The Commonwealth of Massachusetts

DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

D.T.E. 05-46 March 1, 2006

Petition of NSTAR Gas Company to the Department of Telecommunications and Energy pursuant to G.L. c. 164, § 69I, for review and approval of its Load Forecast and Supply Plan for the five-year period from November 1, 2005, through October 31, 2010.

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I. INTRODUCTION

On May 31, 2005, NSTAR Gas Company ("NSTAR Gas" or the "Company") filed with the Department of Telecommunications and Energy ("Department"), pursuant to G.L. c. 164, § 69I, a petition for approval of its load forecast and supply plan ("Plan") for the period of November 1, 2005, through October 31, 2010. The Company's petition was docketed as D.T.E. 05-46.

NSTAR Gas is a Massachusetts corporation and a subsidiary of NSTAR, a Massachusetts business trust. NSTAR Gas serves approximately 300,000 customers in a 1,067 square mile area of central, eastern, and southeastern Massachusetts. The Company's service territory is divided into four major operating divisions: Cambridge, Framingham, New Bedford, and Worcester.

Pursuant to notice duly issued, the Department held a public hearing and procedural conference on this matter on July 28, 2005. At the public hearing, the Department granted a motion by KeySpan Energy Delivery New England for limited participant status. The Department held a technical session on October 6, 2005. An evidentiary hearing was held on October 26, 2005. NSTAR Gas presented two witnesses in support of its Plan: Max Gowen, senior energy supply analyst, and Robert S. Koster, senior load-services engineer. The evidentiary record consists of 44 exhibits and three responses to record requests. No briefs were submitted.

II. ANALYSIS OF THE LONG-RANGE FORECAST

A. Standard of Review

Pursuant to G.L. c. 164, § 69I, the Department is required to ensure "a necessary energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost." In accordance with this mandate, the Department reviews the long-range forecast of each gas utility to ensure that the forecast accurately projects the gas sendout requirements of the utility's market area. G.L. c. 164, § 69I. A forecast must reflect accurate and complete historical data, and reasonable statistical projection methods. Id.; 980 C.M.R. § 7.02(9)(b). Such a forecast should provide a sound basis for resource planning decisions. Bay State Gas Company, D.T.E. 02-75, at 2 (2004); The Berkshire Gas Company, D.T.E. 02-17, at 2 (2003); The Berkshire Gas Company, 16 DOMSC 53, at 56 (1987).

In its review of a forecast, the Department determines if a projection method is reasonable based on whether the methodology is: (a) reviewable, that is, contains enough information to allow a full understanding of the forecast methodology; (b) appropriate, that is, technically suitable to the size and nature of the particular gas company; and (c) reliable, that is, provides a measure of confidence that the gas company's assumptions, judgments, and data will forecast what is most likely to occur. D.T.E. 02-75, at 2; D.T.E. 02-17, at 2; Haverhill Gas Company, 8 DOMSC 48, at 50-51 (1982). Specifically, the Department examines a gas company's: (1) planning standards, including its weather data; (2) forecast method, including the forecast results; and (3) derivation and results of its design and normal sendout forecasts. See D.T.E. 02-75, at 2-3; D.T.E. 02-17, at 3; see also Boston Gas Company, D.P.U. 94-109

(Phase I) at 9 (1996). As part of the review of the forecast, the Department also examines the company's scenario analysis, which is used for evaluating the flexibility of the company's planning process, including any cold-snap analysis[1] and sensitivity analysis. D.T.E. 02-75, at 3; D.T.E. 02-17, at 3; Boston Gas Company, 25 DOMSC 116, at 200 (1992).

B. Previous Sendout Forecast Results

The last review completed for a forecast and supply plan filed by NSTAR Gas was described by the Department in its decision in NSTAR Gas Company, D.T.E. 02-12 (2003) ("2003 NSTAR Gas Decision"). The Company's long-range forecast plan was approved without issuing specific directives for future filings. See Id.

C. Planning Standards

The first element of the Department's forecast review is an assessment of a company's planning standards in order to determine if they are reviewable, appropriate, and reliable. D.T.E. 02-75, at 2; D.T.E. 02-17, at 2; 8 DOMSC 48, at 50-51. A company's planning standards are used as a basis for projecting its sendout forecast, which, in turn, is used to ascertain the adequacy and cost of a company's supply plan. D.T.E. 02-75, at 2; D.T.E. 02-17, at 2; 8 DOMSC 48, at 50-51. The Department's review of a company's planning standards begins with an examination of a company's weather data, and continues

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[1] A cold snap is a prolonged series of days at or near design conditions. Colonial Gas Company, D.P.U. 93-13, at 66 (1995); Boston Gas Company, 25 DOMSC 116, at 217 (1992); Commonwealth Gas Company, 17 DOMSC 71, at 137 (1998).

with an analysis of how a company arrived at its normal year, design year, and design day standards. D.T.E. 02-75, at 2; D.T.E. 02-17, at 2; 8 DOMSC 48, at 50-51.[2]

1. Weather Data

a. Description

The Company obtained effective degree day ("EDD") data[3] from the National Weather Service[4] for the 30-year period of November 1975 through October 2004 (Exh. NSTAR-1, at 13).[5] The Company determined that measuring both wind speed and temperature data at the same location would provide more reliable and consistent EDDs (Tr. at 10-11). The National Weather Service provided data from locations that were representative of the Company's service territories: Logan Airport for the Cambridge Division; Worcester Airport for the Framingham and Worcester Divisions; and Providence Airport for the New Bedford Division (Exh. NSTAR-1, at 12-13).

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[2] The design day represents the coldest day for which the Company plans to provide reliable firm service.

[3] Unlike heating degree days, EDDs incorporate the impact of wind speed as well as temperature to provide a better measure of weather fluctuations in estimating demand for gas.

[4] In its testimony, the Company referred to the weather data as being obtained from the U.S. Weather Bureau (Exh. NSTAR-1, at 12; Tr. at 9-11). Subsequently, the Company stated that the U.S. Weather Bureau is more properly referred to as the National Oceanic and Atmospheric Administration's National Weather Service (RR-DTE-1 Supp.).

[5] All of the EDD data was arranged to be consistent with the recent change in the North American Energy Standards Board Gas Day, which now starts at 10:00 AM Eastern Time (Exh. NSTAR-1, at 13). Previously, the Gas Day began at 8:00 AM Eastern Time (id.).

b. Analysis and Findings

In the Company's previously approved load forecast and supply plan, NSTAR Gas utilized temperature data measured at the Company's locations and combined it with wind data supplied by its weather forecasting service provider to generate EDDs for long range planning purposes. See 2003 NSTAR Gas Decision at 4-5. The Department approved the use of that data. See Id. at 5. In this case, the Department finds that the National Weather Service data is reliable and approves its use. In addition, the Department finds that the Company's use of a 30-year database is comparable to other weather databases approved previously by the Department. Colonial Gas Company, 23 DOMSC 351, at 363-364 (1991); 25 DOMSC 116, at 135-136; D.T.E. 99-26, at 4; Colonial Gas Company, D.P.U. 93-13, at 10 (1995). Therefore, the Department concludes that the Company has assembled an adequate database from which to develop the Company's planning standards. The Department finds that the weather data used by NSTAR Gas is reviewable, appropriate, and reliable.

