350	478.510
2002	15.33	10.69	*1.43*	45754.000	416.220	479.430
2003	15.00	12.75	*1.18*	47670.000	418.660	484.280
2004	16.44	13.51	*1.22*	49526.000	420.250	488.480
2005	17.75	17.23	*1.03*	49923.000	417.950	491.120
2006	20.36	20.25	*1.01*	50931.000	416.260	492.980
2007	18.84	21.12	*0.89*	49755.000	414.780	492.020
2008	18.41	26.44	*0.70*	48381.000	414.540	481.060
2009	18.61	18.65	*1.00*	47854.000	414.460	459.350
2010	18.25	22.78	*0.80*	48792.000	414.500	458.000
2011	16.31	28.23	*0.58*	48650.000	415.540	460.540
2012	14.82	30.06	*0.49*	49016.000	417.070	465.570
2013	15.12	29.53	*0.51*	49943.000	417.590	471.620
2014	15.08	28.46	*0.53*	50544.000	416.600	477.730
2015	14.19	19.87	*0.71*	50632.130	417.340	483.410
2016	13.97	15.35	*0.91*	51481.420	419.960	490.100
2017	14.40	17.15	*0.84*	52695.020	422.490	496.810
2018	14.70	16.97	*0.87*	53499.410	424.280	502.830
2019	15.46	17.02	*0.91*	54221.570	425.710	507.250
2020	16.03	17.10	*0.94*	54792.120	426.860	508.920
2021	16.52	17.31	*0.95*	55561.190	427.540	510.390
2022	16.82	17.53	*0.96*	56449.620	428.530	512.830
2023	17.07	17.77	*0.96*	57327.280	429.790	515.410
2024	17.24	18.01	*0.96*	58150.120	430.720	517.600
2025	17.45	18.27	*0.95*	58952.500	431.870	519.820
2026	17.50	18.57	*0.94*	59761.330	432.770	522.080
PY23/PY18	3.0%	0.9%	2.1%	1.4%	0.3%	0.5%

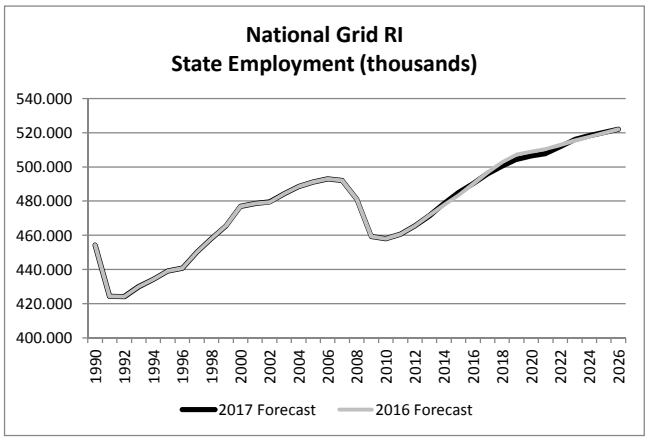

National Grid RI
Natural Gas Residential Price ($/dth)
25.00
20.00
15.00
10.00
5.00
0.00
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024 2026
2017 Forecast
2016 Forecast


National Grid RI
State GDP (Millions 2009 $)
65000.000
60000.000
55000.000
50000.000
45000.000
40000.000
35000.000
30000.000
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024 2026
2017 Forecast
2016 Forecast


National Grid RI
No. 2 Distillate Residential Price ($/dth)
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024 2026
2017 Forecast
2016 Forecast


National Grid RI
State Households (thousands)
460.000
440.000
420.000
400.000
380.000
360.000
340.000
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024 2026
2017 Forecast
2016 Forecast

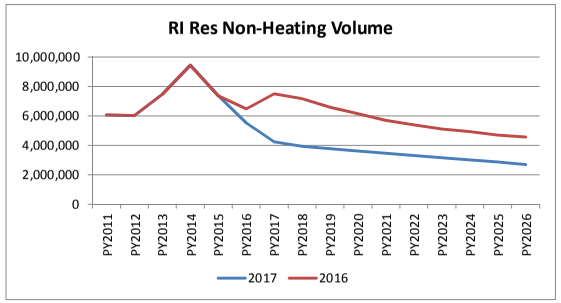

National Grid RI
Residential Gas-to-Oil Price Ratio
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024 2026
2017 Forecast
2016 Forecast

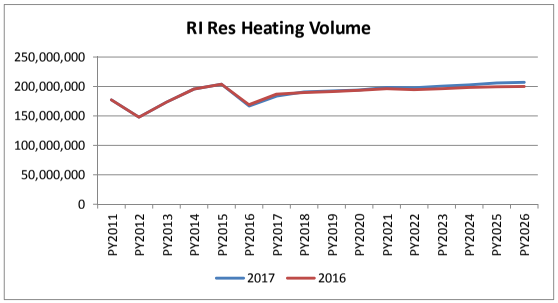

National Grid RI
State Employment (thousands)
540.000
520.000
500.000
480.000
460.000
440.000
420.000
400.000
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 2024 2026
2017 Forecast
2016 Forecast

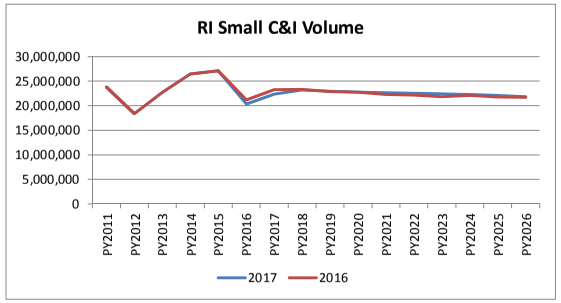
National Grid RI Retail Volume Forecast by Rate Class

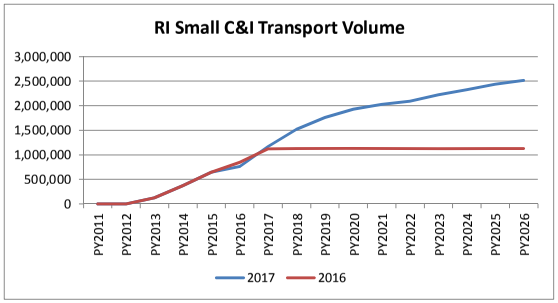
2017 vs 2016 Forecast

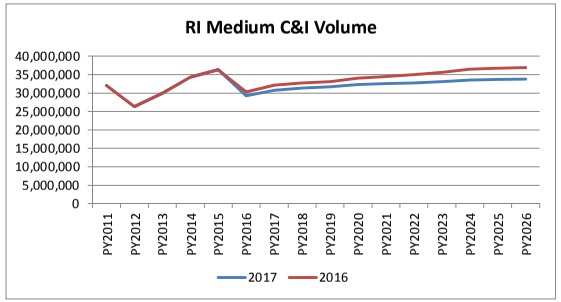
National Grid
2016 and 2017 Volume Forecasts by Rate Class
(Therms; Planning Year)

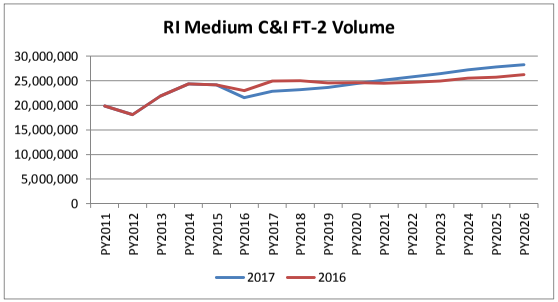


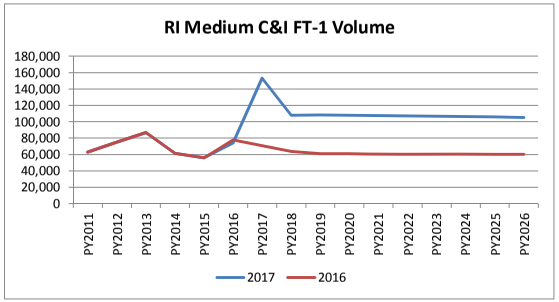




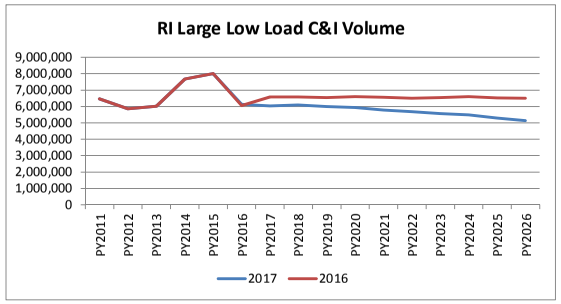


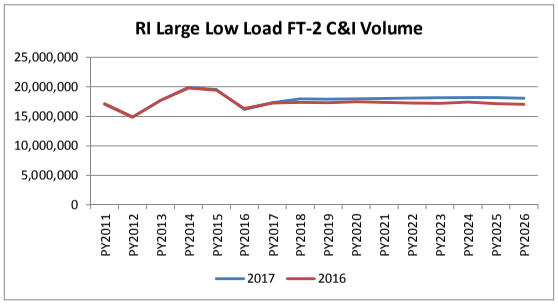


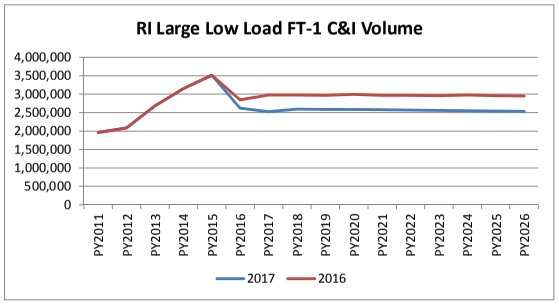


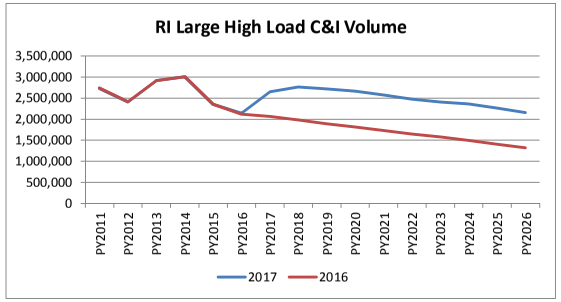


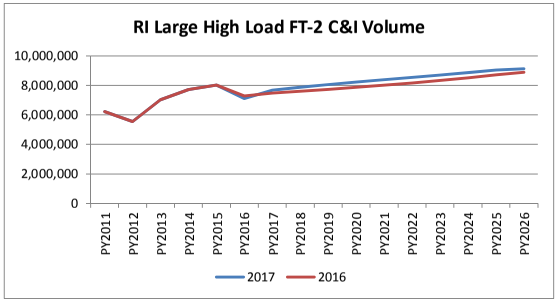
National Grid
2016 and 2017 Volume Forecasts by Rate Class
(Therms; Planning Year)

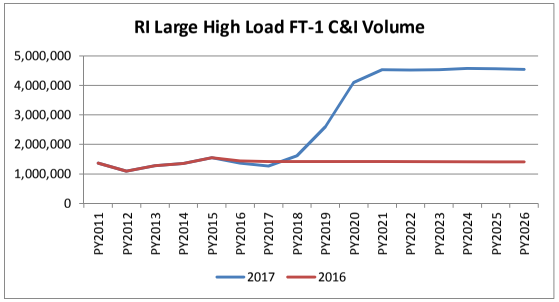


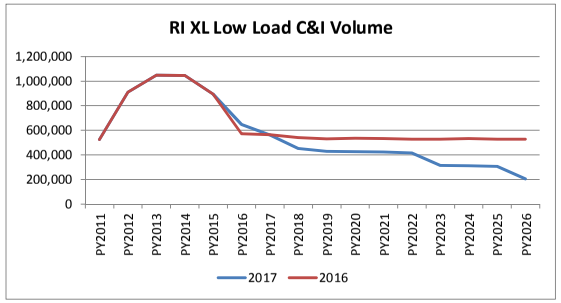


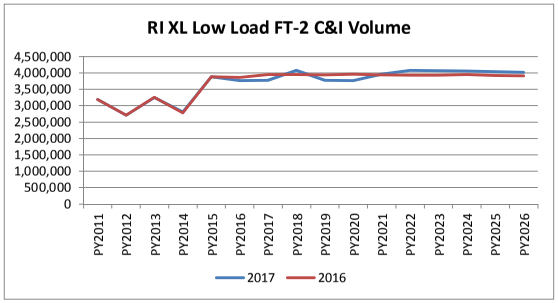


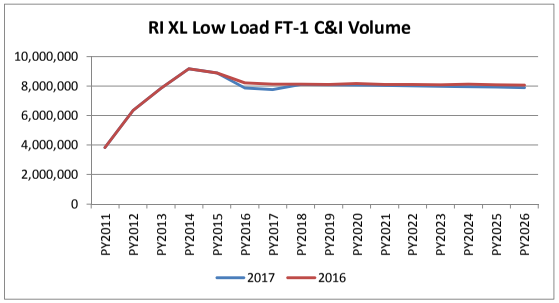




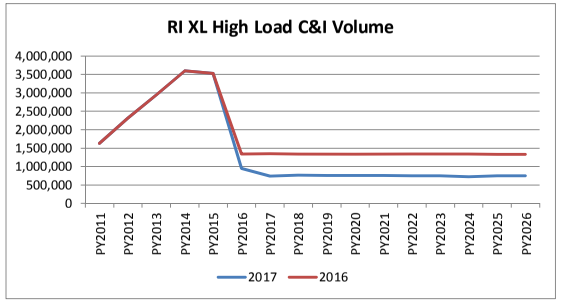


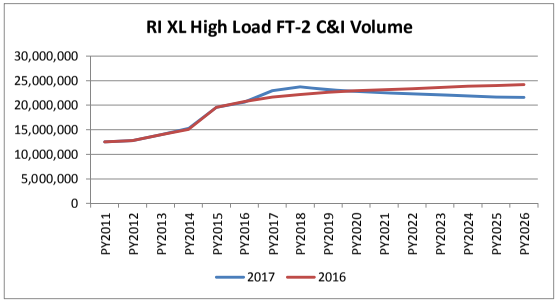


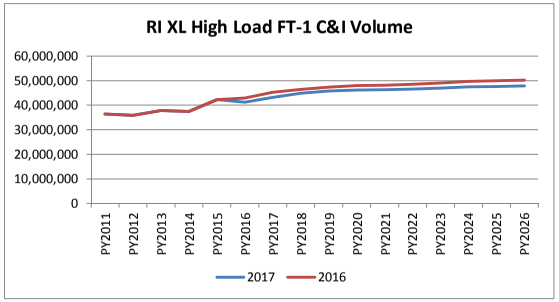


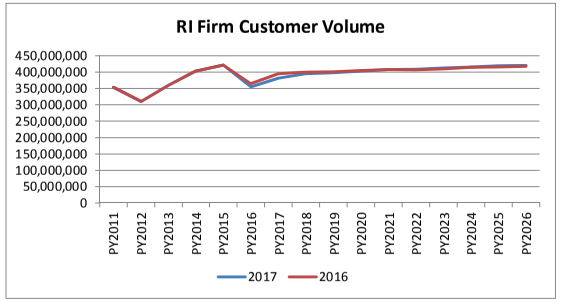


National Grid
2016 and 2017 Volume Forecasts by Rate Class
(Therms; Planning Year)





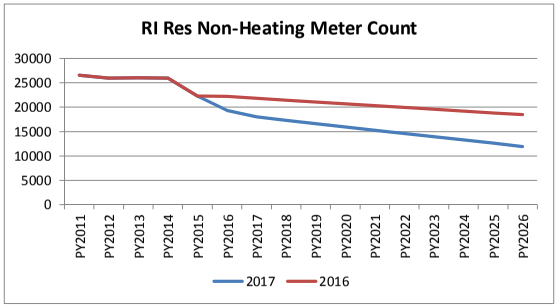


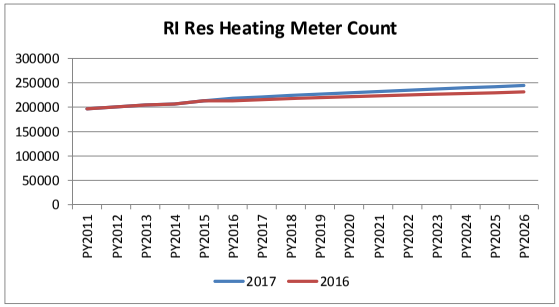


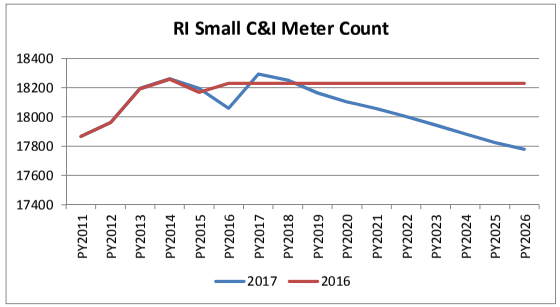
National Grid RI Retail Meter Count Forecast by Rate Class

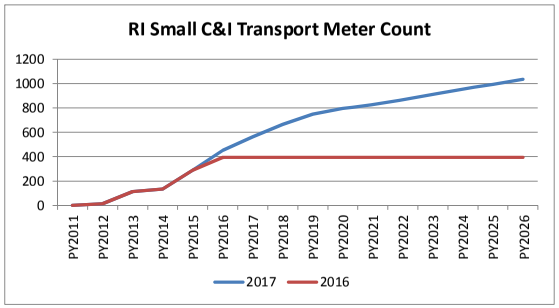
2017 vs 2016 Forecast

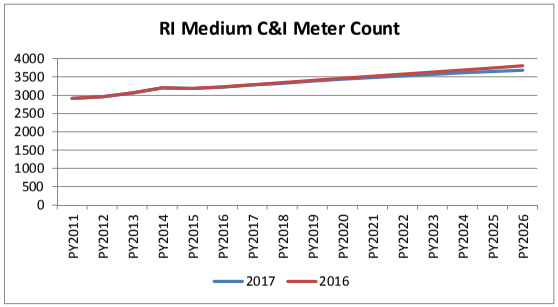
National Grid
2016 and 2017 Meter Count Forecasts by Rate Class
(end of Planning Year)

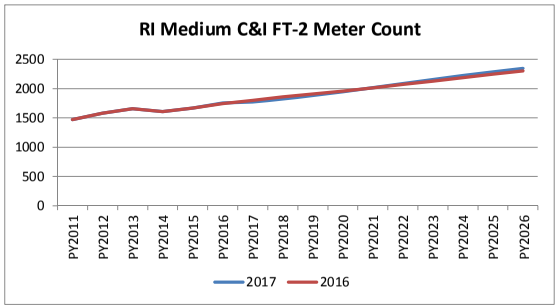


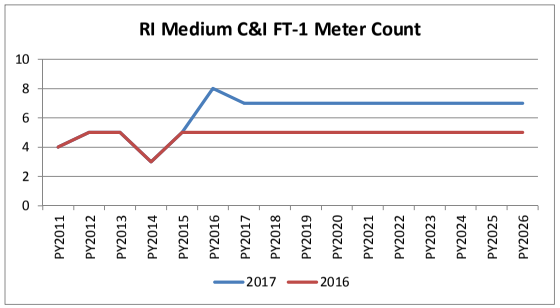




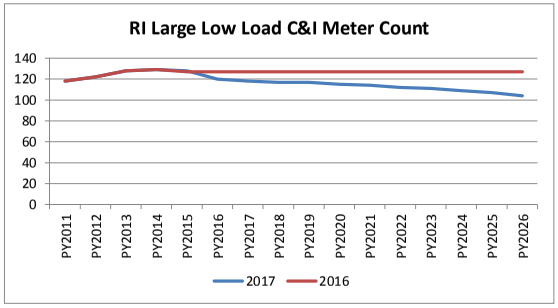


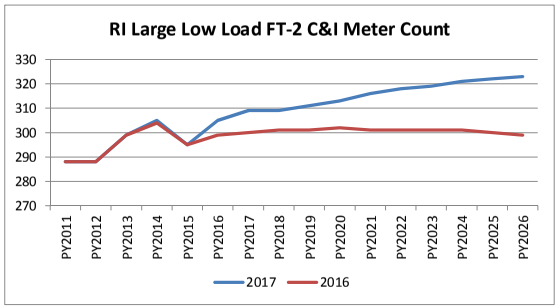


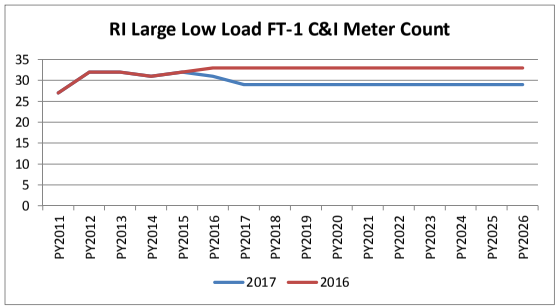


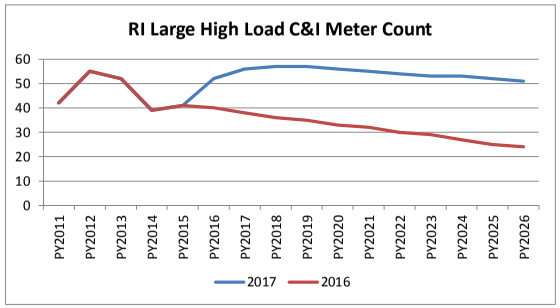


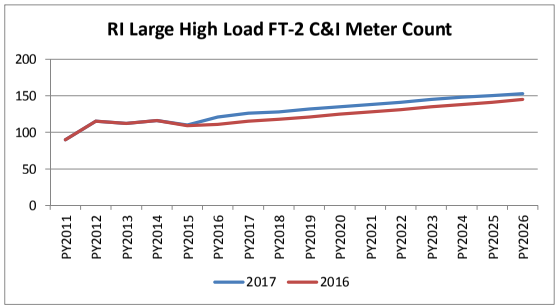
National Grid
2016 and 2017 Meter Count Forecasts by Rate Class
(end of Planning Year)

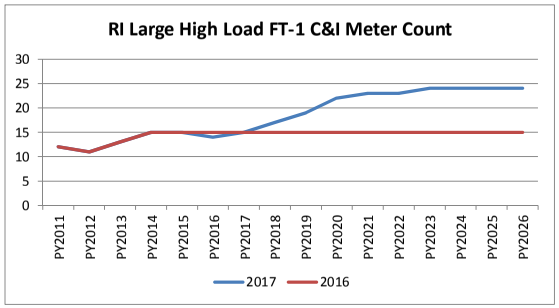


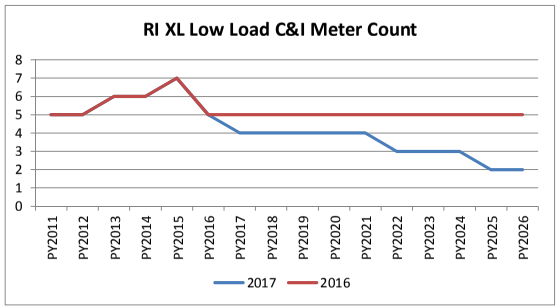


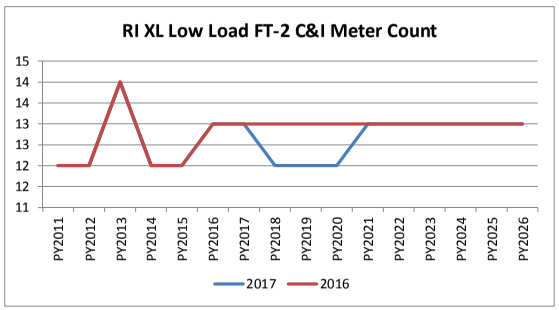


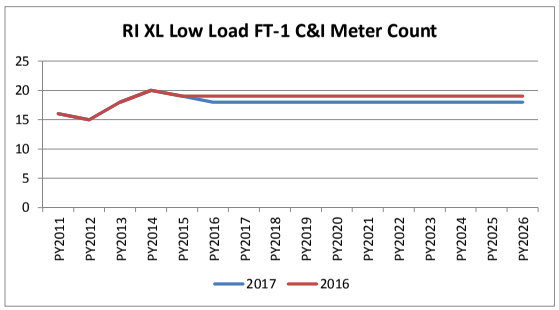




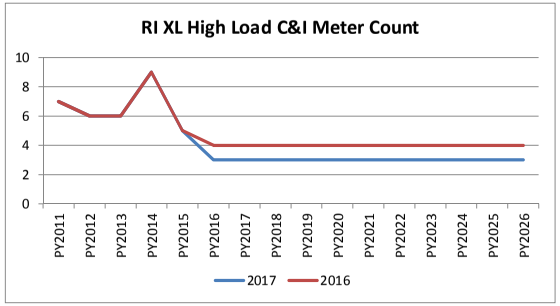


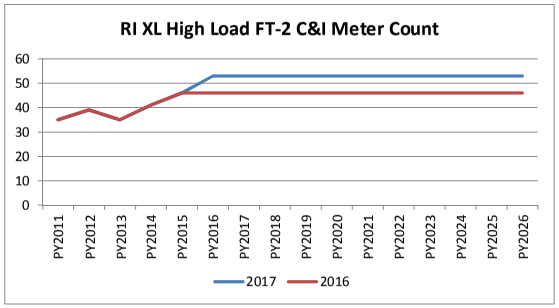


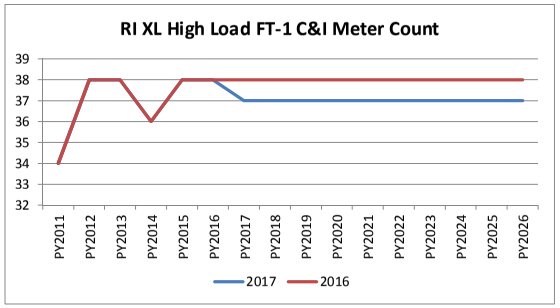


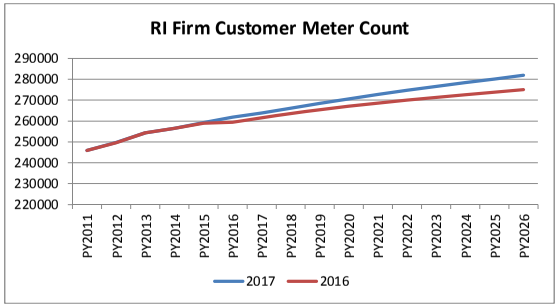


National Grid
2016 and 2017 Meter Count Forecasts by Rate Class
(end of Planning Year)









Appendix B

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 400
Residential Heating

Model Type = Meter Count
-
Model Type = logisp
Model Eqn = b1 + b2*log(x1 + b3)
Variable = time
Coeffs = {-1837967.818,300609.801,796.504}
R2 = 0.957898
RV = 5.22412e+06

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	182,373	Mar-2017	205,163	2012	186,188
Oct-2012	181,100	Apr-2017	204,681	2013	187,654
Nov-2012	183,110	May-2017	204,404	2014	193,085
Dec-2012	184,723	Jun-2017	203,856	2015	201,272
Jan-2013	186,704	Jul-2017	204,324	2016	203,690
Feb-2013	187,888	Aug-2017	203,605	2017	207,083
Mar-2013	188,597	Sep-2017	203,085	2018	210,391
Apr-2013	188,798	Oct-2017	203,155	2019	213,609
May-2013	188,294	Nov-2017	203,690	2020	216,750
Jun-2013	187,240	Dec-2017	204,817	2021	219,827
Jul-2013	185,117	Jan-2018	206,489		
Aug-2013	184,458	Feb-2018	208,020		
Sep-2013	184,257	Mar-2018	208,994		
Oct-2013	185,011	Apr-2018	209,343		
Nov-2013	186,188	May-2018	209,069		
Dec-2013	188,038	Jun-2018	208,519		
Jan-2014	189,841	Jul-2018	207,733		
Feb-2014	190,937	Aug-2018	207,009		
Mar-2014	191,226	Sep-2018	206,486		
Apr-2014	190,194	Oct-2018	206,552		
May-2014	188,270	Nov-2018	207,083		
Jun-2014	187,320	Dec-2018	208,202		
Jul-2014	185,863	Jan-2019	209,861		
Aug-2014	185,482	Feb-2019	211,383		
Sep-2014	185,743	Mar-2019	212,349		
Oct-2014	186,270	Apr-2019	212,695		
Nov-2014	187,654	May-2019	212,417		
Dec-2014	192,010	Jun-2019	211,859		
Jan-2015	194,106	Jul-2019	211,065		
Feb-2015	195,189	Aug-2019	210,331		
Mar-2015	195,750	Sep-2019	209,800		
Apr-2015	193,885	Oct-2019	209,863		
May-2015	192,624	Nov-2019	210,391		
Jun-2015	191,841	Dec-2019	211,501		
Jul-2015	191,635	Jan-2020	213,150		
Aug-2015	191,350	Feb-2020	214,661		
Sep-2015	191,643	Mar-2020	215,619		
Oct-2015	192,099	Apr-2020	215,961		
Nov-2015	193,085	May-2020	215,679		
Dec-2015	195,059	Jun-2020	215,113		
Jan-2016	196,844	Jul-2020	214,307		
Feb-2016	197,882	Aug-2020	213,565		
Mar-2016	200,147	Sep-2020	213,026		
Apr-2016	201,337	Oct-2020	213,086		
May-2016	199,818	Nov-2020	213,609		
Jun-2016	198,891	Dec-2020	214,713		
Jul-2016	199,963	Jan-2021	216,350		
Aug-2016	199,871	Feb-2021	217,853		
Sep-2016	199,934	Mar-2021	218,805		
Oct-2016	199,651	Apr-2021	219,143		
Nov-2016	201,272	May-2021	218,856		
Dec-2016	202,873	Jun-2021	218,285		
Jan-2017	204,578	Jul-2021	217,470		
Feb-2017	205,459	Aug-2021	216,720		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 401
Residential Non-Heating

Model Type = Meter Count
-
Model Type = linear
Model Eqn = 1 + x1
Variable =
Coeffs = {22775.0872,-45.1205}
R2 = 0.943776
RV = 92321.7

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	25,784	Mar-2017	19,216	2012	25,586
Oct-2012	25,563	Apr-2017	19,197	2013	25,169
Nov-2012	25,782	May-2017	19,150	2014	21,899
Dec-2012	25,840	Jun-2017	19,102	2015	19,161
Jan-2013	25,907	Jul-2017	17,817	2016	17,689
Feb-2013	25,889	Aug-2017	17,790	2017	17,042
Mar-2013	25,915	Sep-2017	17,747	2018	16,391
Apr-2013	25,925	Oct-2017	17,730	2019	15,733
May-2013	25,874	Nov-2017	17,689	2020	15,073
Jun-2013	25,806	Dec-2017	17,641	2021	14,409
Jul-2013	25,674	Jan-2018	17,569		
Aug-2013	25,562	Feb-2018	17,472		
Sep-2013	25,507	Mar-2018	17,398		
Oct-2013	25,547	Apr-2018	17,302		
Nov-2013	25,586	May-2018	17,253		
Dec-2013	25,645	Jun-2018	17,206		
Jan-2014	25,735	Jul-2018	17,170		
Feb-2014	25,765	Aug-2018	17,144		
Mar-2014	25,709	Sep-2018	17,100		
Apr-2014	25,645	Oct-2018	17,083		
May-2014	25,528	Nov-2018	17,042		
Jun-2014	25,441	Dec-2018	16,994		
Jul-2014	25,323	Jan-2019	16,921		
Aug-2014	25,289	Feb-2019	16,825		
Sep-2014	25,287	Mar-2019	16,750		
Oct-2014	25,328	Apr-2019	16,654		
Nov-2014	25,169	May-2019	16,604		
Dec-2014	23,065	Jun-2019	16,556		
Jan-2015	23,108	Jul-2019	16,519		
Feb-2015	23,136	Aug-2019	16,493		
Mar-2015	23,137	Sep-2019	16,450		
Apr-2015	22,989	Oct-2019	16,433		
May-2015	22,919	Nov-2019	16,391		
Jun-2015	22,488	Dec-2019	16,343		
Jul-2015	21,945	Jan-2020	16,268		
Aug-2015	21,886	Feb-2020	16,171		
Sep-2015	21,869	Mar-2020	16,096		
Oct-2015	21,868	Apr-2020	16,000		
Nov-2015	21,899	May-2020	15,950		
Dec-2015	21,969	Jun-2020	15,901		
Jan-2016	22,038	Jul-2020	15,864		
Feb-2016	22,078	Aug-2020	15,837		
Mar-2016	21,849	Sep-2020	15,793		
Apr-2016	21,935	Oct-2020	15,776		
May-2016	21,355	Nov-2020	15,733		
Jun-2016	21,301	Dec-2020	15,685		
Jul-2016	19,239	Jan-2021	15,610		
Aug-2016	19,101	Feb-2021	15,513		
Sep-2016	19,087	Mar-2021	15,437		
Oct-2016	19,087	Apr-2021	15,341		
Nov-2016	19,161	May-2021	15,291		
Dec-2016	19,231	Jun-2021	15,241		
Jan-2017	19,269	Jul-2021	15,203		
Feb-2017	19,266	Aug-2021	15,176		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 402
Residential Low Income Heating

Model Type = Meter Count
-
Model Type = logi
Model Eqn = 19693-2166/(1+exp(-1.26993*(t-3.06932))
Variable =
Coeffs =
R2 = 0.0100206
RV = 6.20293e+06

