

STATE OF NEW HAMPSHIRE
PUBLIC UTILITIES COMMISSION

DG 06-105

In the Matter of:
KeySpan Energy Delivery New England
2006 Integrated Resource Plan

Surrebuttal Testimony

of

George R. McCluskey

November 30, 2007

1 I. INTRODUCTION

2 Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

3 A. My name is George McCluskey and my business address is 21 South Fruit
4 Street, Suite 10, Concord, NH 03301.

5

6 Q. ARE YOU THE SAME GEORGE MCCLUSKEY WHO FILED DIRECT
7 TESTIMONY IN THIS PROCEEDING?

8 A. Yes, I filed direct testimony on February 7, 2007.

9

10 Q. WHAT IS THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY?

11 A. My surrebuttal testimony responds to the joint testimony filed on behalf of
12 KeySpan Energy Delivery New England (“KeySpan” or “Company”) by
13 Elizabeth Arangio, Leo Silvestrini and Theodore Poe on September 5, 2007 that
14 addresses the Company’s 2006 integrated resource plan (“2006 IRP”).

15

16 Q. HOW IS YOUR SURREBUTTAL TESTIMONY ORGANIZED?

17 A. My testimony is in six parts. Following this introduction, I respond to the
18 portion of the joint testimony that addresses filing requirements for natural gas
19 company IRPs. Next, I rebut the Company’s arguments relating to the proposed
20 design day and design year planning standards. Next I critique of the arguments
21 relating to the assessment of supply-side resources. I follow this by addressing
22 the Company’s arguments for not including an assessment of demand-side

resources in the 2006 IRP. The final section briefly presents my
2 recommendation in this case.

3

4 **II. FILING REQUIREMENTS**

5 Q. KEYSpan STATES THAT YOU CONCLUDED THAT THE 2006 IRP IS
6 INADEQUATE BECAUSE IT DOES NOT COMPLY WITH THE IRP
REQUIREMENTS FOR ELECTRIC UTILITIES. IS THAT AN ACCURATE
8 SUMMARY OF YOUR TESTIMONY?

9 A. No. I recommended that the 2006 IRP be found inadequate because it does not
10 include certain essential analyses or assessments, some of which are reflected in
the statute governing electric utility IRP requirements. At page 3 of my direct
12 testimony, I summarize my conclusions as follows:

- 13 (1) The Company's cost/benefit analysis supporting its proposed design day
14 and design year planning produces more questions than answers,
15 potentially resulting in unnecessary costs for consumers.
- 16 (2) The 2006 IRP includes virtually no discussion, much less evaluation, of
17 the available supply- and demand-side resource options to meet
18 customer requirements over the planning period. In fact, the demand-
19 side assessment was completely omitted.
- 20 (3) The 2006 IRP neither discusses the process for integrating cost effective
21 demand-side and supply-side resources nor identifies the preferred
22 portfolio of existing and new resources that satisfies forecasted loads at
23 least cost over the planning period.
- 24 (4) The recommendation that the level of any capacity reserve authorized by
25 the Commission be set at 100% of grandfathered customer demands is
26 not supported by evidence that firm sales customers would benefit from
27 such a reserve.
28

1 Q. DID YOU RECOMMEND THAT NEW HAMPSHIRE'S ELECTRIC
2 UTILITY IRP STATUTE BE APPLIED TO NATURAL GAS COMPANIES,
3 AS ALLEGED BY THE COMPANY?

4 A. No, I did not. A review of my direct testimony shows that five of the seven
5 electric utility IRP filing requirements were recommended as building blocks
6 for a natural gas company IRP. The five requirements are:

- 7 (1) A forecast of future electrical demand for the utility's service area.
- 8 (2) An assessment of the demand-side energy management programs,
9 including conservation, efficiency improvement, and load management
10 programs.
- 11 (3) An assessment of supply-side options.
- 12 (4) Provision of diversity of supply sources.
- 13 (5) Integration of demand-side and supply-side options.

14
15 This recommendation is consistent with my opinion that each IRP, whether
16 submitted by an electric or gas company, must include certain basic components
17 in order to be pronounced adequate. These basic components include a forecast
18 of future loads, an assessment of supply-side resource options, an assessment of
19 demand-side resource options, and a description of the process for integrating
20 supply-side and demand-side resources. In addition, the output from the
21 integration process must include the preferred portfolio of existing and new
22 resources that meets forecasted load at least cost.