2. Normal Year Standard

a. Description

The determination of the normal year EDD distribution for each division was based on the 30-year average of the historical EDD data from the National Weather Service locations (Exh. NSTAR-1, at 13). The normal year EDDs for each location were then distributed over the calendar year based on the 30-year frequency distribution of monthly EDDs and the 30-year average daily EDDs within each month (id.). Based on this method, the Company calculated the following normal year standards: 6,402 EDDs for the Cambridge Division;

7,561 EDDs for the Framingham and Worcester Divisions; and 6,283 EDDs for the New Bedford Division (id. at 14, Table III-2).

b. Analysis and Findings

The record indicates that NSTAR Gas (1) based its normal year standard on an historical average of its data, and (2) based its planning standards on an acceptable weather database. The Department, therefore, finds that NSTAR Gas' method for determining its normal year planning standard is reviewable, appropriate, and reliable.

3. Design Year and Design Day Planning Standards

a. Background

NSTAR Gas states that in its previously-approved long-range supply plan, Navigant Consulting, Inc. ("NCI") updated the cost and benefit analysis of alternative design-day and design-year standards previously developed by National Economic Research Associates (id. at 2). NSTAR Gas further states that NCI's study led to NSTAR Gas' adoption of a 1:33 planning standard for the design year and a 1:50 planning standard for the design day (id.).[6]

In this current filing, NSTAR Gas replicated NCI's study using updated gas load data, gas cost data, gas shortage cost estimates, and EDD data (id.). The optimal design standards were determined where the marginal reduction in the cost of supply outages equaled marginal

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[6] A probability of recurrence reflects how frequently a specific weather pattern is expected to repeat, given a normal probability distribution. A probability of recurrence of 33 indicates that you could expect it to repeat once in 33 years (i.e., 1:33) (see Exh. NSTAR-1, at 15 n.3).

cost of the incremental capacity required to avoid supply disruptions (id. at 15). Due to the difficulty in identifying disruption costs, the Company states it considered a range of costs based on a "high" cost estimate and a "low" cost estimate (id.). In addition, NSTAR Gas' analysis included: (1) a study of the frequency of historical occurrence of design planning criteria; and (2) a review of the changes in the gas industry that may have an effect on the Company's selection of appropriate design planning standards (id.).

The Company reviewed historical weather data for the 30-year period between 1975 and 2004 to determine the five coldest winter periods for each division and their respective probabilities of recurrence (id.). The Company's analysis indicates that the severity of temperature depends on the location of the service territory, with the coldest winters occurring during different years for each division (id. at 16). The Company conducted a similar statistical analysis of the peak day for each of the divisions (id.).

b. Design Year Standard

i. Description

NSTAR Gas' design year standard analysis generated results that were very similar to those of the previous NCI study, and led to the retention of the previously approved 1:33 design standard (id. at 24). NSTAR Gas' update of the NCI study identifies a range of probability values between 1:30 and 1:120 (based on low and high damage values) (id. at 19, Table III-5). The Company states that the flexibility of its resource portfolio (including its large storage and vaporization capability at Hopkinton), current market conditions, and recent

Company experience justifies the selection of a design-winter standard near the lower end of the range, i.e., 1:33 (id. at 24).[7]

ii. Analysis and Findings

The Department notes that the Company has complied with Department precedent by using a methodology approved by the Department in the Company's previous supply plan. See 2003 NSTAR Gas Decision at 11-13. The Department finds that the Company's update of the weather input data, as well as the probabilistic and cost/benefit analyses, for developing the design year standards are reviewable, appropriate, and reliable (Exh. NSTAR-1, exh. 3). The Department, therefore, finds that the method for determining the design year standard provides a reasonable basis for resource planning decisions and, as such, is reviewable, appropriate, and reliable.

c. Design Day Standard

i. Description

Similar to the design year standard, the Company's design day standard analysis indicated that a 1:50 design standard also remains appropriate. The Company states that the design day represents the highest EDD the Company's resource portfolio must be structured to meet, and that although use of some short-term spot market-area arrangements on the warmer days of the winter season may be reasonable, reliance on spot gas arrangements in meeting

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[7] The Company states that once the design winter standard was selected, NSTAR Gas used a basic statistical function to calculate the following design year EDDs: Cambridge - 6,974 EDDs; Framingham and Worcester Division - 8,234 EDDs; and New Bedford - 6,897 EDDs (Exh. NSTAR-1, at 26, Table III-7).

design-day conditions is inappropriate (Exh. NSTAR-1, at 25). NSTAR Gas' update of the NCI study identifies a range of probability values between 1:23 and 1:92 (based on low and high damage values) (id. at 20, Table III-6). The Company argues that a 1:50 design day standard is appropriate because it is near the midpoint of the range and two of its four districts have already experienced close to a 1:50 design day occurrence (id. at 24).

ii. Analysis and Findings

The Department finds that NSTAR Gas has performed an adequate analysis which complies with the Department's precedent in this area by using a methodology approved by the Department in the previous filing (Exh. NSTAR-1, exh. 3). Accordingly, the Department finds that the Company's method for determining the design day standards is reviewable, appropriate, and reliable.

4. Cold-Snap Planning Standard

a. Description

The Company developed a cold-snap standard based on 30 years of weather data for each of the Company's four divisions (Exh. NSTAR-1, at 9, 79-80). NSTAR Gas used data provided by the National Weather Service (id. at 79-80; Tr. at 14). Specifically, the Company's ten-day cold-snap was calculated to have a recurrence probability of 1:33 years and was incorporated into a January with a number of EDDs consistent with a recurrence probability of 1:33 years (Exh. NSTAR-1, at 79-80). The distribution for the January cold-snap is 623 EDDs for the Cambridge Division, 684 EDDs for the Framingham and Worcester Divisions, and 618 EDDs for the New Bedford Division (id. at 27, Table III-8).

b. Analysis and Findings

The Department finds the selection of a ten-day cold-snap and January featuring 1:33 recurrence probabilities to be consistent with NSTAR Gas' overall design winter analysis. The Department, therefore, finds that NSTAR Gas' cold-snap standard is reviewable, appropriate, and reliable.

5. Conclusions on Planning Standards

In previous sections of this Order, the Department has found the Company's: (1) weather database; (2) normal year planning standard; (3) design year planning standard; (4) design day planning standard; and (5) cold-snap planning standard to be reviewable, reliable, and appropriate.