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	20,244	Mar-2017	17,551	2012	19,078
Oct-2012	19,363	Apr-2017	17,677	2013	19,831
Nov-2012	19,147	May-2017	17,663	2014	20,399
Dec-2012	18,853	Jun-2017	17,661	2015	18,313
Jan-2013	18,639	Jul-2017	17,711	2016	17,951
Feb-2013	18,442	Aug-2017	17,803	2017	17,484
Mar-2013	18,240	Sep-2017	17,821	2018	16,996
Apr-2013	18,172	Oct-2017	17,943	2019	16,483
May-2013	18,567	Nov-2017	17,951	2020	15,952
Jun-2013	18,926	Dec-2017	17,929	2021	15,411
Jul-2013	20,010	Jan-2018	17,793		
Aug-2013	20,260	Feb-2018	17,560		
Sep-2013	20,097	Mar-2018	17,431		
Oct-2013	19,509	Apr-2018	17,204		
Nov-2013	19,078	May-2018	17,193		
Dec-2013	18,801	Jun-2018	17,191		
Jan-2014	18,535	Jul-2018	17,243		
Feb-2014	18,334	Aug-2018	17,336		
Mar-2014	18,539	Sep-2018	17,355		
Apr-2014	19,817	Oct-2018	17,477		
May-2014	21,449	Nov-2018	17,484		
Jun-2014	21,497	Dec-2018	17,458		
Jul-2014	21,601	Jan-2019	17,320		
Aug-2014	21,277	Feb-2019	17,086		
Sep-2014	20,783	Mar-2019	16,954		
Oct-2014	20,296	Apr-2019	16,728		
Nov-2014	19,831	May-2019	16,715		
Dec-2014	19,721	Jun-2019	16,712		
Jan-2015	19,484	Jul-2019	16,760		
Feb-2015	19,287	Aug-2019	16,852		
Mar-2015	19,278	Sep-2019	16,867		
Apr-2015	21,378	Oct-2019	16,991		
May-2015	22,365	Nov-2019	16,996		
Jun-2015	22,770	Dec-2019	16,968		
Jul-2015	22,260	Jan-2020	16,827		
Aug-2015	21,754	Feb-2020	16,590		
Sep-2015	21,262	Mar-2020	16,455		
Oct-2015	20,787	Apr-2020	16,229		
Nov-2015	20,399	May-2020	16,214		
Dec-2015	20,070	Jun-2020	16,208		
Jan-2016	19,797	Jul-2020	16,253		
Feb-2016	19,552	Aug-2020	16,344		
Mar-2016	14,345	Sep-2020	16,355		
Apr-2016	16,881	Oct-2020	16,480		
May-2016	18,902	Nov-2020	16,483		
Jun-2016	19,390	Dec-2020	16,453		
Jul-2016	19,407	Jan-2021	16,308		
Aug-2016	19,140	Feb-2021	16,070		
Sep-2016	18,870	Mar-2021	15,933		
Oct-2016	18,545	Apr-2021	15,707		
Nov-2016	18,313	May-2021	15,691		
Dec-2016	18,017	Jun-2021	15,683		
Jan-2017	17,741	Jul-2021	15,727		
Feb-2017	17,527	Aug-2021	15,815		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 403
Residential Low Income Non-Heating

Model Type = Meter Count
-
Model Type = constant
Model Eqn = 0*x+236
Variable =
Coeffs =
R2 = 0
RV = 6567.4

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	415	Mar-2017	237	2012	481
Oct-2012	392	Apr-2017	245	2013	588
Nov-2012	392	May-2017	244	2014	425
Dec-2012	391	Jun-2017	243	2015	243
Jan-2013	385	Jul-2017	246	2016	259
Feb-2013	382	Aug-2017	250	2017	231
Mar-2013	379	Sep-2017	251	2018	202
Apr-2013	373	Oct-2017	259	2019	171
May-2013	384	Nov-2017	259	2020	169
Jun-2013	424	Dec-2017	259	2021	169
Jul-2013	484	Jan-2018	252		
Aug-2013	504	Feb-2018	238		
Sep-2013	515	Mar-2018	230		
Oct-2013	495	Apr-2018	217		
Nov-2013	481	May-2018	215		
Dec-2013	474	Jun-2018	215		
Jan-2014	469	Jul-2018	217		
Feb-2014	461	Aug-2018	222		
Mar-2014	466	Sep-2018	223		
Apr-2014	532	Oct-2018	231		
May-2014	633	Nov-2018	231		
Jun-2014	652	Dec-2018	231		
Jul-2014	674	Jan-2019	223		
Aug-2014	665	Feb-2019	209		
Sep-2014	653	Mar-2019	202		
Oct-2014	630	Apr-2019	188		
Nov-2014	588	May-2019	187		
Dec-2014	404	Jun-2019	186		
Jan-2015	404	Jul-2019	188		
Feb-2015	409	Aug-2019	193		
Mar-2015	408	Sep-2019	194		
Apr-2015	510	Oct-2019	201		
May-2015	560	Nov-2019	202		
Jun-2015	519	Dec-2019	201		
Jul-2015	462	Jan-2020	194		
Aug-2015	459	Feb-2020	180		
Sep-2015	450	Mar-2020	172		
Oct-2015	444	Apr-2020	158		
Nov-2015	425	May-2020	157		
Dec-2015	418	Jun-2020	156		
Jan-2016	409	Jul-2020	158		
Feb-2016	410	Aug-2020	163		
Mar-2016	316	Sep-2020	163		
Apr-2016	398	Oct-2020	171		
May-2016	472	Nov-2020	171		
Jun-2016	486	Dec-2020	170		
Jul-2016	269	Jan-2021	169		
Aug-2016	256	Feb-2021	167		
Sep-2016	251	Mar-2021	165		
Oct-2016	246	Apr-2021	163		
Nov-2016	243	May-2021	161		
Dec-2016	238	Jun-2021	159		
Jan-2017	233	Jul-2021	161		
Feb-2017	236	Aug-2021	163		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 404
C&I Small

Model Type = Meter Count
-
Model Type = logisp
Model Eqn = 1 + x1
Variable = NGPRCCI
Coeffs = {19497.5723,-128.3496}
R2 = na
RV = 32613

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	18,292	Mar-2017	18,880	2012	18,269
Oct-2012	17,961	Apr-2017	18,954	2013	18,242
Nov-2012	18,097	May-2017	18,887	2014	18,242
Dec-2012	18,360	Jun-2017	18,772	2015	18,283
Jan-2013	18,613	Jul-2017	18,616	2016	18,298
Feb-2013	18,730	Aug-2017	18,462	2017	18,260
Mar-2013	18,811	Sep-2017	18,347	2018	18,174
Apr-2013	18,797	Oct-2017	18,254	2019	18,117
May-2013	18,705	Nov-2017	18,298	2020	18,072
Jun-2013	18,543	Dec-2017	18,413	2021	18,021
Jul-2013	18,411	Jan-2018	18,612		
Aug-2013	18,289	Feb-2018	18,808		
Sep-2013	18,229	Mar-2018	18,918		
Oct-2013	18,192	Apr-2018	18,923		
Nov-2013	18,269	May-2018	18,856		
Dec-2013	18,525	Jun-2018	18,740		
Jan-2014	18,741	Jul-2018	18,583		
Feb-2014	18,876	Aug-2018	18,428		
Mar-2014	18,930	Sep-2018	18,313		
Apr-2014	18,900	Oct-2018	18,217		
May-2014	18,822	Nov-2018	18,260		
Jun-2014	18,629	Dec-2018	18,371		
Jul-2014	18,432	Jan-2019	18,563		
Aug-2014	18,316	Feb-2019	18,751		
Sep-2014	18,234	Mar-2019	18,858		
Oct-2014	18,220	Apr-2019	18,859		
Nov-2014	18,242	May-2019	18,789		
Dec-2014	18,445	Jun-2019	18,670		
Jan-2015	18,693	Jul-2019	18,508		
Feb-2015	18,797	Aug-2019	18,347		
Mar-2015	18,856	Sep-2019	18,229		
Apr-2015	18,831	Oct-2019	18,130		
May-2015	18,736	Nov-2019	18,174		
Jun-2015	18,547	Dec-2019	18,287		
Jul-2015	18,353	Jan-2020	18,482		
Aug-2015	18,198	Feb-2020	18,674		
Sep-2015	18,224	Mar-2020	18,783		
Oct-2015	18,192	Apr-2020	18,787		
Nov-2015	18,242	May-2020	18,718		
Dec-2015	18,492	Jun-2020	18,601		
Jan-2016	18,688	Jul-2020	18,442		
Feb-2016	18,820	Aug-2020	18,285		
Mar-2016	18,495	Sep-2020	18,168		
Apr-2016	18,884	Oct-2020	18,071		
May-2016	18,815	Nov-2020	18,117		
Jun-2016	18,697	Dec-2020	18,231		
Jul-2016	18,532	Jan-2021	18,428		
Aug-2016	18,379	Feb-2021	18,622		
Sep-2016	18,201	Mar-2021	18,732		
Oct-2016	18,057	Apr-2021	18,737		
Nov-2016	18,283	May-2021	18,669		
Dec-2016	18,398	Jun-2021	18,553		
Jan-2017	18,638	Jul-2021	18,395		
Feb-2017	18,740	Aug-2021	18,239		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 405
C&I Medium

Model Type = Meter Count
-
Model Type = linear
Model Eqn = 1 + x1
Variable =
Coeffs = {2871.6299,4.5292}
R2 = 0.870592
RV = 2978.64

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	2,971	Mar-2017	3,227	2012	3,016
Oct-2012	2,925	Apr-2017	3,220	2013	3,076
Nov-2012	2,977	May-2017	3,222	2014	3,042
Dec-2012	2,991	Jun-2017	3,226	2015	3,250
Jan-2013	3,029	Jul-2017	3,230	2016	3,246
Feb-2013	3,035	Aug-2017	3,233	2017	3,291
Mar-2013	3,044	Sep-2017	3,237	2018	3,349
Apr-2013	3,043	Oct-2017	3,242	2019	3,401
May-2013	3,048	Nov-2017	3,246	2020	3,445
Jun-2013	3,076	Dec-2017	3,251	2021	3,489
Jul-2013	3,058	Jan-2018	3,257		
Aug-2013	3,041	Feb-2018	3,261		
Sep-2013	3,024	Mar-2018	3,265		
Oct-2013	3,025	Apr-2018	3,266		
Nov-2013	3,016	May-2018	3,269		
Dec-2013	3,041	Jun-2018	3,271		
Jan-2014	3,029	Jul-2018	3,274		
Feb-2014	3,043	Aug-2018	3,278		
Mar-2014	3,055	Sep-2018	3,281		
Apr-2014	3,036	Oct-2018	3,286		
May-2014	3,058	Nov-2018	3,291		
Jun-2014	3,075	Dec-2018	3,297		
Jul-2014	3,067	Jan-2019	3,305		
Aug-2014	3,052	Feb-2019	3,311		
Sep-2014	3,064	Mar-2019	3,315		
Oct-2014	3,081	Apr-2019	3,317		
Nov-2014	3,076	May-2019	3,320		
Dec-2014	3,100	Jun-2019	3,325		
Jan-2015	3,122	Jul-2019	3,329		
Feb-2015	3,125	Aug-2019	3,336		
Mar-2015	3,124	Sep-2019	3,339		
Apr-2015	3,120	Oct-2019	3,345		
May-2015	3,107	Nov-2019	3,349		
Jun-2015	3,089	Dec-2019	3,355		
Jul-2015	3,070	Jan-2020	3,361		
Aug-2015	3,057	Feb-2020	3,366		
Sep-2015	3,033	Mar-2020	3,369		
Oct-2015	3,037	Apr-2020	3,371		
Nov-2015	3,042	May-2020	3,374		
Dec-2015	3,063	Jun-2020	3,377		
Jan-2016	3,065	Jul-2020	3,381		
Feb-2016	3,079	Aug-2020	3,388		
Mar-2016	3,014	Sep-2020	3,391		
Apr-2016	3,069	Oct-2020	3,396		
May-2016	3,041	Nov-2020	3,401		
Jun-2016	3,179	Dec-2020	3,406		
Jul-2016	3,157	Jan-2021	3,412		
Aug-2016	3,147	Feb-2021	3,415		
Sep-2016	3,244	Mar-2021	3,419		
Oct-2016	3,205	Apr-2021	3,420		
Nov-2016	3,250	May-2021	3,423		
Dec-2016	3,219	Jun-2021	3,425		
Jan-2017	3,221	Jul-2021	3,429		
Feb-2017	3,232	Aug-2021	3,433		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 406
FT2 Medium

Model Type = Meter Count
-
Model Type = linear
Model Eqn = 1 + x1
Variable =
Coeffs = {964.7144,6.0494}
R2 = 0.914439
RV = 2589.95

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	1,170	Mar-2017	1,416	2012	1,271
Oct-2012	1,162	Apr-2017	1,414	2013	1,229
Nov-2012	1,184	May-2017	1,418	2014	1,290
Dec-2012	1,201	Jun-2017	1,422	2015	1,379
Jan-2013	1,214	Jul-2017	1,425	2016	1,440
Feb-2013	1,228	Aug-2017	1,428	2017	1,502
Mar-2013	1,233	Sep-2017	1,432	2018	1,571
Apr-2013	1,233	Oct-2017	1,436	2019	1,650
May-2013	1,234	Nov-2017	1,440	2020	1,732
Jun-2013	1,246	Dec-2017	1,446	2021	1,810
Jul-2013	1,247	Jan-2018	1,453		
Aug-2013	1,248	Feb-2018	1,460		
Sep-2013	1,251	Mar-2018	1,467		
Oct-2013	1,249	Apr-2018	1,473		
Nov-2013	1,271	May-2018	1,477		
Dec-2013	1,280	Jun-2018	1,482		
Jan-2014	1,309	Jul-2018	1,485		
Feb-2014	1,296	Aug-2018	1,488		
Mar-2014	1,267	Sep-2018	1,493		
Apr-2014	1,247	Oct-2018	1,497		
May-2014	1,237	Nov-2018	1,502		
Jun-2014	1,224	Dec-2018	1,508		
Jul-2014	1,223	Jan-2019	1,515		
Aug-2014	1,229	Feb-2019	1,523		
Sep-2014	1,226	Mar-2019	1,530		
Oct-2014	1,220	Apr-2019	1,538		
Nov-2014	1,229	May-2019	1,543		
Dec-2014	1,229	Jun-2019	1,548		
Jan-2015	1,228	Jul-2019	1,552		
Feb-2015	1,232	Aug-2019	1,556		
Mar-2015	1,229	Sep-2019	1,561		
Apr-2015	1,231	Oct-2019	1,565		
May-2015	1,245	Nov-2019	1,571		
Jun-2015	1,242	Dec-2019	1,577		
Jul-2015	1,260	Jan-2020	1,585		
Aug-2015	1,267	Feb-2020	1,594		
Sep-2015	1,284	Mar-2020	1,602		
Oct-2015	1,283	Apr-2020	1,610		
Nov-2015	1,290	May-2020	1,616		
Dec-2015	1,297	Jun-2020	1,622		
Jan-2016	1,315	Jul-2020	1,628		
Feb-2016	1,331	Aug-2020	1,633		
Mar-2016	1,300	Sep-2020	1,638		
Apr-2016	1,347	Oct-2020	1,644		
May-2016	1,355	Nov-2020	1,650		
Jun-2016	1,368	Dec-2020	1,658		
Jul-2016	1,362	Jan-2021	1,666		
Aug-2016	1,375	Feb-2021	1,676		
Sep-2016	1,363	Mar-2021	1,684		
Oct-2016	1,382	Apr-2021	1,692		
Nov-2016	1,379	May-2021	1,698		
Dec-2016	1,427	Jun-2021	1,704		
Jan-2017	1,432	Jul-2021	1,709		
Feb-2017	1,443	Aug-2021	1,714		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 407
FT1 Medium

Model Type = Meter Count
-
Model Type = linear
Model Eqn = 1 + x1
Variable =
Coeffs = {440.2211,-0.91286}
R2 = 0.954625
RV = 98.1251

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	411	Mar-2017	348	2012	406
Oct-2012	417	Apr-2017	345	2013	386
Nov-2012	415	May-2017	344	2014	382
Dec-2012	413	Jun-2017	343	2015	370
Jan-2013	413	Jul-2017	341	2016	336
Feb-2013	412	Aug-2017	341	2017	323
Mar-2013	411	Sep-2017	339	2018	312
Apr-2013	411	Oct-2017	338	2019	302
May-2013	409	Nov-2017	336	2020	293
Jun-2013	408	Dec-2017	335	2021	283
Jul-2013	410	Jan-2018	334		
Aug-2013	408	Feb-2018	334		
Sep-2013	408	Mar-2018	333		
Oct-2013	406	Apr-2018	332		
Nov-2013	406	May-2018	331		
Dec-2013	405	Jun-2018	329		
Jan-2014	404	Jul-2018	328		
Feb-2014	406	Aug-2018	327		
Mar-2014	405	Sep-2018	326		
Apr-2014	404	Oct-2018	324		
May-2014	402	Nov-2018	323		
Jun-2014	385	Dec-2018	322		
Jul-2014	394	Jan-2019	322		
Aug-2014	394	Feb-2019	321		
Sep-2014	391	Mar-2019	320		
Oct-2014	388	Apr-2019	319		
Nov-2014	386	May-2019	318		
Dec-2014	386	Jun-2019	317		
Jan-2015	386	Jul-2019	317		
Feb-2015	386	Aug-2019	315		
Mar-2015	386	Sep-2019	314		
Apr-2015	386	Oct-2019	313		
May-2015	385	Nov-2019	312		
Jun-2015	382	Dec-2019	311		
Jul-2015	381	Jan-2020	310		
Aug-2015	392	Feb-2020	310		
Sep-2015	388	Mar-2020	309		
Oct-2015	382	Apr-2020	308		
Nov-2015	382	May-2020	307		
Dec-2015	382	Jun-2020	307		
Jan-2016	383	Jul-2020	306		
Feb-2016	383	Aug-2020	305		
Mar-2016	383	Sep-2020	304		
Apr-2016	383	Oct-2020	303		
May-2016	383	Nov-2020	302		
Jun-2016	382	Dec-2020	301		
Jul-2016	380	Jan-2021	301		
Aug-2016	373	Feb-2021	300		
Sep-2016	372	Mar-2021	300		
Oct-2016	372	Apr-2021	299		
Nov-2016	370	May-2021	298		
Dec-2016	369	Jun-2021	298		
Jan-2017	369	Jul-2021	297		
Feb-2017	348	Aug-2021	296		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 408
TSS Medium

Model Type = Meter Count
-
Model Type = log
Model Eqn = b1 + b2*log(x1 + b3)
Variable =
Coeffs = {-964.3161,129.8493,1659.368}
R2 = 0.345423
RV = 179.321

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	24	Mar-2017	43	2012	41
Oct-2012	30	Apr-2017	41	2013	133
Nov-2012	36	May-2017	40	2014	149
Dec-2012	37	Jun-2017	40	2015	19
Jan-2013	37	Jul-2017	40	2016	39
Feb-2013	43	Aug-2017	40	2017	39
Mar-2013	45	Sep-2017	39	2018	39
Apr-2013	55	Oct-2017	39	2019	39
May-2013	55	Nov-2017	39	2020	39
Jun-2013	9	Dec-2017	39	2021	39
Jul-2013	24	Jan-2018	40		
Aug-2013	28	Feb-2018	40		
Sep-2013	31	Mar-2018	39		
Oct-2013	39	Apr-2018	39		
Nov-2013	41	May-2018	39		
Dec-2013	45	Jun-2018	39		
Jan-2014	51	Jul-2018	39		
Feb-2014	67	Aug-2018	39		
Mar-2014	94	Sep-2018	39		
Apr-2014	107	Oct-2018	39		
May-2014	132	Nov-2018	39		
Jun-2014	130	Dec-2018	39		
Jul-2014	116	Jan-2019	39		
Aug-2014	111	Feb-2019	39		
Sep-2014	119	Mar-2019	39		
Oct-2014	123	Apr-2019	39		
Nov-2014	133	May-2019	39		
Dec-2014	147	Jun-2019	39		
Jan-2015	156	Jul-2019	39		
Feb-2015	163	Aug-2019	39		
Mar-2015	172	Sep-2019	39		
Apr-2015	173	Oct-2019	39		
May-2015	167	Nov-2019	39		
Jun-2015	171	Dec-2019	39		
Jul-2015	172	Jan-2020	40		
Aug-2015	168	Feb-2020	40		
Sep-2015	139	Mar-2020	40		
Oct-2015	147	Apr-2020	39		
Nov-2015	149	May-2020	39		
Dec-2015	149	Jun-2020	39		
Jan-2016	146	Jul-2020	39		
Feb-2016	147	Aug-2020	39		
Mar-2016	150	Sep-2020	39		
Apr-2016	154	Oct-2020	39		
May-2016	155	Nov-2020	39		
Jun-2016	13	Dec-2020	39		
Jul-2016	7	Jan-2021	39		
Aug-2016	8	Feb-2021	39		
Sep-2016	7	Mar-2021	39		
Oct-2016	12	Apr-2021	39		
Nov-2016	19	May-2021	39		
Dec-2016	27	Jun-2021	39		
Jan-2017	35	Jul-2021	39		
Feb-2017	43	Aug-2021	39		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 409
C&I Low Load - Large

Model Type = Meter Count
-
Model Type = logi
Model Eqn = 104.667+10.3333/(1+exp(-1.03226*(t-2.8125)))
Variable =
Coeffs =
R2 = 0.308523
RV = 70.7264

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	116	Mar-2017	115	2012	122
Oct-2012	115	Apr-2017	114	2013	126
Nov-2012	118	May-2017	113	2014	121
Dec-2012	116	Jun-2017	113	2015	123
Jan-2013	117	Jul-2017	113	2016	113
Feb-2013	121	Aug-2017	113	2017	112
Mar-2013	121	Sep-2017	113	2018	112
Apr-2013	117	Oct-2017	113	2019	111
May-2013	115	Nov-2017	113	2020	110
Jun-2013	121	Dec-2017	113	2021	109
Jul-2013	121	Jan-2018	113		
Aug-2013	121	Feb-2018	113		
Sep-2013	121	Mar-2018	113		
Oct-2013	121	Apr-2018	112		
Nov-2013	122	May-2018	112		
Dec-2013	124	Jun-2018	112		
Jan-2014	124	Jul-2018	112		
Feb-2014	124	Aug-2018	112		
Mar-2014	121	Sep-2018	112		
Apr-2014	124	Oct-2018	112		
May-2014	124	Nov-2018	112		
Jun-2014	128	Dec-2018	112		
Jul-2014	126	Jan-2019	112		
Aug-2014	126	Feb-2019	112		
Sep-2014	124	Mar-2019	112		
Oct-2014	123	Apr-2019	112		
Nov-2014	126	May-2019	112		
Dec-2014	126	Jun-2019	112		
Jan-2015	128	Jul-2019	112		
Feb-2015	130	Aug-2019	112		
Mar-2015	131	Sep-2019	112		
Apr-2015	129	Oct-2019	112		
May-2015	128	Nov-2019	112		
Jun-2015	128	Dec-2019	112		
Jul-2015	125	Jan-2020	112		
Aug-2015	121	Feb-2020	112		
Sep-2015	115	Mar-2020	112		
Oct-2015	116	Apr-2020	112		
Nov-2015	121	May-2020	111		
Dec-2015	120	Jun-2020	111		
Jan-2016	121	Jul-2020	111		
Feb-2016	119	Aug-2020	111		
Mar-2016	120	Sep-2020	111		
Apr-2016	123	Oct-2020	111		
May-2016	118	Nov-2020	111		
Jun-2016	125	Dec-2020	111		
Jul-2016	124	Jan-2021	111		
Aug-2016	127	Feb-2021	111		
Sep-2016	117	Mar-2021	111		
Oct-2016	119	Apr-2021	111		
Nov-2016	123	May-2021	111		
Dec-2016	114	Jun-2021	110		
Jan-2017	119	Jul-2021	110		
Feb-2017	115	Aug-2021	110		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 410
FT2 Large Low

Model Type = Meter Count
-
Model Type = log
Model Eqn = b1 + b2*log(x1 + b3)
Variable =
Coeffs = {-7.036,46.4032,19.9366}
R2 = 0.937057
RV = 31.3686

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	171	Mar-2017	211	2012	182
Oct-2012	171	Apr-2017	211	2013	188
Nov-2012	175	May-2017	211	2014	194
Dec-2012	176	Jun-2017	212	2015	205
Jan-2013	182	Jul-2017	211	2016	212
Feb-2013	185	Aug-2017	211	2017	216
Mar-2013	186	Sep-2017	212	2018	220
Apr-2013	187	Oct-2017	212	2019	224
May-2013	190	Nov-2017	212	2020	230
Jun-2013	187	Dec-2017	212	2021	233
Jul-2013	188	Jan-2018	213		
Aug-2013	186	Feb-2018	214		
Sep-2013	178	Mar-2018	214		
Oct-2013	179	Apr-2018	215		
Nov-2013	182	May-2018	214		
Dec-2013	184	Jun-2018	215		
Jan-2014	184	Jul-2018	215		
Feb-2014	186	Aug-2018	216		
Mar-2014	189	Sep-2018	215		
Apr-2014	182	Oct-2018	215		
May-2014	188	Nov-2018	216		
Jun-2014	190	Dec-2018	216		
Jul-2014	188	Jan-2019	216		
Aug-2014	188	Feb-2019	217		
Sep-2014	187	Mar-2019	218		
Oct-2014	188	Apr-2019	219		
Nov-2014	188	May-2019	219		
Dec-2014	187	Jun-2019	219		
Jan-2015	188	Jul-2019	219		
Feb-2015	188	Aug-2019	219		
Mar-2015	188	Sep-2019	219		
Apr-2015	185	Oct-2019	220		
May-2015	186	Nov-2019	220		
Jun-2015	185	Dec-2019	221		
Jul-2015	189	Jan-2020	221		
Aug-2015	189	Feb-2020	221		
Sep-2015	189	Mar-2020	223		
Oct-2015	189	Apr-2020	223		
Nov-2015	194	May-2020	223		
Dec-2015	191	Jun-2020	224		
Jan-2016	201	Jul-2020	224		
Feb-2016	202	Aug-2020	224		
Mar-2016	204	Sep-2020	224		
Apr-2016	203	Oct-2020	224		
May-2016	207	Nov-2020	224		
Jun-2016	203	Dec-2020	226		
Jul-2016	203	Jan-2021	226		
Aug-2016	203	Feb-2021	226		
Sep-2016	204	Mar-2021	228		
Oct-2016	206	Apr-2021	228		
Nov-2016	205	May-2021	228		
Dec-2016	213	Jun-2021	228		
Jan-2017	215	Jul-2021	229		
Feb-2017	211	Aug-2021	229		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 411
FT1 Large Low

Model Type = Meter Count
-
Model Type = log
Model Eqn = b1 + b2*log(x1 + b3)
Variable =
Coeffs = {773.8644,-107.9508,437.8488}
R2 = 0.92868
RV = 2.24909

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	119	Mar-2017	98	2012	120
Oct-2012	117	Apr-2017	98	2013	116
Nov-2012	119	May-2017	98	2014	104
Dec-2012	119	Jun-2017	98	2015	99
Jan-2013	117	Jul-2017	98	2016	96
Feb-2013	116	Aug-2017	97	2017	93
Mar-2013	115	Sep-2017	97	2018	91
Apr-2013	116	Oct-2017	97	2019	89
May-2013	116	Nov-2017	96	2020	87
Jun-2013	115	Dec-2017	96	2021	85
Jul-2013	115	Jan-2018	95		
Aug-2013	121	Feb-2018	96		
Sep-2013	121	Mar-2018	96		
Oct-2013	120	Apr-2018	96		
Nov-2013	120	May-2018	96		
Dec-2013	119	Jun-2018	94		
Jan-2014	119	Jul-2018	94		
Feb-2014	121	Aug-2018	94		
Mar-2014	121	Sep-2018	94		
Apr-2014	120	Oct-2018	94		
May-2014	119	Nov-2018	93		
Jun-2014	114	Dec-2018	93		
Jul-2014	116	Jan-2019	93		
Aug-2014	116	Feb-2019	93		
Sep-2014	116	Mar-2019	93		
Oct-2014	117	Apr-2019	92		
Nov-2014	116	May-2019	92		
Dec-2014	116	Jun-2019	92		
Jan-2015	115	Jul-2019	92		
Feb-2015	115	Aug-2019	92		
Mar-2015	115	Sep-2019	91		
Apr-2015	115	Oct-2019	91		
May-2015	115	Nov-2019	91		
Jun-2015	115	Dec-2019	91		
Jul-2015	115	Jan-2020	91		
Aug-2015	105	Feb-2020	90		
Sep-2015	106	Mar-2020	90		
Oct-2015	106	Apr-2020	90		
Nov-2015	104	May-2020	90		
Dec-2015	103	Jun-2020	90		
Jan-2016	103	Jul-2020	89		
Feb-2016	101	Aug-2020	89		
Mar-2016	101	Sep-2020	89		
Apr-2016	102	Oct-2020	89		
May-2016	102	Nov-2020	89		
Jun-2016	101	Dec-2020	88		
Jul-2016	99	Jan-2021	88		
Aug-2016	99	Feb-2021	88		
Sep-2016	99	Mar-2021	89		
Oct-2016	99	Apr-2021	89		
Nov-2016	99	May-2021	88		
Dec-2016	99	Jun-2021	88		
Jan-2017	99	Jul-2021	88		
Feb-2017	99	Aug-2021	88		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 412
TSS Large Low Load

Model Type = Meter Count
-
Model Type = constant
Model Eqn = 0*x+6
Variable =
Coeffs =
R2 = 0
RV = 10.5195

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	5	Mar-2017	6	2012	7
Oct-2012	7	Apr-2017	5	2013	7
Nov-2012	10	May-2017	5	2014	12
Dec-2012	9	Jun-2017	5	2015	2
Jan-2013	6	Jul-2017	5	2016	5
Feb-2013	5	Aug-2017	5	2017	5
Mar-2013	4	Sep-2017	5	2018	5
Apr-2013	7	Oct-2017	5	2019	4
May-2013	3	Nov-2017	5	2020	4
Jun-2013	3	Dec-2017	5	2021	3
Jul-2013	2	Jan-2018	5		
Aug-2013	9	Feb-2018	5		
Sep-2013	6	Mar-2018	5		
Oct-2013	7	Apr-2018	5		
Nov-2013	7	May-2018	5		
Dec-2013	8	Jun-2018	5		
Jan-2014	10	Jul-2018	5		
Feb-2014	10	Aug-2018	5		
Mar-2014	10	Sep-2018	5		
Apr-2014	10	Oct-2018	5		
May-2014	9	Nov-2018	5		
Jun-2014	8	Dec-2018	5		
Jul-2014	6	Jan-2019	5		
Aug-2014	6	Feb-2019	5		
Sep-2014	6	Mar-2019	5		
Oct-2014	6	Apr-2019	5		
Nov-2014	7	May-2019	5		
Dec-2014	9	Jun-2019	5		
Jan-2015	10	Jul-2019	5		
Feb-2015	10	Aug-2019	5		
Mar-2015	10	Sep-2019	5		
Apr-2015	10	Oct-2019	5		
May-2015	14	Nov-2019	5		
Jun-2015	13	Dec-2019	5		
Jul-2015	13	Jan-2020	5		
Aug-2015	13	Feb-2020	5		
Sep-2015	13	Mar-2020	5		
Oct-2015	12	Apr-2020	5		
Nov-2015	12	May-2020	4		
Dec-2015	13	Jun-2020	4		
Jan-2016	9	Jul-2020	4		
Feb-2016	10	Aug-2020	4		
Mar-2016	9	Sep-2020	4		
Apr-2016	10	Oct-2020	4		
May-2016	9	Nov-2020	4		
Jun-2016	1	Dec-2020	4		
Jul-2016	2	Jan-2021	4		
Aug-2016	2	Feb-2021	4		
Sep-2016	1	Mar-2021	4		
Oct-2016	1	Apr-2021	4		
Nov-2016	2	May-2021	4		
Dec-2016	3	Jun-2021	4		
Jan-2017	4	Jul-2021	4		
Feb-2017	6	Aug-2021	4		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 413
C&I Low Load - Extra Large

Model Type = Meter Count
-
Model Type = constant
Model Eqn = 0*x+5
Variable =
Coeffs =
R2 = 0
RV = 2.32468

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	7	Mar-2017	5	2012	6
Oct-2012	5	Apr-2017	5	2013	6
Nov-2012	7	May-2017	5	2014	6
Dec-2012	7	Jun-2017	5	2015	5
Jan-2013	7	Jul-2017	4	2016	4
Feb-2013	7	Aug-2017	4	2017	4
Mar-2013	7	Sep-2017	4	2018	4
Apr-2013	7	Oct-2017	4	2019	4
May-2013	8	Nov-2017	4	2020	4
Jun-2013	7	Dec-2017	4	2021	3
Jul-2013	8	Jan-2018	4		
Aug-2013	7	Feb-2018	4		
Sep-2013	7	Mar-2018	4		
Oct-2013	6	Apr-2018	4		
Nov-2013	6	May-2018	4		
Dec-2013	6	Jun-2018	4		
Jan-2014	6	Jul-2018	4		
Feb-2014	6	Aug-2018	4		
Mar-2014	5	Sep-2018	4		
Apr-2014	7	Oct-2018	4		
May-2014	6	Nov-2018	4		
Jun-2014	6	Dec-2018	4		
Jul-2014	6	Jan-2019	4		
Aug-2014	5	Feb-2019	4		
Sep-2014	7	Mar-2019	4		
Oct-2014	6	Apr-2019	4		
Nov-2014	6	May-2019	4		
Dec-2014	6	Jun-2019	4		
Jan-2015	6	Jul-2019	4		
Feb-2015	6	Aug-2019	4		
Mar-2015	6	Sep-2019	4		
Apr-2015	5	Oct-2019	4		
May-2015	7	Nov-2019	4		
Jun-2015	6	Dec-2019	4		
Jul-2015	6	Jan-2020	4		
Aug-2015	6	Feb-2020	4		
Sep-2015	7	Mar-2020	4		
Oct-2015	7	Apr-2020	4		
Nov-2015	6	May-2020	4		
Dec-2015	6	Jun-2020	4		
Jan-2016	6	Jul-2020	4		
Feb-2016	5	Aug-2020	4		
Mar-2016	6	Sep-2020	4		
Apr-2016	6	Oct-2020	4		
May-2016	6	Nov-2020	4		
Jun-2016	6	Dec-2020	4		
Jul-2016	6	Jan-2021	4		
Aug-2016	6	Feb-2021	4		
Sep-2016	4	Mar-2021	4		
Oct-2016	5	Apr-2021	4		
Nov-2016	5	May-2021	4		
Dec-2016	4	Jun-2021	4		
Jan-2017	5	Jul-2021	4		
Feb-2017	5	Aug-2021	4		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 414
FT2 Exlarge Low

Model Type = Meter Count
-
Model Type = constant
Model Eqn = 0*x+3
Variable =
Coeffs =
R2 = 0
RV = 0.012987