23
24 I also believe that the above opinion is consistent with standard treatises on gas
25 integrated resource planning, such as NARUC's Primer on Gas Integrated
26 Resource Planning, and the Stipulation entered into by ENGI and Staff in
27 Docket No. 95-189 and approved by the Commission in Order No. 22,116.

1 Q. DID THE COMPANY EXPLAIN WHY IT BELIEVES THESE
2 REQUIREMENTS SHOULD NOT BE USED TO CONTROL THE
3 INFORMATION INCLUDED IN A NATURAL GAS COMPANY IRP?

4 A. Yes, the Company made two basic arguments. The first is that the 2006 IRP
5 was submitted in compliance with the settlement agreement in Docket DG 04-
6 133 and therefore the terms of that agreement should control the content of the
7 filing. In effect, the Company's argument is that under the DG 04-133
8 settlement agreement, the IRP filing in this docket is a mere compliance filing
9 over which the Commission is to exercise no discretion beyond satisfying itself
10 that the specified changes to the IRP have been addressed. The second
11 argument is that "there is no independent basis in New Hampshire for requiring
12 gas utilities to file an IRP or for determining what information must be included
13 in a gas utility's IRP."

14

15 Q. DO YOU AGREE WITH THE COMPANY'S FIRST ARGUMENT?

16 A. I agree that the 2006 IRP addresses the issues required in Order No. 24,531. I
17 do not agree, however, that the 2006 IRP is therefore sufficient. Inclusion of the
18 changes to the IRP specified in the DG 04-133 settlement agreement means that
19 the Company has satisfied the terms of the settlement agreement in that regard.
20 Clearly, the express terms of the DG 04-133 settlement agreement do not
21 provide that the IRP will be approved if it includes the changes specified in the
22 agreement. In paragraph 2 of the Miscellaneous provisions of the DG 04-133
23 settlement agreement, the parties and Staff agreed that "the Commission's

1 approval of this Settlement Agreement will not constitute continuing approval
2 of, or precedent for, any particular issue or resolution thereof in this proceeding,
3 except that . . . the matters set forth in this Settlement Agreement shall be
4 binding on the Staff and Parties to the extent expressly set forth herein”
5 (Emphasis added.) Further, paragraph 4 provides in part that “[t]his Settlement
6 Agreement constitutes the entire agreement between the Staff and Parties
7 regarding the subject matter hereof.” (Emphasis added.)

8
9 Notwithstanding the Company’s extended discussion of the circumstances
10 surrounding the DG 04-133 settlement agreement, the conclusion is inescapable
11 that the Commission retains full discretion to assess the 2006 IRP on its own
12 merits. Among other things, the Commission may decide in this docket whether
13 or not to adopt my recommended filing requirements and the recent IRP policy
14 preferences set forth in *Public Service Company of New Hampshire*, Order No.
15 24,695 (2006).

16
17 Q. WHAT ABOUT THE ARGUMENT THAT THERE IS NO INDEPENDENT
18 BASIS IN NEW HAMPSHIRE FOR REQUIRING A GAS COMPANY TO
19 FILE AN IRP?

20 A. The Company stops short of arguing that the Commission lacks the authority to
21 require gas companies to file IRPs. Rather, the Company argues that the
22 legislative background suggests the Legislature did not believe that electric
23 utility IRP requirements should be applied to gas companies. Although this is

really a legal argument based on the supposed intent of the Legislature, since
2 the issue is raised in the Company's testimony, I will respond briefly in the
3 following manner.

4
5 Compared to the amount of legislative attention paid to electric utilities, the
6 Legislature clearly has not been as active in regulating gas companies.

7 However, the fact that the Legislature has not enacted a statute governing IRPs
8 filed by gas companies does not evidence a legislative determination that
9 electric utility IRP requirements should not be applied to gas companies. It is
10 undisputed that the Legislature has granted the Commission broad (though not
11 unlimited) authority to regulate utilities. Accordingly, the fact that the
12 legislature has not enacted a statute governing IRPs filed by gas companies
13 means that the Legislature has not restricted the Commission's discretion to
14 make policy choices regarding the information to be provided in gas company
15 IRPs.

16
17 **III. DESIGN PLANNING STANDARDS**

18 Q. THE COMPANY STATES THAT THE PROCESS IT USED TO SELECT ITS
19 DESIGN DAY STANDARD IS CONSISTENT WITH THE
20 RECOMMENDATION FROM STAFF'S CONSULTANT IN DOCKET 04-
21 133. DO YOU AGREE?