D. Demand Forecast

1. Econometric Forecast of Aggregate Sales

a. Methodology

The Company's planning process commences with the formulation of forecasts of firm aggregate sales by customer class under normal weather conditions for each of its four divisions, using historical aggregate sales data[8] as the primary input (id. at 7). The individual customer forecasts are then aggregated across the divisions to obtain a Company-wide forecast of firm aggregate sales over time (id. at 8).

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[8] Aggregate sales includes firm sales, firm transportation, new projects, special contracts, and demand side management (Exh. NSTAR-1, at 7).

NSTAR Gas retained Global Insight, Inc. ("Global Insight") to prepare the Company's econometric forecasts of firm sales and firm transportation (id. at 28). Global Insight's econometric forecast used historical Company sales data provided by the Company from billing records for a 27-year period spanning 1978 to 2004 (id. at 31). Global Insight relied on multiple regression analysis to generate forecasts for the Company (id. at 29). In addition, Global Insight used economic, demographic, weather and energy pricing variables as drivers in estimating statistically valid econometric equations for the residential heating, residential non-heating, municipal, commercial, and industrial customer classes in the Cambridge, Framingham, Worcester, and New Bedford operating divisions (id. at 28). The Company asserts that while sufficient historical data are available to estimate firm sales directly for the residential classes, Global Insight was required to develop models to estimate the share of firm sales to total firm sales and firm transportation for the municipal, commercial, and industrial classes (id.).[9]

The forecast of firm transportation is developed by subtracting the forecast of firm sales from the forecast of firm sales and firm transportation (id.). Firm transportation includes: (1) transportation load associated with customers who have converted from sales service to transportation service since February 1, 1999, and are eligible for capacity assignment; (2) transportation loads in place prior to February 1, 1999, which are exempt from capacity assignment (i.e., grandfathered customers); and (3) new transportation load associated with

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[9] The Company states that municipal, commercial, and industrial customers began to purchase gas directly from third-party suppliers in the 1990s due to retail unbundling.

customers who are exempt from capacity assignment because they have become transportation customers without first taking firm sales service from the Company (id. at 28-29).[10]

For each class (i.e., residential, municipal, commercial, and industrial), Global Insight developed separate econometric models of firm sales and firm transportation as well as the number of customers in each service division (id. at 30). These models were developed by regressing each dependent variable (i.e., sales or number of customers) against certain logical causal independent variables (e.g., number of households, fuel prices) (id.).[11] In addition, "dummy variables" were used in the regressions to account for structural changes and anomalous outliers in historical data (id.).[12] Individual models and forecasts were then developed for each customer category and for each of the operating divisions (id. at 30-31).[13]

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[10] In Natural Gas Unbundling, D.T.E. 98-32-B (1999), the Department determined that firm sales customers converting to firm transportation service after the date of the Order (i.e., February 1, 1999) would be allocated a pro-rata share of a local gas distribution company's design day capacity resources (i.e., upstream pipeline capacity, storage, and LNG) that marketers may then use to serve their requirements. See D.T.E. 98-32-B at 34, 40-42. These customers are referred to as "capacity eligible." The Department further determined that firm sales customers who converted to firm transportation service prior to February 1, 1999, would be exempt from capacity assignment. See Id. These customers are referred to as "grandfathered customers."

[11] The logical causal independent variables include population, number of households, fuel prices, employment, cost of gas, and EDD (Exh. NSTAR-1, at 30).

[12] A dummy variable takes on the value of 1 when the condition is present and 0 when it is not (Exh. NSTAR-1, at 30).

[13] Global Insight developed a total of 64 equations: 16 equations for each division, of which 8 equations were estimated for number of customers, 5 equations were estimated for sales, and 3 equations were estimated for firm sales share (Exh. NSTAR-1, at 31).

b. Service Territory Specific Data Availability

The Company's service territory covers a total of 51 cities and towns located in six different Massachusetts counties (id. at 35). The Company states that in order to perform multiple regression analysis for the communities served by the Company, it is necessary to acquire historical time series data for both dependent and independent variables, as well as projected time series data for the independent variables (id.). The Company states that it obtained the economic and demographic data from Global Insight (id. at 36). The Company further states that Global Insight has county-level data available and that NSTAR Gas provided Global Insight with a map of the service territories so that the proper county data would be used to model sales in each division (Tr. at 15-16; Exh. NSTAR-1, att. 4, at 2-3).[14] NSTAR Gas' four operating divisions were matched to Massachusetts counties in the following manner: Cambridge Division – Middlesex County; Framingham Division – Middlesex, Norfolk, and Worcester Counties; New Bedford Division – Bristol and Plymouth Counties; and Worcester Division – Middlesex and Worcester Counties (id.).

c. Validity and Predictive Power of the Model

Each equation supporting Global Insight's forecast is evaluated with a broad range of statistical criteria, including a high adjusted R^2, proper sign and reasonable magnitude of

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[14] NSTAR Gas specifically notes that the counties and combinations of counties used in modeling include geographic areas significantly larger than, and thus different from, the actual service territory included in the Company's four operating divisions (Exh. NSTAR-1, at 35). The Company states that the geographic and demographic differences required the use of different independent variables in the regression equations for the same customer category located in different service divisions (id.).

coefficients, significant "t" values, absence of serial correlation, a high degree of confidence in overall fit, and reasonableness of forecasts (id. at 31). The Company also performed an ex post facto analysis to evaluate its econometric model's predictive power (RR-DTE-3). The Company re-estimated its forecasting equations using historical data from 2003, then applied these equations to forecast sendout for 2004 (id.). A comparison between forecasted 2004 sendout and actual 2004 sendout produces a -0.2 percent difference (id.).

2. Forecast of Total Firm Throughput

a. Methodology

The Company asserts that Global Insight's econometric forecast must be adjusted to develop a Company-wide forecast of total firm load throughput under normal weather conditions that is used for making resource planning decisions (Exh. NSTAR-1, at 8).[15] Total firm load requirements are identified by summing the forecast of firm sales, capacity-eligible customers, and the other loads that are estimated outside of the econometric forecasting process (id. at 32).[16] The Company defines firm load as follows:

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[15] The adjustments include the addition of Company-use gas, line loss, demand in excess of historical growth patterns resulting from large new projects, as well as reductions of firm load resulting from demand side management (Exh. NSTAR-1, at 8).

[16] The Company includes in the forecast the estimated load reduction achieved from the conservation measures that were installed through 2004 and are forecast to be installed throughout the forecast period pursuant to the Company's Department-approved demand-side management programs (Exh. NSTAR-1, at 34). The Company forecasts an increase in accrued demand-side management savings from 808.22 BBtus in 2005 to 954.17 BBtus in 2010 (id., Table IV-2).