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	1	Mar-2017	3	2012	5
Oct-2012	1	Apr-2017	3	2013	4
Nov-2012	1	May-2017	3	2014	4
Dec-2012	1	Jun-2017	3	2015	3
Jan-2013	2	Jul-2017	3	2016	3
Feb-2013	2	Aug-2017	3	2017	3
Mar-2013	2	Sep-2017	3	2018	3
Apr-2013	2	Oct-2017	3	2019	3
May-2013	2	Nov-2017	3	2020	3
Jun-2013	2	Dec-2017	3	2021	3
Jul-2013	2	Jan-2018	3		
Aug-2013	2	Feb-2018	3		
Sep-2013	4	Mar-2018	3		
Oct-2013	5	Apr-2018	3		
Nov-2013	5	May-2018	3		
Dec-2013	5	Jun-2018	3		
Jan-2014	5	Jul-2018	3		
Feb-2014	5	Aug-2018	3		
Mar-2014	5	Sep-2018	3		
Apr-2014	5	Oct-2018	3		
May-2014	4	Nov-2018	3		
Jun-2014	4	Dec-2018	3		
Jul-2014	4	Jan-2019	3		
Aug-2014	4	Feb-2019	3		
Sep-2014	4	Mar-2019	3		
Oct-2014	4	Apr-2019	3		
Nov-2014	4	May-2019	3		
Dec-2014	4	Jun-2019	3		
Jan-2015	4	Jul-2019	3		
Feb-2015	4	Aug-2019	3		
Mar-2015	4	Sep-2019	3		
Apr-2015	4	Oct-2019	3		
May-2015	4	Nov-2019	3		
Jun-2015	4	Dec-2019	3		
Jul-2015	4	Jan-2020	3		
Aug-2015	4	Feb-2020	3		
Sep-2015	3	Mar-2020	3		
Oct-2015	3	Apr-2020	3		
Nov-2015	4	May-2020	3		
Dec-2015	4	Jun-2020	3		
Jan-2016	4	Jul-2020	3		
Feb-2016	4	Aug-2020	3		
Mar-2016	4	Sep-2020	3		
Apr-2016	4	Oct-2020	3		
May-2016	4	Nov-2020	3		
Jun-2016	4	Dec-2020	3		
Jul-2016	4	Jan-2021	3		
Aug-2016	4	Feb-2021	3		
Sep-2016	3	Mar-2021	3		
Oct-2016	3	Apr-2021	3		
Nov-2016	3	May-2021	3		
Dec-2016	3	Jun-2021	3		
Jan-2017	3	Jul-2021	3		
Feb-2017	3	Aug-2021	3		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 415
FT1 Exlarge Low

Model Type = Meter Count
-
Model Type = logi
Model Eqn = 13-2/(1+exp(-0.666667*(t-38)))
Variable =
Coeffs =
R2 = 0.915276
RV = 2.20198

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	10	Mar-2017	10	2012	9
Oct-2012	10	Apr-2017	10	2013	9
Nov-2012	12	May-2017	10	2014	9
Dec-2012	13	Jun-2017	10	2015	10
Jan-2013	12	Jul-2017	10	2016	10
Feb-2013	12	Aug-2017	10	2017	9
Mar-2013	12	Sep-2017	10	2018	9
Apr-2013	11	Oct-2017	10	2019	9
May-2013	11	Nov-2017	10	2020	10
Jun-2013	11	Dec-2017	10	2021	10
Jul-2013	12	Jan-2018	10		
Aug-2013	10	Feb-2018	10		
Sep-2013	9	Mar-2018	10		
Oct-2013	9	Apr-2018	10		
Nov-2013	9	May-2018	10		
Dec-2013	8	Jun-2018	10		
Jan-2014	7	Jul-2018	10		
Feb-2014	6	Aug-2018	9		
Mar-2014	8	Sep-2018	9		
Apr-2014	8	Oct-2018	9		
May-2014	7	Nov-2018	9		
Jun-2014	8	Dec-2018	9		
Jul-2014	9	Jan-2019	9		
Aug-2014	8	Feb-2019	9		
Sep-2014	8	Mar-2019	9		
Oct-2014	7	Apr-2019	9		
Nov-2014	9	May-2019	9		
Dec-2014	8	Jun-2019	9		
Jan-2015	8	Jul-2019	9		
Feb-2015	8	Aug-2019	9		
Mar-2015	8	Sep-2019	9		
Apr-2015	8	Oct-2019	9		
May-2015	8	Nov-2019	9		
Jun-2015	8	Dec-2019	9		
Jul-2015	8	Jan-2020	9		
Aug-2015	9	Feb-2020	9		
Sep-2015	9	Mar-2020	9		
Oct-2015	9	Apr-2020	9		
Nov-2015	9	May-2020	9		
Dec-2015	9	Jun-2020	9		
Jan-2016	9	Jul-2020	9		
Feb-2016	9	Aug-2020	9		
Mar-2016	9	Sep-2020	9		
Apr-2016	9	Oct-2020	9		
May-2016	9	Nov-2020	9		
Jun-2016	9	Dec-2020	9		
Jul-2016	9	Jan-2021	9		
Aug-2016	10	Feb-2021	10		
Sep-2016	10	Mar-2021	10		
Oct-2016	10	Apr-2021	10		
Nov-2016	10	May-2021	10		
Dec-2016	10	Jun-2021	10		
Jan-2017	10	Jul-2021	10		
Feb-2017	11	Aug-2021	10		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 416
TSS Extra Large Low Load

Model Type = Meter Count
-
Model Type = constant
Model Eqn = 0*x+0
Variable =
Coeffs =
R2 = 0
RV = 0

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	1	Mar-2017	0	2012	0
Oct-2012	1	Apr-2017	0	2013	1
Nov-2012	1	May-2017	0	2014	0
Dec-2012	1	Jun-2017	0	2015	0
Jan-2013	0	Jul-2017	0	2016	0
Feb-2013	0	Aug-2017	0	2017	0
Mar-2013	0	Sep-2017	0	2018	0
Apr-2013	1	Oct-2017	0	2019	0
May-2013	0	Nov-2017	0	2020	0
Jun-2013	0	Dec-2017	0	2021	0
Jul-2013	0	Jan-2018	0		
Aug-2013	0	Feb-2018	0		
Sep-2013	0	Mar-2018	0		
Oct-2013	0	Apr-2018	0		
Nov-2013	0	May-2018	0		
Dec-2013	1	Jun-2018	0		
Jan-2014	0	Jul-2018	0		
Feb-2014	-1	Aug-2018	0		
Mar-2014	0	Sep-2018	0		
Apr-2014	0	Oct-2018	0		
May-2014	1	Nov-2018	0		
Jun-2014	1	Dec-2018	0		
Jul-2014	1	Jan-2019	0		
Aug-2014	1	Feb-2019	0		
Sep-2014	1	Mar-2019	0		
Oct-2014	1	Apr-2019	0		
Nov-2014	1	May-2019	0		
Dec-2014	1	Jun-2019	0		
Jan-2015	1	Jul-2019	0		
Feb-2015	1	Aug-2019	0		
Mar-2015	1	Sep-2019	0		
Apr-2015	1	Oct-2019	0		
May-2015	1	Nov-2019	0		
Jun-2015	1	Dec-2019	0		
Jul-2015	1	Jan-2020	0		
Aug-2015	1	Feb-2020	0		
Sep-2015	0	Mar-2020	0		
Oct-2015	0	Apr-2020	0		
Nov-2015	0	May-2020	0		
Dec-2015	0	Jun-2020	0		
Jan-2016	0	Jul-2020	0		
Feb-2016	0	Aug-2020	0		
Mar-2016	0	Sep-2020	0		
Apr-2016	0	Oct-2020	0		
May-2016	0	Nov-2020	0		
Jun-2016	0	Dec-2020	0		
Jul-2016	0	Jan-2021	0		
Aug-2016	0	Feb-2021	0		
Sep-2016	0	Mar-2021	0		
Oct-2016	0	Apr-2021	0		
Nov-2016	0	May-2021	0		
Dec-2016	0	Jun-2021	0		
Jan-2017	0	Jul-2021	0		
Feb-2017	0	Aug-2021	0		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 417
C&I High Load - Large

Model Type = Meter Count
-
Model Type = linear
Model Eqn = 1 + x1
Variable =
Coeffs = {43.8438,0.098892}
R2 = 0.238464
RV = 23.8728

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	56	Mar-2017	52	2012	52
Oct-2012	53	Apr-2017	52	2013	36
Nov-2012	56	May-2017	52	2014	37
Dec-2012	56	Jun-2017	52	2015	47
Jan-2013	56	Jul-2017	52	2016	53
Feb-2013	56	Aug-2017	53	2017	54
Mar-2013	56	Sep-2017	53	2018	54
Apr-2013	55	Oct-2017	53	2019	53
May-2013	54	Nov-2017	53	2020	53
Jun-2013	54	Dec-2017	54	2021	52
Jul-2013	53	Jan-2018	54		
Aug-2013	52	Feb-2018	53		
Sep-2013	49	Mar-2018	53		
Oct-2013	51	Apr-2018	52		
Nov-2013	52	May-2018	52		
Dec-2013	50	Jun-2018	52		
Jan-2014	50	Jul-2018	52		
Feb-2014	52	Aug-2018	52		
Mar-2014	52	Sep-2018	52		
Apr-2014	51	Oct-2018	54		
May-2014	50	Nov-2018	54		
Jun-2014	51	Dec-2018	54		
Jul-2014	50	Jan-2019	53		
Aug-2014	50	Feb-2019	52		
Sep-2014	36	Mar-2019	53		
Oct-2014	36	Apr-2019	52		
Nov-2014	36	May-2019	52		
Dec-2014	37	Jun-2019	52		
Jan-2015	36	Jul-2019	52		
Feb-2015	36	Aug-2019	54		
Mar-2015	37	Sep-2019	54		
Apr-2015	36	Oct-2019	54		
May-2015	36	Nov-2019	54		
Jun-2015	36	Dec-2019	54		
Jul-2015	36	Jan-2020	54		
Aug-2015	36	Feb-2020	53		
Sep-2015	37	Mar-2020	52		
Oct-2015	36	Apr-2020	52		
Nov-2015	37	May-2020	52		
Dec-2015	35	Jun-2020	53		
Jan-2016	36	Jul-2020	53		
Feb-2016	36	Aug-2020	53		
Mar-2016	38	Sep-2020	53		
Apr-2016	35	Oct-2020	53		
May-2016	36	Nov-2020	53		
Jun-2016	42	Dec-2020	53		
Jul-2016	41	Jan-2021	53		
Aug-2016	41	Feb-2021	52		
Sep-2016	49	Mar-2021	52		
Oct-2016	52	Apr-2021	52		
Nov-2016	47	May-2021	52		
Dec-2016	47	Jun-2021	52		
Jan-2017	49	Jul-2021	52		
Feb-2017	53	Aug-2021	52		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 418
FT2 Large High

Model Type = Meter Count
-
Model Type = log
Model Eqn = b1 + b2*log(x1 + b3)
Variable =
Coeffs = {-1939.6911,301.6349,722.5672}
R2 = 0.966218
RV = 2.83472

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	55	Mar-2017	77	2012	60
Oct-2012	57	Apr-2017	78	2013	67
Nov-2012	56	May-2017	78	2014	64
Dec-2012	56	Jun-2017	78	2015	76
Jan-2013	57	Jul-2017	79	2016	80
Feb-2013	58	Aug-2017	79	2017	85
Mar-2013	58	Sep-2017	79	2018	89
Apr-2013	59	Oct-2017	80	2019	93
May-2013	59	Nov-2017	80	2020	98
Jun-2013	59	Dec-2017	81	2021	102
Jul-2013	60	Jan-2018	81		
Aug-2013	60	Feb-2018	81		
Sep-2013	61	Mar-2018	82		
Oct-2013	60	Apr-2018	82		
Nov-2013	60	May-2018	82		
Dec-2013	61	Jun-2018	83		
Jan-2014	61	Jul-2018	83		
Feb-2014	62	Aug-2018	84		
Mar-2014	61	Sep-2018	84		
Apr-2014	59	Oct-2018	84		
May-2014	64	Nov-2018	85		
Jun-2014	65	Dec-2018	85		
Jul-2014	65	Jan-2019	85		
Aug-2014	68	Feb-2019	86		
Sep-2014	68	Mar-2019	86		
Oct-2014	67	Apr-2019	86		
Nov-2014	67	May-2019	87		
Dec-2014	68	Jun-2019	87		
Jan-2015	67	Jul-2019	88		
Feb-2015	70	Aug-2019	88		
Mar-2015	70	Sep-2019	88		
Apr-2015	72	Oct-2019	89		
May-2015	72	Nov-2019	89		
Jun-2015	73	Dec-2019	89		
Jul-2015	73	Jan-2020	90		
Aug-2015	72	Feb-2020	90		
Sep-2015	64	Mar-2020	90		
Oct-2015	64	Apr-2020	91		
Nov-2015	64	May-2020	91		
Dec-2015	65	Jun-2020	92		
Jan-2016	65	Jul-2020	92		
Feb-2016	64	Aug-2020	92		
Mar-2016	65	Sep-2020	93		
Apr-2016	66	Oct-2020	93		
May-2016	65	Nov-2020	93		
Jun-2016	65	Dec-2020	94		
Jul-2016	66	Jan-2021	94		
Aug-2016	67	Feb-2021	94		
Sep-2016	75	Mar-2021	95		
Oct-2016	74	Apr-2021	95		
Nov-2016	76	May-2021	95		
Dec-2016	77	Jun-2021	96		
Jan-2017	76	Jul-2021	96		
Feb-2017	76	Aug-2021	97		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 419
FT1 Large High

Model Type = Meter Count
-
Model Type = linear
Model Eqn = 1 + x1
Variable =
Coeffs = {53.7161,-0.09491}
R2 = 0.631621
RV = 4.11043

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	57	Mar-2017	46	2012	52
Oct-2012	58	Apr-2017	46	2013	48
Nov-2012	58	May-2017	46	2014	46
Dec-2012	58	Jun-2017	46	2015	48
Jan-2013	58	Jul-2017	46	2016	45
Feb-2013	58	Aug-2017	46	2017	44
Mar-2013	58	Sep-2017	46	2018	43
Apr-2013	58	Oct-2017	46	2019	42
May-2013	58	Nov-2017	45	2020	41
Jun-2013	58	Dec-2017	45	2021	40
Jul-2013	59	Jan-2018	45		
Aug-2013	53	Feb-2018	45		
Sep-2013	53	Mar-2018	45		
Oct-2013	52	Apr-2018	45		
Nov-2013	52	May-2018	45		
Dec-2013	50	Jun-2018	45		
Jan-2014	50	Jul-2018	45		
Feb-2014	50	Aug-2018	45		
Mar-2014	50	Sep-2018	45		
Apr-2014	52	Oct-2018	44		
May-2014	52	Nov-2018	44		
Jun-2014	49	Dec-2018	44		
Jul-2014	51	Jan-2019	44		
Aug-2014	51	Feb-2019	44		
Sep-2014	50	Mar-2019	44		
Oct-2014	49	Apr-2019	44		
Nov-2014	48	May-2019	44		
Dec-2014	48	Jun-2019	44		
Jan-2015	47	Jul-2019	44		
Feb-2015	48	Aug-2019	43		
Mar-2015	47	Sep-2019	43		
Apr-2015	47	Oct-2019	43		
May-2015	48	Nov-2019	43		
Jun-2015	48	Dec-2019	43		
Jul-2015	48	Jan-2020	43		
Aug-2015	46	Feb-2020	43		
Sep-2015	46	Mar-2020	43		
Oct-2015	46	Apr-2020	43		
Nov-2015	46	May-2020	43		
Dec-2015	46	Jun-2020	43		
Jan-2016	46	Jul-2020	42		
Feb-2016	46	Aug-2020	42		
Mar-2016	45	Sep-2020	42		
Apr-2016	45	Oct-2020	42		
May-2016	45	Nov-2020	42		
Jun-2016	44	Dec-2020	42		
Jul-2016	44	Jan-2021	42		
Aug-2016	47	Feb-2021	42		
Sep-2016	47	Mar-2021	42		
Oct-2016	47	Apr-2021	42		
Nov-2016	48	May-2021	41		
Dec-2016	48	Jun-2021	41		
Jan-2017	48	Jul-2021	41		
Feb-2017	46	Aug-2021	41		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 420
TSS Large High Load

Model Type = Meter Count
-
Model Type = constant
Model Eqn = 0*x+3
Variable =
Coeffs =
R2 = 0
RV = 8.33766

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	1	Mar-2017	3	2012	1
Oct-2012	2	Apr-2017	3	2013	4
Nov-2012	2	May-2017	3	2014	4
Dec-2012	1	Jun-2017	3	2015	0
Jan-2013	2	Jul-2017	3	2016	3
Feb-2013	1	Aug-2017	3	2017	3
Mar-2013	0	Sep-2017	3	2018	3
Apr-2013	0	Oct-2017	3	2019	3
May-2013	0	Nov-2017	3	2020	2
Jun-2013	0	Dec-2017	3	2021	2
Jul-2013	0	Jan-2018	3		
Aug-2013	1	Feb-2018	3		
Sep-2013	1	Mar-2018	3		
Oct-2013	1	Apr-2018	3		
Nov-2013	1	May-2018	3		
Dec-2013	3	Jun-2018	3		
Jan-2014	1	Jul-2018	3		
Feb-2014	2	Aug-2018	3		
Mar-2014	2	Sep-2018	3		
Apr-2014	2	Oct-2018	3		
May-2014	2	Nov-2018	3		
Jun-2014	4	Dec-2018	3		
Jul-2014	2	Jan-2019	3		
Aug-2014	2	Feb-2019	3		
Sep-2014	2	Mar-2019	3		
Oct-2014	3	Apr-2019	3		
Nov-2014	4	May-2019	3		
Dec-2014	4	Jun-2019	3		
Jan-2015	7	Jul-2019	3		
Feb-2015	4	Aug-2019	3		
Mar-2015	4	Sep-2019	3		
Apr-2015	3	Oct-2019	3		
May-2015	3	Nov-2019	3		
Jun-2015	2	Dec-2019	3		
Jul-2015	3	Jan-2020	3		
Aug-2015	3	Feb-2020	3		
Sep-2015	3	Mar-2020	3		
Oct-2015	5	Apr-2020	2		
Nov-2015	4	May-2020	2		
Dec-2015	4	Jun-2020	2		
Jan-2016	5	Jul-2020	2		
Feb-2016	5	Aug-2020	3		
Mar-2016	5	Sep-2020	3		
Apr-2016	4	Oct-2020	3		
May-2016	6	Nov-2020	3		
Jun-2016	1	Dec-2020	3		
Jul-2016	0	Jan-2021	3		
Aug-2016	1	Feb-2021	2		
Sep-2016	0	Mar-2021	2		
Oct-2016	0	Apr-2021	2		
Nov-2016	0	May-2021	2		
Dec-2016	1	Jun-2021	2		
Jan-2017	2	Jul-2021	2		
Feb-2017	3	Aug-2021	2		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 421
C&I High Load - Extra Large

Model Type = Meter Count
-
Model Type = parlogi
Model Eqn = b1 + b2/(1 + exp(- b3*(x1 - b4)))
Variable =
Coeffs = {4.9742,-220527.3984,-0.06162,-205.2578}
R2 = 0.0155884
RV = 2.91065

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	7	Mar-2017	3	2012	6
Oct-2012	6	Apr-2017	3	2013	10
Nov-2012	7	May-2017	3	2014	5
Dec-2012	7	Jun-2017	3	2015	3
Jan-2013	7	Jul-2017	3	2016	3
Feb-2013	7	Aug-2017	3	2017	3
Mar-2013	7	Sep-2017	3	2018	3
Apr-2013	7	Oct-2017	3	2019	3
May-2013	7	Nov-2017	3	2020	3
Jun-2013	7	Dec-2017	3	2021	3
Jul-2013	7	Jan-2018	3		
Aug-2013	7	Feb-2018	3		
Sep-2013	6	Mar-2018	3		
Oct-2013	6	Apr-2018	3		
Nov-2013	6	May-2018	3		
Dec-2013	7	Jun-2018	3		
Jan-2014	7	Jul-2018	3		
Feb-2014	7	Aug-2018	3		
Mar-2014	9	Sep-2018	3		
Apr-2014	7	Oct-2018	3		
May-2014	9	Nov-2018	3		
Jun-2014	10	Dec-2018	3		
Jul-2014	11	Jan-2019	3		
Aug-2014	9	Feb-2019	3		
Sep-2014	11	Mar-2019	3		
Oct-2014	9	Apr-2019	3		
Nov-2014	10	May-2019	3		
Dec-2014	10	Jun-2019	3		
Jan-2015	9	Jul-2019	3		
Feb-2015	10	Aug-2019	3		
Mar-2015	11	Sep-2019	3		
Apr-2015	8	Oct-2019	3		
May-2015	9	Nov-2019	3		
Jun-2015	8	Dec-2019	3		
Jul-2015	7	Jan-2020	3		
Aug-2015	7	Feb-2020	3		
Sep-2015	5	Mar-2020	3		
Oct-2015	5	Apr-2020	3		
Nov-2015	5	May-2020	3		
Dec-2015	5	Jun-2020	3		
Jan-2016	4	Jul-2020	3		
Feb-2016	4	Aug-2020	3		
Mar-2016	4	Sep-2020	3		
Apr-2016	3	Oct-2020	3		
May-2016	3	Nov-2020	3		
Jun-2016	3	Dec-2020	3		
Jul-2016	3	Jan-2021	3		
Aug-2016	3	Feb-2021	3		
Sep-2016	3	Mar-2021	3		
Oct-2016	3	Apr-2021	3		
Nov-2016	3	May-2021	3		
Dec-2016	3	Jun-2021	3		
Jan-2017	3	Jul-2021	3		
Feb-2017	3	Aug-2021	3		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 422
FT2 Exlarge High

Model Type = Meter Count
-
Model Type = constant
Model Eqn = 0*x+16
Variable =
Coeffs =
R2 = 0
RV = 4.63636

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	7	Mar-2017	16	2012	6
Oct-2012	8	Apr-2017	16	2013	7
Nov-2012	8	May-2017	16	2014	13
Dec-2012	8	Jun-2017	16	2015	16
Jan-2013	8	Jul-2017	16	2016	16
Feb-2013	8	Aug-2017	16	2017	16
Mar-2013	8	Sep-2017	16	2018	16
Apr-2013	8	Oct-2017	16	2019	16
May-2013	8	Nov-2017	16	2020	16
Jun-2013	8	Dec-2017	16	2021	16
Jul-2013	8	Jan-2018	16		
Aug-2013	8	Feb-2018	16		
Sep-2013	6	Mar-2018	16		
Oct-2013	6	Apr-2018	16		
Nov-2013	6	May-2018	16		
Dec-2013	6	Jun-2018	16		
Jan-2014	6	Jul-2018	16		
Feb-2014	6	Aug-2018	16		
Mar-2014	6	Sep-2018	16		
Apr-2014	6	Oct-2018	16		
May-2014	6	Nov-2018	16		
Jun-2014	6	Dec-2018	16		
Jul-2014	6	Jan-2019	16		
Aug-2014	6	Feb-2019	16		
Sep-2014	6	Mar-2019	16		
Oct-2014	7	Apr-2019	16		
Nov-2014	7	May-2019	16		
Dec-2014	6	Jun-2019	16		
Jan-2015	5	Jul-2019	16		
Feb-2015	5	Aug-2019	16		
Mar-2015	5	Sep-2019	16		
Apr-2015	5	Oct-2019	16		
May-2015	7	Nov-2019	16		
Jun-2015	6	Dec-2019	16		
Jul-2015	9	Jan-2020	16		
Aug-2015	7	Feb-2020	16		
Sep-2015	13	Mar-2020	16		
Oct-2015	13	Apr-2020	16		
Nov-2015	13	May-2020	16		
Dec-2015	13	Jun-2020	16		
Jan-2016	15	Jul-2020	16		
Feb-2016	13	Aug-2020	16		
Mar-2016	16	Sep-2020	16		
Apr-2016	13	Oct-2020	16		
May-2016	14	Nov-2020	16		
Jun-2016	14	Dec-2020	16		
Jul-2016	14	Jan-2021	16		
Aug-2016	15	Feb-2021	16		
Sep-2016	14	Mar-2021	16		
Oct-2016	15	Apr-2021	16		
Nov-2016	16	May-2021	16		
Dec-2016	15	Jun-2021	16		
Jan-2017	14	Jul-2021	16		
Feb-2017	16	Aug-2021	16		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 423
FT1 Exlarge High

Model Type = Meter Count
-
Model Type = logi
Model Eqn = 33+4/(1+exp(-1*(t-68)))
Variable =
Coeffs =
R2 = 0.659809
RV = 5.19293

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	31	Mar-2017	37	2012	28
Oct-2012	31	Apr-2017	37	2013	32
Nov-2012	31	May-2017	37	2014	33
Dec-2012	31	Jun-2017	37	2015	37
Jan-2013	30	Jul-2017	37	2016	37
Feb-2013	29	Aug-2017	37	2017	37
Mar-2013	30	Sep-2017	37	2018	37
Apr-2013	30	Oct-2017	37	2019	37
May-2013	29	Nov-2017	37	2020	37
Jun-2013	29	Dec-2017	37	2021	37
Jul-2013	29	Jan-2018	37		
Aug-2013	29	Feb-2018	37		
Sep-2013	29	Mar-2018	37		
Oct-2013	28	Apr-2018	37		
Nov-2013	28	May-2018	37		
Dec-2013	28	Jun-2018	37		
Jan-2014	28	Jul-2018	37		
Feb-2014	29	Aug-2018	37		
Mar-2014	32	Sep-2018	37		
Apr-2014	32	Oct-2018	37		
May-2014	32	Nov-2018	37		
Jun-2014	32	Dec-2018	37		
Jul-2014	33	Jan-2019	37		
Aug-2014	31	Feb-2019	37		
Sep-2014	31	Mar-2019	37		
Oct-2014	33	Apr-2019	37		
Nov-2014	32	May-2019	37		
Dec-2014	34	Jun-2019	37		
Jan-2015	32	Jul-2019	37		
Feb-2015	32	Aug-2019	37		
Mar-2015	32	Sep-2019	37		
Apr-2015	32	Oct-2019	37		
May-2015	32	Nov-2019	37		
Jun-2015	32	Dec-2019	37		
Jul-2015	33	Jan-2020	37		
Aug-2015	33	Feb-2020	37		
Sep-2015	32	Mar-2020	37		
Oct-2015	32	Apr-2020	37		
Nov-2015	33	May-2020	37		
Dec-2015	33	Jun-2020	37		
Jan-2016	33	Jul-2020	37		
Feb-2016	33	Aug-2020	37		
Mar-2016	33	Sep-2020	37		
Apr-2016	36	Oct-2020	37		
May-2016	36	Nov-2020	37		
Jun-2016	34	Dec-2020	37		
Jul-2016	34	Jan-2021	37		
Aug-2016	37	Feb-2021	37		
Sep-2016	37	Mar-2021	37		
Oct-2016	37	Apr-2021	37		
Nov-2016	37	May-2021	37		
Dec-2016	37	Jun-2021	37		
Jan-2017	37	Jul-2021	37		
Feb-2017	37	Aug-2021	37		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 424
TSS Extra Large High Load

Model Type = Meter Count
-
Model Type = constant
Model Eqn = 0*x+0
Variable =
Coeffs =
R2 = 0
RV = 1.16883

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	0	Mar-2017	0	2012	-2
Oct-2012	0	Apr-2017	0	2013	0
Nov-2012	0	May-2017	0	2014	1
Dec-2012	0	Jun-2017	0	2015	0
Jan-2013	0	Jul-2017	0	2016	0
Feb-2013	1	Aug-2017	0	2017	0
Mar-2013	0	Sep-2017	0	2018	0
Apr-2013	0	Oct-2017	0	2019	0
May-2013	1	Nov-2017	0	2020	0
Jun-2013	0	Dec-2017	0	2021	0
Jul-2013	0	Jan-2018	0		
Aug-2013	0	Feb-2018	0		
Sep-2013	0	Mar-2018	0		
Oct-2013	1	Apr-2018	0		
Nov-2013	-2	May-2018	0		
Dec-2013	-1	Jun-2018	0		
Jan-2014	1	Jul-2018	0		
Feb-2014	0	Aug-2018	0		
Mar-2014	-1	Sep-2018	0		
Apr-2014	1	Oct-2018	0		
May-2014	0	Nov-2018	0		
Jun-2014	1	Dec-2018	0		
Jul-2014	0	Jan-2019	0		
Aug-2014	1	Feb-2019	0		
Sep-2014	1	Mar-2019	0		
Oct-2014	1	Apr-2019	0		
Nov-2014	0	May-2019	0		
Dec-2014	1	Jun-2019	0		
Jan-2015	1	Jul-2019	0		
Feb-2015	1	Aug-2019	0		
Mar-2015	1	Sep-2019	0		
Apr-2015	1	Oct-2019	0		
May-2015	1	Nov-2019	0		
Jun-2015	1	Dec-2019	0		
Jul-2015	1	Jan-2020	0		
Aug-2015	1	Feb-2020	0		
Sep-2015	1	Mar-2020	0		
Oct-2015	1	Apr-2020	0		
Nov-2015	1	May-2020	0		
Dec-2015	1	Jun-2020	0		
Jan-2016	0	Jul-2020	0		
Feb-2016	0	Aug-2020	0		
Mar-2016	0	Sep-2020	0		
Apr-2016	0	Oct-2020	0		
May-2016	0	Nov-2020	0		
Jun-2016	0	Dec-2020	0		
Jul-2016	0	Jan-2021	0		
Aug-2016	1	Feb-2021	0		
Sep-2016	1	Mar-2021	0		
Oct-2016	1	Apr-2021	0		
Nov-2016	0	May-2021	0		
Dec-2016	0	Jun-2021	0		
Jan-2017	0	Jul-2021	0		
Feb-2017	0	Aug-2021	0		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 429
Pawtucket Power

Model Type = Meter Count
-
Model Type = constant
Model Eqn = 0*x+0
Variable =
Coeffs =
R2 = 0
RV = 0

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	0	Mar-2017	0	2012	0
Oct-2012	0	Apr-2017	0	2013	0
Nov-2012	0	May-2017	0	2014	0
Dec-2012	0	Jun-2017	0	2015	0
Jan-2013	0	Jul-2017	0	2016	0
Feb-2013	0	Aug-2017	0	2017	0
Mar-2013	0	Sep-2017	0	2018	0
Apr-2013	0	Oct-2017	0	2019	0
May-2013	0	Nov-2017	0	2020	0
Jun-2013	0	Dec-2017	0	2021	0
Jul-2013	0	Jan-2018	0		
Aug-2013	0	Feb-2018	0		
Sep-2013	0	Mar-2018	0		
Oct-2013	0	Apr-2018	0		
Nov-2013	0	May-2018	0		
Dec-2013	0	Jun-2018	0		
Jan-2014	0	Jul-2018	0		
Feb-2014	0	Aug-2018	0		
Mar-2014	0	Sep-2018	0		
Apr-2014	0	Oct-2018	0		
May-2014	0	Nov-2018	0		
Jun-2014	0	Dec-2018	0		
Jul-2014	0	Jan-2019	0		
Aug-2014	0	Feb-2019	0		
Sep-2014	0	Mar-2019	0		
Oct-2014	0	Apr-2019	0		
Nov-2014	0	May-2019	0		
Dec-2014	0	Jun-2019	0		
Jan-2015	0	Jul-2019	0		
Feb-2015	0	Aug-2019	0		
Mar-2015	0	Sep-2019	0		
Apr-2015	0	Oct-2019	0		
May-2015	0	Nov-2019	0		
Jun-2015	0	Dec-2019	0		
Jul-2015	0	Jan-2020	0		
Aug-2015	0	Feb-2020	0		
Sep-2015	0	Mar-2020	0		
Oct-2015	0	Apr-2020	0		
Nov-2015	0	May-2020	0		
Dec-2015	0	Jun-2020	0		
Jan-2016	0	Jul-2020	0		
Feb-2016	0	Aug-2020	0		
Mar-2016	0	Sep-2020	0		
Apr-2016	0	Oct-2020	0		
May-2016	0	Nov-2020	0		
Jun-2016	0	Dec-2020	0		
Jul-2016	0	Jan-2021	0		
Aug-2016	0	Feb-2021	0		
Sep-2016	0	Mar-2021	0		
Oct-2016	0	Apr-2021	0		
Nov-2016	0	May-2021	0		
Dec-2016	0	Jun-2021	0		
Jan-2017	0	Jul-2021	0		
Feb-2017	0	Aug-2021	0		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 430
Manchester Street Project (VA Power)

Model Type = Meter Count
-
Model Type = constant
Model Eqn = 0*x+1
Variable =
Coeffs =
R2 = 0
RV = 0

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	1	Mar-2017	1	2012	1
Oct-2012	1	Apr-2017	1	2013	1
Nov-2012	1	May-2017	1	2014	1
Dec-2012	1	Jun-2017	1	2015	1
Jan-2013	1	Jul-2017	1	2016	1
Feb-2013	1	Aug-2017	1	2017	1
Mar-2013	1	Sep-2017	1	2018	1
Apr-2013	1	Oct-2017	1	2019	1
May-2013	1	Nov-2017	1	2020	1
Jun-2013	1	Dec-2017	1	2021	1
Jul-2013	1	Jan-2018	1		
Aug-2013	1	Feb-2018	1		
Sep-2013	1	Mar-2018	1		
Oct-2013	1	Apr-2018	1		
Nov-2013	1	May-2018	1		
Dec-2013	1	Jun-2018	1		
Jan-2014	1	Jul-2018	1		
Feb-2014	1	Aug-2018	1		
Mar-2014	1	Sep-2018	1		
Apr-2014	1	Oct-2018	1		
May-2014	1	Nov-2018	1		
Jun-2014	1	Dec-2018	1		
Jul-2014	1	Jan-2019	1		
Aug-2014	1	Feb-2019	1		
Sep-2014	1	Mar-2019	1		
Oct-2014	1	Apr-2019	1		
Nov-2014	1	May-2019	1		
Dec-2014	1	Jun-2019	1		
Jan-2015	1	Jul-2019	1		
Feb-2015	1	Aug-2019	1		
Mar-2015	1	Sep-2019	1		
Apr-2015	1	Oct-2019	1		
May-2015	1	Nov-2019	1		
Jun-2015	1	Dec-2019	1		
Jul-2015	1	Jan-2020	1		
Aug-2015	1	Feb-2020	1		
Sep-2015	1	Mar-2020	1		
Oct-2015	1	Apr-2020	1		
Nov-2015	1	May-2020	1		
Dec-2015	1	Jun-2020	1		
Jan-2016	1	Jul-2020	1		
Feb-2016	1	Aug-2020	1		
Mar-2016	1	Sep-2020	1		
Apr-2016	1	Oct-2020	1		
May-2016	1	Nov-2020	1		
Jun-2016	1	Dec-2020	1		
Jul-2016	1	Jan-2021	1		
Aug-2016	1	Feb-2021	1		
Sep-2016	1	Mar-2021	1		
Oct-2016	1	Apr-2021	1		
Nov-2016	1	May-2021	1		
Dec-2016	1	Jun-2021	1		
Jan-2017	1	Jul-2021	1		
Feb-2017	1	Aug-2021	1		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 433
NFS Medium

Model Type = Meter Count
-
Model Type = constant
Model Eqn = 0*x+0
Variable =
Coeffs =
R2 = 0
RV = 0

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	2	Mar-2017	0	2012	1
Oct-2012	2	Apr-2017	0	2013	0
Nov-2012	2	May-2017	0	2014	0
Dec-2012	2	Jun-2017	0	2015	0
Jan-2013	2	Jul-2017	0	2016	0
Feb-2013	2	Aug-2017	0	2017	0
Mar-2013	1	Sep-2017	0	2018	0
Apr-2013	1	Oct-2017	0	2019	0
May-2013	1	Nov-2017	0	2020	0
Jun-2013	1	Dec-2017	0	2021	0
Jul-2013	1	Jan-2018	0		
Aug-2013	1	Feb-2018	0		
Sep-2013	0	Mar-2018	0		
Oct-2013	0	Apr-2018	0		
Nov-2013	1	May-2018	0		
Dec-2013	1	Jun-2018	0		
Jan-2014	0	Jul-2018	0		
Feb-2014	0	Aug-2018	0		
Mar-2014	0	Sep-2018	0		
Apr-2014	0	Oct-2018	0		
May-2014	0	Nov-2018	0		
Jun-2014	0	Dec-2018	0		
Jul-2014	0	Jan-2019	0		
Aug-2014	0	Feb-2019	0		
Sep-2014	0	Mar-2019	0		
Oct-2014	0	Apr-2019	0		
Nov-2014	0	May-2019	0		
Dec-2014	0	Jun-2019	0		
Jan-2015	0	Jul-2019	0		
Feb-2015	0	Aug-2019	0		
Mar-2015	0	Sep-2019	0		
Apr-2015	0	Oct-2019	0		
May-2015	0	Nov-2019	0		
Jun-2015	0	Dec-2019	0		
Jul-2015	0	Jan-2020	0		
Aug-2015	0	Feb-2020	0		
Sep-2015	0	Mar-2020	0		
Oct-2015	0	Apr-2020	0		
Nov-2015	0	May-2020	0		
Dec-2015	0	Jun-2020	0		
Jan-2016	0	Jul-2020	0		
Feb-2016	0	Aug-2020	0		
Mar-2016	0	Sep-2020	0		
Apr-2016	0	Oct-2020	0		
May-2016	0	Nov-2020	0		
Jun-2016	0	Dec-2020	0		
Jul-2016	0	Jan-2021	0		
Aug-2016	0	Feb-2021	0		
Sep-2016	0	Mar-2021	0		
Oct-2016	0	Apr-2021	0		
Nov-2016	0	May-2021	0		
Dec-2016	0	Jun-2021	0		
Jan-2017	0	Jul-2021	0		
Feb-2017	0	Aug-2021	0		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 434
NFT Medium

Model Type = Meter Count
-
Model Type = constant
Model Eqn = 0*x+0
Variable =
Coeffs =
R2 = 0
RV = 0

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	1	Mar-2017	0	2012	0
Oct-2012	1	Apr-2017	0	2013	0
Nov-2012	1	May-2017	0	2014	0
Dec-2012	1	Jun-2017	0	2015	0
Jan-2013	1	Jul-2017	0	2016	0
Feb-2013	1	Aug-2017	0	2017	0
Mar-2013	1	Sep-2017	0	2018	0
Apr-2013	1	Oct-2017	0	2019	0
May-2013	1	Nov-2017	0	2020	0
Jun-2013	1	Dec-2017	0	2021	0
Jul-2013	1	Jan-2018	0		
Aug-2013	1	Feb-2018	0		
Sep-2013	1	Mar-2018	0		
Oct-2013	1	Apr-2018	0		
Nov-2013	0	May-2018	0		
Dec-2013	0	Jun-2018	0		
Jan-2014	1	Jul-2018	0		
Feb-2014	1	Aug-2018	0		
Mar-2014	1	Sep-2018	0		
Apr-2014	1	Oct-2018	0		
May-2014	1	Nov-2018	0		
Jun-2014	0	Dec-2018	0		
Jul-2014	0	Jan-2019	0		
Aug-2014	0	Feb-2019	0		
Sep-2014	0	Mar-2019	0		
Oct-2014	0	Apr-2019	0		
Nov-2014	0	May-2019	0		
Dec-2014	0	Jun-2019	0		
Jan-2015	0	Jul-2019	0		
Feb-2015	0	Aug-2019	0		
Mar-2015	0	Sep-2019	0		
Apr-2015	0	Oct-2019	0		
May-2015	0	Nov-2019	0		
Jun-2015	0	Dec-2019	0		
Jul-2015	0	Jan-2020	0		
Aug-2015	0	Feb-2020	0		
Sep-2015	0	Mar-2020	0		
Oct-2015	0	Apr-2020	0		
Nov-2015	0	May-2020	0		
Dec-2015	0	Jun-2020	0		
Jan-2016	0	Jul-2020	0		
Feb-2016	0	Aug-2020	0		
Mar-2016	0	Sep-2020	0		
Apr-2016	0	Oct-2020	0		
May-2016	0	Nov-2020	0		
Jun-2016	0	Dec-2020	0		
Jul-2016	0	Jan-2021	0		
Aug-2016	0	Feb-2021	0		
Sep-2016	0	Mar-2021	0		
Oct-2016	0	Apr-2021	0		
Nov-2016	0	May-2021	0		
Dec-2016	0	Jun-2021	0		
Jan-2017	0	Jul-2021	0		
Feb-2017	0	Aug-2021	0		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 435
NFS Large Low

Model Type = Meter Count
-
Model Type = constant
Model Eqn = 0*x+0
Variable =
Coeffs =
R2 = 0
RV = 0

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	0	Mar-2017	0	2012	0
Oct-2012	0	Apr-2017	0	2013	0
Nov-2012	0	May-2017	0	2014	0
Dec-2012	0	Jun-2017	0	2015	0
Jan-2013	0	Jul-2017	0	2016	0
Feb-2013	0	Aug-2017	0	2017	0
Mar-2013	0	Sep-2017	0	2018	0
Apr-2013	0	Oct-2017	0	2019	0
May-2013	0	Nov-2017	0	2020	0
Jun-2013	0	Dec-2017	0	2021	0
Jul-2013	0	Jan-2018	0		
Aug-2013	0	Feb-2018	0		
Sep-2013	0	Mar-2018	0		
Oct-2013	0	Apr-2018	0		
Nov-2013	0	May-2018	0		
Dec-2013	0	Jun-2018	0		
Jan-2014	0	Jul-2018	0		
Feb-2014	0	Aug-2018	0		
Mar-2014	0	Sep-2018	0		
Apr-2014	0	Oct-2018	0		
May-2014	0	Nov-2018	0		
Jun-2014	0	Dec-2018	0		
Jul-2014	0	Jan-2019	0		
Aug-2014	0	Feb-2019	0		
Sep-2014	0	Mar-2019	0		
Oct-2014	0	Apr-2019	0		
Nov-2014	0	May-2019	0		
Dec-2014	0	Jun-2019	0		
Jan-2015	0	Jul-2019	0		
Feb-2015	0	Aug-2019	0		
Mar-2015	0	Sep-2019	0		
Apr-2015	0	Oct-2019	0		
May-2015	0	Nov-2019	0		
Jun-2015	0	Dec-2019	0		
Jul-2015	0	Jan-2020	0		
Aug-2015	0	Feb-2020	0		
Sep-2015	0	Mar-2020	0		
Oct-2015	0	Apr-2020	0		
Nov-2015	0	May-2020	0		
Dec-2015	0	Jun-2020	0		
Jan-2016	0	Jul-2020	0		
Feb-2016	0	Aug-2020	0		
Mar-2016	0	Sep-2020	0		
Apr-2016	0	Oct-2020	0		
May-2016	0	Nov-2020	0		
Jun-2016	0	Dec-2020	0		
Jul-2016	0	Jan-2021	0		
Aug-2016	0	Feb-2021	0		
Sep-2016	0	Mar-2021	0		
Oct-2016	0	Apr-2021	0		
Nov-2016	0	May-2021	0		
Dec-2016	0	Jun-2021	0		
Jan-2017	0	Jul-2021	0		
Feb-2017	0	Aug-2021	0		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 436
NFT Large Low

Model Type = Meter Count
-
Model Type = constant
Model Eqn = 0*x+0
Variable =
Coeffs =
R2 = 0
RV = 0

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	0	Mar-2017	0	2012	0
Oct-2012	0	Apr-2017	0	2013	0
Nov-2012	0	May-2017	0	2014	0
Dec-2012	0	Jun-2017	0	2015	0
Jan-2013	0	Jul-2017	0	2016	0
Feb-2013	0	Aug-2017	0	2017	0
Mar-2013	0	Sep-2017	0	2018	0
Apr-2013	0	Oct-2017	0	2019	0
May-2013	0	Nov-2017	0	2020	0
Jun-2013	0	Dec-2017	0	2021	0
Jul-2013	0	Jan-2018	0		
Aug-2013	0	Feb-2018	0		
Sep-2013	0	Mar-2018	0		
Oct-2013	0	Apr-2018	0		
Nov-2013	0	May-2018	0		
Dec-2013	0	Jun-2018	0		
Jan-2014	0	Jul-2018	0		
Feb-2014	0	Aug-2018	0		
Mar-2014	0	Sep-2018	0		
Apr-2014	0	Oct-2018	0		
May-2014	0	Nov-2018	0		
Jun-2014	0	Dec-2018	0		
Jul-2014	0	Jan-2019	0		
Aug-2014	0	Feb-2019	0		
Sep-2014	0	Mar-2019	0		
Oct-2014	0	Apr-2019	0		
Nov-2014	0	May-2019	0		
Dec-2014	0	Jun-2019	0		
Jan-2015	0	Jul-2019	0		
Feb-2015	0	Aug-2019	0		
Mar-2015	0	Sep-2019	0		
Apr-2015	0	Oct-2019	0		
May-2015	0	Nov-2019	0		
Jun-2015	0	Dec-2019	0		
Jul-2015	0	Jan-2020	0		
Aug-2015	0	Feb-2020	0		
Sep-2015	0	Mar-2020	0		
Oct-2015	0	Apr-2020	0		
Nov-2015	0	May-2020	0		
Dec-2015	0	Jun-2020	0		
Jan-2016	0	Jul-2020	0		
Feb-2016	0	Aug-2020	0		
Mar-2016	0	Sep-2020	0		
Apr-2016	0	Oct-2020	0		
May-2016	0	Nov-2020	0		
Jun-2016	0	Dec-2020	0		
Jul-2016	0	Jan-2021	0		
Aug-2016	0	Feb-2021	0		
Sep-2016	0	Mar-2021	0		
Oct-2016	0	Apr-2021	0		
Nov-2016	0	May-2021	0		
Dec-2016	0	Jun-2021	0		
Jan-2017	0	Jul-2021	0		
Feb-2017	0	Aug-2021	0		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 437
NFS Large High

Model Type = Meter Count
-
Model Type = constant
Model Eqn = 0*x+0
Variable =
Coeffs =
R2 = 0
RV = 0

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	1	Mar-2017	0	2012	0
Oct-2012	1	Apr-2017	0	2013	0
Nov-2012	1	May-2017	0	2014	0
Dec-2012	0	Jun-2017	0	2015	0
Jan-2013	0	Jul-2017	0	2016	0
Feb-2013	0	Aug-2017	0	2017	0
Mar-2013	0	Sep-2017	0	2018	0
Apr-2013	0	Oct-2017	0	2019	0
May-2013	0	Nov-2017	0	2020	0
Jun-2013	0	Dec-2017	0	2021	0
Jul-2013	0	Jan-2018	0		
Aug-2013	0	Feb-2018	0		
Sep-2013	0	Mar-2018	0		
Oct-2013	0	Apr-2018	0		
Nov-2013	0	May-2018	0		
Dec-2013	0	Jun-2018	0		
Jan-2014	0	Jul-2018	0		
Feb-2014	0	Aug-2018	0		
Mar-2014	0	Sep-2018	0		
Apr-2014	0	Oct-2018	0		
May-2014	0	Nov-2018	0		
Jun-2014	0	Dec-2018	0		
Jul-2014	0	Jan-2019	0		
Aug-2014	0	Feb-2019	0		
Sep-2014	0	Mar-2019	0		
Oct-2014	0	Apr-2019	0		
Nov-2014	0	May-2019	0		
Dec-2014	0	Jun-2019	0		
Jan-2015	0	Jul-2019	0		
Feb-2015	0	Aug-2019	0		
Mar-2015	0	Sep-2019	0		
Apr-2015	0	Oct-2019	0		
May-2015	0	Nov-2019	0		
Jun-2015	0	Dec-2019	0		
Jul-2015	0	Jan-2020	0		
Aug-2015	0	Feb-2020	0		
Sep-2015	0	Mar-2020	0		
Oct-2015	0	Apr-2020	0		
Nov-2015	0	May-2020	0		
Dec-2015	0	Jun-2020	0		
Jan-2016	0	Jul-2020	0		
Feb-2016	0	Aug-2020	0		
Mar-2016	0	Sep-2020	0		
Apr-2016	0	Oct-2020	0		
May-2016	0	Nov-2020	0		
Jun-2016	0	Dec-2020	0		
Jul-2016	0	Jan-2021	0		
Aug-2016	0	Feb-2021	0		
Sep-2016	0	Mar-2021	0		
Oct-2016	0	Apr-2021	0		
Nov-2016	0	May-2021	0		
Dec-2016	0	Jun-2021	0		
Jan-2017	0	Jul-2021	0		
Feb-2017	0	Aug-2021	0		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 438
NFT Large High

Model Type = Meter Count
-
Model Type = constant
Model Eqn = 0*x+0
Variable =
Coeffs =
R2 = 0
RV = 0

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	0	Mar-2017	0	2012	0
Oct-2012	0	Apr-2017	0	2013	0
Nov-2012	0	May-2017	0	2014	0
Dec-2012	0	Jun-2017	0	2015	0
Jan-2013	0	Jul-2017	0	2016	0
Feb-2013	0	Aug-2017	0	2017	0
Mar-2013	0	Sep-2017	0	2018	0
Apr-2013	0	Oct-2017	0	2019	0
May-2013	0	Nov-2017	0	2020	0
Jun-2013	0	Dec-2017	0	2021	0
Jul-2013	0	Jan-2018	0		
Aug-2013	0	Feb-2018	0		
Sep-2013	0	Mar-2018	0		
Oct-2013	0	Apr-2018	0		
Nov-2013	0	May-2018	0		
Dec-2013	0	Jun-2018	0		
Jan-2014	0	Jul-2018	0		
Feb-2014	0	Aug-2018	0		
Mar-2014	0	Sep-2018	0		
Apr-2014	0	Oct-2018	0		
May-2014	0	Nov-2018	0		
Jun-2014	0	Dec-2018	0		
Jul-2014	0	Jan-2019	0		
Aug-2014	0	Feb-2019	0		
Sep-2014	0	Mar-2019	0		
Oct-2014	0	Apr-2019	0		
Nov-2014	0	May-2019	0		
Dec-2014	0	Jun-2019	0		
Jan-2015	0	Jul-2019	0		
Feb-2015	0	Aug-2019	0		
Mar-2015	0	Sep-2019	0		
Apr-2015	0	Oct-2019	0		
May-2015	0	Nov-2019	0		
Jun-2015	0	Dec-2019	0		
Jul-2015	0	Jan-2020	0		
Aug-2015	0	Feb-2020	0		
Sep-2015	0	Mar-2020	0		
Oct-2015	0	Apr-2020	0		
Nov-2015	0	May-2020	0		
Dec-2015	0	Jun-2020	0		
Jan-2016	0	Jul-2020	0		
Feb-2016	0	Aug-2020	0		
Mar-2016	0	Sep-2020	0		
Apr-2016	0	Oct-2020	0		
May-2016	0	Nov-2020	0		
Jun-2016	0	Dec-2020	0		
Jul-2016	0	Jan-2021	0		
Aug-2016	0	Feb-2021	0		
Sep-2016	0	Mar-2021	0		
Oct-2016	0	Apr-2021	0		
Nov-2016	0	May-2021	0		
Dec-2016	0	Jun-2021	0		
Jan-2017	0	Jul-2021	0		
Feb-2017	0	Aug-2021	0		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 439
NFS XL Low

Model Type = Meter Count
-
Model Type = constant
Model Eqn = 0*x+1
Variable =
Coeffs =
R2 = 0
RV = 0

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	1	Mar-2017	1	2012	1
Oct-2012	1	Apr-2017	1	2013	1
Nov-2012	1	May-2017	1	2014	1
Dec-2012	1	Jun-2017	1	2015	1
Jan-2013	1	Jul-2017	1	2016	0
Feb-2013	1	Aug-2017	1	2017	1
Mar-2013	1	Sep-2017	0	2018	1
Apr-2013	1	Oct-2017	0	2019	1
May-2013	1	Nov-2017	0	2020	1
Jun-2013	1	Dec-2017	0	2021	1
Jul-2013	1	Jan-2018	0		
Aug-2013	1	Feb-2018	1		
Sep-2013	1	Mar-2018	1		
Oct-2013	1	Apr-2018	1		
Nov-2013	1	May-2018	1		
Dec-2013	1	Jun-2018	1		
Jan-2014	1	Jul-2018	1		
Feb-2014	1	Aug-2018	1		
Mar-2014	1	Sep-2018	1		
Apr-2014	1	Oct-2018	1		
May-2014	1	Nov-2018	1		
Jun-2014	1	Dec-2018	1		
Jul-2014	1	Jan-2019	1		
Aug-2014	1	Feb-2019	1		
Sep-2014	1	Mar-2019	1		
Oct-2014	1	Apr-2019	1		
Nov-2014	1	May-2019	1		
Dec-2014	1	Jun-2019	1		
Jan-2015	1	Jul-2019	1		
Feb-2015	1	Aug-2019	1		
Mar-2015	1	Sep-2019	1		
Apr-2015	1	Oct-2019	1		
May-2015	1	Nov-2019	1		
Jun-2015	1	Dec-2019	1		
Jul-2015	1	Jan-2020	1		
Aug-2015	1	Feb-2020	1		
Sep-2015	1	Mar-2020	1		
Oct-2015	1	Apr-2020	1		
Nov-2015	1	May-2020	1		
Dec-2015	1	Jun-2020	1		
Jan-2016	1	Jul-2020	1		
Feb-2016	1	Aug-2020	1		
Mar-2016	1	Sep-2020	1		
Apr-2016	1	Oct-2020	1		
May-2016	1	Nov-2020	1		
Jun-2016	1	Dec-2020	1		
Jul-2016	1	Jan-2021	1		
Aug-2016	1	Feb-2021	1		
Sep-2016	1	Mar-2021	1		
Oct-2016	1	Apr-2021	2		
Nov-2016	1	May-2021	1		
Dec-2016	1	Jun-2021	1		
Jan-2017	1	Jul-2021	1		
Feb-2017	1	Aug-2021	1		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 440
NFT XL Low

Model Type = Meter Count
-
Model Type = constant
Model Eqn = 0*x+1
Variable =
Coeffs =
R2 = 0
RV = 0

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	3	Mar-2017	1	2012	3
Oct-2012	3	Apr-2017	1	2013	1
Nov-2012	2	May-2017	1	2014	1
Dec-2012	1	Jun-2017	1	2015	1
Jan-2013	1	Jul-2017	1	2016	1
Feb-2013	1	Aug-2017	1	2017	1
Mar-2013	1	Sep-2017	1	2018	1
Apr-2013	1	Oct-2017	1	2019	1
May-2013	1	Nov-2017	1	2020	1
Jun-2013	1	Dec-2017	1	2021	1
Jul-2013	1	Jan-2018	1		
Aug-2013	1	Feb-2018	1		
Sep-2013	3	Mar-2018	1		
Oct-2013	3	Apr-2018	1		
Nov-2013	3	May-2018	1		
Dec-2013	3	Jun-2018	1		
Jan-2014	3	Jul-2018	1		
Feb-2014	3	Aug-2018	1		
Mar-2014	3	Sep-2018	1		
Apr-2014	3	Oct-2018	1		
May-2014	3	Nov-2018	1		
Jun-2014	3	Dec-2018	1		
Jul-2014	3	Jan-2019	1		
Aug-2014	3	Feb-2019	1		
Sep-2014	3	Mar-2019	1		
Oct-2014	3	Apr-2019	1		
Nov-2014	1	May-2019	1		
Dec-2014	1	Jun-2019	1		
Jan-2015	1	Jul-2019	1		
Feb-2015	1	Aug-2019	1		
Mar-2015	1	Sep-2019	1		
Apr-2015	1	Oct-2019	1		
May-2015	1	Nov-2019	1		
Jun-2015	1	Dec-2019	1		
Jul-2015	1	Jan-2020	1		
Aug-2015	1	Feb-2020	1		
Sep-2015	1	Mar-2020	1		
Oct-2015	1	Apr-2020	1		
Nov-2015	1	May-2020	1		
Dec-2015	1	Jun-2020	1		
Jan-2016	1	Jul-2020	1		
Feb-2016	1	Aug-2020	1		
Mar-2016	1	Sep-2020	1		
Apr-2016	1	Oct-2020	1		
May-2016	1	Nov-2020	1		
Jun-2016	1	Dec-2020	1		
Jul-2016	1	Jan-2021	1		
Aug-2016	1	Feb-2021	1		
Sep-2016	1	Mar-2021	1		
Oct-2016	1	Apr-2021	1		
Nov-2016	1	May-2021	1		
Dec-2016	1	Jun-2021	1		
Jan-2017	1	Jul-2021	1		
Feb-2017	1	Aug-2021	1		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 441
NFS XL High

Model Type = Meter Count
-
Model Type = constant
Model Eqn = 0*x+1
Variable =
Coeffs =
R2 = 0
RV = 0

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	2	Mar-2017	1	2012	2
Oct-2012	2	Apr-2017	1	2013	1
Nov-2012	2	May-2017	1	2014	1
Dec-2012	2	Jun-2017	1	2015	1
Jan-2013	2	Jul-2017	1	2016	1
Feb-2013	2	Aug-2017	1	2017	1
Mar-2013	2	Sep-2017	1	2018	1
Apr-2013	2	Oct-2017	1	2019	1
May-2013	2	Nov-2017	1	2020	1
Jun-2013	2	Dec-2017	1	2021	1
Jul-2013	2	Jan-2018	1		
Aug-2013	2	Feb-2018	1		
Sep-2013	2	Mar-2018	1		
Oct-2013	2	Apr-2018	1		
Nov-2013	2	May-2018	1		
Dec-2013	2	Jun-2018	1		
Jan-2014	1	Jul-2018	1		
Feb-2014	1	Aug-2018	1		
Mar-2014	1	Sep-2018	1		
Apr-2014	1	Oct-2018	1		
May-2014	1	Nov-2018	1		
Jun-2014	1	Dec-2018	1		
Jul-2014	1	Jan-2019	1		
Aug-2014	1	Feb-2019	1		
Sep-2014	1	Mar-2019	1		
Oct-2014	1	Apr-2019	1		
Nov-2014	1	May-2019	1		
Dec-2014	1	Jun-2019	1		
Jan-2015	1	Jul-2019	1		
Feb-2015	1	Aug-2019	1		
Mar-2015	1	Sep-2019	1		
Apr-2015	1	Oct-2019	1		
May-2015	1	Nov-2019	1		
Jun-2015	1	Dec-2019	1		
Jul-2015	1	Jan-2020	1		
Aug-2015	1	Feb-2020	1		
Sep-2015	1	Mar-2020	1		
Oct-2015	1	Apr-2020	1		
Nov-2015	1	May-2020	1		
Dec-2015	1	Jun-2020	1		
Jan-2016	1	Jul-2020	1		
Feb-2016	1	Aug-2020	1		
Mar-2016	1	Sep-2020	1		
Apr-2016	1	Oct-2020	1		
May-2016	1	Nov-2020	1		
Jun-2016	1	Dec-2020	1		
Jul-2016	1	Jan-2021	1		
Aug-2016	1	Feb-2021	1		
Sep-2016	1	Mar-2021	1		
Oct-2016	1	Apr-2021	1		
Nov-2016	1	May-2021	1		
Dec-2016	1	Jun-2021	1		
Jan-2017	1	Jul-2021	1		
Feb-2017	1	Aug-2021	1		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 442
NFT XL High

Model Type = Meter Count
-
Model Type = constant
Model Eqn = 0*x+7
Variable =
Coeffs =
R2 = 0
RV = 0.246753

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	14	Mar-2017	7	2012	12
Oct-2012	14	Apr-2017	7	2013	8
Nov-2012	14	May-2017	7	2014	8
Dec-2012	14	Jun-2017	7	2015	7
Jan-2013	14	Jul-2017	7	2016	7
Feb-2013	14	Aug-2017	7	2017	7
Mar-2013	14	Sep-2017	7	2018	7
Apr-2013	14	Oct-2017	7	2019	7
May-2013	14	Nov-2017	7	2020	7
Jun-2013	15	Dec-2017	7	2021	7
Jul-2013	14	Jan-2018	7		
Aug-2013	14	Feb-2018	7		
Sep-2013	12	Mar-2018	7		
Oct-2013	12	Apr-2018	7		
Nov-2013	12	May-2018	7		
Dec-2013	10	Jun-2018	7		
Jan-2014	10	Jul-2018	7		
Feb-2014	10	Aug-2018	7		
Mar-2014	9	Sep-2018	7		
Apr-2014	10	Oct-2018	7		
May-2014	10	Nov-2018	7		
Jun-2014	10	Dec-2018	7		
Jul-2014	10	Jan-2019	7		
Aug-2014	10	Feb-2019	7		
Sep-2014	10	Mar-2019	7		
Oct-2014	10	Apr-2019	7		
Nov-2014	8	May-2019	7		
Dec-2014	8	Jun-2019	7		
Jan-2015	8	Jul-2019	7		
Feb-2015	8	Aug-2019	7		
Mar-2015	8	Sep-2019	7		
Apr-2015	8	Oct-2019	7		
May-2015	8	Nov-2019	7		
Jun-2015	8	Dec-2019	7		
Jul-2015	8	Jan-2020	7		
Aug-2015	8	Feb-2020	7		
Sep-2015	8	Mar-2020	7		
Oct-2015	8	Apr-2020	7		
Nov-2015	8	May-2020	7		
Dec-2015	8	Jun-2020	7		
Jan-2016	8	Jul-2020	7		
Feb-2016	8	Aug-2020	7		
Mar-2016	8	Sep-2020	7		
Apr-2016	8	Oct-2020	7		
May-2016	8	Nov-2020	7		
Jun-2016	7	Dec-2020	7		
Jul-2016	7	Jan-2021	7		
Aug-2016	7	Feb-2021	7		
Sep-2016	7	Mar-2021	7		
Oct-2016	7	Apr-2021	7		
Nov-2016	7	May-2021	7		
Dec-2016	7	Jun-2021	7		
Jan-2017	7	Jul-2021	7		
Feb-2017	7	Aug-2021	7		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 443
FT2 Small

Model Type = Meter Count
-
Model Type = Eco
Model Eqn = 1 + x1
Variable =
Coeffs = {-7970.8135,17.2792}:
R2 = na
RV = 936.823R^2=0.83921

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	5	Mar-2017	507	2012	123
Oct-2012	13	Apr-2017	513	2013	170
Nov-2012	24	May-2017	521	2014	335
Dec-2012	32	Jun-2017	529	2015	457
Jan-2013	51	Jul-2017	538	2016	572
Feb-2013	64	Aug-2017	546	2017	672
Mar-2013	70	Sep-2017	554	2018	753
Apr-2013	72	Oct-2017	562	2019	798
May-2013	78	Nov-2017	572	2020	830
Jun-2013	82	Dec-2017	580	2021	871
Jul-2013	86	Jan-2018	591		
Aug-2013	87	Feb-2018	602		
Sep-2013	92	Mar-2018	610		
Oct-2013	114	Apr-2018	619		
Nov-2013	123	May-2018	627		
Dec-2013	141	Jun-2018	634		
Jan-2014	155	Jul-2018	642		
Feb-2014	155	Aug-2018	649		
Mar-2014	156	Sep-2018	656		
Apr-2014	154	Oct-2018	664		
May-2014	149	Nov-2018	672		
Jun-2014	139	Dec-2018	680		
Jul-2014	134	Jan-2019	690		
Aug-2014	135	Feb-2019	700		
Sep-2014	137	Mar-2019	707		
Oct-2014	135	Apr-2019	714		
Nov-2014	170	May-2019	720		
Dec-2014	184	Jun-2019	725		
Jan-2015	203	Jul-2019	730		
Feb-2015	264	Aug-2019	736		
Mar-2015	266	Sep-2019	742		
Apr-2015	266	Oct-2019	748		
May-2015	278	Nov-2019	753		
Jun-2015	278	Dec-2019	760		
Jul-2015	286	Jan-2020	768		
Aug-2015	289	Feb-2020	775		
Sep-2015	288	Mar-2020	778		
Oct-2015	290	Apr-2020	783		
Nov-2015	335	May-2020	785		
Dec-2015	351	Jun-2020	787		
Jan-2016	383	Jul-2020	789		
Feb-2016	394	Aug-2020	791		
Mar-2016	396	Sep-2020	793		
Apr-2016	408	Oct-2020	795		
May-2016	427	Nov-2020	798		
Jun-2016	428	Dec-2020	801		
Jul-2016	431	Jan-2021	806		
Aug-2016	433	Feb-2021	810		
Sep-2016	440	Mar-2021	813		
Oct-2016	453	Apr-2021	816		
Nov-2016	457	May-2021	818		
Dec-2016	518	Jun-2021	820		
Jan-2017	499	Jul-2021	822		
Feb-2017	507	Aug-2021	824		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 444
TSS Small

Model Type = Meter Count
-
Model Type = constant
Model Eqn = 0*x+45
Variable =
Coeffs =
R2 = 0
RV = 1216.48

Date	Actual Monthly Meter Count	Date	Forecast Monthly Meter Count	Year	Calendar Year-End Meter Count
Sep-2012	0	Mar-2017	44	2012	5
Oct-2012	0	Apr-2017	40	2013	41
Nov-2012	0	May-2017	40	2014	5
Dec-2012	0	Jun-2017	39	2015	2
Jan-2013	1	Jul-2017	38	2016	37
Feb-2013	1	Aug-2017	38	2017	34
Mar-2013	2	Sep-2017	38	2018	34
Apr-2013	2	Oct-2017	38	2019	32
May-2013	2	Nov-2017	37	2020	29
Jun-2013	1	Dec-2017	38	2021	25
Jul-2013	1	Jan-2018	38		
Aug-2013	3	Feb-2018	38		
Sep-2013	2	Mar-2018	38		
Oct-2013	2	Apr-2018	37		
Nov-2013	5	May-2018	36		
Dec-2013	5	Jun-2018	35		
Jan-2014	6	Jul-2018	35		
Feb-2014	7	Aug-2018	35		
Mar-2014	9	Sep-2018	34		
Apr-2014	15	Oct-2018	34		
May-2014	19	Nov-2018	34		
Jun-2014	28	Dec-2018	35		
Jul-2014	35	Jan-2019	36		
Aug-2014	39	Feb-2019	36		
Sep-2014	39	Mar-2019	36		
Oct-2014	41	Apr-2019	35		
Nov-2014	41	May-2019	35		
Dec-2014	42	Jun-2019	34		
Jan-2015	44	Jul-2019	34		
Feb-2015	44	Aug-2019	34		
Mar-2015	51	Sep-2019	34		
Apr-2015	54	Oct-2019	34		
May-2015	48	Nov-2019	34		
Jun-2015	48	Dec-2019	35		
Jul-2015	49	Jan-2020	35		
Aug-2015	50	Feb-2020	35		
Sep-2015	4	Mar-2020	35		
Oct-2015	2	Apr-2020	34		
Nov-2015	5	May-2020	33		
Dec-2015	5	Jun-2020	33		
Jan-2016	6	Jul-2020	33		
Feb-2016	6	Aug-2020	33		
Mar-2016	7	Sep-2020	32		
Apr-2016	7	Oct-2020	32		
May-2016	8	Nov-2020	32		
Jun-2016	1	Dec-2020	33		
Jul-2016	3	Jan-2021	33		
Aug-2016	3	Feb-2021	33		
Sep-2016	1	Mar-2021	32		
Oct-2016	2	Apr-2021	31		
Nov-2016	2	May-2021	31		
Dec-2016	18	Jun-2021	30		
Jan-2017	40	Jul-2021	29		
Feb-2017	45	Aug-2021	29		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 400
Residential Heating

Model Type = UPC
Submodel = basemodel
Model Eqn = 0*x+0.577668
Variable = constant
Coeffs =
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = na
x1 Stats = na
Model Stats = na