Firm Load	=	***Firm Sales***
	+	Capacity Eligible Firm Transportation
	+	Line Loss and Company Use
	+	Massachusetts Institute of Technology and Special Projects[17]

(id. at 32-33).

b. Transportation Migration

The Company's firm transportation load forecast, as developed by Global Insight, includes: (1) load associated with firm sales customers who migrated to firm transportation service after February 1, 1999; (2) grandfathered transportation load; (3) load growth associated with grandfathered transportation customers; and (4) incremental transportation load associated with new transportation customers.[18] The Company states that with respect to firm transportation customers, the relevant load for resource planning is that portion of the firm transportation load that is subject to mandatory capacity assignment ("Capacity Eligible Load") (id. at 46).

The Company developed a forecast of Capacity Eligible Load by classifying the 2004 firm transportation load into two categories: (1) load exempt from capacity assignment; and (2) capacity eligible load (id.). The load exempt from capacity assignment is isolated and then extrapolated through 2010 by using the growth trend of total transportation forecasted by

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[17] The Department notes that the Massachusetts Institute of Technology ("MIT") projected load is not captured in the econometric forecasting process because the volumes of this contract are known and are a result of a special off-tariff agreement between the Company and MIT (see Exh. NSTAR-1, at 47).

[18] New transportation customers are defined as customers not previously taking firm sales service or customers migrating to firm transportation service from interruptible sales or transportation service (Exh. NSTAR-1, at 45).

Global Insight (id.). Subtracting the capacity exempt load from total transportation load produces the Capacity Eligible Load over the forecast period (id.). This load is forecasted to increase from 4065 BBtus in 2005 to 4580 BBtus in 2010 (id.).

The Company states that although its terms and conditions allow for transportation service for all residential customers, there has been minimal migration to transportation within this customer class (id. at 46-47). In 2004, residential firm transportation totaled 13 BBtu, with load growth forecasted to reach 15 BBtu by 2010 (id. at 47).

c. Line Loss and Company-Use Gas

NSTAR Gas' forecasted level of company-use gas is expected to remain constant at 100 BBtu per year (id.). The Company indicated that the forecast of line loss was based on recent historical data, and adjusted for the firm throughput growth trend (id.).[19]

d. MIT and Special Projects

Massachusetts Institute of Technology ("MIT") receives gas from NSTAR Gas under a special sales contract to provide fuel for MIT's electric generating facilities (id.; Tr. at 18). The Company states that the projections for the MIT electric generation facilities are derived from the contract with MIT, and are not included in the econometric model (Exh. NSTAR-1, at 47). The daily contract volume is 5,500 MMBtus, with a provision to curtail the load for up to 20 days per year (id.). The annual volume of the contract is 1,897.5 BBtus, with any usage

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[19] In 2004, Company Use represented less than 0.2 percent of firm throughput while actual line loss represented approximately two percent of total throughput (Exh. NSTAR-1, at 47).

by MIT in excess of the 5,500 MMBtus per day limit to be served by third-party suppliers and treated as firm transportation load (id.).

The Company indicates that sales to the North Point Development in Cambridge and the Pine Hills residential golf course community in the New Bedford Division represent new incremental load that is not captured in the econometric modeling process (id.). An estimate of this load was provided by the Company's Sales Department based on specific plans for residential and commercial development (id.). The projected firm sales to the North Point Development are entirely associated with residential customers, and range from zero BBtus in 2005 to 125 BBtus in 2010 (RR-DTE-2). The projection of firm sales to the Pine Hills residential golf course community contains both residential and commercial elements (id.). Estimated residential sales increase from 20 BBtus in 2005 to 130 BBtus in 2010, while commercial sales remain constant at four BBtus throughout the forecast period (id.).

3. Normal Year Sendout

The Company calculated its sendout requirements for firm load under normal weather conditions as the sum of firm sales, MIT, Capacity Eligible Load, line loss, company use and special projects load (Exh. NSTAR-1, at 48). The Company's firm load sendout requirement increases at an annual compound growth rate of 1.2 percent, from 43,450 BBtu in 2005 to 46,192 BBtu in 2010 (id. at 50).

4. Design Year Sendout

Upon selection of a winter season standard of 1:33 years, the Company converts its annual normal year forecast into monthly sendout, and then daily baseload and heating load per degree day factors to develop design year and design day forecasts (id.). To convert the forecasts of annual firm sales and capacity eligible transportation sendout load into monthly sendout, the Company used the last five years of historical information on both monthly firm sales and monthly firm transportation data (id.).

To determine the heat sensitive portion of the load, the Company used the average daily firm sendout of the non-heat sensitive months of July and August as "baseload" (id. at 50-51). The Company then subtracted the monthly total of daily baseload from each month's total firm requirements to obtain the heat sensitive portion of the load (id. at 51). Dividing this heat sensitive sendout by monthly normal EDDs produced monthly heating load per effective degree-day or "heat factors" (id.). The Company used the heat factors and design year patterns to determine design year demand (id.).

The Company's total design year firm requirements increase at an average annual rate of 1.21 percent and grow from 46,863 BBtus in 2005-2006 to 49,174 BBtus for the 2009-2010 season (id.).

5. Design Day Sendout

Based on its historical analysis, NSTAR Gas states that the January heat factor is the highest of the twelve months; hence, the Company selected a design day based on January, which represents the most severe test of NSTAR Gas' system capabilities (id.). To calculate

the design day sendout, the Company first multiplied the EDDs for the selected design day (January 16) by the January heat factor (id.). Next, NSTAR Gas added the daily base load in order to derive the design day sendout (id.).

Based on the Company's design year standard, NSTAR Gas' total design day firm requirements increases at an average annual rate of 1.2 percent, from 431 BBtus in 2005-2006 to 452 BBtus for the 2009-2010 season (id. at 51-52).

6. Firm Requirements Under Sensitivity Analysis

The Company argues that the more sensitive its forecast is to potential changes in key underlying variables, the greater the importance of the supply portfolio's flexibility in meeting changing demand (id. at 52). The Company tested the sensitivity of its forecast by changing projections of key economic and demographic variables used in the econometric forecasting models (id.).[20] These changes to forecast drivers were provided by Global Insight as part of the "high" and "low" economic growth scenarios (id.). The Company's sendout forecast under the low and high economic growth scenarios demonstrates an overall spread of +/- 2.06 percent and +/- 2.10 percent, respectively, from the base case forecast (id. at 52, Table V-10).

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[20] These scenario forecasts were developed to provide 95 percent confidence in the forecast of the key drivers (Exh. NSTAR-1, at 52).

7. Analysis and Findings

The Department finds that the econometric forecasts developed by Global Insight as well as NSTAR Gas' firm sales and transportation load forecast are sufficiently documented and incorporate enough detail to allow full understanding of their methodologies.

The Department also finds that NSTAR Gas' forecast is suitable given the size and the nature of the Company. The Company retained the services of an economic and financial consulting company to provide the necessary level of expertise for NSTAR Gas' econometric forecasting processes. Additionally, the Department notes that the econometric models employed in the forecast are proven techniques used extensively in the industry by other local gas distribution companies.