Model Type = UPC
Submodel = slopemodel
Model Eqn = 0*x+0.13545
Variable = constant
Coeffs =
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	19.6	Mar-2017	134	2012	509
Oct-2012	26.0	Apr-2017	97	2013	605
Nov-2012	54.9	May-2017	50	2014	677
Dec-2012	101.9	Jun-2017	27	2015	704
Jan-2013	142.3	Jul-2017	20	2016	558
Feb-2013	152.5	Aug-2017	17	2017	588
Mar-2013	132.0	Sep-2017	19	2018	605
Apr-2013	100.7	Oct-2017	24	2019	606
May-2013	50.4	Nov-2017	59	2020	605
Jun-2013	26.6	Dec-2017	104	2021	612
Jul-2013	29.4	Jan-2018	142		
Aug-2013	16.3	Feb-2018	156		
Sep-2013	12.6	Mar-2018	134		
Oct-2013	23.6	Apr-2018	94		
Nov-2013	58.0	May-2018	50		
Dec-2013	122.9	Jun-2018	28		
Jan-2014	166.0	Jul-2018	20		
Feb-2014	167.4	Aug-2018	17		
Mar-2014	155.3	Sep-2018	19		
Apr-2014	107.0	Oct-2018	24		
May-2014	55.0	Nov-2018	55		
Jun-2014	26.7	Dec-2018	103		
Jul-2014	19.6	Jan-2019	147		
Aug-2014	18.7	Feb-2019	156		
Sep-2014	19.0	Mar-2019	134		
Oct-2014	25.1	Apr-2019	91		
Nov-2014	56.4	May-2019	52		
Dec-2014	115.5	Jun-2019	27		
Jan-2015	152.7	Jul-2019	20		
Feb-2015	186.8	Aug-2019	18		
Mar-2015	175.3	Sep-2019	20		
Apr-2015	115.1	Oct-2019	23		
May-2015	47.8	Nov-2019	55		
Jun-2015	26.0	Dec-2019	103		
Jul-2015	19.9	Jan-2020	147		
Aug-2015	17.8	Feb-2020	156		
Sep-2015	18.1	Mar-2020	130		
Oct-2015	25.1	Apr-2020	96		
Nov-2015	48.9	May-2020	49		
Dec-2015	86.3	Jun-2020	27		
Jan-2016	118.0	Jul-2020	20		
Feb-2016	143.4	Aug-2020	16		
Mar-2016	123.4	Sep-2020	19		
Apr-2016	91.0	Oct-2020	23		
May-2016	54.7	Nov-2020	56		
Jun-2016	27.4	Dec-2020	102		
Jul-2016	19.7	Jan-2021	147		
Aug-2016	16.8	Feb-2021	156		
Sep-2016	17.0	Mar-2021	138		
Oct-2016	24.0	Apr-2021	96		
Nov-2016	53.3	May-2021	48		
Dec-2016	104.9	Jun-2021	27		
Jan-2017	143.3	Jul-2021	20		
Feb-2017	136.5	Aug-2021	17		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 401
Residential Non-Heating

Model Type = UPC
Submodel = model
Model Eqn = 0*x+0.607706
Variable = constant
Coeffs =
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	10.3	Mar-2017	36	2012	139
Oct-2012	13.0	Apr-2017	28	2013	185
Nov-2012	18.6	May-2017	18	2014	242
Dec-2012	30.6	Jun-2017	13	2015	209
Jan-2013	39.5	Jul-2017	9	2016	167
Feb-2013	41.9	Aug-2017	8	2017	146
Mar-2013	37.8	Sep-2017	9	2018	147
Apr-2013	31.7	Oct-2017	10	2019	147
May-2013	20.2	Nov-2017	15	2020	148
Jun-2013	13.7	Dec-2017	21	2021	147
Jul-2013	10.9	Jan-2018	27		
Aug-2013	10.4	Feb-2018	26		
Sep-2013	11.1	Mar-2018	36		
Oct-2013	12.3	Apr-2018	28		
Nov-2013	22.4	May-2018	18		
Dec-2013	41.8	Jun-2018	13		
Jan-2014	54.9	Jul-2018	9		
Feb-2014	55.8	Aug-2018	8		
Mar-2014	52.8	Sep-2018	9		
Apr-2014	39.5	Oct-2018	10		
May-2014	24.0	Nov-2018	14		
Jun-2014	14.9	Dec-2018	21		
Jul-2014	11.2	Jan-2019	27		
Aug-2014	10.9	Feb-2019	26		
Sep-2014	10.9	Mar-2019	36		
Oct-2014	13.2	Apr-2019	27		
Nov-2014	23.3	May-2019	19		
Dec-2014	33.8	Jun-2019	13		
Jan-2015	43.6	Jul-2019	9		
Feb-2015	50.8	Aug-2019	8		
Mar-2015	48.5	Sep-2019	9		
Apr-2015	34.9	Oct-2019	10		
May-2015	18.4	Nov-2019	14		
Jun-2015	12.8	Dec-2019	21		
Jul-2015	10.5	Jan-2020	27		
Aug-2015	9.4	Feb-2020	27		
Sep-2015	9.5	Mar-2020	36		
Oct-2015	11.4	Apr-2020	28		
Nov-2015	16.9	May-2020	18		
Dec-2015	26.6	Jun-2020	13		
Jan-2016	33.7	Jul-2020	10		
Feb-2016	39.4	Aug-2020	8		
Mar-2016	35.4	Sep-2020	9		
Apr-2016	27.9	Oct-2020	10		
May-2016	18.3	Nov-2020	15		
Jun-2016	12.7	Dec-2020	21		
Jul-2016	9.7	Jan-2021	27		
Aug-2016	8.2	Feb-2021	26		
Sep-2016	8.5	Mar-2021	35		
Oct-2016	10.2	Apr-2021	28		
Nov-2016	14.1	May-2021	18		
Dec-2016	20.9	Jun-2021	13		
Jan-2017	26.1	Jul-2021	10		
Feb-2017	25.6	Aug-2021	8		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 402
Residential Low Income Heating

Model Type = UPC
Submodel = basemodel
Model Eqn = b1 + b2*log(x1 + b3)
Variable = TimeLog
Coeffs = {3.0376,-0.50366,-1895.8836}
b1 Stats = SE-641.7184 t-0.0047335 p-0.99652
b2 Stats = SE-111.271 t--0.0045265 p-0.99667
b3 Stats = SE-25973.8497 t--0.072992 p-0.94641
Model Stats = R^2-0.18934, F-NaN
Intercept Stats = na
x1 Stats = na
Model Stats = na

Model Type = UPC
Submodel = slopemodel
Model Eqn = b1 + b2*log(x1 + b3)
Variable = TimeLog
Coeffs = {0.38081,-0.051602,-1886.0704}
b1 Stats = SE-0.35322 t-1.0781 p-0.34166
b2 Stats = SE-0.072867 t--0.70817 p-0.51792
b3 Stats = SE-0.00086617 t--2177488.1287 p-2.6689e-25
Model Stats = R^2-0.18649, F-NaN
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	20.5	Mar-2017	133	2012	504
Oct-2012	25.8	Apr-2017	97	2013	591
Nov-2012	52.9	May-2017	50	2014	656
Dec-2012	102.4	Jun-2017	27	2015	676
Jan-2013	138.8	Jul-2017	21	2016	546
Feb-2013	148.0	Aug-2017	18	2017	578
Mar-2013	129.4	Sep-2017	21	2018	595
Apr-2013	97.9	Oct-2017	25	2019	594
May-2013	49.3	Nov-2017	57	2020	590
Jun-2013	27.2	Dec-2017	105	2021	590
Jul-2013	20.4	Jan-2018	139		
Aug-2013	19.7	Feb-2018	151		
Sep-2013	20.9	Mar-2018	133		
Oct-2013	24.7	Apr-2018	94		
Nov-2013	58.2	May-2018	49		
Dec-2013	118.9	Jun-2018	29		
Jan-2014	161.3	Jul-2018	20		
Feb-2014	161.6	Aug-2018	18		
Mar-2014	149.8	Sep-2018	21		
Apr-2014	103.1	Oct-2018	25		
May-2014	53.9	Nov-2018	54		
Jun-2014	26.5	Dec-2018	104		
Jul-2014	20.5	Jan-2019	143		
Aug-2014	19.3	Feb-2019	151		
Sep-2014	19.7	Mar-2019	132		
Oct-2014	25.8	Apr-2019	90		
Nov-2014	55.9	May-2019	51		
Dec-2014	112.4	Jun-2019	27		
Jan-2015	148.1	Jul-2019	20		
Feb-2015	176.4	Aug-2019	19		
Mar-2015	166.0	Sep-2019	21		
Apr-2015	113.0	Oct-2019	24		
May-2015	46.2	Nov-2019	54		
Jun-2015	26.3	Dec-2019	104		
Jul-2015	21.4	Jan-2020	143		
Aug-2015	18.5	Feb-2020	150		
Sep-2015	19.1	Mar-2020	128		
Oct-2015	26.5	Apr-2020	96		
Nov-2015	48.8	May-2020	47		
Dec-2015	83.1	Jun-2020	27		
Jan-2016	116.6	Jul-2020	22		
Feb-2016	134.8	Aug-2020	17		
Mar-2016	122.0	Sep-2020	20		
Apr-2016	91.1	Oct-2020	24		
May-2016	53.3	Nov-2020	55		
Jun-2016	27.7	Dec-2020	102		
Jul-2016	20.7	Jan-2021	142		
Aug-2016	17.6	Feb-2021	149		
Sep-2016	18.3	Mar-2021	131		
Oct-2016	25.0	Apr-2021	95		
Nov-2016	55.1	May-2021	47		
Dec-2016	104.1	Jun-2021	27		
Jan-2017	139.4	Jul-2021	21		
Feb-2017	131.7	Aug-2021	18		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 403
Residential Low Income Non-Heating

Model Type = UPC
Submodel = model
Model Eqn = b1 + b2*log(x1 + b3)
Variable = TimeLog
Coeffs = {48.0819,-9.4688,-1880.0518}
b1 Stats = SE-11757.8828 t-0.0040893 p-0.99699
b2 Stats = SE-1995.0574 t--0.0047461 p-0.99651
b3 Stats = SE-28108.4203 t--0.066886 p-0.95088
Model Stats = R^2-0.23599, F-NaN
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	16.9	Mar-2017	83	2012	391
Oct-2012	23.4	Apr-2017	75	2013	477
Nov-2012	45.6	May-2017	43	2014	579
Dec-2012	84.8	Jun-2017	19	2015	460
Jan-2013	113.7	Jul-2017	12	2016	379
Feb-2013	124.7	Aug-2017	10	2017	359
Mar-2013	102.7	Sep-2017	11	2018	356
Apr-2013	76.3	Oct-2017	15	2019	356
May-2013	37.5	Nov-2017	31	2020	357
Jun-2013	22.2	Dec-2017	56	2021	357
Jul-2013	17.2	Jan-2018	73		
Aug-2013	16.9	Feb-2018	67		
Sep-2013	17.8	Mar-2018	80		
Oct-2013	21.5	Apr-2018	72		
Nov-2013	56.1	May-2018	43		
Dec-2013	110.5	Jun-2018	20		
Jan-2014	144.8	Jul-2018	11		
Feb-2014	142.4	Aug-2018	10		
Mar-2014	133.9	Sep-2018	12		
Apr-2014	89.6	Oct-2018	15		
May-2014	46.6	Nov-2018	30		
Jun-2014	22.1	Dec-2018	57		
Jul-2014	17.7	Jan-2019	75		
Aug-2014	16.4	Feb-2019	67		
Sep-2014	16.9	Mar-2019	80		
Oct-2014	22.6	Apr-2019	70		
Nov-2014	48.3	May-2019	45		
Dec-2014	77.1	Jun-2019	19		
Jan-2015	99.7	Jul-2019	12		
Feb-2015	116.3	Aug-2019	11		
Mar-2015	107.8	Sep-2019	11		
Apr-2015	83.0	Oct-2019	14		
May-2015	33.8	Nov-2019	30		
Jun-2015	19.9	Dec-2019	57		
Jul-2015	16.3	Jan-2020	75		
Aug-2015	15.6	Feb-2020	66		
Sep-2015	14.4	Mar-2020	80		
Oct-2015	19.7	Apr-2020	75		
Nov-2015	34.0	May-2020	42		
Dec-2015	53.6	Jun-2020	19		
Jan-2016	77.0	Jul-2020	12		
Feb-2016	84.2	Aug-2020	10		
Mar-2016	82.7	Sep-2020	12		
Apr-2016	73.9	Oct-2020	15		
May-2016	40.7	Nov-2020	31		
Jun-2016	20.3	Dec-2020	57		
Jul-2016	12.2	Jan-2021	75		
Aug-2016	10.4	Feb-2021	67		
Sep-2016	10.8	Mar-2021	82		
Oct-2016	14.9	Apr-2021	75		
Nov-2016	29.6	May-2021	40		
Dec-2016	54.7	Jun-2021	19		
Jan-2017	72.1	Jul-2021	12		
Feb-2017	66.1	Aug-2021	10		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 404
C&I Small

Model Type = UPC
Submodel = basemodel
Model Eqn = 0*x+0.759596
Variable = constant
Coeffs =
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = na
x1 Stats = na
Model Stats = na

Model Type = UPC
Submodel = slopemodel
Model Eqn = 1 + x1
Variable = GORCI
Coeffs = {0.26907,-0.085223}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-0.01556 t-17.2929 p-6.5623e-05
x1 Stats = SE-0.029345 t--2.9042 p-0.043933
Model Stats = R^2-0.67832, F-8.4351

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	27.2	Mar-2017	206	2012	720
Oct-2012	19.8	Apr-2017	140	2013	886
Nov-2012	66.3	May-2017	62	2014	1,061
Dec-2012	176.0	Jun-2017	40	2015	1,104
Jan-2013	211.0	Jul-2017	25	2016	821
Feb-2013	239.0	Aug-2017	23	2017	879
Mar-2013	204.6	Sep-2017	26	2018	902
Apr-2013	142.7	Oct-2017	32	2019	897
May-2013	60.5	Nov-2017	69	2020	897
Jun-2013	28.0	Dec-2017	162	2021	889
Jul-2013	22.7	Jan-2018	226		
Aug-2013	21.7	Feb-2018	230		
Sep-2013	22.7	Mar-2018	205		
Oct-2013	26.4	Apr-2018	140		
Nov-2013	73.5	May-2018	62		
Dec-2013	176.9	Jun-2018	40		
Jan-2014	276.1	Jul-2018	24		
Feb-2014	275.2	Aug-2018	23		
Mar-2014	257.3	Sep-2018	26		
Apr-2014	171.4	Oct-2018	32		
May-2014	54.1	Nov-2018	66		
Jun-2014	26.8	Dec-2018	160		
Jul-2014	23.0	Jan-2019	225		
Aug-2014	22.6	Feb-2019	229		
Sep-2014	23.2	Mar-2019	204		
Oct-2014	30.9	Apr-2019	135		
Nov-2014	72.6	May-2019	64		
Dec-2014	165.6	Jun-2019	40		
Jan-2015	242.7	Jul-2019	24		
Feb-2015	309.2	Aug-2019	23		
Mar-2015	292.5	Sep-2019	26		
Apr-2015	169.0	Oct-2019	30		
May-2015	61.7	Nov-2019	66		
Jun-2015	29.2	Dec-2019	160		
Jul-2015	52.1	Jan-2020	225		
Aug-2015	-3.1	Feb-2020	233		
Sep-2015	23.5	Mar-2020	200		
Oct-2015	30.8	Apr-2020	138		
Nov-2015	60.2	May-2020	61		
Dec-2015	114.9	Jun-2020	40		
Jan-2016	174.7	Jul-2020	25		
Feb-2016	225.6	Aug-2020	22		
Mar-2016	189.6	Sep-2020	26		
Apr-2016	126.1	Oct-2020	31		
May-2016	70.3	Nov-2020	67		
Jun-2016	34.5	Dec-2020	159		
Jul-2016	25.5	Jan-2021	224		
Aug-2016	22.8	Feb-2021	228		
Sep-2016	19.9	Mar-2021	202		
Oct-2016	26.4	Apr-2021	137		
Nov-2016	62.7	May-2021	59		
Dec-2016	146.2	Jun-2021	39		
Jan-2017	222.1	Jul-2021	25		
Feb-2017	209.5	Aug-2021	22		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 405
C&I Medium

Model Type = UPC
Submodel = model
Model Eqn = 1 + x1
Variable = GORI
Coeffs = {36.4415,-19.0521}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-3.4024 t-10.7105 p-0.00043061
x1 Stats = SE-6.8198 t--2.7937 p-0.049128
Model Stats = R^2-0.67201, F-8.1959

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	296.0	Mar-2017	1,393	2012	5,894
Oct-2012	361.3	Apr-2017	1,025	2013	6,737
Nov-2012	628.5	May-2017	648	2014	7,542
Dec-2012	1,173.5	Jun-2017	369	2015	7,888
Jan-2013	1,572.6	Jul-2017	279	2016	6,301
Feb-2013	1,662.9	Aug-2017	292	2017	6,423
Mar-2013	1,442.3	Sep-2017	277	2018	6,433
Apr-2013	1,101.4	Oct-2017	364	2019	6,429
May-2013	605.2	Nov-2017	650	2020	6,462
Jun-2013	352.4	Dec-2017	1,155	2021	6,361
Jul-2013	323.3	Jan-2018	1,553		
Aug-2013	256.5	Feb-2018	1,451		
Sep-2013	318.4	Mar-2018	1,390		
Oct-2013	318.5	Apr-2018	1,022		
Nov-2013	683.2	May-2018	647		
Dec-2013	1,500.4	Jun-2018	370		
Jan-2014	1,726.6	Jul-2018	280		
Feb-2014	1,839.6	Aug-2018	293		
Mar-2014	1,757.9	Sep-2018	278		
Apr-2014	1,196.7	Oct-2018	362		
May-2014	669.7	Nov-2018	625		
Jun-2014	351.4	Dec-2018	1,149		
Jul-2014	277.3	Jan-2019	1,552		
Aug-2014	274.7	Feb-2019	1,450		
Sep-2014	276.6	Mar-2019	1,391		
Oct-2014	353.2	Apr-2019	991		
Nov-2014	719.7	May-2019	671		
Dec-2014	1,250.2	Jun-2019	374		
Jan-2015	1,693.9	Jul-2019	284		
Feb-2015	2,035.6	Aug-2019	309		
Mar-2015	1,941.7	Sep-2019	283		
Apr-2015	1,289.1	Oct-2019	355		
May-2015	576.3	Nov-2019	628		
Jun-2015	351.6	Dec-2019	1,149		
Jul-2015	280.8	Jan-2020	1,546		
Aug-2015	259.3	Feb-2020	1,491		
Sep-2015	267.4	Mar-2020	1,384		
Oct-2015	354.8	Apr-2020	1,020		
Nov-2015	646.7	May-2020	648		
Dec-2015	938.4	Jun-2020	373		
Jan-2016	1,289.5	Jul-2020	293		
Feb-2016	1,575.2	Aug-2020	288		
Mar-2016	1,390.6	Sep-2020	282		
Apr-2016	1,022.2	Oct-2020	364		
May-2016	650.8	Nov-2020	646		
Jun-2016	372.3	Dec-2020	1,144		
Jul-2016	289.3	Jan-2021	1,539		
Aug-2016	294.5	Feb-2021	1,437		
Sep-2016	275.1	Mar-2021	1,378		
Oct-2016	360.4	Apr-2021	1,013		
Nov-2016	621.4	May-2021	624		
Dec-2016	1,138.4	Jun-2021	371		
Jan-2017	1,548.4	Jul-2021	291		
Feb-2017	1,439.3	Aug-2021	296		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 406
FT2 Medium

Model Type = UPC
Submodel = model
Model Eqn = 1 + x1
Variable = GORCI
Coeffs = {41.5931,-13.3126}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-3.1144 t-13.3551 p-0.00018176
x1 Stats = SE-5.8736 t--2.2665 p-0.086057
Model Stats = R^2-0.56242, F-5.1416

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	350.6	Mar-2017	1,775	2012	7,242
Oct-2012	440.1	Apr-2017	1,357	2013	7,422
Nov-2012	797.5	May-2017	890	2014	9,337
Dec-2012	2,406.8	Jun-2017	509	2015	9,771
Jan-2013	879.5	Jul-2017	374	2016	8,136
Feb-2013	2,002.4	Aug-2017	332	2017	8,291
Mar-2013	1,793.0	Sep-2017	335	2018	8,299
Apr-2013	1,451.9	Oct-2017	456	2019	8,268
May-2013	812.0	Nov-2017	872	2020	8,317
Jun-2013	482.7	Dec-2017	1,461	2021	8,218
Jul-2013	369.6	Jan-2018	1,931		
Aug-2013	363.4	Feb-2018	1,845		
Sep-2013	377.5	Mar-2018	1,770		
Oct-2013	476.9	Apr-2018	1,353		
Nov-2013	951.4	May-2018	890		
Dec-2013	1,612.7	Jun-2018	510		
Jan-2014	2,126.7	Jul-2018	375		
Feb-2014	2,192.4	Aug-2018	334		
Mar-2014	2,123.6	Sep-2018	337		
Apr-2014	1,518.3	Oct-2018	458		
May-2014	894.3	Nov-2018	841		
Jun-2014	481.4	Dec-2018	1,456		
Jul-2014	384.5	Jan-2019	1,927		
Aug-2014	362.6	Feb-2019	1,840		
Sep-2014	359.5	Mar-2019	1,765		
Oct-2014	445.2	Apr-2019	1,308		
Nov-2014	895.5	May-2019	918		
Dec-2014	1,568.6	Jun-2019	511		
Jan-2015	2,055.3	Jul-2019	377		
Feb-2015	2,447.0	Aug-2019	347		
Mar-2015	2,345.0	Sep-2019	338		
Apr-2015	1,662.8	Oct-2019	443		
May-2015	827.0	Nov-2019	839		
Jun-2015	434.3	Dec-2019	1,451		
Jul-2015	391.5	Jan-2020	1,920		
Aug-2015	354.9	Feb-2020	1,893		
Sep-2015	365.4	Mar-2020	1,758		
Oct-2015	472.0	Apr-2020	1,348		
Nov-2015	804.7	May-2020	887		
Dec-2015	1,259.3	Jun-2020	511		
Jan-2016	1,660.8	Jul-2020	390		
Feb-2016	1,952.9	Aug-2020	325		
Mar-2016	1,764.0	Sep-2020	339		
Apr-2016	1,358.7	Oct-2020	457		
May-2016	892.0	Nov-2020	864		
Jun-2016	507.5	Dec-2020	1,444		
Jul-2016	384.1	Jan-2021	1,911		
Aug-2016	331.6	Feb-2021	1,822		
Sep-2016	328.6	Mar-2021	1,749		
Oct-2016	443.4	Apr-2021	1,341		
Nov-2016	826.9	May-2021	885		
Dec-2016	1,435.8	Jun-2021	510		
Jan-2017	1,927.7	Jul-2021	390		
Feb-2017	1,832.3	Aug-2021	338		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 407
FT1 Medium

Model Type = UPC
Submodel = model
Model Eqn = 1 + x1
Variable = GORCI
Coeffs = {56.616,-20.4609}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-3.7474 t-15.1081 p-0.00011187
x1 Stats = SE-7.0674 t--2.8951 p-0.044335
Model Stats = R^2-0.67696, F-8.3825

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	714.6	Mar-2017	1,816	2012	8,587
Oct-2012	988.4	Apr-2017	1,509	2013	9,878
Nov-2012	1,840.5	May-2017	951	2014	10,758
Dec-2012	2,068.7	Jun-2017	648	2015	11,261
Jan-2013	2,511.7	Jul-2017	633	2016	9,757
Feb-2013	2,333.4	Aug-2017	583	2017	9,328
Mar-2013	2,146.1	Sep-2017	645	2018	9,352
Apr-2013	1,371.2	Oct-2017	1,066	2019	9,347
May-2013	860.9	Nov-2017	1,535	2020	9,386
Jun-2013	654.9	Dec-2017	2,477	2021	9,276
Jul-2013	608.1	Jan-2018	2,412		
Aug-2013	656.0	Feb-2018	2,019		
Sep-2013	735.7	Mar-2018	1,813		
Oct-2013	1,063.2	Apr-2018	1,505		
Nov-2013	1,806.9	May-2018	952		
Dec-2013	2,477.9	Jun-2018	651		
Jan-2014	2,840.8	Jul-2018	636		
Feb-2014	2,546.8	Aug-2018	586		
Mar-2014	2,384.7	Sep-2018	649		
Apr-2014	1,425.4	Oct-2018	1,070		
May-2014	882.5	Nov-2018	1,533		
Jun-2014	678.0	Dec-2018	2,473		
Jul-2014	650.9	Jan-2019	2,410		
Aug-2014	662.1	Feb-2019	2,016		
Sep-2014	700.8	Mar-2019	1,810		
Oct-2014	1,040.0	Apr-2019	1,507		
Nov-2014	1,763.4	May-2019	951		
Dec-2014	2,216.4	Jun-2019	653		
Jan-2015	2,908.7	Jul-2019	639		
Feb-2015	3,002.5	Aug-2019	591		
Mar-2015	2,440.0	Sep-2019	652		
Apr-2015	1,428.0	Oct-2019	1,071		
May-2015	790.3	Nov-2019	1,532		
Jun-2015	691.8	Dec-2019	2,467		
Jul-2015	645.5	Jan-2020	2,402		
Aug-2015	633.7	Feb-2020	2,072		
Sep-2015	646.1	Mar-2020	1,803		
Oct-2015	1,193.3	Apr-2020	1,502		
Nov-2015	1,486.8	May-2020	951		
Dec-2015	1,665.9	Jun-2020	656		
Jan-2016	2,537.3	Jul-2020	642		
Feb-2016	2,313.4	Aug-2020	593		
Mar-2016	1,798.2	Sep-2020	655		
Apr-2016	1,510.1	Oct-2020	1,072		
May-2016	952.4	Nov-2020	1,528		
Jun-2016	646.1	Dec-2020	2,459		
Jul-2016	630.5	Jan-2021	2,390		
Aug-2016	583.5	Feb-2021	1,996		
Sep-2016	636.1	Mar-2021	1,792		
Oct-2016	1,049.3	Apr-2021	1,492		
Nov-2016	1,510.7	May-2021	949		
Dec-2016	2,440.0	Jun-2021	657		
Jan-2017	2,406.1	Jul-2021	645		
Feb-2017	1,997.6	Aug-2021	597		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 408
TSS Medium

Model Type = UPC
Submodel = model
Model Eqn = 0*x+33.5399
Variable = constant
Coeffs =
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	418.4	Mar-2017	1,430	2012	7,130
Oct-2012	796.3	Apr-2017	1,099	2013	6,735
Nov-2012	1,135.5	May-2017	713	2014	8,833
Dec-2012	1,935.1	Jun-2017	490	2015	9,138
Jan-2013	1,645.8	Jul-2017	942	2016	6,782
Feb-2013	1,527.5	Aug-2017	846	2017	6,709
Mar-2013	1,410.1	Sep-2017	704	2018	6,689
Apr-2013	1,200.1	Oct-2017	556	2019	6,669
May-2013	573.9	Nov-2017	894	2020	6,651
Jun-2013	377.5	Dec-2017	1,376	2021	6,632
Jul-2013	211.3	Jan-2018	1,527		
Aug-2013	285.9	Feb-2018	1,441		
Sep-2013	377.4	Mar-2018	1,425		
Oct-2013	450.1	Apr-2018	1,096		
Nov-2013	876.3	May-2018	711		
Dec-2013	1,630.2	Jun-2018	489		
Jan-2014	2,422.7	Jul-2018	939		
Feb-2014	2,033.2	Aug-2018	844		
Mar-2014	1,876.9	Sep-2018	702		
Apr-2014	1,286.5	Oct-2018	554		
May-2014	779.8	Nov-2018	891		
Jun-2014	433.9	Dec-2018	1,372		
Jul-2014	418.2	Jan-2019	1,523		
Aug-2014	483.8	Feb-2019	1,437		
Sep-2014	454.3	Mar-2019	1,421		
Oct-2014	509.8	Apr-2019	1,093		
Nov-2014	836.0	May-2019	709		
Dec-2014	1,493.5	Jun-2019	487		
Jan-2015	1,981.0	Jul-2019	936		
Feb-2015	2,380.5	Aug-2019	841		
Mar-2015	2,108.1	Sep-2019	700		
Apr-2015	1,497.3	Oct-2019	552		
May-2015	726.5	Nov-2019	889		
Jun-2015	444.2	Dec-2019	1,368		
Jul-2015	372.9	Jan-2020	1,518		
Aug-2015	367.0	Feb-2020	1,433		
Sep-2015	430.6	Mar-2020	1,417		
Oct-2015	519.1	Apr-2020	1,090		
Nov-2015	699.6	May-2020	707		
Dec-2015	1,083.4	Jun-2020	486		
Jan-2016	1,425.4	Jul-2020	934		
Feb-2016	1,612.8	Aug-2020	839		
Mar-2016	1,434.1	Sep-2020	698		
Apr-2016	1,102.8	Oct-2020	551		
May-2016	715.1	Nov-2020	886		
Jun-2016	491.9	Dec-2020	1,364		
Jul-2016	945.0	Jan-2021	1,514		
Aug-2016	848.9	Feb-2021	1,429		
Sep-2016	706.2	Mar-2021	1,413		
Oct-2016	557.4	Apr-2021	1,087		
Nov-2016	897.0	May-2021	705		
Dec-2016	1,380.0	Jun-2021	485		
Jan-2017	1,531.5	Jul-2021	931		
Feb-2017	1,445.2	Aug-2021	837		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 409
C&I Low Load - Large

Model Type = UPC
Submodel = basemodel
Model Eqn = 1 + x1
Variable = GORI
Coeffs = {39.8064,-36.6347}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-5.2163 t-7.6312 p-0.0015836
x1 Stats = SE-10.4555 t--3.5039 p-0.024809
Model Stats = R^2-0.76587, F-13.0848

Model Type = UPC
Submodel = slopemodel
Model Eqn = 0*x+9.06722
Variable = constant
Coeffs =
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	1,115.2	Mar-2017	8,320	2012	30,582
Oct-2012	1,299.4	Apr-2017	5,572	2013	35,261
Nov-2012	2,944.1	May-2017	3,248	2014	43,765
Dec-2012	6,031.0	Jun-2017	1,376	2015	44,316
Jan-2013	8,064.6	Jul-2017	733	2016	36,009
Feb-2013	8,892.6	Aug-2017	658	2017	36,251
Mar-2013	7,799.6	Sep-2017	974	2018	36,907
Apr-2013	6,078.4	Oct-2017	1,197	2019	36,631
May-2013	3,200.6	Nov-2017	3,243	2020	36,520
Jun-2013	1,225.7	Dec-2017	6,954	2021	36,119
Jul-2013	834.2	Jan-2018	9,139		
Aug-2013	838.5	Feb-2018	9,350		
Sep-2013	831.2	Mar-2018	8,274		
Oct-2013	1,254.6	Apr-2018	5,546		
Nov-2013	3,471.6	May-2018	3,218		
Dec-2013	7,254.5	Jun-2018	1,380		
Jan-2014	10,474.2	Jul-2018	716		
Feb-2014	10,620.1	Aug-2018	644		
Mar-2014	10,665.2	Sep-2018	960		
Apr-2014	7,032.2	Oct-2018	1,177		
May-2014	3,631.0	Nov-2018	3,106		
Jun-2014	1,342.3	Dec-2018	6,867		
Jul-2014	784.5	Jan-2019	9,087		
Aug-2014	736.4	Feb-2019	9,313		
Sep-2014	817.9	Mar-2019	8,233		
Oct-2014	1,229.4	Apr-2019	5,337		
Nov-2014	3,280.5	May-2019	3,302		
Dec-2014	7,206.2	Jun-2019	1,360		
Jan-2015	9,684.7	Jul-2019	703		
Feb-2015	11,655.5	Aug-2019	631		
Mar-2015	11,087.7	Sep-2019	950		
Apr-2015	7,712.1	Oct-2019	1,131		
May-2015	3,018.6	Nov-2019	3,081		
Jun-2015	1,156.9	Dec-2019	6,845		
Jul-2015	790.8	Jan-2020	9,051		
Aug-2015	712.8	Feb-2020	9,432		
Sep-2015	649.7	Mar-2020	8,053		
Oct-2015	1,210.5	Apr-2020	5,465		
Nov-2015	2,862.8	May-2020	3,177		
Dec-2015	5,073.4	Jun-2020	1,341		
Jan-2016	7,321.8	Jul-2020	720		
Feb-2016	9,662.4	Aug-2020	596		
Mar-2016	8,772.7	Sep-2020	923		
Apr-2016	5,550.0	Oct-2020	1,137		
May-2016	3,358.2	Nov-2020	3,129		
Jun-2016	1,343.7	Dec-2020	6,787		
Jul-2016	680.7	Jan-2021	9,003		
Aug-2016	558.7	Feb-2021	9,229		
Sep-2016	675.2	Mar-2021	8,139		
Oct-2016	1,248.9	Apr-2021	5,407		
Nov-2016	3,033.9	May-2021	3,034		
Dec-2016	6,476.4	Jun-2021	1,306		
Jan-2017	9,290.6	Jul-2021	702		
Feb-2017	8,444.1	Aug-2021	604		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 410
FT2 Large Low

Model Type = UPC
Submodel = basemodel
Model Eqn = 1 + x1
Variable = GORI
Coeffs = {38.343,-24.2243}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-5.0226 t-7.6341 p-0.0015813
x1 Stats = SE-10.0673 t--2.4062 p-0.073855
Model Stats = R^2-0.60891, F-6.2281

Model Type = UPC
Submodel = slopemodel
Model Eqn = 0*x+9.81712
Variable = constant
Coeffs =
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	883.3	Mar-2017	9,106	2012	34,165
Oct-2012	1,338.8	Apr-2017	6,112	2013	40,866
Nov-2012	4,099.4	May-2017	3,613	2014	46,700
Dec-2012	7,230.8	Jun-2017	1,597	2015	47,061
Jan-2013	9,567.1	Jul-2017	888	2016	38,800
Feb-2013	10,288.2	Aug-2017	807	2017	39,786
Mar-2013	9,057.6	Sep-2017	1,147	2018	40,513
Apr-2013	6,995.8	Oct-2017	1,535	2019	40,295
May-2013	3,511.1	Nov-2017	4,176	2020	40,249
Jun-2013	1,446.4	Dec-2017	8,004	2021	39,959
Jul-2013	915.6	Jan-2018	9,959		
Aug-2013	945.0	Feb-2018	10,189		
Sep-2013	912.6	Mar-2018	9,064		
Oct-2013	1,466.9	Apr-2018	6,097		
Nov-2013	4,650.3	May-2018	3,592		
Dec-2013	7,683.5	Jun-2018	1,613		
Jan-2014	10,800.3	Jul-2018	884		
Feb-2014	11,651.5	Aug-2018	805		
Mar-2014	10,886.4	Sep-2018	1,144		
Apr-2014	7,913.7	Oct-2018	1,529		
May-2014	3,951.9	Nov-2018	4,020		
Jun-2014	1,496.2	Dec-2018	7,926		
Jul-2014	916.1	Jan-2019	9,919		
Aug-2014	869.5	Feb-2019	10,159		
Sep-2014	933.0	Mar-2019	9,031		
Oct-2014	1,502.3	Apr-2019	5,875		
Nov-2014	3,935.7	May-2019	3,704		
Dec-2014	7,935.5	Jun-2019	1,605		
Jan-2015	10,642.1	Jul-2019	884		
Feb-2015	12,309.7	Aug-2019	806		
Mar-2015	11,733.4	Sep-2019	1,147		
Apr-2015	7,723.7	Oct-2019	1,485		
May-2015	3,297.2	Nov-2019	4,001		
Jun-2015	1,355.1	Dec-2019	7,912		
Jul-2015	930.0	Jan-2020	9,890		
Aug-2015	797.2	Feb-2020	10,309		
Sep-2015	806.2	Mar-2020	8,848		
Oct-2015	1,520.9	Apr-2020	6,030		
Nov-2015	3,480.5	May-2020	3,575		
Dec-2015	6,241.9	Jun-2020	1,598		
Jan-2016	8,175.1	Jul-2020	919		
Feb-2016	10,025.0	Aug-2020	776		
Mar-2016	8,857.4	Sep-2020	1,129		
Apr-2016	6,291.3	Oct-2020	1,507		
May-2016	3,818.3	Nov-2020	4,077		
Jun-2016	1,632.4	Dec-2020	7,851		
Jul-2016	856.0	Jan-2021	9,843		
Aug-2016	749.3	Feb-2021	10,079		
Sep-2016	805.0	Mar-2021	8,944		
Oct-2016	1,419.4	Apr-2021	5,981		
Nov-2016	3,756.5	May-2021	3,544		
Dec-2016	7,296.1	Jun-2021	1,568		
Jan-2017	9,800.6	Jul-2021	911		
Feb-2017	9,557.3	Aug-2021	800		

The Narragansett Electric Company d/b/a National Grid
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Rate Code 411
FT1 Large Low

Model Type = UPC
Submodel = basemodel
Model Eqn = b1 + b2*log(x1 + b3)
Variable = TimeLog
Coeffs = {33.9949,1.7298,-2009.5064}
b1 Stats = SE-18.0866 t-1.8796 p-0.15676
b2 Stats = SE-8.3557 t-0.20702 p-0.84925
b3 Stats = SE-13.5823 t--147.9504 p-6.8085e-07
Model Stats = R^2-0.28635, F-NaN
Intercept Stats = na
x1 Stats = na
Model Stats = na

Model Type = UPC
Submodel = slopemodel
Model Eqn = 1 + x1
Variable = TimeLinear
Coeffs = {385.1829,-0.18657}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-111.3151 t-3.4603 p-0.025811
x1 Stats = SE-0.055277 t--3.3752 p-0.027909
Model Stats = R^2-0.74754, F-11.8447

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	1,528.3	Mar-2017	8,137	2012	33,992
Oct-2012	3,340.4	Apr-2017	4,784	2013	38,993
Nov-2012	7,359.7	May-2017	2,587	2014	43,050
Dec-2012	8,682.9	Jun-2017	1,492	2015	43,832
Jan-2013	10,808.2	Jul-2017	1,141	2016	36,300
Feb-2013	10,158.4	Aug-2017	1,137	2017	34,179
Mar-2013	9,124.4	Sep-2017	1,573	2018	37,467
Apr-2013	5,281.9	Oct-2017	3,778	2019	37,384
May-2013	2,337.9	Nov-2017	6,090	2020	37,308
Jun-2013	1,282.2	Dec-2017	9,291	2021	37,150
Jul-2013	1,074.0	Jan-2018	11,030		
Aug-2013	1,159.5	Feb-2018	9,473		
Sep-2013	1,668.4	Mar-2018	8,115		
Oct-2013	3,694.5	Apr-2018	4,770		
Nov-2013	7,767.0	May-2018	2,584		
Dec-2013	10,348.6	Jun-2018	1,494		
Jan-2014	12,547.1	Jul-2018	1,143		
Feb-2014	10,983.2	Aug-2018	1,140		
Mar-2014	10,267.0	Sep-2018	1,576		
Apr-2014	5,451.5	Oct-2018	3,775		
May-2014	2,512.0	Nov-2018	6,075		
Jun-2014	1,289.6	Dec-2018	9,266		
Jul-2014	1,148.7	Jan-2019	11,004		
Aug-2014	1,188.4	Feb-2019	9,448		
Sep-2014	1,564.4	Mar-2019	8,095		
Oct-2014	3,492.1	Apr-2019	4,764		
Nov-2014	7,067.6	May-2019	2,579		
Dec-2014	9,099.0	Jun-2019	1,495		
Jan-2015	12,363.4	Jul-2019	1,147		
Feb-2015	12,681.8	Aug-2019	1,144		
Mar-2015	9,990.5	Sep-2019	1,577		
Apr-2015	5,267.6	Oct-2019	3,769		
May-2015	1,988.3	Nov-2019	6,061		
Jun-2015	1,540.5	Dec-2019	9,240		
Jul-2015	1,234.7	Jan-2020	10,971		
Aug-2015	1,129.5	Feb-2020	9,447		
Sep-2015	1,264.4	Mar-2020	8,070		
Oct-2015	3,910.7	Apr-2020	4,750		
Nov-2015	5,477.7	May-2020	2,575		
Dec-2015	6,291.5	Jun-2020	1,496		
Jan-2016	10,562.2	Jul-2020	1,149		
Feb-2016	9,228.2	Aug-2020	1,145		
Mar-2016	6,848.2	Sep-2020	1,578		
Apr-2016	5,577.2	Oct-2020	3,763		
May-2016	2,801.5	Nov-2020	6,044		
Jun-2016	1,283.2	Dec-2020	9,213		
Jul-2016	1,145.2	Jan-2021	10,934		
Aug-2016	1,129.8	Feb-2021	9,384		
Sep-2016	1,446.8	Mar-2021	8,039		
Oct-2016	3,653.0	Apr-2021	4,729		
Nov-2016	5,726.9	May-2021	2,569		
Dec-2016	9,409.0	Jun-2021	1,494		
Jan-2017	9,513.1	Jul-2021	1,150		
Feb-2017	7,664.9	Aug-2021	1,148		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 412
TSS Large Low Load

Model Type = UPC
Submodel = basemodel
Model Eqn = 1 + x1
Variable = FGDP$A
Coeffs = {-1381.6528,0.028404}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-297.8705 t--4.6384 p-0.0097454
x1 Stats = SE-0.0059899 t-4.7419 p-0.0090242
Model Stats = R^2-0.85685, F-23.9431

Model Type = UPC
Submodel = slopemodel
Model Eqn = 0*x+11.2894
Variable = constant
Coeffs =
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	818.2	Mar-2017	11,091	2012	67,249
Oct-2012	3,713.6	Apr-2017	7,650	2013	35,222
Nov-2012	5,094.6	May-2017	4,658	2014	36,908
Dec-2012	8,031.5	Jun-2017	2,345	2015	41,512
Jan-2013	9,452.2	Jul-2017	1,645	2016	30,868
Feb-2013	9,256.5	Aug-2017	1,549	2017	50,628
Mar-2013	6,327.9	Sep-2017	2,038	2018	51,870
Apr-2013	6,736.1	Oct-2017	1,993	2019	51,767
May-2013	2,723.0	Nov-2017	7,668	2020	51,208
Jun-2013	726.2	Dec-2017	11,383	2021	50,753
Jul-2013	127.5	Jan-2018	13,600		
Aug-2013	210.3	Feb-2018	12,603		
Sep-2013	364.4	Mar-2018	11,077		
Oct-2013	972.5	Apr-2018	7,599		
Nov-2013	4,292.6	May-2018	4,624		
Dec-2013	10,745.8	Jun-2018	2,367		
Jan-2014	8,245.7	Jul-2018	1,631		
Feb-2014	9,913.7	Aug-2018	1,539		
Mar-2014	9,913.8	Sep-2018	2,039		
Apr-2014	4,477.8	Oct-2018	1,970		
May-2014	3,460.2	Nov-2018	7,344		
Jun-2014	896.3	Dec-2018	11,568		
Jul-2014	1,140.2	Jan-2019	13,521		
Aug-2014	1,394.8	Feb-2019	12,551		
Sep-2014	1,510.0	Mar-2019	11,025		
Oct-2014	1,507.9	Apr-2019	7,593		
Nov-2014	3,917.8	May-2019	4,737		
Dec-2014	6,838.9	Jun-2019	2,341		
Jan-2015	9,763.9	Jul-2019	1,625		
Feb-2015	10,507.6	Aug-2019	1,536		
Mar-2015	9,878.2	Sep-2019	2,025		
Apr-2015	7,349.5	Oct-2019	1,899		
May-2015	2,809.1	Nov-2019	7,281		
Jun-2015	1,203.4	Dec-2019	11,530		
Jul-2015	721.9	Jan-2020	13,458		
Aug-2015	656.7	Feb-2020	12,625		
Sep-2015	399.3	Mar-2020	10,753		
Oct-2015	1,062.4	Apr-2020	7,521		
Nov-2015	3,521.2	May-2020	4,556		
Dec-2015	5,859.3	Jun-2020	2,293		
Jan-2016	8,720.0	Jul-2020	1,670		
Feb-2016	8,974.4	Aug-2020	1,464		
Mar-2016	8,539.8	Sep-2020	2,014		
Apr-2016	5,407.4	Oct-2020	1,937		
May-2016	3,381.1	Nov-2020	7,426		
Jun-2016	-4,154.9	Dec-2020	11,526		
Jul-2016	2,039.3	Jan-2021	13,399		
Aug-2016	1,575.2	Feb-2021	12,482		
Sep-2016	2,093.8	Mar-2021	10,863		
Oct-2016	-548.5	Apr-2021	7,392		
Nov-2016	3,201.5	May-2021	4,360		
Dec-2016	5,214.8	Jun-2021	2,257		
Jan-2017	12,967.3	Jul-2021	1,595		
Feb-2017	11,917.6	Aug-2021	1,511		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 413
C&I Low Load - Extra Large

Model Type = UPC
Submodel = basemodel
Model Eqn = b1 + b2*log(x1 + b3)
Variable = TimeLog
Coeffs = {289.3523,-125.586,-2009.0174}
b1 Stats = SE-452.888 t-0.6389 p-0.56832
b2 Stats = SE-194.1757 t--0.64676 p-0.56386
b3 Stats = SE-5.3412 t--376.1331 p-4.1441e-08
Model Stats = R^2-0.83308, F-NaN
Intercept Stats = na
x1 Stats = na
Model Stats = na

Model Type = UPC
Submodel = slopemodel
Model Eqn = b1 + b2*log(x1 + b3)
Variable = TimeLog
Coeffs = {107.7993,-16.4336,-1828.2197}
b1 Stats = SE-252018.7169 t-0.00042774 p-0.99969
b2 Stats = SE-40506.0531 t--0.00040571 p-0.9997
b3 Stats = SE-456602.1628 t--0.004004 p-0.99706
Model Stats = R^2-0.0052544, F-NaN
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	5,278.2	Mar-2017	19,400	2012	125,072
Oct-2012	10,008.6	Apr-2017	13,153	2013	104,308
Nov-2012	10,186.8	May-2017	7,474	2014	133,664
Dec-2012	17,785.0	Jun-2017	4,216	2015	114,731
Jan-2013	21,871.1	Jul-2017	1,283	2016	85,597
Feb-2013	21,001.6	Aug-2017	890	2017	83,245
Mar-2013	22,199.6	Sep-2017	1,556	2018	84,147
Apr-2013	19,355.9	Oct-2017	2,580	2019	81,227
May-2013	13,250.4	Nov-2017	6,954	2020	80,487
Jun-2013	6,629.6	Dec-2017	18,220	2021	80,270
Jul-2013	5,448.2	Jan-2018	21,443		
Aug-2013	3,145.0	Feb-2018	21,715		
Sep-2013	3,095.0	Mar-2018	18,510		
Oct-2013	3,548.0	Apr-2018	12,246		
Nov-2013	10,668.4	May-2018	6,603		
Dec-2013	24,456.2	Jun-2018	3,631		
Jan-2014	32,292.6	Jul-2018	495		
Feb-2014	31,839.7	Aug-2018	196		
Mar-2014	34,513.3	Sep-2018	920		
Apr-2014	18,055.5	Oct-2018	1,945		
May-2014	12,254.7	Nov-2018	6,085		
Jun-2014	4,708.7	Dec-2018	17,386		
Jul-2014	2,440.8	Jan-2019	21,551		
Aug-2014	1,426.4	Feb-2019	20,536		
Sep-2014	1,054.8	Mar-2019	18,040		
Oct-2014	3,458.0	Apr-2019	11,515		
Nov-2014	7,290.5	May-2019	6,444		
Dec-2014	17,293.6	Jun-2019	3,141		
Jan-2015	24,195.5	Jul-2019	240		
Feb-2015	25,760.5	Aug-2019	0		
Mar-2015	28,511.7	Sep-2019	708		
Apr-2015	21,803.9	Oct-2019	1,715		
May-2015	8,812.0	Nov-2019	5,934		
Jun-2015	5,647.0	Dec-2019	17,251		
Jul-2015	2,548.2	Jan-2020	21,337		
Aug-2015	2,368.3	Feb-2020	20,585		
Sep-2015	2,298.0	Mar-2020	17,601		
Oct-2015	3,785.3	Apr-2020	11,777		
Nov-2015	6,209.1	May-2020	6,177		
Dec-2015	13,212.2	Jun-2020	3,009		
Jan-2016	16,602.6	Jul-2020	254		
Feb-2016	19,979.8	Aug-2020	0		
Mar-2016	21,376.6	Sep-2020	666		
Apr-2016	14,134.4	Oct-2020	1,640		
May-2016	8,818.4	Nov-2020	5,949		
Jun-2016	4,685.4	Dec-2020	17,061		
Jul-2016	2,003.3	Jan-2021	21,259		
Aug-2016	1,683.7	Feb-2021	20,256		
Sep-2016	743.3	Mar-2021	17,820		
Oct-2016	2,223.6	Apr-2021	11,952		
Nov-2016	7,025.9	May-2021	6,052		
Dec-2016	21,381.3	Jun-2021	2,930		
Jan-2017	19,645.0	Jul-2021	232		
Feb-2017	19,357.8	Aug-2021	0		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 414
FT2 Exlarge Low

Model Type = UPC
Submodel = basemodel
Model Eqn = 0*x+129.054
Variable = constant
Coeffs =
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = na
x1 Stats = na
Model Stats = na

Model Type = UPC
Submodel = slopemodel
Model Eqn = 0*x+27.3218
Variable = constant
Coeffs =
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	0.0	Mar-2017	29,314	2012	101,833
Oct-2012	116.2	Apr-2017	22,772	2013	108,233
Nov-2012	4,623.4	May-2017	14,775	2014	109,407
Dec-2012	26,303.8	Jun-2017	8,116	2015	119,703
Jan-2013	26,256.0	Jul-2017	4,666	2016	131,078
Feb-2013	27,489.3	Aug-2017	3,902	2017	122,284
Mar-2013	25,784.7	Sep-2017	4,375	2018	138,121
Apr-2013	20,880.7	Oct-2017	6,693	2019	137,293
May-2013	6,903.8	Nov-2017	14,904	2020	136,378
Jun-2013	918.8	Dec-2017	23,283	2021	135,692
Jul-2013	805.7	Jan-2018	29,392		
Aug-2013	853.4	Feb-2018	33,100		
Sep-2013	3,444.0	Mar-2018	29,249		
Oct-2013	5,499.7	Apr-2018	22,736		
Nov-2013	10,665.0	May-2018	14,805		
Dec-2013	17,129.6	Jun-2018	8,840		
Jan-2014	24,624.4	Jul-2018	4,541		
Feb-2014	26,338.6	Aug-2018	3,948		
Mar-2014	25,374.5	Sep-2018	4,297		
Apr-2014	17,995.2	Oct-2018	6,877		
May-2014	10,648.8	Nov-2018	14,271		
Jun-2014	4,425.4	Dec-2018	22,951		
Jul-2014	2,478.6	Jan-2019	30,205		
Aug-2014	2,510.1	Feb-2019	32,040		
Sep-2014	3,051.8	Mar-2019	29,199		
Oct-2014	6,061.0	Apr-2019	21,935		
Nov-2014	12,165.2	May-2019	15,330		
Dec-2014	21,495.9	Jun-2019	8,585		
Jan-2015	23,247.6	Jul-2019	4,616		
Feb-2015	29,743.4	Aug-2019	4,151		
Mar-2015	34,303.7	Sep-2019	4,361		
Apr-2015	19,844.1	Oct-2019	6,834		
May-2015	8,986.1	Nov-2019	14,369		
Jun-2015	3,577.7	Dec-2019	23,019		
Jul-2015	2,668.3	Jan-2020	30,915		
Aug-2015	2,204.2	Feb-2020	31,831		
Sep-2015	1,456.4	Mar-2020	28,404		
Oct-2015	4,330.0	Apr-2020	22,427		
Nov-2015	10,913.2	May-2020	14,741		
Dec-2015	20,524.0	Jun-2020	8,061		
Jan-2016	22,740.9	Jul-2020	4,981		
Feb-2016	29,503.2	Aug-2020	3,918		
Mar-2016	31,730.6	Sep-2020	4,231		
Apr-2016	21,830.2	Oct-2020	6,538		
May-2016	16,265.8	Nov-2020	14,361		
Jun-2016	9,007.2	Dec-2020	23,379		
Jul-2016	5,809.2	Jan-2021	29,978		
Aug-2016	3,894.1	Feb-2021	31,733		
Sep-2016	1,569.6	Mar-2021	28,869		
Oct-2016	3,110.3	Apr-2021	23,037		
Nov-2016	4,611.8	May-2021	14,028		
Dec-2016	16,768.7	Jun-2021	8,046		
Jan-2017	26,011.5	Jul-2021	5,018		
Feb-2017	21,294.9	Aug-2021	4,101		

The Narragansett Electric Company d/b/a National Grid
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Rate Code 415
FT1 Exlarge Low

Model Type = UPC
Submodel = basemodel
Model Eqn = 1 + x1
Variable = FRTFSA
Coeffs = {-2738.56,0.21924}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-1328.9275 t--2.0607 p-0.10836
x1 Stats = SE-0.098057 t-2.2359 p-0.089029
Model Stats = R^2-0.58707, F-5.6872

Model Type = UPC
Submodel = slopemodel
Model Eqn = b1 + b2*log(x1 + b3)
Variable = TimeLog
Coeffs = {-9.9892,25.1704,-2006.2792}
b1 Stats = SE-148.5963 t--0.067224 p-0.95063
b2 Stats = SE-50.9325 t-0.49419 p-0.65509
b3 Stats = b3: SE-13.3802 t--149.9437 p-6.5406e-07
Model Stats = R^2-0.90046, F-NaN
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	7,724.0	Mar-2017	45,174	2012	127,262
Oct-2012	14,156.5	Apr-2017	29,078	2013	142,700
Nov-2012	33,129.5	May-2017	19,162	2014	169,512
Dec-2012	38,677.0	Jun-2017	10,709	2015	241,824
Jan-2013	39,877.6	Jul-2017	9,077	2016	214,321
Feb-2013	36,099.5	Aug-2017	9,015	2017	190,709
Mar-2013	32,105.2	Sep-2017	11,210	2018	212,913
Apr-2013	18,899.9	Oct-2017	24,583	2019	212,902
May-2013	9,590.0	Nov-2017	35,241	2020	212,384
Jun-2013	6,127.3	Dec-2017	51,659	2021	211,025
Jul-2013	5,133.5	Jan-2018	58,380		
Aug-2013	6,814.0	Feb-2018	50,518		
Sep-2013	7,405.7	Mar-2018	45,068		
Oct-2013	13,017.8	Apr-2018	28,994		
Nov-2013	28,983.3	May-2018	19,175		
Dec-2013	41,929.5	Jun-2018	10,778		
Jan-2014	49,838.5	Jul-2018	9,141		
Feb-2014	44,305.5	Aug-2018	9,091		
Mar-2014	40,478.2	Sep-2018	11,325		
Apr-2014	19,982.2	Oct-2018	24,683		
May-2014	9,149.1	Nov-2018	35,232		
Jun-2014	5,758.3	Dec-2018	51,633		
Jul-2014	5,236.5	Jan-2019	58,331		
Aug-2014	5,442.6	Feb-2019	50,466		
Sep-2014	7,174.8	Mar-2019	45,037		
Oct-2014	12,454.9	Apr-2019	29,046		
Nov-2014	36,211.1	May-2019	19,178		
Dec-2014	50,919.2	Jun-2019	10,845		
Jan-2015	65,640.3	Jul-2019	9,244		
Feb-2015	63,775.2	Aug-2019	9,202		
Mar-2015	54,029.0	Sep-2019	11,377		
Apr-2015	30,921.5	Oct-2019	24,681		
May-2015	15,163.7	Nov-2019	35,183		
Jun-2015	12,294.5	Dec-2019	51,478		
Jul-2015	12,142.9	Jan-2020	58,127		
Aug-2015	10,360.9	Feb-2020	50,401		
Sep-2015	11,888.9	Mar-2020	44,845		
Oct-2015	24,897.5	Apr-2020	28,948		
Nov-2015	32,394.2	May-2020	19,166		
Dec-2015	35,776.7	Jun-2020	10,897		
Jan-2016	58,200.3	Jul-2020	9,305		
Feb-2016	51,416.6	Aug-2020	9,236		
Mar-2016	40,424.2	Sep-2020	11,438		
Apr-2016	34,192.0	Oct-2020	24,673		
May-2016	19,044.6	Nov-2020	35,068		
Jun-2016	11,043.4	Dec-2020	51,278		
Jul-2016	9,990.6	Jan-2021	57,846		
Aug-2016	8,965.1	Feb-2021	49,926		
Sep-2016	11,206.8	Mar-2021	44,539		
Oct-2016	22,785.5	Apr-2021	28,736		
Nov-2016	30,906.9	May-2021	19,109		
Dec-2016	49,720.2	Jun-2021	10,869		
Jan-2017	49,714.8	Jul-2021	9,302		
Feb-2017	36,871.8	Aug-2021	9,272		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 416
TSS Extra Large Low Load

Model Type = UPC
Submodel = basemodel
Model Eqn = 1 + x1
Variable = FE23A
Coeffs = {-861.1329,54.7396}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-428.6403 t--2.009 p-0.11493
x1 Stats = SE-26.7882 t-2.0434 p-0.11051
Model Stats = R^2-0.51074, F-4.1760

Model Type = UPC
Submodel = slopemodel
Model Eqn = 1 + x1
Variable = FGDP$A
Coeffs = {-110.4115,0.0022648}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-40.3066 t--2.7393 p-0.051943
x1 Stats = SE-0.00081053 t-2.7942 p-0.049101
Model Stats = R^2-0.67538, F-8.3225

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	10.7	Mar-2017	0	2012	0
Oct-2012	17,176.1	Apr-2017	0	2013	35,852
Nov-2012	13,325.2	May-2017	0	2014	5,034
Dec-2012	19,621.3	Jun-2017	0	2015	33,888
Jan-2013	0.0	Jul-2017	0	2016	0
Feb-2013	0.0	Aug-2017	0	2017	0
Mar-2013	0.0	Sep-2017	0	2018	0
Apr-2013	35,852.5	Oct-2017	0	2019	0
May-2013	0.0	Nov-2017	0	2020	0
Jun-2013	0.0	Dec-2017	0	2021	0
Jul-2013	0.0	Jan-2018	0		
Aug-2013	0.0	Feb-2018	0		
Sep-2013	0.0	Mar-2018	0		
Oct-2013	0.0	Apr-2018	0		
Nov-2013	0.0	May-2018	0		
Dec-2013	27,002.9	Jun-2018	0		
Jan-2014	0.0	Jul-2018	0		
Feb-2014	0.0	Aug-2018	0		
Mar-2014	0.0	Sep-2018	0		
Apr-2014	0.0	Oct-2018	0		
May-2014	3,073.7	Nov-2018	0		
Jun-2014	1,960.5	Dec-2018	0		
Jul-2014	1,355.7	Jan-2019	0		
Aug-2014	1,159.7	Feb-2019	0		
Sep-2014	1,207.7	Mar-2019	0		
Oct-2014	1,863.6	Apr-2019	0		
Nov-2014	3,210.2	May-2019	0		
Dec-2014	5,150.9	Jun-2019	0		
Jan-2015	7,296.6	Jul-2019	0		
Feb-2015	8,103.3	Aug-2019	0		
Mar-2015	7,901.9	Sep-2019	0		
Apr-2015	6,026.1	Oct-2019	0		
May-2015	2,467.9	Nov-2019	0		
Jun-2015	2,092.0	Dec-2019	0		
Jul-2015	1,632.7	Jan-2020	0		
Aug-2015	1,210.3	Feb-2020	0		
Sep-2015	0.0	Mar-2020	0		
Oct-2015	0.0	Apr-2020	0		
Nov-2015	0.0	May-2020	0		
Dec-2015	0.0	Jun-2020	0		
Jan-2016	0.0	Jul-2020	0		
Feb-2016	0.0	Aug-2020	0		
Mar-2016	0.0	Sep-2020	0		
Apr-2016	0.0	Oct-2020	0		
May-2016	0.0	Nov-2020	0		
Jun-2016	0.0	Dec-2020	0		
Jul-2016	0.0	Jan-2021	0		
Aug-2016	0.0	Feb-2021	0		
Sep-2016	0.0	Mar-2021	0		
Oct-2016	0.0	Apr-2021	0		
Nov-2016	0.0	May-2021	0		
Dec-2016	0.0	Jun-2021	0		
Jan-2017	0.0	Jul-2021	0		
Feb-2017	0.0	Aug-2021	0		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 417
C&I High Load - Large

Model Type = UPC
Submodel = model
Model Eqn = 1 + x1
Variable = GORI
Coeffs = {203.8676,-123.5096}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-27.5621 t-7.3967 p-0.0017818
x1 Stats = SE-55.2453 t--2.2357 p-0.08905
Model Stats = R^2-0.59986, F-5.9968

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	3,420.3	Mar-2017	4,800	2012	28,989
Oct-2012	3,425.8	Apr-2017	4,327	2013	29,185
Nov-2012	3,769.7	May-2017	4,358	2014	29,853
Dec-2012	5,343.1	Jun-2017	5,164	2015	33,408
Jan-2013	5,397.0	Jul-2017	3,862	2016	28,211
Feb-2013	5,868.2	Aug-2017	2,702	2017	28,785
Mar-2013	5,708.9	Sep-2017	3,068	2018	28,753
Apr-2013	4,871.9	Oct-2017	3,539	2019	28,261
May-2013	3,961.7	Nov-2017	3,994	2020	27,694
Jun-2013	3,377.4	Dec-2017	4,820	2021	27,017
Jul-2013	2,995.9	Jan-2018	5,460		
Aug-2013	3,505.0	Feb-2018	5,005		
Sep-2013	4,120.3	Mar-2018	4,708		
Oct-2013	4,182.5	Apr-2018	4,239		
Nov-2013	4,750.0	May-2018	4,273		
Dec-2013	5,243.5	Jun-2018	5,067		
Jan-2014	5,995.2	Jul-2018	3,786		
Feb-2014	5,539.5	Aug-2018	2,649		
Mar-2014	5,397.7	Sep-2018	3,011		
Apr-2014	4,650.7	Oct-2018	3,469		
May-2014	4,212.8	Nov-2018	3,783		
Jun-2014	4,057.4	Dec-2018	4,720		
Jul-2014	4,038.9	Jan-2019	5,353		
Aug-2014	5,831.3	Feb-2019	4,909		
Sep-2014	3,902.6	Mar-2019	4,635		
Oct-2014	3,984.9	Apr-2019	4,048		
Nov-2014	4,409.6	May-2019	4,343		
Dec-2014	5,554.3	Jun-2019	4,973		
Jan-2015	7,222.7	Jul-2019	3,739		
Feb-2015	7,891.2	Aug-2019	2,739		
Mar-2015	6,811.1	Sep-2019	2,994		
Apr-2015	5,188.3	Oct-2019	3,322		
May-2015	3,415.2	Nov-2019	3,739		
Jun-2015	2,879.1	Dec-2019	4,644		
Jul-2015	2,849.8	Jan-2020	5,243		
Aug-2015	3,384.7	Feb-2020	4,962		
Sep-2015	3,795.0	Mar-2020	4,543		
Oct-2015	4,017.3	Apr-2020	4,099		
Nov-2015	4,252.8	May-2020	4,126		
Dec-2015	4,686.2	Jun-2020	4,720		
Jan-2016	5,061.0	Jul-2020	3,787		
Feb-2016	5,427.2	Aug-2020	2,521		
Mar-2016	4,583.3	Sep-2020	2,940		
Apr-2016	4,125.9	Oct-2020	3,367		
May-2016	4,046.3	Nov-2020	3,787		
Jun-2016	4,967.6	Dec-2020	4,558		
Jul-2016	3,830.0	Jan-2021	5,141		
Aug-2016	2,597.3	Feb-2021	4,716		
Sep-2016	2,933.4	Mar-2021	4,450		
Oct-2016	3,388.8	Apr-2021	4,010		
Nov-2016	3,685.3	May-2021	3,916		
Dec-2016	4,563.3	Jun-2021	4,784		
Jan-2017	5,298.7	Jul-2021	3,714		
Feb-2017	4,837.9	Aug-2021	2,557		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 418
FT2 Large High

Model Type = UPC
Submodel = model
Model Eqn = 0*x+169.599
Variable = constant
Coeffs =
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	2,930.6	Mar-2017	6,690	2012	32,904
Oct-2012	3,033.9	Apr-2017	6,189	2013	31,960
Nov-2012	3,962.9	May-2017	5,355	2014	39,880
Dec-2012	5,379.7	Jun-2017	4,207	2015	41,278
Jan-2013	6,184.3	Jul-2017	3,457	2016	36,603
Feb-2013	6,117.7	Aug-2017	3,119	2017	36,699
Mar-2013	5,910.2	Sep-2017	3,392	2018	36,813
Apr-2013	5,523.1	Oct-2017	3,590	2019	36,821
May-2013	4,574.4	Nov-2017	4,719	2020	36,766
Jun-2013	3,650.5	Dec-2017	5,837	2021	36,479
Jul-2013	3,225.0	Jan-2018	7,505		
Aug-2013	3,410.9	Feb-2018	6,976		
Sep-2013	4,807.1	Mar-2018	6,671		
Oct-2013	4,351.7	Apr-2018	5,974		
Nov-2013	5,322.2	May-2018	5,345		
Dec-2013	7,012.0	Jun-2018	4,341		
Jan-2014	8,288.7	Jul-2018	3,339		
Feb-2014	8,021.7	Aug-2018	3,116		
Mar-2014	7,725.7	Sep-2018	3,389		
Apr-2014	6,707.7	Oct-2018	3,708		
May-2014	5,086.1	Nov-2018	4,551		
Jun-2014	4,050.3	Dec-2018	5,821		
Jul-2014	3,679.9	Jan-2019	7,731		
Aug-2014	3,579.8	Feb-2019	6,959		
Sep-2014	3,656.6	Mar-2019	6,656		
Oct-2014	3,951.7	Apr-2019	5,768		
Nov-2014	4,883.1	May-2019	5,512		
Dec-2014	6,681.9	Jun-2019	4,195		
Jan-2015	7,850.2	Jul-2019	3,451		
Feb-2015	8,783.8	Aug-2019	3,330		
Mar-2015	8,629.0	Sep-2019	3,277		
Apr-2015	6,847.2	Oct-2019	3,458		
May-2015	4,912.3	Nov-2019	4,542		
Jun-2015	4,255.1	Dec-2019	5,805		
Jul-2015	3,744.8	Jan-2020	7,711		
Aug-2015	3,754.1	Feb-2020	6,932		
Sep-2015	3,515.7	Mar-2020	6,637		
Oct-2015	3,955.2	Apr-2020	6,149		
Nov-2015	4,907.2	May-2020	5,147		
Dec-2015	5,907.7	Jun-2020	4,190		
Jan-2016	6,521.0	Jul-2020	3,675		
Feb-2016	7,412.2	Aug-2020	3,006		
Mar-2016	6,915.5	Sep-2020	3,274		
Apr-2016	6,207.0	Oct-2020	3,574		
May-2016	5,193.2	Nov-2020	4,685		
Jun-2016	4,353.6	Dec-2020	5,787		
Jul-2016	3,576.6	Jan-2021	7,686		
Aug-2016	3,125.6	Feb-2021	6,913		
Sep-2016	3,278.8	Mar-2021	6,612		
Oct-2016	3,699.1	Apr-2021	6,128		
Nov-2016	4,549.0	May-2021	4,959		
Dec-2016	5,812.5	Jun-2021	4,181		
Jan-2017	7,283.8	Jul-2021	3,556		
Feb-2017	6,974.6	Aug-2021	3,110		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 419
FT1 Large High

Model Type = UPC
Submodel = model
Model Eqn = 1 + x1
Variable = GORI
Coeffs = {219.3415,-76.068}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-11.9859 t-18.3 p-5.2451e-05
x1 Stats = SE-24.0244 t--3.1663 p-0.033979
Model Stats = R^2-0.72057, F-10.3151

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	4,130.1	Mar-2017	6,593	2012	32,412
Oct-2012	4,573.3	Apr-2017	6,000	2013	34,563
Nov-2012	5,788.0	May-2017	5,246	2014	38,262
Dec-2012	6,239.2	Jun-2017	5,034	2015	38,500
Jan-2013	7,245.0	Jul-2017	4,336	2016	38,319
Feb-2013	6,899.2	Aug-2017	3,917	2017	35,275
Mar-2013	6,549.7	Sep-2017	4,020	2018	35,254
Apr-2013	5,186.6	Oct-2017	4,639	2019	35,235
May-2013	4,468.0	Nov-2017	5,074	2020	35,373
Jun-2013	4,214.2	Dec-2017	6,752	2021	35,074
Jul-2013	3,858.6	Jan-2018	6,537		
Aug-2013	4,379.1	Feb-2018	5,873		
Sep-2013	4,745.3	Mar-2018	6,580		
Oct-2013	5,391.9	Apr-2018	5,987		
Nov-2013	6,248.7	May-2018	5,242		
Dec-2013	7,237.3	Jun-2018	5,034		
Jan-2014	8,339.6	Jul-2018	4,338		
Feb-2014	7,580.2	Aug-2018	3,919		
Mar-2014	7,429.9	Sep-2018	4,026		
Apr-2014	5,828.3	Oct-2018	4,643		
May-2014	4,858.6	Nov-2018	5,068		
Jun-2014	4,225.5	Dec-2018	6,740		
Jul-2014	4,150.5	Jan-2019	6,532		
Aug-2014	4,304.8	Feb-2019	5,866		
Sep-2014	4,431.2	Mar-2019	6,573		
Oct-2014	5,209.9	Apr-2019	5,989		
Nov-2014	5,950.4	May-2019	5,240		
Dec-2014	6,831.1	Jun-2019	5,034		
Jan-2015	8,287.6	Jul-2019	4,343		
Feb-2015	8,450.0	Aug-2019	3,931		
Mar-2015	7,402.8	Sep-2019	4,031		
Apr-2015	5,463.0	Oct-2019	4,645		
May-2015	4,389.9	Nov-2019	5,067		
Jun-2015	4,506.5	Dec-2019	6,729		
Jul-2015	4,095.7	Jan-2020	6,518		
Aug-2015	4,581.3	Feb-2020	6,044		
Sep-2015	4,654.9	Mar-2020	6,559		
Oct-2015	5,716.5	Apr-2020	5,978		
Nov-2015	6,131.3	May-2020	5,236		
Dec-2015	6,180.9	Jun-2020	5,038		
Jan-2016	8,057.7	Jul-2020	4,349		
Feb-2016	7,376.6	Aug-2020	3,932		
Mar-2016	6,567.2	Sep-2020	4,039		
Apr-2016	6,015.3	Oct-2020	4,648		
May-2016	5,264.5	Nov-2020	5,060		
Jun-2016	5,037.5	Dec-2020	6,714		
Jul-2016	4,337.4	Jan-2021	6,493		
Aug-2016	3,923.4	Feb-2021	5,825		
Sep-2016	4,005.9	Mar-2021	6,532		
Oct-2016	4,606.3	Apr-2021	5,956		
Nov-2016	5,037.0	May-2021	5,232		
Dec-2016	6,690.7	Jun-2021	5,036		
Jan-2017	6,554.7	Jul-2021	4,353		
Feb-2017	5,847.4	Aug-2021	3,942		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 420
TSS Large High Load