Furthermore, the Department finds that NSTAR Gas has provided sufficient evidence to indicate that the Company's assumptions, judgments, and data will forecast what is most likely to occur within a reasonable degree of accuracy. The Company's ex post facto analysis produced only a -0.2 percent difference between forecasted sendout and actual sendout and demonstrates the reliability of the forecast model's predictive power. In addition, the Company's forecast's sensitivity to low and high economic growth scenarios was within acceptable levels. Therefore, the Department finds that the forecast developed by NSTAR Gas is reviewable, appropriate, and reliable.

III. ANALYSIS OF THE SUPPLY PLAN

In this section, the Department reviews the adequacy of the Company's supply planning process, the Company's supply plan, and the cost of the Company's supply plan. In addition,

the Department reviews the Company's supply plan and identifies elements that represent potential contingencies affecting the adequacy of supply or that potentially affect the cost of the supply plan.

A. Standard of Review

The Department is required to ensure "a necessary energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost." G.L. c. 164, § 69I. In fulfilling this mandate, the Department reviews a gas company's supply planning process and the two major aspects of every utility's supply plan: adequacy and cost.[21] Commonwealth Gas Company, D.P.U. 92-159, at 53 (1995); D.P.U. 93-13, at 49-50; 25 DOMSC 116, at 201.

The Department reviews a gas company's five-year supply plan to determine whether the plan is adequate to meet projected normal-year, design-year, design-day, and cold-snap firm sendout requirements. 25 DOMSC 116, at 201. The Department's review of reliability, another necessary element of a gas company's supply plan, is included in the Department's consideration of adequacy. See D.T.E. 99-26, at 18; D.P.U. 93-13, at 50, n.22; 25 DOMSC 116, at 201, n.87. In order to establish adequacy, a gas company must demonstrate that it has an identified set of resources that meet its projected sendout under a reasonable range of contingencies. 25 DOMSC 116, at 201, n.87. If a company cannot establish that it has an identified set of resources which meet sendout requirements under a

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[21] G.L. c. 164, § 69I also directs the Department to balance cost considerations with environmental impacts in ensuring that the Commonwealth has a necessary supply of energy. D.P.U. 96-18, at 31; D.P.U. 92-159, at 53; D.P.U. 93-13, at 50.

reasonable set of contingencies, the company must then demonstrate that it has an action plan which meets projected sendout in the event that the identified resources will not be available when expected. D.P.U. 96-18, at 31; D.P.U. 92-159, at 54; D.P.U. 93-13, at 50.

In its review of a gas company's supply plan, the Department reviews a company's overall supply planning process. D.P.U. 92-159, at 53. An appropriate supply planning process is essential to the development of an adequate, low-cost, and low environmental impact resource plan. Id. Pursuant to this standard, a gas company must establish that its supply planning process enables it to (1) identify and evaluate a full range of supply options, and (2) compare all options including demand side management ("DSM") on an equal footing. D.P.U. 96-18, at 31; D.P.U. 92-159, at 54; D.P.U. 93-13, at 51; 25 DOMSC 116, at 202.

Finally, the Department reviews whether a gas company's five-year supply plan minimizes cost. 25 DOMSC 116, at 203. A least-cost supply plan is one that minimizes costs subject to trade-offs with adequacy and environmental impact. D.P.U. 92-159, at 55; D.P.U. 93-13, at 51-52; 25 DOMSC 116, at 203. Here, a gas company must establish that application of its supply planning process has resulted in the addition of resource options that contribute to a least-cost plan. D.P.U. 92-159, at 55.

B. Previous Supply Plan Review

The Department approved NSTAR Gas' supply plan for the years 2001-2002 through 2005-2006 without issuing any specific directives. See 2003 NSTAR Gas Decision. The Department found that NSTAR Gas had established that the Company had adequate supplies to meet its normal year, design year, design day, and cold-snap forecast sendout requirements

throughout the forecast period. Id. at 51. In addition, the Department found that NSTAR Gas developed: (1) appropriate criteria for screening and comparing supply-side resources and demand-side resources; and (2) a mechanism to undertake the comparison of resources on a equal basis. Id. Finally, the Department found that the Company's supply planning process as a whole may lead to the addition of resources that contribute to a least-cost supply plan. Id.

C. Description of Supply Model

NSTAR Gas uses New Energy Associates' SENDOUT® linear programming optimization model to calculate the least-cost dispatch of existing and incremental resources to meet the Company's load requirements (Exh. NSTAR-1, at 56). The Resource Mix module is an extension of the basic SENDOUT® model and allows optimization of existing and new contract capacity levels by taking into account fixed charges as well as variable costs (id. at 58). The Company relies on the output produced by the model to identify the mix of resources required, excess resources, supply shortages, and the costs of serving demand (id. at 59). The results provide the basis for the Company's five-year gas supply portfolio plan, including any modifications required to meet project demand (id.).

The Company states that the SENDOUT® model provides a mechanism for a detailed simulation of the least-cost dispatch of the Company's supply resources under alternative demand scenarios (id.). NSTAR Gas further states that the SENDOUT® model serves as the Company's primary planning tool for testing the operational and economic consequences of a wide variety of supply and DSM alternatives (id.).

D. Supply Planning Process

1. Standard of Review

The Department has determined that a supply planning process is critical in enabling a utility company to formulate a resource plan that achieves an adequate, least-cost and low environmental impact supply for its customers. The Berkshire Gas Company, D.P.U. 94-14, at 36 (1994); D.P.U. 93-13, at 70; 25 DOMSC 116, at 223; Boston Gas Company, 19 DOMSC 332, at 388 (1990). The Department has noted that an appropriate supply planning process provides a gas company with an organized method of analyzing options, making decisions, and reevaluating decisions in light of changed circumstances. D.P.U. 94-14, at 36; D.P.U. 93-13, at 70; 25 DOMSC 116, at 223; 19 DOMSC 332, at 388. For the Department to determine that a gas company's supply planning process is appropriate, the process must be fully documented. D.P.U. 93-13, at 70; 25 DOMSC 116, at 223.

The Department's review of a gas company's process for identifying and evaluating resources focuses on whether the company: (1) has a process for compiling a comprehensive array of resource options -- including pipeline supplies, supplemental supplies, DSM, and other resources; (2) has established appropriate criteria for screening and comparing resources within a particular supply category; (3) has a mechanism in place for comparing all resources, including DSM, on an equal basis, i.e., across resource categories; and (4) has a process that, as a whole, enables the company to achieve an adequate, least-cost, and low environmental impact supply plan. D.P.U. 94-140, at 37; D.P.U. 93-13, at 70; 25 DOMSC 116, at 224; 19 DOMSC 332, at 54-55.