Model Type = UPC
Submodel = model
Model Eqn = 1 + x1
Variable = GORI
Coeffs = {426.9729,-603.4271}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-131.5521 t-3.2457 p-0.031505
x1 Stats = SE-263.682 t--2.2885 p-0.083999
Model Stats = R^2-0.59159, F-5.7945

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	4,249.9	Mar-2017	5,554	2012	24,737
Oct-2012	4,137.8	Apr-2017	6,543	2013	2,131
Nov-2012	4,385.1	May-2017	4,733	2014	61,961
Dec-2012	8,443.9	Jun-2017	2,790	2015	41,512
Jan-2013	2,079.1	Jul-2017	90	2016	31,159
Feb-2013	52.1	Aug-2017	2,122	2017	25,873
Mar-2013	0.0	Sep-2017	44	2018	26,001
Apr-2013	0.0	Oct-2017	36	2019	25,862
May-2013	0.0	Nov-2017	79	2020	25,754
Jun-2013	0.0	Dec-2017	3,171	2021	25,736
Jul-2013	0.0	Jan-2018	3,503		
Aug-2013	4,278.5	Feb-2018	2,866		
Sep-2013	4,830.0	Mar-2018	5,536		
Oct-2013	2,647.8	Apr-2018	6,506		
Nov-2013	6,072.7	May-2018	4,712		
Dec-2013	7,135.7	Jun-2018	2,878		
Jan-2014	9,780.8	Jul-2018	83		
Feb-2014	10,588.4	Aug-2018	2,111		
Mar-2014	23,775.3	Sep-2018	46		
Apr-2014	6,937.8	Oct-2018	28		
May-2014	6,473.1	Nov-2018	60		
Jun-2014	4,405.4	Dec-2018	3,132		
Jul-2014	4,921.2	Jan-2019	3,594		
Aug-2014	5,303.7	Feb-2019	2,851		
Sep-2014	5,048.9	Mar-2019	5,516		
Oct-2014	4,144.9	Apr-2019	6,292		
Nov-2014	6,063.7	May-2019	4,840		
Dec-2014	7,263.4	Jun-2019	2,769		
Jan-2015	7,263.0	Jul-2019	84		
Feb-2015	8,165.6	Aug-2019	2,180		
Mar-2015	6,489.3	Sep-2019	39		
Apr-2015	8,013.4	Oct-2019	27		
May-2015	5,680.2	Nov-2019	58		
Jun-2015	5,900.6	Dec-2019	3,113		
Jul-2015	4,715.9	Jan-2020	3,571		
Aug-2015	4,526.2	Feb-2020	2,879		
Sep-2015	4,748.8	Mar-2020	5,483		
Oct-2015	3,213.9	Apr-2020	6,511		
Nov-2015	4,554.3	May-2020	4,655		
Dec-2015	5,253.5	Jun-2020	2,655		
Jan-2016	5,705.6	Jul-2020	82		
Feb-2016	6,102.0	Aug-2020	2,098		
Mar-2016	5,484.1	Sep-2020	41		
Apr-2016	6,467.2	Oct-2020	19		
May-2016	4,585.3	Nov-2020	40		
Jun-2016	2,815.1	Dec-2020	3,099		
Jul-2016	0.0	Jan-2021	3,549		
Aug-2016	2,130.9	Feb-2021	2,860		
Sep-2016	0.0	Mar-2021	5,464		
Oct-2016	0.0	Apr-2021	6,651		
Nov-2016	0.0	May-2021	4,483		
Dec-2016	2,969.0	Jun-2021	2,728		
Jan-2017	3,527.1	Jul-2021	74		
Feb-2017	2,726.7	Aug-2021	2,089		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 421
C&I High Load - Extra Large

Model Type = UPC
Submodel = model
Model Eqn = 0*x+683.163
Variable = constant
Coeffs =
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	26,540.5	Mar-2017	23,773	2012	207,660
Oct-2012	31,973.4	Apr-2017	23,118	2013	242,524
Nov-2012	35,952.8	May-2017	16,517	2014	218,992
Dec-2012	46,533.3	Jun-2017	18,487	2015	220,490
Jan-2013	206,582.2	Jul-2017	18,575	2016	119,106
Feb-2013	455.5	Aug-2017	17,392	2017	107,778
Mar-2013	7,431.9	Sep-2017	21,829	2018	110,742
Apr-2013	3,008.3	Oct-2017	26,910	2019	110,671
May-2013	11,641.8	Nov-2017	34,477	2020	108,875
Jun-2013	13,404.4	Dec-2017	26,158	2021	109,031
Jul-2013	19,992.3	Jan-2018	14,568		
Aug-2013	28,351.7	Feb-2018	14,217		
Sep-2013	27,882.1	Mar-2018	23,681		
Oct-2013	27,026.9	Apr-2018	22,803		
Nov-2013	32,705.2	May-2018	16,374		
Dec-2013	34,096.8	Jun-2018	19,099		
Jan-2014	48,012.0	Jul-2018	18,431		
Feb-2014	35,271.0	Aug-2018	17,274		
Mar-2014	35,448.2	Sep-2018	21,805		
Apr-2014	36,687.4	Oct-2018	26,726		
May-2014	31,661.3	Nov-2018	33,007		
Jun-2014	31,912.1	Dec-2018	25,664		
Jul-2014	23,200.0	Jan-2019	14,799		
Aug-2014	30,488.9	Feb-2019	14,572		
Sep-2014	46,438.2	Mar-2019	23,851		
Oct-2014	40,264.6	Apr-2019	22,618		
Nov-2014	41,510.6	May-2019	16,595		
Dec-2014	46,858.1	Jun-2019	18,236		
Jan-2015	43,450.6	Jul-2019	18,414		
Feb-2015	39,753.6	Aug-2019	17,286		
Mar-2015	36,965.7	Sep-2019	21,781		
Apr-2015	40,663.5	Oct-2019	25,847		
May-2015	26,046.8	Nov-2019	33,076		
Jun-2015	33,609.6	Dec-2019	26,044		
Jul-2015	29,718.0	Jan-2020	14,838		
Aug-2015	22,719.5	Feb-2020	13,916		
Sep-2015	26,959.9	Mar-2020	23,470		
Oct-2015	24,641.6	Apr-2020	23,442		
Nov-2015	24,267.6	May-2020	15,808		
Dec-2015	31,674.4	Jun-2020	17,401		
Jan-2016	20,022.7	Jul-2020	18,891		
Feb-2016	19,857.1	Aug-2020	17,100		
Mar-2016	22,644.3	Sep-2020	21,294		
Apr-2016	21,859.2	Oct-2020	26,522		
May-2016	15,952.4	Nov-2020	33,786		
Jun-2016	18,770.3	Dec-2020	25,890		
Jul-2016	19,078.1	Jan-2021	14,963		
Aug-2016	17,475.6	Feb-2021	14,608		
Sep-2016	21,294.1	Mar-2021	23,233		
Oct-2016	26,496.4	Apr-2021	23,270		
Nov-2016	32,369.3	May-2021	15,167		
Dec-2016	23,303.6	Jun-2021	17,791		
Jan-2017	13,668.0	Jul-2021	18,712		
Feb-2017	12,213.8	Aug-2021	17,057		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 422
FT2 Exlarge High

Model Type = UPC
Submodel = model
Model Eqn = 1 + x1
Variable = FGDP$A
Coeffs = {-8790.9581,0.19304}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-1866.9447 t--4.7087 p-0.0092483
x1 Stats = SE-0.037543 t-5.1419 p-0.0067822
Model Stats = R^2-0.86863, F-26.4481

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	12,256.8	Mar-2017	30,451	2012	129,096
Oct-2012	13,605.7	Apr-2017	32,551	2013	111,477
Nov-2012	15,659.0	May-2017	27,850	2014	172,847
Dec-2012	20,268.3	Jun-2017	25,809	2015	213,115
Jan-2013	20,971.4	Jul-2017	23,695	2016	178,653
Feb-2013	21,854.9	Aug-2017	22,836	2017	182,873
Mar-2013	20,631.6	Sep-2017	28,760	2018	181,730
Apr-2013	18,735.3	Oct-2017	23,427	2019	182,109
May-2013	16,082.4	Nov-2017	27,294	2020	182,587
Jun-2013	13,201.1	Dec-2017	31,405	2021	183,735
Jul-2013	11,084.4	Jan-2018	33,800		
Aug-2013	11,647.4	Feb-2018	31,420		
Sep-2013	19,216.3	Mar-2018	30,469		
Oct-2013	17,829.1	Apr-2018	31,515		
Nov-2013	23,825.2	May-2018	26,956		
Dec-2013	24,962.3	Jun-2018	27,569		
Jan-2014	35,532.6	Jul-2018	22,947		
Feb-2014	35,156.0	Aug-2018	22,878		
Mar-2014	36,223.1	Sep-2018	28,809		
Apr-2014	29,321.5	Oct-2018	24,305		
May-2014	20,275.8	Nov-2018	26,411		
Jun-2014	16,337.9	Dec-2018	31,424		
Jul-2014	13,396.5	Jan-2019	34,967		
Aug-2014	20,329.7	Feb-2019	31,446		
Sep-2014	16,549.1	Mar-2019	30,501		
Oct-2014	16,165.0	Apr-2019	30,522		
Nov-2014	20,778.2	May-2019	27,920		
Dec-2014	25,067.7	Jun-2019	26,752		
Jan-2015	33,146.9	Jul-2019	23,788		
Feb-2015	36,201.0	Aug-2019	23,727		
Mar-2015	39,641.8	Sep-2019	28,851		
Apr-2015	44,589.1	Oct-2019	23,512		
May-2015	30,526.2	Nov-2019	26,446		
Jun-2015	29,009.9	Dec-2019	32,446		
Jul-2015	25,024.6	Jan-2020	34,977		
Aug-2015	29,962.5	Feb-2020	32,486		
Sep-2015	27,252.3	Mar-2020	30,507		
Oct-2015	25,042.7	Apr-2020	31,585		
Nov-2015	30,453.2	May-2020	27,951		
Dec-2015	37,441.0	Jun-2020	25,081		
Jan-2016	29,961.8	Jul-2020	25,408		
Feb-2016	33,023.7	Aug-2020	22,971		
Mar-2016	31,357.3	Sep-2020	27,051		
Apr-2016	32,540.3	Oct-2020	24,382		
May-2016	25,998.1	Nov-2020	27,365		
Jun-2016	25,771.6	Dec-2020	32,451		
Jul-2016	24,445.6	Jan-2021	36,084		
Aug-2016	22,819.5	Feb-2021	31,415		
Sep-2016	27,753.6	Mar-2021	30,479		
Oct-2016	24,948.7	Apr-2021	33,669		
Nov-2016	26,233.6	May-2021	26,120		
Dec-2016	31,162.2	Jun-2021	25,967		
Jan-2017	34,920.8	Jul-2021	24,659		
Feb-2017	31,291.3	Aug-2021	23,025		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 423
FT1 Exlarge High

Model Type = UPC
Submodel = model
Model Eqn = b1 + b2*log(x1 + b3)
Variable = TimeLog
Coeffs = {1097.8148,110.7774,-2010.6901}
b1 Stats = SE-195.0379 t-5.6287 p-0.011091
b2 Stats = SE-131.9873 t-0.8393 p-0.46291
b3 Stats = SE-1.0344 t--1943.9083 p-3.0022e-10
Model Stats = R^2-0.73993, F-NaN
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	27,414.5	Mar-2017	48,024	2012	194,292
Oct-2012	32,344.5	Apr-2017	41,889	2013	219,324
Nov-2012	38,208.6	May-2017	38,597	2014	233,736
Dec-2012	36,387.8	Jun-2017	37,600	2015	279,861
Jan-2013	42,344.9	Jul-2017	35,798	2016	242,358
Feb-2013	41,047.9	Aug-2017	36,094	2017	245,750
Mar-2013	41,049.8	Sep-2017	35,655	2018	253,992
Apr-2013	35,325.0	Oct-2017	40,259	2019	243,737
May-2013	31,031.0	Nov-2017	42,690	2020	239,469
Jun-2013	28,525.8	Dec-2017	51,151	2021	235,809
Jul-2013	27,462.0	Jan-2018	47,956		
Aug-2013	28,989.1	Feb-2018	40,675		
Sep-2013	30,241.0	Mar-2018	47,784		
Oct-2013	34,507.7	Apr-2018	41,678		
Nov-2013	36,223.3	May-2018	38,439		
Dec-2013	43,701.9	Jun-2018	37,461		
Jan-2014	47,179.6	Jul-2018	35,667		
Feb-2014	41,761.5	Aug-2018	35,962		
Mar-2014	46,191.1	Sep-2018	35,539		
Apr-2014	36,476.6	Oct-2018	40,111		
May-2014	32,092.9	Nov-2018	42,488		
Jun-2014	30,033.7	Dec-2018	50,897		
Jul-2014	30,939.1	Jan-2019	46,008		
Aug-2014	30,567.6	Feb-2019	39,018		
Sep-2014	30,018.1	Mar-2019	45,842		
Oct-2014	33,213.0	Apr-2019	40,023		
Nov-2014	40,282.7	May-2019	36,884		
Dec-2014	59,443.5	Jun-2019	35,963		
Jan-2015	65,983.2	Jul-2019	34,262		
Feb-2015	61,936.3	Aug-2019	34,560		
Mar-2015	46,495.4	Sep-2019	34,125		
Apr-2015	37,891.3	Oct-2019	38,505		
May-2015	34,015.5	Nov-2019	40,773		
Jun-2015	33,539.1	Dec-2019	48,803		
Jul-2015	31,965.1	Jan-2020	44,940		
Aug-2015	31,445.4	Feb-2020	39,385		
Sep-2015	32,058.3	Mar-2020	44,775		
Oct-2015	37,711.7	Apr-2020	39,103		
Nov-2015	38,282.9	May-2020	36,067		
Dec-2015	41,974.6	Jun-2020	35,199		
Jan-2016	48,858.0	Jul-2020	33,532		
Feb-2016	44,971.1	Aug-2020	33,801		
Mar-2016	42,807.8	Sep-2020	33,412		
Apr-2016	37,510.1	Oct-2020	37,670		
May-2016	34,584.4	Nov-2020	39,843		
Jun-2016	33,626.5	Dec-2020	47,671		
Jul-2016	32,012.0	Jan-2021	44,470		
Aug-2016	32,308.9	Feb-2021	37,680		
Sep-2016	31,816.3	Mar-2021	44,295		
Oct-2016	35,847.4	Apr-2021	38,697		
Nov-2016	38,003.7	May-2021	35,762		
Dec-2016	45,449.8	Jun-2021	34,905		
Jan-2017	43,195.5	Jul-2021	33,275		
Feb-2017	36,445.6	Aug-2021	33,568		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 424
TSS Extra Large High Load

Model Type = UPC
Submodel = model
Model Eqn = 1 + x1
Variable = GORCI
Coeffs = {1689.6791,-2472.7969}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-323.7189 t-5.2196 p-0.0064293
x1 Stats = SE-610.5163 t--4.0503 p-0.015471
Model Stats = R^2-0.80416, F-16.4248

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	0.0	Mar-2017	0	2012	12,544
Oct-2012	0.0	Apr-2017	0	2013	28,479
Nov-2012	0.0	May-2017	0	2014	98,478
Dec-2012	0.0	Jun-2017	0	2015	245,916
Jan-2013	0.0	Jul-2017	0	2016	0
Feb-2013	773.5	Aug-2017	0	2017	0
Mar-2013	0.0	Sep-2017	0	2018	0
Apr-2013	0.0	Oct-2017	0	2019	0
May-2013	27,705.9	Nov-2017	0	2020	0
Jun-2013	0.0	Dec-2017	0	2021	0
Jul-2013	0.0	Jan-2018	0		
Aug-2013	0.0	Feb-2018	0		
Sep-2013	0.0	Mar-2018	0		
Oct-2013	62,569.3	Apr-2018	0		
Nov-2013	0.0	May-2018	0		
Dec-2013	0.0	Jun-2018	0		
Jan-2014	40,851.0	Jul-2018	0		
Feb-2014	0.0	Aug-2018	0		
Mar-2014	0.0	Sep-2018	0		
Apr-2014	51,088.4	Oct-2018	0		
May-2014	0.0	Nov-2018	0		
Jun-2014	6,539.0	Dec-2018	0		
Jul-2014	0.0	Jan-2019	0		
Aug-2014	10,514.6	Feb-2019	0		
Sep-2014	10,829.5	Mar-2019	0		
Oct-2014	11,031.3	Apr-2019	0		
Nov-2014	0.0	May-2019	0		
Dec-2014	41,620.7	Jun-2019	0		
Jan-2015	46,680.2	Jul-2019	0		
Feb-2015	48,274.3	Aug-2019	0		
Mar-2015	49,499.8	Sep-2019	0		
Apr-2015	42,211.0	Oct-2019	0		
May-2015	32,720.3	Nov-2019	0		
Jun-2015	26,530.0	Dec-2019	0		
Jul-2015	23,494.5	Jan-2020	0		
Aug-2015	21,418.2	Feb-2020	0		
Sep-2015	24,451.0	Mar-2020	0		
Oct-2015	24,098.8	Apr-2020	0		
Nov-2015	21,959.2	May-2020	0		
Dec-2015	28,061.0	Jun-2020	0		
Jan-2016	0.0	Jul-2020	0		
Feb-2016	0.0	Aug-2020	0		
Mar-2016	0.0	Sep-2020	0		
Apr-2016	0.0	Oct-2020	0		
May-2016	0.0	Nov-2020	0		
Jun-2016	0.0	Dec-2020	0		
Jul-2016	0.0	Jan-2021	0		
Aug-2016	10.0	Feb-2021	0		
Sep-2016	11.0	Mar-2021	0		
Oct-2016	9.3	Apr-2021	0		
Nov-2016	0.0	May-2021	0		
Dec-2016	0.0	Jun-2021	0		
Jan-2017	0.0	Jul-2021	0		
Feb-2017	0.0	Aug-2021	0		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 429
Pawtucket Power

Model Type = UPC
Submodel = model
Model Eqn = 0*x+1e-06
Variable = constant
Coeffs =
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	0.0	Mar-2017	0	2012	31,192
Oct-2012	0.0	Apr-2017	0	2013	0
Nov-2012	0.0	May-2017	0	2014	0
Dec-2012	0.0	Jun-2017	0	2015	0
Jan-2013	0.0	Jul-2017	0	2016	0
Feb-2013	0.0	Aug-2017	0	2017	0
Mar-2013	0.0	Sep-2017	0	2018	0
Apr-2013	0.0	Oct-2017	0	2019	0
May-2013	0.0	Nov-2017	0	2020	0
Jun-2013	0.0	Dec-2017	0	2021	0
Jul-2013	0.0	Jan-2018	0		
Aug-2013	0.0	Feb-2018	0		
Sep-2013	0.0	Mar-2018	0		
Oct-2013	0.0	Apr-2018	0		
Nov-2013	0.0	May-2018	0		
Dec-2013	0.0	Jun-2018	0		
Jan-2014	0.0	Jul-2018	0		
Feb-2014	0.0	Aug-2018	0		
Mar-2014	0.0	Sep-2018	0		
Apr-2014	0.0	Oct-2018	0		
May-2014	0.0	Nov-2018	0		
Jun-2014	0.0	Dec-2018	0		
Jul-2014	0.0	Jan-2019	0		
Aug-2014	0.0	Feb-2019	0		
Sep-2014	0.0	Mar-2019	0		
Oct-2014	0.0	Apr-2019	0		
Nov-2014	0.0	May-2019	0		
Dec-2014	0.0	Jun-2019	0		
Jan-2015	0.0	Jul-2019	0		
Feb-2015	0.0	Aug-2019	0		
Mar-2015	0.0	Sep-2019	0		
Apr-2015	0.0	Oct-2019	0		
May-2015	0.0	Nov-2019	0		
Jun-2015	0.0	Dec-2019	0		
Jul-2015	0.0	Jan-2020	0		
Aug-2015	0.0	Feb-2020	0		
Sep-2015	0.0	Mar-2020	0		
Oct-2015	0.0	Apr-2020	0		
Nov-2015	0.0	May-2020	0		
Dec-2015	0.0	Jun-2020	0		
Jan-2016	0.0	Jul-2020	0		
Feb-2016	0.0	Aug-2020	0		
Mar-2016	0.0	Sep-2020	0		
Apr-2016	0.0	Oct-2020	0		
May-2016	0.0	Nov-2020	0		
Jun-2016	0.0	Dec-2020	0		
Jul-2016	0.0	Jan-2021	0		
Aug-2016	0.0	Feb-2021	0		
Sep-2016	0.0	Mar-2021	0		
Oct-2016	0.0	Apr-2021	0		
Nov-2016	0.0	May-2021	0		
Dec-2016	0.0	Jun-2021	0		
Jan-2017	0.0	Jul-2021	0		
Feb-2017	0.0	Aug-2021	0		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 430
Manchester Street Project (VA Power)

Model Type = UPC
Submodel = model
Model Eqn = 1 + x1
Variable = GORC
Coeffs = {0.074892,-0.085226}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-0+0.0090172i t-0-8.3055i p-0.0011477
x1 Stats = SE-0+0.016068i t-0+5.3041i p-0.0060705
Model Stats = R^2-1.1635, F--28.4649

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	1.0	Mar-2017	1	2012	5
Oct-2012	1.0	Apr-2017	1	2013	6
Nov-2012	1.0	May-2017	1	2014	6
Dec-2012	1.0	Jun-2017	1	2015	6
Jan-2013	1.0	Jul-2017	1	2016	6
Feb-2013	0.9	Aug-2017	1	2017	6
Mar-2013	1.1	Sep-2017	1	2018	6
Apr-2013	1.0	Oct-2017	1	2019	6
May-2013	1.0	Nov-2017	1	2020	6
Jun-2013	1.0	Dec-2017	1	2021	6
Jul-2013	1.0	Jan-2018	1		
Aug-2013	0.9	Feb-2018	1		
Sep-2013	1.1	Mar-2018	1		
Oct-2013	1.0	Apr-2018	1		
Nov-2013	1.0	May-2018	1		
Dec-2013	1.0	Jun-2018	1		
Jan-2014	0.9	Jul-2018	1		
Feb-2014	1.1	Aug-2018	1		
Mar-2014	1.0	Sep-2018	1		
Apr-2014	1.0	Oct-2018	1		
May-2014	0.9	Nov-2018	1		
Jun-2014	1.1	Dec-2018	1		
Jul-2014	1.0	Jan-2019	1		
Aug-2014	1.0	Feb-2019	1		
Sep-2014	1.0	Mar-2019	1		
Oct-2014	1.0	Apr-2019	1		
Nov-2014	0.9	May-2019	1		
Dec-2014	1.1	Jun-2019	1		
Jan-2015	1.0	Jul-2019	1		
Feb-2015	1.0	Aug-2019	1		
Mar-2015	1.0	Sep-2019	1		
Apr-2015	0.9	Oct-2019	1		
May-2015	1.1	Nov-2019	1		
Jun-2015	1.0	Dec-2019	1		
Jul-2015	0.9	Jan-2020	1		
Aug-2015	1.1	Feb-2020	1		
Sep-2015	1.0	Mar-2020	1		
Oct-2015	1.0	Apr-2020	1		
Nov-2015	0.9	May-2020	1		
Dec-2015	1.1	Jun-2020	1		
Jan-2016	1.0	Jul-2020	1		
Feb-2016	1.0	Aug-2020	1		
Mar-2016	1.0	Sep-2020	1		
Apr-2016	1.0	Oct-2020	1		
May-2016	1.0	Nov-2020	1		
Jun-2016	1.0	Dec-2020	1		
Jul-2016	1.0	Jan-2021	1		
Aug-2016	1.0	Feb-2021	1		
Sep-2016	1.0	Mar-2021	1		
Oct-2016	1.0	Apr-2021	1		
Nov-2016	1.0	May-2021	1		
Dec-2016	0.9	Jun-2021	1		
Jan-2017	1.1	Jul-2021	1		
Feb-2017	1.0	Aug-2021	1		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 433
NFS Medium

Model Type = UPC
Submodel = model
Model Eqn = b1 + b2*log(x1 + b3)
Variable = TimeLog
Coeffs = {110.7398,-59.9835,-2008.6555}
b1 Stats = SE-388.5146 t-0.28503 p-0.79416
b2 Stats = SE-159.4108 t--0.37628 p-0.73174
b3 Stats = SE-10.3782 t--193.5452 p-3.0415e-07
Model Stats = R^2-0.67412, F-NaN
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	0.0	Mar-2017	0	2012	12,203
Oct-2012	76.5	Apr-2017	0	2013	14,053
Nov-2012	1,688.4	May-2017	0	2014	0
Dec-2012	8,224.5	Jun-2017	0	2015	0
Jan-2013	6,488.2	Jul-2017	0	2016	0
Feb-2013	6,532.2	Aug-2017	0	2017	0
Mar-2013	1,032.3	Sep-2017	0	2018	0
Apr-2013	0.0	Oct-2017	0	2019	0
May-2013	0.0	Nov-2017	0	2020	0
Jun-2013	0.0	Dec-2017	0	2021	0
Jul-2013	0.0	Jan-2018	0		
Aug-2013	0.0	Feb-2018	0		
Sep-2013	0.0	Mar-2018	0		
Oct-2013	0.0	Apr-2018	0		
Nov-2013	0.0	May-2018	0		
Dec-2013	0.0	Jun-2018	0		
Jan-2014	0.0	Jul-2018	0		
Feb-2014	0.0	Aug-2018	0		
Mar-2014	0.0	Sep-2018	0		
Apr-2014	0.0	Oct-2018	0		
May-2014	0.0	Nov-2018	0		
Jun-2014	0.0	Dec-2018	0		
Jul-2014	0.0	Jan-2019	0		
Aug-2014	0.0	Feb-2019	0		
Sep-2014	0.0	Mar-2019	0		
Oct-2014	0.0	Apr-2019	0		
Nov-2014	0.0	May-2019	0		
Dec-2014	0.0	Jun-2019	0		
Jan-2015	0.0	Jul-2019	0		
Feb-2015	0.0	Aug-2019	0		
Mar-2015	0.0	Sep-2019	0		
Apr-2015	0.0	Oct-2019	0		
May-2015	0.0	Nov-2019	0		
Jun-2015	0.0	Dec-2019	0		
Jul-2015	0.0	Jan-2020	0		
Aug-2015	0.0	Feb-2020	0		
Sep-2015	0.0	Mar-2020	0		
Oct-2015	0.0	Apr-2020	0		
Nov-2015	0.0	May-2020	0		
Dec-2015	0.0	Jun-2020	0		
Jan-2016	0.0	Jul-2020	0		
Feb-2016	0.0	Aug-2020	0		
Mar-2016	0.0	Sep-2020	0		
Apr-2016	0.0	Oct-2020	0		
May-2016	0.0	Nov-2020	0		
Jun-2016	0.0	Dec-2020	0		
Jul-2016	0.0	Jan-2021	0		
Aug-2016	0.0	Feb-2021	0		
Sep-2016	0.0	Mar-2021	0		
Oct-2016	0.0	Apr-2021	0		
Nov-2016	0.0	May-2021	0		
Dec-2016	0.0	Jun-2021	0		
Jan-2017	0.0	Jul-2021	0		
Feb-2017	0.0	Aug-2021	0		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 434
NFT Medium

Model Type = UPC
Submodel = basemodel
Model Eqn = b1 + b2*log(x1 + b3)
Variable = TimeLog
Coeffs = {1e-06,0,-2010}
b1 Stats = SE-NaN t-NaN p-NaN
b2 Stats = SE-NaN t-NaN p-NaN
b3 Stats = SE-NaN t-NaN p-NaN
Model Stats = R^2-NaN, F-NaN
Intercept Stats = na
x1 Stats = na
Model Stats = na

Model Type = UPC
Submodel = slopemodel
Model Eqn = b1 + b2*log(x1 + b3)
Variable = TimeLog
Coeffs = {1e-06,0,-2010}
b1 Stats = SE-NaN t-NaN p-NaN
b2 Stats = SE-NaN t-NaN p-NaN
b3 Stats = SE-NaN t-NaN p-NaN
Model Stats = R^2-NaN, F-NaN
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	0.0	Mar-2017	0	2012	0
Oct-2012	0.0	Apr-2017	0	2013	0
Nov-2012	0.0	May-2017	0	2014	0
Dec-2012	0.0	Jun-2017	0	2015	0
Jan-2013	0.0	Jul-2017	0	2016	0
Feb-2013	0.0	Aug-2017	0	2017	0
Mar-2013	0.0	Sep-2017	0	2018	0
Apr-2013	0.0	Oct-2017	0	2019	0
May-2013	0.0	Nov-2017	0	2020	0
Jun-2013	0.0	Dec-2017	0	2021	0
Jul-2013	0.0	Jan-2018	0		
Aug-2013	0.0	Feb-2018	0		
Sep-2013	0.0	Mar-2018	0		
Oct-2013	0.0	Apr-2018	0		
Nov-2013	0.0	May-2018	0		
Dec-2013	0.0	Jun-2018	0		
Jan-2014	0.0	Jul-2018	0		
Feb-2014	0.0	Aug-2018	0		
Mar-2014	0.0	Sep-2018	0		
Apr-2014	0.0	Oct-2018	0		
May-2014	0.0	Nov-2018	0		
Jun-2014	0.0	Dec-2018	0		
Jul-2014	0.0	Jan-2019	0		
Aug-2014	0.0	Feb-2019	0		
Sep-2014	0.0	Mar-2019	0		
Oct-2014	0.0	Apr-2019	0		
Nov-2014	0.0	May-2019	0		
Dec-2014	0.0	Jun-2019	0		
Jan-2015	0.0	Jul-2019	0		
Feb-2015	0.0	Aug-2019	0		
Mar-2015	0.0	Sep-2019	0		
Apr-2015	0.0	Oct-2019	0		
May-2015	0.0	Nov-2019	0		
Jun-2015	0.0	Dec-2019	0		
Jul-2015	0.0	Jan-2020	0		
Aug-2015	0.0	Feb-2020	0		
Sep-2015	0.0	Mar-2020	0		
Oct-2015	0.0	Apr-2020	0		
Nov-2015	0.0	May-2020	0		
Dec-2015	0.0	Jun-2020	0		
Jan-2016	0.0	Jul-2020	0		
Feb-2016	0.0	Aug-2020	0		
Mar-2016	0.0	Sep-2020	0		
Apr-2016	0.0	Oct-2020	0		
May-2016	0.0	Nov-2020	0		
Jun-2016	0.0	Dec-2020	0		
Jul-2016	0.0	Jan-2021	0		
Aug-2016	0.0	Feb-2021	0		
Sep-2016	0.0	Mar-2021	0		
Oct-2016	0.0	Apr-2021	0		
Nov-2016	0.0	May-2021	0		
Dec-2016	0.0	Jun-2021	0		
Jan-2017	0.0	Jul-2021	0		
Feb-2017	0.0	Aug-2021	0		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 435
NFS Large Low

Model Type = UPC
Submodel = basemodel
Model Eqn = b1 + b2*log(x1 + b3)
Variable = TimeLog
Coeffs = {1e-06,0,-2010}
b1 Stats = SE-NaN t-NaN p-NaN
b2 Stats = SE-NaN t-NaN p-NaN
b3 Stats = SE-NaN t-NaN p-NaN
Model Stats = R^2-NaN, F-NaN
Intercept Stats = na
x1 Stats = na
Model Stats = na

Model Type = UPC
Submodel = slopemodel
Model Eqn = b1 + b2*log(x1 + b3)
Variable = TimeLog
Coeffs = {1e-06,0,-2010}
b1 Stats = SE-NaN t-NaN p-NaN
b2 Stats = SE-NaN t-NaN p-NaN
b3 Stats = SE-NaN t-NaN p-NaN
Model Stats = R^2-NaN, F-NaN
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	0.0	Mar-2017	0	2012	0
Oct-2012	0.0	Apr-2017	0	2013	0
Nov-2012	0.0	May-2017	0	2014	0
Dec-2012	0.0	Jun-2017	0	2015	0
Jan-2013	0.0	Jul-2017	0	2016	0
Feb-2013	0.0	Aug-2017	0	2017	0
Mar-2013	0.0	Sep-2017	0	2018	0
Apr-2013	0.0	Oct-2017	0	2019	0
May-2013	0.0	Nov-2017	0	2020	0
Jun-2013	0.0	Dec-2017	0	2021	0
Jul-2013	0.0	Jan-2018	0		
Aug-2013	0.0	Feb-2018	0		
Sep-2013	0.0	Mar-2018	0		
Oct-2013	0.0	Apr-2018	0		
Nov-2013	0.0	May-2018	0		
Dec-2013	0.0	Jun-2018	0		
Jan-2014	0.0	Jul-2018	0		
Feb-2014	0.0	Aug-2018	0		
Mar-2014	0.0	Sep-2018	0		
Apr-2014	0.0	Oct-2018	0		
May-2014	0.0	Nov-2018	0		
Jun-2014	0.0	Dec-2018	0		
Jul-2014	0.0	Jan-2019	0		
Aug-2014	0.0	Feb-2019	0		
Sep-2014	0.0	Mar-2019	0		
Oct-2014	0.0	Apr-2019	0		
Nov-2014	0.0	May-2019	0		
Dec-2014	0.0	Jun-2019	0		
Jan-2015	0.0	Jul-2019	0		
Feb-2015	0.0	Aug-2019	0		
Mar-2015	0.0	Sep-2019	0		
Apr-2015	0.0	Oct-2019	0		
May-2015	0.0	Nov-2019	0		
Jun-2015	0.0	Dec-2019	0		
Jul-2015	0.0	Jan-2020	0		
Aug-2015	0.0	Feb-2020	0		
Sep-2015	0.0	Mar-2020	0		
Oct-2015	0.0	Apr-2020	0		
Nov-2015	0.0	May-2020	0		
Dec-2015	0.0	Jun-2020	0		
Jan-2016	0.0	Jul-2020	0		
Feb-2016	0.0	Aug-2020	0		
Mar-2016	0.0	Sep-2020	0		
Apr-2016	0.0	Oct-2020	0		
May-2016	0.0	Nov-2020	0		
Jun-2016	0.0	Dec-2020	0		
Jul-2016	0.0	Jan-2021	0		
Aug-2016	0.0	Feb-2021	0		
Sep-2016	0.0	Mar-2021	0		
Oct-2016	0.0	Apr-2021	0		
Nov-2016	0.0	May-2021	0		
Dec-2016	0.0	Jun-2021	0		
Jan-2017	0.0	Jul-2021	0		
Feb-2017	0.0	Aug-2021	0		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 436
NFT Large Low

Model Type = UPC
Submodel = basemodel
Model Eqn = b1 + b2*log(x1 + b3)
Variable = TimeLog
Coeffs = {1e-06,0,-2010}
b1 Stats = SE-NaN t-NaN p-NaN
b2 Stats = SE-NaN t-NaN p-NaN
b3 Stats = SE-NaN t-NaN p-NaN
Model Stats = R^2-NaN, F-NaN
Intercept Stats = na
x1 Stats = na
Model Stats = na

Model Type = UPC
Submodel = slopemodel
Model Eqn = b1 + b2*log(x1 + b3)
Variable = TimeLog
Coeffs = {1e-06,0,-2010}
b1 Stats = SE-NaN t-NaN p-NaN
b2 Stats = SE-NaN t-NaN p-NaN
b3 Stats = SE-NaN t-NaN p-NaN
Model Stats = R^2-NaN, F-NaN
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	0.0	Mar-2017	0	2012	0
Oct-2012	0.0	Apr-2017	0	2013	0
Nov-2012	0.0	May-2017	0	2014	0
Dec-2012	0.0	Jun-2017	0	2015	0
Jan-2013	0.0	Jul-2017	0	2016	0
Feb-2013	0.0	Aug-2017	0	2017	0
Mar-2013	0.0	Sep-2017	0	2018	0
Apr-2013	0.0	Oct-2017	0	2019	0
May-2013	0.0	Nov-2017	0	2020	0
Jun-2013	0.0	Dec-2017	0	2021	0
Jul-2013	0.0	Jan-2018	0		
Aug-2013	0.0	Feb-2018	0		
Sep-2013	0.0	Mar-2018	0		
Oct-2013	0.0	Apr-2018	0		
Nov-2013	0.0	May-2018	0		
Dec-2013	0.0	Jun-2018	0		
Jan-2014	0.0	Jul-2018	0		
Feb-2014	0.0	Aug-2018	0		
Mar-2014	0.0	Sep-2018	0		
Apr-2014	0.0	Oct-2018	0		
May-2014	0.0	Nov-2018	0		
Jun-2014	0.0	Dec-2018	0		
Jul-2014	0.0	Jan-2019	0		
Aug-2014	0.0	Feb-2019	0		
Sep-2014	0.0	Mar-2019	0		
Oct-2014	0.0	Apr-2019	0		
Nov-2014	0.0	May-2019	0		
Dec-2014	0.0	Jun-2019	0		
Jan-2015	0.0	Jul-2019	0		
Feb-2015	0.0	Aug-2019	0		
Mar-2015	0.0	Sep-2019	0		
Apr-2015	0.0	Oct-2019	0		
May-2015	0.0	Nov-2019	0		
Jun-2015	0.0	Dec-2019	0		
Jul-2015	0.0	Jan-2020	0		
Aug-2015	0.0	Feb-2020	0		
Sep-2015	0.0	Mar-2020	0		
Oct-2015	0.0	Apr-2020	0		
Nov-2015	0.0	May-2020	0		
Dec-2015	0.0	Jun-2020	0		
Jan-2016	0.0	Jul-2020	0		
Feb-2016	0.0	Aug-2020	0		
Mar-2016	0.0	Sep-2020	0		
Apr-2016	0.0	Oct-2020	0		
May-2016	0.0	Nov-2020	0		
Jun-2016	0.0	Dec-2020	0		
Jul-2016	0.0	Jan-2021	0		
Aug-2016	0.0	Feb-2021	0		
Sep-2016	0.0	Mar-2021	0		
Oct-2016	0.0	Apr-2021	0		
Nov-2016	0.0	May-2021	0		
Dec-2016	0.0	Jun-2021	0		
Jan-2017	0.0	Jul-2021	0		
Feb-2017	0.0	Aug-2021	0		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 437
NFS Large High

Model Type = UPC
Submodel = model
Model Eqn = b1 + b2*log(x1 + b3)
Variable = TimeLog
Coeffs = {1e-06,0,-2010}
b1 Stats = SE-NaN t-NaN p-NaN
b2 Stats = SE-NaN t-NaN p-NaN
b3 Stats = SE-NaN t-NaN p-NaN
Model Stats = R^2-NaN, F-NaN
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	4,205.8	Mar-2017	0	2012	8,670
Oct-2012	4,892.8	Apr-2017	0	2013	0
Nov-2012	87.9	May-2017	0	2014	0
Dec-2012	0.0	Jun-2017	0	2015	0
Jan-2013	0.0	Jul-2017	0	2016	0
Feb-2013	0.0	Aug-2017	0	2017	0
Mar-2013	0.0	Sep-2017	0	2018	0
Apr-2013	0.0	Oct-2017	0	2019	0
May-2013	0.0	Nov-2017	0	2020	0
Jun-2013	0.0	Dec-2017	0	2021	0
Jul-2013	0.0	Jan-2018	0		
Aug-2013	0.0	Feb-2018	0		
Sep-2013	0.0	Mar-2018	0		
Oct-2013	0.0	Apr-2018	0		
Nov-2013	0.0	May-2018	0		
Dec-2013	0.0	Jun-2018	0		
Jan-2014	0.0	Jul-2018	0		
Feb-2014	0.0	Aug-2018	0		
Mar-2014	0.0	Sep-2018	0		
Apr-2014	0.0	Oct-2018	0		
May-2014	0.0	Nov-2018	0		
Jun-2014	0.0	Dec-2018	0		
Jul-2014	0.0	Jan-2019	0		
Aug-2014	0.0	Feb-2019	0		
Sep-2014	0.0	Mar-2019	0		
Oct-2014	0.0	Apr-2019	0		
Nov-2014	0.0	May-2019	0		
Dec-2014	0.0	Jun-2019	0		
Jan-2015	0.0	Jul-2019	0		
Feb-2015	0.0	Aug-2019	0		
Mar-2015	0.0	Sep-2019	0		
Apr-2015	0.0	Oct-2019	0		
May-2015	0.0	Nov-2019	0		
Jun-2015	0.0	Dec-2019	0		
Jul-2015	0.0	Jan-2020	0		
Aug-2015	0.0	Feb-2020	0		
Sep-2015	0.0	Mar-2020	0		
Oct-2015	0.0	Apr-2020	0		
Nov-2015	0.0	May-2020	0		
Dec-2015	0.0	Jun-2020	0		
Jan-2016	0.0	Jul-2020	0		
Feb-2016	0.0	Aug-2020	0		
Mar-2016	0.0	Sep-2020	0		
Apr-2016	0.0	Oct-2020	0		
May-2016	0.0	Nov-2020	0		
Jun-2016	0.0	Dec-2020	0		
Jul-2016	0.0	Jan-2021	0		
Aug-2016	0.0	Feb-2021	0		
Sep-2016	0.0	Mar-2021	0		
Oct-2016	0.0	Apr-2021	0		
Nov-2016	0.0	May-2021	0		
Dec-2016	0.0	Jun-2021	0		
Jan-2017	0.0	Jul-2021	0		
Feb-2017	0.0	Aug-2021	0		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 438
NFT Large High

Model Type = UPC
Submodel = model
Model Eqn = 0*x+1e-06
Variable = constant
Coeffs =
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	0.0	Mar-2017	0	2012	0
Oct-2012	0.0	Apr-2017	0	2013	0
Nov-2012	0.0	May-2017	0	2014	0
Dec-2012	0.0	Jun-2017	0	2015	0
Jan-2013	0.0	Jul-2017	0	2016	0
Feb-2013	0.0	Aug-2017	0	2017	0
Mar-2013	0.0	Sep-2017	0	2018	0
Apr-2013	0.0	Oct-2017	0	2019	0
May-2013	0.0	Nov-2017	0	2020	0
Jun-2013	0.0	Dec-2017	0	2021	0
Jul-2013	0.0	Jan-2018	0		
Aug-2013	0.0	Feb-2018	0		
Sep-2013	0.0	Mar-2018	0		
Oct-2013	0.0	Apr-2018	0		
Nov-2013	0.0	May-2018	0		
Dec-2013	0.0	Jun-2018	0		
Jan-2014	0.0	Jul-2018	0		
Feb-2014	0.0	Aug-2018	0		
Mar-2014	0.0	Sep-2018	0		
Apr-2014	0.0	Oct-2018	0		
May-2014	0.0	Nov-2018	0		
Jun-2014	0.0	Dec-2018	0		
Jul-2014	0.0	Jan-2019	0		
Aug-2014	0.0	Feb-2019	0		
Sep-2014	0.0	Mar-2019	0		
Oct-2014	0.0	Apr-2019	0		
Nov-2014	0.0	May-2019	0		
Dec-2014	0.0	Jun-2019	0		
Jan-2015	0.0	Jul-2019	0		
Feb-2015	0.0	Aug-2019	0		
Mar-2015	0.0	Sep-2019	0		
Apr-2015	0.0	Oct-2019	0		
May-2015	0.0	Nov-2019	0		
Jun-2015	0.0	Dec-2019	0		
Jul-2015	0.0	Jan-2020	0		
Aug-2015	0.0	Feb-2020	0		
Sep-2015	0.0	Mar-2020	0		
Oct-2015	0.0	Apr-2020	0		
Nov-2015	0.0	May-2020	0		
Dec-2015	0.0	Jun-2020	0		
Jan-2016	0.0	Jul-2020	0		
Feb-2016	0.0	Aug-2020	0		
Mar-2016	0.0	Sep-2020	0		
Apr-2016	0.0	Oct-2020	0		
May-2016	0.0	Nov-2020	0		
Jun-2016	0.0	Dec-2020	0		
Jul-2016	0.0	Jan-2021	0		
Aug-2016	0.0	Feb-2021	0		
Sep-2016	0.0	Mar-2021	0		
Oct-2016	0.0	Apr-2021	0		
Nov-2016	0.0	May-2021	0		
Dec-2016	0.0	Jun-2021	0		
Jan-2017	0.0	Jul-2021	0		
Feb-2017	0.0	Aug-2021	0		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 439
NFS XL Low

Model Type = UPC
Submodel = basemodel
Model Eqn = 0*x+1e-06
Variable = constant
Coeffs =
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = na
x1 Stats = na
Model Stats = na

Model Type = UPC
Submodel = slopemodel
Model Eqn = b1 + b2*log(x1 + b3)
Variable = TimeLog
Coeffs = {414.3719,-109.4658,-2009.1332}
b1 Stats = SE-1126.232 t-0.36793 p-0.73735
b2 Stats = SE-490.577 t--0.22314 p-0.83776
b3 Stats = SE-14.8178 t--135.5894 p-8.8452e-07
Model Stats = R^2-0.36411, F-NaN
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	3,017.7	Mar-2017	335,902	2012	1,229,892
Oct-2012	56,152.2	Apr-2017	240,592	2013	1,206,306
Nov-2012	309,407.1	May-2017	62,364	2014	748,211
Dec-2012	314,677.4	Jun-2017	11,981	2015	776,069
Jan-2013	237,796.6	Jul-2017	943	2016	881,952
Feb-2013	337,489.8	Aug-2017	0	2017	1,136,294
Mar-2013	374,083.7	Sep-2017	0	2018	911,977
Apr-2013	256,483.1	Oct-2017	0	2019	1,146,226
May-2013	446.6	Nov-2017	0	2020	1,140,606
Jun-2013	6.5	Dec-2017	0	2021	1,138,782
Jul-2013	0.5	Jan-2018	0		
Aug-2013	0.0	Feb-2018	261,762		
Sep-2013	695.8	Mar-2018	336,002		
Oct-2013	57,211.7	Apr-2018	239,804		
Nov-2013	275,949.5	May-2018	62,207		
Dec-2013	236,516.7	Jun-2018	12,202		
Jan-2014	109,470.8	Jul-2018	847		
Feb-2014	24,272.9	Aug-2018	0		
Mar-2014	296,692.9	Sep-2018	2,669		
Apr-2014	255,346.7	Oct-2018	93,384		
May-2014	62,428.1	Nov-2018	160,675		
Jun-2014	0.1	Dec-2018	260,284		
Jul-2014	1.9	Jan-2019	235,750		
Aug-2014	-21.6	Feb-2019	261,313		
Sep-2014	-1,104.6	Mar-2019	335,579		
Oct-2014	-15,275.1	Apr-2019	240,260		
Nov-2014	270,054.7	May-2019	61,514		
Dec-2014	306,187.9	Jun-2019	11,810		
Jan-2015	214,635.6	Jul-2019	756		
Feb-2015	15,372.7	Aug-2019	0		
Mar-2015	295,369.1	Sep-2019	2,327		
Apr-2015	224,370.4	Oct-2019	93,184		
May-2015	25,697.8	Nov-2019	160,331		
Jun-2015	623.1	Dec-2019	259,649		
Jul-2015	0.0	Jan-2020	234,996		
Aug-2015	0.0	Feb-2020	258,766		
Sep-2015	1,103.0	Mar-2020	334,485		
Oct-2015	92,936.6	Apr-2020	239,571		
Nov-2015	230,248.2	May-2020	61,195		
Dec-2015	248,253.1	Jun-2020	11,593		
Jan-2016	193,607.4	Jul-2020	460		
Feb-2016	129,058.8	Aug-2020	0		
Mar-2016	270,409.7	Sep-2020	2,209		
Apr-2016	246,556.0	Oct-2020	92,781		
May-2016	42,320.2	Nov-2020	159,577		
Jun-2016	0.0	Dec-2020	259,206		
Jul-2016	0.0	Jan-2021	234,481		
Aug-2016	0.0	Feb-2021	259,967		
Sep-2016	2,349.4	Mar-2021	334,022		
Oct-2016	93,039.8	Apr-2021	237,904		
Nov-2016	243,478.7	May-2021	61,081		
Dec-2016	301,993.8	Jun-2021	11,327		
Jan-2017	293,536.1	Jul-2021	271		
Feb-2017	191,919.2	Aug-2021	0		

The Narragansett Electric Company d/b/a National Grid
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Rate Code 440
NFT XL Low

Model Type = UPC
Submodel = basemodel
Model Eqn = 1 + x1
Variable = FETA
Coeffs = {-43949.4921,97.9083}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-16261.5934 t--2.7027 p-0.053946
x1 Stats = SE-34.5232 t-2.836 p-0.047057
Model Stats = R^2-0.69722, F-9.2111

Model Type = UPC
Submodel = slopemodel
Model Eqn = b1 + b2*log(x1 + b3)
Variable = TimeLog
Coeffs = {-10566.9302,2193.3875,-1879.3187}
b1 Stats = SE-4056655.6103 t--0.0026048 p-0.99809
b2 Stats = SE-687686.8478 t-0.0031895 p-0.99766
b3 Stats = SE-42056.1967 t--0.044686 p-0.96717
Model Stats = R^2-0.13498, F-NaN
Intercept Stats = na
x1 Stats = na
Model Stats = na

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	45,498.8	Mar-2017	368,670	2012	693,077
Oct-2012	89,334.0	Apr-2017	325,038	2013	1,689,690
Nov-2012	204,637.5	May-2017	183,904	2014	659,380
Dec-2012	370,798.4	Jun-2017	131,937	2015	1,364,413
Jan-2013	284,730.0	Jul-2017	126,835	2016	1,673,966
Feb-2013	400,013.5	Aug-2017	107,523	2017	1,723,074
Mar-2013	414,359.4	Sep-2017	157,582	2018	1,723,074
Apr-2013	303,251.9	Oct-2017	260,121	2019	1,723,074
May-2013	166,830.2	Nov-2017	345,556	2020	1,723,074
Jun-2013	120,505.3	Dec-2017	444,463	2021	1,723,074
Jul-2013	104,781.0	Jan-2018	406,807		
Aug-2013	118,645.9	Feb-2018	306,718		
Sep-2013	67,620.1	Mar-2018	368,670		
Oct-2013	100,222.2	Apr-2018	325,038		
Nov-2013	158,786.8	May-2018	183,904		
Dec-2013	147,784.4	Jun-2018	131,937		
Jan-2014	89,700.8	Jul-2018	126,835		
Feb-2014	125,199.9	Aug-2018	107,523		
Mar-2014	162,375.6	Sep-2018	157,582		
Apr-2014	147,052.8	Oct-2018	260,121		
May-2014	81,054.6	Nov-2018	345,556		
Jun-2014	53,995.8	Dec-2018	444,463		
Jul-2014	51,821.0	Jan-2019	406,807		
Aug-2014	56,551.9	Feb-2019	306,718		
Sep-2014	70,758.6	Mar-2019	368,670		
Oct-2014	102,558.6	Apr-2019	325,038		
Nov-2014	351,467.3	May-2019	183,904		
Dec-2014	416,153.8	Jun-2019	131,937		
Jan-2015	230,455.2	Jul-2019	126,835		
Feb-2015	84,704.2	Aug-2019	107,523		
Mar-2015	452,682.2	Sep-2019	157,582		
Apr-2015	319,341.9	Oct-2019	260,121		
May-2015	152,779.8	Nov-2019	345,556		
Jun-2015	124,449.9	Dec-2019	444,463		
Jul-2015	107,048.4	Jan-2020	406,807		
Aug-2015	90,880.9	Feb-2020	306,718		
Sep-2015	126,880.6	Mar-2020	368,670		
Oct-2015	250,359.3	Apr-2020	325,038		
Nov-2015	315,123.7	May-2020	183,904		
Dec-2015	339,899.4	Jun-2020	131,937		
Jan-2016	329,493.6	Jul-2020	126,835		
Feb-2016	334,923.2	Aug-2020	107,523		
Mar-2016	368,669.8	Sep-2020	157,582		
Apr-2016	325,038.2	Oct-2020	260,121		
May-2016	183,903.8	Nov-2020	345,556		
Jun-2016	131,937.0	Dec-2020	444,463		
Jul-2016	126,834.7	Jan-2021	406,807		
Aug-2016	107,523.1	Feb-2021	306,718		
Sep-2016	157,581.6	Mar-2021	368,670		
Oct-2016	260,121.2	Apr-2021	325,038		
Nov-2016	345,556.4	May-2021	183,904		
Dec-2016	444,462.6	Jun-2021	131,937		
Jan-2017	406,807.0	Jul-2021	126,835		
Feb-2017	306,717.7	Aug-2021	107,523		

The Narragansett Electric Company d/b/a National Grid
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Rate Code 441
NFS XL High

Model Type = UPC
Submodel = model
Model Eqn = 1 + x1
Variable = FGDP$A
Coeffs = {-13679.1247,0.30472}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-4433.6765 t--3.0853 p-0.036743
x1 Stats = SE-0.089157 t-3.4178 p-0.026835
Model Stats = R^2-0.74493, F-11.6821

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	56,465.7	Mar-2017	2,546	2012	115,157
Oct-2012	49,149.2	Apr-2017	41,913	2013	116,224
Nov-2012	41,766.0	May-2017	75,252	2014	168,181
Dec-2012	29,626.4	Jun-2017	91,437	2015	162,059
Jan-2013	0.0	Jul-2017	63,953	2016	208,202
Feb-2013	15.8	Aug-2017	67,173	2017	211,148
Mar-2013	1,244.3	Sep-2017	57,743	2018	215,073
Apr-2013	23,881.4	Oct-2017	82,468	2019	214,310
May-2013	42,080.5	Nov-2017	79,624	2020	212,851
Jun-2013	49,001.6	Dec-2017	38,032	2021	211,973
Jul-2013	47,268.7	Jan-2018	2,088		
Aug-2013	55,529.1	Feb-2018	2,114		
Sep-2013	71,127.0	Mar-2018	2,541		
Oct-2013	57,562.0	Apr-2018	41,689		
Nov-2013	50,492.8	May-2018	75,165		
Dec-2013	27,061.2	Jun-2018	91,476		
Jan-2014	2,864.2	Jul-2018	63,868		
Feb-2014	0.0	Aug-2018	67,105		
Mar-2014	1,412.9	Sep-2018	57,931		
Apr-2014	41,077.5	Oct-2018	82,297		
May-2014	67,791.2	Nov-2018	79,127		
Jun-2014	55,035.1	Dec-2018	37,182		
Jul-2014	64,077.9	Jan-2019	1,589		
Aug-2014	64,458.8	Feb-2019	2,023		
Sep-2014	91,246.5	Mar-2019	2,485		
Oct-2014	110,087.0	Apr-2019	41,864		
Nov-2014	100,745.8	May-2019	74,991		
Dec-2014	39,385.6	Jun-2019	91,358		
Jan-2015	1,157.7	Jul-2019	63,867		
Feb-2015	0.0	Aug-2019	67,158		
Mar-2015	1,380.8	Sep-2019	57,839		
Apr-2015	39,570.3	Oct-2019	82,267		
May-2015	54,088.7	Nov-2019	79,079		
Jun-2015	65,861.1	Dec-2019	37,039		
Jul-2015	83,650.0	Jan-2020	1,421		
Aug-2015	78,906.9	Feb-2020	1,337		
Sep-2015	87,845.9	Mar-2020	2,220		
Oct-2015	90,080.1	Apr-2020	41,679		
Nov-2015	89,844.1	May-2020	74,880		
Dec-2015	58,077.0	Jun-2020	91,314		
Jan-2016	0.0	Jul-2020	63,793		
Feb-2016	0.0	Aug-2020	67,062		
Mar-2016	1,259.7	Sep-2020	57,845		
Apr-2016	41,075.5	Oct-2020	82,150		
May-2016	74,712.1	Nov-2020	78,859		
Jun-2016	91,154.2	Dec-2020	36,955		
Jul-2016	63,480.3	Jan-2021	1,272		
Aug-2016	67,120.3	Feb-2021	1,643		
Sep-2016	57,371.1	Mar-2021	2,049		
Oct-2016	81,830.1	Apr-2021	40,961		
Nov-2016	78,093.7	May-2021	74,846		
Dec-2016	34,977.0	Jun-2021	91,202		
Jan-2017	0.0	Jul-2021	63,709		
Feb-2017	0.0	Aug-2021	67,050		

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2017 Gas Delivery Forecast Model Specifications

Rate Code 442
NFT XL High

Model Type = UPC
Submodel = model
Model Eqn = 1 + x1
Variable = FGDP$A
Coeffs = {-41481.4178,0.90609}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-11911.8127 t--3.4824 p-0.025297
x1 Stats = SE-0.23954 t-3.7827 p-0.019391
Model Stats = R^2-0.78153, F-14.3096

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	85,180.6	Mar-2017	115,959	2012	496,919
Oct-2012	90,388.3	Apr-2017	97,487	2013	453,639
Nov-2012	99,455.1	May-2017	119,419	2014	491,391
Dec-2012	88,093.6	Jun-2017	117,434	2015	630,154
Jan-2013	58,255.0	Jul-2017	203,062	2016	599,287
Feb-2013	79,535.0	Aug-2017	263,819	2017	589,448
Mar-2013	85,993.2	Sep-2017	229,282	2018	598,448
Apr-2013	82,694.7	Oct-2017	160,849	2019	601,796
May-2013	73,909.8	Nov-2017	132,056	2020	603,361
Jun-2013	73,250.8	Dec-2017	92,885	2021	598,550
Jul-2013	88,769.8	Jan-2018	77,366		
Aug-2013	83,633.9	Feb-2018	68,798		
Sep-2013	99,203.2	Mar-2018	115,940		
Oct-2013	102,755.3	Apr-2018	97,581		
Nov-2013	97,584.8	May-2018	120,224		
Dec-2013	75,922.7	Jun-2018	118,538		
Jan-2014	36,383.1	Jul-2018	204,163		
Feb-2014	55,860.4	Aug-2018	264,946		
Mar-2014	97,192.0	Sep-2018	230,728		
Apr-2014	90,294.4	Oct-2018	161,938		
May-2014	104,517.4	Nov-2018	132,294		
Jun-2014	107,143.4	Dec-2018	92,592		
Jul-2014	132,822.4	Jan-2019	77,520		
Aug-2014	122,705.3	Feb-2019	68,785		
Sep-2014	124,389.7	Mar-2019	116,178		
Oct-2014	115,887.9	Apr-2019	98,643		
Nov-2014	124,244.2	May-2019	121,062		
Dec-2014	113,513.3	Jun-2019	119,609		
Jan-2015	57,347.7	Jul-2019	205,544		
Feb-2015	18,689.8	Aug-2019	266,569		
Mar-2015	110,986.7	Sep-2019	231,791		
Apr-2015	140,531.3	Oct-2019	162,850		
May-2015	154,545.7	Nov-2019	132,848		
Jun-2015	148,052.6	Dec-2019	92,341		
Jul-2015	181,187.6	Jan-2020	76,999		
Aug-2015	181,161.5	Feb-2020	69,516		
Sep-2015	190,694.6	Mar-2020	115,678		
Oct-2015	149,772.5	Apr-2020	98,684		
Nov-2015	150,288.5	May-2020	121,672		
Dec-2015	102,735.7	Jun-2020	120,811		
Jan-2016	85,572.7	Jul-2020	206,672		
Feb-2016	79,518.7	Aug-2020	267,381		
Mar-2016	109,610.3	Sep-2020	233,091		
Apr-2016	94,450.9	Oct-2020	163,706		
May-2016	116,586.7	Nov-2020	132,908		
Jun-2016	113,547.6	Dec-2020	91,845		
Jul-2016	200,636.8	Jan-2021	75,740		
Aug-2016	263,243.0	Feb-2021	66,587		
Sep-2016	226,876.6	Mar-2021	114,498		
Oct-2016	155,473.0	Apr-2021	98,003		
Nov-2016	125,726.6	May-2021	122,241		
Dec-2016	84,178.2	Jun-2021	121,481		
Jan-2017	75,677.3	Jul-2021	207,712		
Feb-2017	63,471.5	Aug-2021	268,842		

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Rate Code 443
FT2 Small

Model Type = UPC
Submodel = basemodel
Model Eqn = 0*x+1.41632
Variable = constant
Coeffs =
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = na
x1 Stats = na
Model Stats = na

Model Type = UPC
Submodel = slopemodel
Model Eqn = 1 + x1
Variable = GORC
Coeffs = {0.83688,-0.94787}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-0.13666 t-6.124 p-0.0036017
x1 Stats = SE-0.24351 t--3.8925 p-0.017653
Model Stats = R^2-0.7913, F-15.1666

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	71.9	Mar-2017	370	2012	0
Oct-2012	36.8	Apr-2017	284	2013	1,428
Nov-2012	68.2	May-2017	173	2014	1,750
Dec-2012	207.9	Jun-2017	86	2015	2,033
Jan-2013	292.9	Jul-2017	49	2016	1,456
Feb-2013	384.3	Aug-2017	41	2017	1,671
Mar-2013	339.2	Sep-2017	49	2018	1,736
Apr-2013	237.6	Oct-2017	94	2019	1,752
May-2013	111.1	Nov-2017	215	2020	1,736
Jun-2013	63.2	Dec-2017	326	2021	1,740
Jul-2013	49.2	Jan-2018	408		
Aug-2013	48.7	Feb-2018	421		
Sep-2013	53.5	Mar-2018	369		
Oct-2013	69.9	Apr-2018	275		
Nov-2013	141.8	May-2018	173		
Dec-2013	302.9	Jun-2018	90		
Jan-2014	430.5	Jul-2018	49		
Feb-2014	428.6	Aug-2018	42		
Mar-2014	403.9	Sep-2018	49		
Apr-2014	271.0	Oct-2018	97		
May-2014	135.2	Nov-2018	200		
Jun-2014	81.1	Dec-2018	321		
Jul-2014	62.7	Jan-2019	421		
Aug-2014	65.5	Feb-2019	421		
Sep-2014	79.7	Mar-2019	368		
Oct-2014	91.6	Apr-2019	275		
Nov-2014	131.7	May-2019	179		
Dec-2014	278.6	Jun-2019	87		
Jan-2015	450.9	Jul-2019	49		
Feb-2015	593.5	Aug-2019	45		
Mar-2015	532.2	Sep-2019	50		
Apr-2015	286.9	Oct-2019	93		
May-2015	109.3	Nov-2019	200		
Jun-2015	60.3	Dec-2019	322		
Jul-2015	51.3	Jan-2020	421		
Aug-2015	51.1	Feb-2020	420		
Sep-2015	50.2	Mar-2020	357		
Oct-2015	61.4	Apr-2020	282		
Nov-2015	102.4	May-2020	168		
Dec-2015	194.6	Jun-2020	87		
Jan-2016	308.6	Jul-2020	51		
Feb-2016	405.9	Aug-2020	40		
Mar-2016	337.9	Sep-2020	49		
Apr-2016	221.1	Oct-2020	91		
May-2016	122.7	Nov-2020	202		
Jun-2016	59.5	Dec-2020	319		
Jul-2016	47.8	Jan-2021	420		
Aug-2016	41.2	Feb-2021	421		
Sep-2016	40.8	Mar-2021	367		
Oct-2016	58.5	Apr-2021	280		
Nov-2016	124.5	May-2021	166		
Dec-2016	253.3	Jun-2021	86		
Jan-2017	392.1	Jul-2021	51		
Feb-2017	366.4	Aug-2021	43		

The Narragansett Electric Company d/b/a National Grid
2017 Gas Delivery Forecast Model Specifications

Rate Code 444
TSS Small

Model Type = UPC
Submodel = basemodel
Model Eqn = 1 + x1
Variable = FE23A
Coeffs = {-24.7301,1.5781}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-10.9688 t--2.2546 p-0.087201
x1 Stats = SE-0.6855 t-2.3021 p-0.082746
Model Stats = R^2-0.56988, F-5.3001

Model Type = UPC
Submodel = slopemodel
Model Eqn = 1 + x1
Variable = FETA
Coeffs = {-8.0328,0.017511}
b1 Stats = na
b2 Stats = na
b3 Stats = na
Model Stats = na
Intercept Stats = SE-0.77108 t--10.4176 p-0.00047959
x1 Stats = SE-0.001637 t-10.6969 p-0.00043274
Model Stats = R^2-0.96622, F-114.4252

Date	Actual Monthly UPC (therms)	Date	Forecast Monthly UPC (therms)	Year	Calendar Year UPC (therms)
Sep-2012	0.0	Mar-2017	357	2012	0
Oct-2012	0.0	Apr-2017	228	2013	1,428
Nov-2012	0.0	May-2017	120	2014	965
Dec-2012	0.0	Jun-2017	34	2015	1,511
Jan-2013	2.9	Jul-2017	6	2016	1,453
Feb-2013	146.9	Aug-2017	3	2017	1,532
Mar-2013	582.9	Sep-2017	20	2018	1,599
Apr-2013	450.0	Oct-2017	110	2019	1,597
May-2013	234.1	Nov-2017	228	2020	1,584
Jun-2013	11.3	Dec-2017	361	2021	1,571
Jul-2013	18.7	Jan-2018	450		
Aug-2013	12.2	Feb-2018	412		
Sep-2013	1.3	Mar-2018	356		
Oct-2013	2.3	Apr-2018	228		
Nov-2013	45.9	May-2018	119		
Dec-2013	72.2	Jun-2018	35		
Jan-2014	112.2	Jul-2018	6		
Feb-2014	195.3	Aug-2018	3		
Mar-2014	318.4	Sep-2018	20		
Apr-2014	153.1	Oct-2018	109		
May-2014	130.1	Nov-2018	226		
Jun-2014	55.8	Dec-2018	369		
Jul-2014	43.3	Jan-2019	447		
Aug-2014	35.6	Feb-2019	411		
Sep-2014	36.7	Mar-2019	355		
Oct-2014	44.6	Apr-2019	227		
Nov-2014	81.1	May-2019	122		
Dec-2014	209.2	Jun-2019	35		
Jan-2015	312.4	Jul-2019	6		
Feb-2015	425.1	Aug-2019	3		
Mar-2015	410.0	Sep-2019	20		
Apr-2015	243.9	Oct-2019	110		
May-2015	75.6	Nov-2019	217		
Jun-2015	44.3	Dec-2019	368		
Jul-2015	38.7	Jan-2020	446		
Aug-2015	36.2	Feb-2020	415		
Sep-2015	53.3	Mar-2020	346		
Oct-2015	193.3	Apr-2020	225		
Nov-2015	72.6	May-2020	118		
Dec-2015	112.9	Jun-2020	34		
Jan-2016	328.6	Jul-2020	6		
Feb-2016	390.0	Aug-2020	3		
Mar-2016	343.1	Sep-2020	19		
Apr-2016	182.9	Oct-2020	107		
May-2016	122.3	Nov-2020	221		
Jun-2016	86.0	Dec-2020	366		
Jul-2016	2.8	Jan-2021	444		
Aug-2016	3.4	Feb-2021	408		
Sep-2016	22.2	Mar-2021	351		
Oct-2016	18.2	Apr-2021	222		
Nov-2016	282.2	May-2021	113		
Dec-2016	457.9	Jun-2021	33		
Jan-2017	412.1	Jul-2021	6		
Feb-2017	380.7	Aug-2021	3		