The Department reviews a gas company's five-year supply plan to determine whether it minimizes cost, subject to trade-offs with adequacy and environmental impact. D.P.U. 94-140, at 37; D.P.U. 93-13, at 88; 25 DOMSC 116, at 236. A gas company must establish that the application of its supply planning process, including adequate consideration of DSM and consideration of all resource options on an equal basis, has resulted in the addition of resource options that contribute to a least-cost supply plan. D.P.U. 94-140, at 37; D.P.U. 93-13, at 83; 25 DOMSC 116, at 233; The Berkshire Gas Company, 14 DOMSC 107, at 115 (1986). As part of this review, the Department requires gas companies to show, at a minimum, that they have completed comprehensive cost studies comparing the costs of a reasonable range of practical supply alternatives prior to selection of major new resources for their supply plans. D.P.U. 94-140, at 37; D.P.U. 93-13, at 89; 25 DOMSC 116, at 236; 1986 Gas Generic Order, 14 DOMSC 95, at 100-102 (1986).

2. Identification and Evaluation of Resources Alternatives

a. Supply-Side Resources

NSTAR Gas states that it maintains continuous contact with the market through formal and informal solicitations for new resources (Exh. NSTAR-1, at 59). The Company also states that it maintains an extensive list of contacts with whom it conducts business regularly (id. at 60). As a result, the Company asserts that it has a large number of potential suppliers to whom to send a request for proposals ("RFP") if and when a particular need arises (id.). Should the Company incur an incremental need for capacity, NSTAR Gas explains that it considers a wide scope of potential resource options including pipeline supplies, supplemental

supplies, and other available alternatives (e.g., sharing arrangements with industrial and electric generation facilities) (id.). The Company states it looks to all potential qualified vendors to meet the need on a least-cost basis, consistent with the Company's cost and non-cost criteria (id.).

i. Cost Criteria

According to NSTAR Gas, the goal of cost analysis is to determine the Company's total portfolio cost over the planning horizon for each resource option in question (id. at 61). The Company employs the SENDOUT® optimization model to determine the choice and size of an optimal mix of resources in a manner that minimizes the cost of the portfolio and remains consistent with operational constraints (id.).

ii. Non-Cost Criteria

The Company states that factors such as reliability, diversity, flexibility, and financial viability are among the non-cost attributes analyzed when choosing each resource alternative (id.). NSTAR Gas explains that reliability is a crucial qualitative factor that refers to the ability of a supplier to fulfill commitments based on past performance, its operational strengths, and proffered terms and conditions (id. at 62). The Company also considers diversity to be a key qualitative factor and notes that it refers to a potential supplier's ability to access supplies from a variety of producing basins, to engage in trading activities in several market areas and on different pipelines, as well as to access storage and transportation resources (id.). In evaluating flexibility, the Company maintains that it considers a potential supplier's ability to adjust supplies to match changing system demands caused by temperature

or other factors (id. at 63). With respect to financial viability, the Company states that it is measured through an assessment of historical and projected financial resources that demonstrate a potential supplier's competency and capability to meet commitments (id. at 62). NSTAR Gas asserts that it also takes into consideration a potential supplier's annual reports and filings with the U.S. Securities and Exchange Commission (id.).

b. Demand-Side Resources

The Company states it identifies and evaluates energy efficiency on an equal basis with available supply-side options (id. at 63). The Company asserts that the avoided cost estimates used to screen DSM programs were developed by ICF Consulting and that these estimates also support NSTAR Gas' most recent energy efficiency programs filed in NSTAR Gas Company, D.T.E. 04-37 (2005) (id.). Screening is then conducted using a total resource cost ("TRC") test, as specified by the Department in Investigation to Establish Methods for Evaluation of Energy Efficiency Programs, D.T.E. 98-100 (1999) (id. at 64). The Company states that the TRC test also takes into account the direct economic benefits and costs of a program to participating customers (id.). According to NSTAR Gas, the Company currently offers a mix of regional and Company-specific programs that are, for the most part, market driven (id.).

3. Application of the Process

The Company states that it continually seeks ways to reduce the cost of serving its firm sales customers without compromising the reliability of service (id.). The Company also states that since the implementation of FERC Order No. 636, NSTAR Gas has used capacity release, off-system sales, and portfolio asset management strategies to manage its supply resources

(id.). The Company asserts that, due to the continuing process of retail restructuring, it continues to pursue a strategy of short-term, i.e., one year or less, contracts for commodity purchases (id. at 65). Outlined below are specific actions NSTAR Gas has taken or intends to take to this end.

a. Tennessee Gas Pipeline - Contract Restructuring

The Company explains that the bulk of the contracts on the Tennessee Gas Pipeline ("Tennessee") are scheduled to expire on October 31, 2006, and require a one-year notice to terminate (id.).[22]

i. Tennessee Longhaul Transportation Contracts

The Company renewed the 365-day gas transport contract for a three-year time period in 2003 to coincide with the Department's three-year transition period (id. at 66). According to the Company, these contracts are the most cost-effective resource available to NSTAR Gas and are the only longhaul contracts available with which to serve the Worcester Division, NSTAR Gas' largest service area (id.). The Company states it plans to renew these contracts for the five-year minimum term required by Tennessee (id.; Tr. at 24).

ii. Tennessee FS Storage and Associated Transport

The Company asserts that these contracts provide the right to store gas in Tennessee's market-area storage and to transport gas from storage to the Company's city-gates, and provide

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[22] Where a contract requires one-year notice to terminate and such notice is not given, it automatically continues in evergreen status.

among the most cost-effective storage rates; hence, the Company elected to extend these contracts for the minimum five-year period (Exh. NSTAR-1, at 66; Tr. at 24-25).

b. Dominion Transmission

The Company maintains that the contract with Dominion Transmission provides storage service at Ellisburg, Pennsylvania, and delivers storage gas into Tennessee (Exh. NSTAR-1, at 66). According to the Company, the primary term of this contract is due to expire on March 31, 2007, and continues in year-to-year evergreen status unless either the pipeline or the Company provides a two-year notice of termination (id. at 66-67; Tr. at 26). Additionally, the Company states that the contract is one of the more cost-effective storage services available; hence, the Company states it intends to renew the contract (Exh. NSTAR-1, at 67).

c. Capacity Assignment

NSTAR Gas states that it implemented its capacity assignment program on December 1, 2000, as required by the Department's Order in Natural Gas Unbundling, D.T.E. 98-32-B (1999) (id.). NSTAR Gas states that as of May 2005, the Company has assigned to marketers 25,800 MMbtu/day of pipeline transportation, storage, and liquified natural gas ("LNG") deliverability (id.). The Company indicates that the annual demand charge associated with these capacity assignments is approximately $3.8 million, and that it is credited to firm sales customers (id.).

The Company notes that the issuance of the Department's Order in Assignment of Interstate Pipeline Capacity, D.T.E. 04-1 (2004), has secured NSTAR Gas' obligation to plan and procure capacity on behalf of firm customers (Exh. NSTAR-1, at 69, Tr. at 23). The

Company states it will evaluate contract renewal decisions during the forecast period using several criteria including: (1) whether the capacity is needed to meet current and future design day and design season requirements; (2) whether alternatives that are equally reliable and most cost-effective exist; and (3) input from marketers currently being assigned capacity under the Company's mandatory capacity assignment program (Exh. NSTAR-1, at 69). NSTAR Gas further states that its resource portfolio assumes the renewal of all expiring transportation and storage contracts during the forecast horizon (id. at 68).

4. Analysis and Findings

The Company has provided evidence that it has in place a resource planning process that ensures its ability to acquire least-cost supplies. With the use of the SENDOUT® model, NSTAR Gas is able to take physical limitations and contract constraints into account and determine the minimum cost dispatch for a particular period. As part of this process, the Company also considers DSM as well as non-cost factors such as reliability, supply diversity, and flexibility. The Department finds that NSTAR Gas has shown that the application of these processes has resulted in the development of a supply portfolio that contributes to a least-cost supply plan.

Further, the Department recognizes the Company's effectiveness in identifying resources that are consistent with NSTAR Gas' expressed portfolio objectives. Accordingly, the Department finds that the Company has formulated an appropriate process for the identification of a comprehensive array of supply options and has developed appropriate criteria for screening and comparing supply resources.

E. Base Case Supply Plan

Outlined below are portfolio resources the Company has indicated are available to meet its firm load sendout requirements, including pipeline transportation contracts, storage contracts, gas supply contracts, supplemental resources, and DSM resources (id. at 71).

1. Transportation and Storage Contract Supplies

The Company indicates the following firm portfolio resources:

	Maximum Daily Transportation Quantity MMBtu/Day (MDQ)	Annual Transportation Contract Quantity MMBtu/Year (ACQ)
Algonquin Gas Transmission ("Algonquin")		
Firm-Capacity with Flowing Domestic Supplies	91,986	33,574,890
Firm-Capacity from Storage Fields	50,560	11,095,836 (a)
Firm-Local LNG Transportation Service	40,000	6,040,000
Total Firm Algonquin Transportation	182,546	50,710,726
Tennessee Gas Pipeline		
Firm-Capacity with Flowing Domestic Supplies	47,387	17,296,255
Firm-Capacity with Canadian Gas by Iroquois & Tennessee	4,431 (b)	1,617,315 (b)
Firm-Capacity from Storage Fields	27,472	10,027,280 (c)

Total Firm Tennessee Delivery	79,290	28,940,850
Liquified Natural Gas		
Hopkinton	180,000 (d)	3,120,000 (e)
Acushnet	30,000	530,000 (e)
System Total Capacity		
Maximum Peak Day Deliverability	431,836	
Maximum Annual Pipeline Deliverability		83,301,576

(a) Indicates Maximum Annual Transportation Deliverability for transportation contracts; there is only about 4,450,000 MMBtu of storage capacity available for the Algonquin system.
(b) Tennessee MDQ is actually 4,500 MMBtu. However deliveries into Tennessee are constrained by deliveries by the Iroquois Gas Transmission ("Iroquois") RTS contract, and the Iroquois fuel factor varies monthly. The 4,431 MMBtu figure is the city-gate delivered quantity when the Iroquois fuel factor is 0.6 percent, which was used for modeling purposes. The annual quantity is simply 365 times the daily quantity.
(c) Indicates Maximum Annual Transportation Deliverability for transportation contracts; there is only about 3,478,000 MMBtu of storage capacity available for the Tennessee system.
(d) When 40,000 MMBtu of LNG is being transported via Algonquin, the balance of the Hopkinton LNG vaporization capacity is 140,000 MMBtu. For calculating Total System Capacity, the 40,000 MMBtu of Algonquin LNG is only counted once.
(e) Total LNG capacity includes the capacity required for the heel.

(id. at 73-74).

2. Gas Supplies

Since first presented with the opportunity to restructure the gas supply portion of its portfolio as a result of FERC Order No. 436 and subsequent orders, the Company states it has sought to acquire reliable, flexible, and low-cost supplies to meet its needs (id. at 74). The

Company asserts it uses an RFP process to acquire gas supplies (id.). The same RFP process has been used to obtain asset optimization proposals from suppliers, through which certain of the Company's storage resources have been managed by third parties (id.). These arrangements have taken the form of storage refill programs or asset management arrangements (id.)

The Company entered into a third-party recallable, upstream asset management contract for one year beginning November 1, 2004, with Merrill Lynch Commodities, Inc., to supply the Company's city-gate requirements for firm sendout (id. at 75). As a result of a new RFP process, the Company chose Merrill Lynch Commodities, Inc., to manage its portfolio for the year beginning November 1, 2005 (Tr. at 30).

3. Supplemental Facilities

The Company utilizes a full services agreement with its affiliated company, Hopkinton LNG Corporation, which owns LNG facilities in Hopkinton and Acushnet, Massachusetts (Exh. NSTAR-1, at 75). Under its agreement with Hopkinton LNG Corporation, the Company is entitled to 100 percent of the liquefaction, vaporization, and storage capacity of these facilites (id.). The Company indicates that it evaluates, on a year-to-year basis, contracts for additional LNG supplies in liquid and/or vapor depending on LNG storage levels, load requirements, and the relative cost of such contracts in relation to the Company's other supply resources (id. at 76).

The Company states that the Hopkinton LNG facility is capable of receiving gas for liquefication from either the Algonquin Marathon station or the Tennessee Hopkinton Station

(id. at 75). Additionally, the Company notes that the Hopkinton LNG facility also has the capability of injecting gas into both the Algonquin system and the Tennessee system for redelivery to other NSTAR take stations (id.).

F. Adequacy of the Supply Plan

Under this section, the Department analyzes and reviews the adequacy of the Company's supply plan through the supply resources available to meet its demand and maintain its firm load sendout requirements. In reviewing adequacy, the Department first examines whether the company's base case supply plan is adequate to meet its projected normal year, design year, design day, and cold-snap firm sendout requirements. The Department then reviews whether the company's plan is adequate to meet its sendout requirements if certain supplies become unavailable. If the supplies are not found to be adequate under the base case and contingency plans, then the company must establish that it has an action plan to obtain the supplies required to meet the projected firm sendout requirements. See D.P.U. 93-13, at 62; 25 DOMSC 116, at 212-213; 16 DOMSC 53, at 76.

1. Normal Year and Design Year Adequacy

The Company states its normal year weather pattern is based on a 30-year average of EDD (Exh. NSTAR-1, at 76). The Company has submitted a supply plan for meeting its normal year sendout and storage refill requirements (id.). NSTAR Gas asserts that its plan demonstrates it has adequate resources to meet projected sendout requirements under normal conditions for the first three years of the forecast period (id.). In the last two years of the forecast, the Company shows a need for additional resources of 96 BBtu in 2008-2009 and

355 BBtu in 2009-2010 to meet its normal winter requirements (id., Table VII-2; see also Exh. NSTAR-1, att. 1, Table G-22N). The Company states that under design conditions, it projects a shortage of 1,687 BBtu in the winter of 2005-2006, increasing to 3,112 BBtu for the winter of 2009-2010 (Exh. NSTAR-1, at 77, Table VII-3; see also Exh. NSTAR-1, att. 1, Tables G-22D, G-23). In its filing, the Company stated that it would issue an RFP in June 2005 to acquire firm winter seasonal resources beginning November 1, 2005 (Exh. NSTAR-1, at 77). Subsequently, the Company stated that as a result of the RFP, it has a contract in place for the delivery of 14,000 decatherms a day to the Mendon receipt point (Tr. at 8). The Company also states that the acquired supply of gas will enable the Company to utilize the Dartmouth Power capacity (Tr. at 33).[23] In addition, the Company notes that it arranged for alternative supplies to be delivered to the market area as a replacement for the Tennessee 500 line capacity (Tr. at 33).[24]

Based upon the above, the Department finds that the Company has established a normal year supply plan that is adequate to meet the Company's forecasted sendout requirements and storage refill requirements through the forecast period.

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[23] As a result of the Department's decision in NSTAR Gas Company, D.T.E. 05-47 (2005), Dartmouth Power will permanently release to NSTAR Gas, long-term transportation capacity on the interstate pipeline owned and operated by Algonquin Gas Transmission.

[24] The Tennessee system's 500 section has been affected by the 2005 hurricane activity (Tr. at 34-35).

2. Design Day Adequacy

NSTAR Gas states that it is short of the adequate resources required to meet projected design day requirements beginning in the winter of 2006-2007 and continuing through the forecast years (Exh. NSTAR-1, at 78). The shortfall is 4.9 BBtu in 2006-2007 and increases to 19.8 BBtu by 2009-2010 (id.). The Company explains that because of its significant LNG capacity and its need for LNG throughout most of the winter season, the Company is able to purchase city-gate gas to husband its LNG inventory on non-peak winter days (id. at 79; Tr. at 32). The Company states that it plans to purchase up to 500 BBtu in the winter spot gas market during a design winter (Exh. NSTAR-1, at 79). In addition, the Company asserts that it intends to contract for 100 percent of the projected design day requirement before the beginning of a winter season in order to provide an adequate level of reliability (id.). As stated in Section F.1. above, NSTAR Gas issued an RFP in June 2005 and subsequently contracted with a supplier for the delivery of 14,000 decatherms a day to the Mendon receipt point, ensuring additional winter resources (Tr. at 8).

The Company has developed a resource plan that will allow NSTAR Gas to obtain adequate resources to meet its forecasted firm design day sendout requirements (Exh. NSTAR-1, at 79; Tr. at 8). Accordingly, the Department finds that the Company has established that its design day supply is adequate to meet the Company's sendout requirements for the forecast period.

3. Cold-Snap Analysis

The Company contends that its winter design standard incorporates a ten-day cold-snap that is based on a statistical analysis of the 30-year historical record in NSTAR Gas' four divisions (Exh. NSTAR-1, at 79). The Company asserts its SENDOUT® model demonstrates that its supply portfolio adequately meets demand, assuming market area purchases are met (id. at 80). NSTAR Gas further asserts that its model demonstrates the Company's ability, under design weather conditions, to supply a cold-snap period adequately and reliably (id.).

Based on the Company's analysis, the Department finds that NSTAR Gas has demonstrated that it has adequate supplies to meet its firm sendout requirements for a prolonged cold-snap. The Department finds the cold-snap planning standard to be reviewable, appropriate, and reliable.

4. Growth-Scenario Analysis

The Company states that it developed both a low demand and a high demand scenario (id.; see also Exh. NSTAR-1, at 52-53). According to the Company, these scenarios were developed to provide a 95 percent confidence level in the forecast of the independent drivers included in the economic forecast (Exh. NSTAR-1, at 52). NSTAR Gas states that it then adjusted the sendout results of the two scenarios to design weather conditions in order to determine the adequacy of the portfolio under the alternative scenarios (id. at 80-81, Tables VII-5, VII-6). The results of the two scenarios showed deficiencies during the gas years 2005-2006 through 2009-2010 (id. at 81). The Company states that this shortfall will be met by acquiring additional resources over the forecast period (id.).

The Company indicates that there are also deficiencies in the design day under the high and low growth scenarios (id.). The Company intends to adjust its winter season purchase commitment and/or its commitment to new pipeline/storage capacity over time to keep the portfolio balanced with the load requirements (id. at 82).

The Department finds that NSTAR Gas established a plan to ensure that supplies will be obtained to meet its projected requirements. Therefore, the Department finds that the Company's growth scenario analysis is reviewable, appropriate, and reliable.

G. Conclusions on the Supply Plan

The Department finds that the Company has developed an appropriate supply planning process. Specifically, the Company has: (1) formulated an appropriate process to identify a comprehensive array of supply options and has developed appropriate criteria for screening and comparing resources; (2) formulated an appropriate process for identifying a comprehensive array of DSM options and has developed appropriate criteria for screening and comparing DSM resources; and (3) incorporated both supply-side and demand-side options in its resource mix, and it has compared all resources, including DSM, on an equal basis and finds that the Company has developed an appropriate supply planning process.

The Department also finds that the Company has established that its normal year, design year, design day, and cold-snap supply plans are adequate to meet the Company's forecast sendout requirements throughout the forecast period. In addition, the Department finds that the Company has developed: (1) appropriate criteria for screening and comparing

supply-side resources and demand-side resources; and (2) a mechanism to undertake the comparison of resources on an equal basis.

Finally, the Department finds that the Company's supply planning process as a whole may contribute to and may lead to a least-cost supply plan. Accordingly, the Department approves the Company's supply plan for the years 2005-2006 through 2009-2010.

IV. ORDER

Accordingly, after due notice, hearing, and consideration, it is hereby

ORDERED: That NSTAR Gas Company's petition for approval of its load forecast and supply plan be and hereby is APPROVED; and it is

FURTHER ORDERED: That NSTAR Gas Company comply with any and all other directives contained in this Order.

By Order of the Department,

/s/
Judith F. Judson, Chairman

/s/
James Connelly, Commissioner

/s/
W. Robert Keating, Commissioner

/s/
Paul G. Afonso, Commissioner

/s/
Brian Paul Golden, Commissioner

An appeal as to matters of law from any final decision, order or ruling of the Commission may be taken to the Supreme Judicial Court by an aggrieved party in interest by the filing of a written petition praying that the Order of the Commission be modified or set aside in whole or in part. Such petition for appeal shall be filed with the Secretary of the Commission within twenty days after the date of service of the decision, order or ruling of the Commission, or within such further time as the Commission may allow upon request filed prior to the expiration of the twenty days after the date of service of said decision, order or ruling. Within ten days after such petition has been filed, the appealing party shall enter the appeal in the Supreme Judicial Court sitting in Suffolk County by filing a copy thereof with the Clerk of said Court. G.L. c. 25, § 5.