22 A. No. As I stated in my direct testimony, Staff's consultant recommended that the
23 Company: (i) employ Monte Carlo simulation to develop a probability

1 distribution for ENGI's weather; and (ii) base its design day standard on a
2 statistical analysis of that distribution. Although the Company did employ
3 Monte Carlo simulation to develop a probability distribution of ENGI weather,
4 it disregarded the part of the recommendation that calls for the design day
5 standard (i.e., level of reliability on peak day) to be based on a statistical
6 analysis of the distribution. Instead, the Company has proposed that its design
7 day standard be based on a financial analysis. Specifically, the Company
8 proposes to replace the statistical analysis with a cost/benefit analysis that seeks
9 to determine the point of interconnection between two curves; one that
10 represents the cost of adding incremental supplies to meet peak demand and one
11 that represents the benefit to customers of avoiding curtailment on the peak
12 day.¹ Since both the cost to add incremental supplies and the benefit of
13 avoiding curtailment are a function of EDD, the point of interconnection
14 identifies the EDD level where the cost to add incremental supplies just equals
15 the benefit of avoiding curtailment for an average customer.²

16
17 Q. HOW DOES THE COMPANY JUSTIFY BASING ITS DESIGN DAY
18 STANDARD ON A FINANCIAL ANALYSIS WHEN THE STAFF'S
19 CONSULTANT IN DOCKET DG 04-133 CLEARLY CALLED FOR THE
20 USE OF A STATISTICAL ANALYSIS?

¹ As will become clear below, the Company's cost/benefit analysis is a little more complex than this simplified description suggests.

² The point of intersection of these curves was determined by the Company to be 80 EDD.

1 A. The Company used the results of the Monte Carlo simulation as inputs to the
2 benefits calculation in the financial analysis. It is unclear whether the Company
3 believes this step justifies the use of financial analysis.

4 Q. WHAT IS YOUR VIEW?

5 A. When Staff's consultant in DG 04-133 recommended that the design day
6 standard be based on a statistical analysis of the weather in KeySpan's service
7 territory, it was advising the parties to that proceeding, and ultimately the
8 Commission, to select a standard based solely on the probability of extreme
9 weather events. Nowhere does Staff's consultant recommend that financial
issues be factored into that decision.

11
12 Q. IN ITS JOINT TESTIMONY, THE COMPANY ASSERTS THAT ITS
COST/BENEFIT ANALYSIS UTILIZES "ACTUAL DATA SUCH AS THE
COSTS OF RESOURCES TO MEET ITS CUSTOMERS' REQUIREMENTS
AND THE COSTS OF POTENTIAL DAMAGES SHOULD THE COMPANY
FAIL TO ... MEET ITS CUSTOMERS' REQUIREMENTS." IN THE
UNLIKELY EVENT THE COMMISSION DECIDES FINANCIAL
18 ANALYSIS IS APPROPRIATE, DO YOU AGREE WITH THE ABOVE
19 ASSERTION?

20 A. No. As noted in my direct testimony, the costs of the resources in KeySpan's
financial analysis were presented as a range that extended from a low-cost
22 supply option - propane vaporization capacity - to a high-cost supply option -
23 interstate pipeline capacity. The annual cost of incremental propane capacity

1 was estimated at \$55.4 per MMBtu and interstate pipeline capacity at \$559 per
2 MMBtu.³ However, the latter estimate does not include the cost of expanding
3 the Concord Lateral, which is a prerequisite to receiving additional pipeline
4 supplies. The annual cost to expand the Concord Lateral has been estimated in
5 Docket DG 07-101 at \$146 per MMBtu, which suggests that the cost of
6 incremental pipeline capacity in the financial analysis is understated by about
7 26%.

8
9 In the same docket, the Company estimated the annual cost to expand its
10 propane facilities at \$103.3 per MMBtu, which is approximately twice the
11 amount used in the financial analysis. In short, the financial analysis uses cost
12 data that understate the Company's current estimates of the cost of incremental
13 supplies.⁴

14
15 Q. WHAT ARE THE IMPLICATIONS OF THIS COST UNDERSTATEMENT?
16 A. To understand the implications, we must first understand the Company's
17 analysis. Figure 1 is a copy of Chart III-E-7 from the Company's 2006 IRP,
18 which shows probability-weighted damage costs and system upgrade costs
19 plotted as a function of EDD. Because of the uncertainty regarding the
20 percentage of residential customers that might experience heating system
21 freeze-up and consequent need for remodeling, the probability-weighted
22 damage costs were presented by the Company at three different levels. To

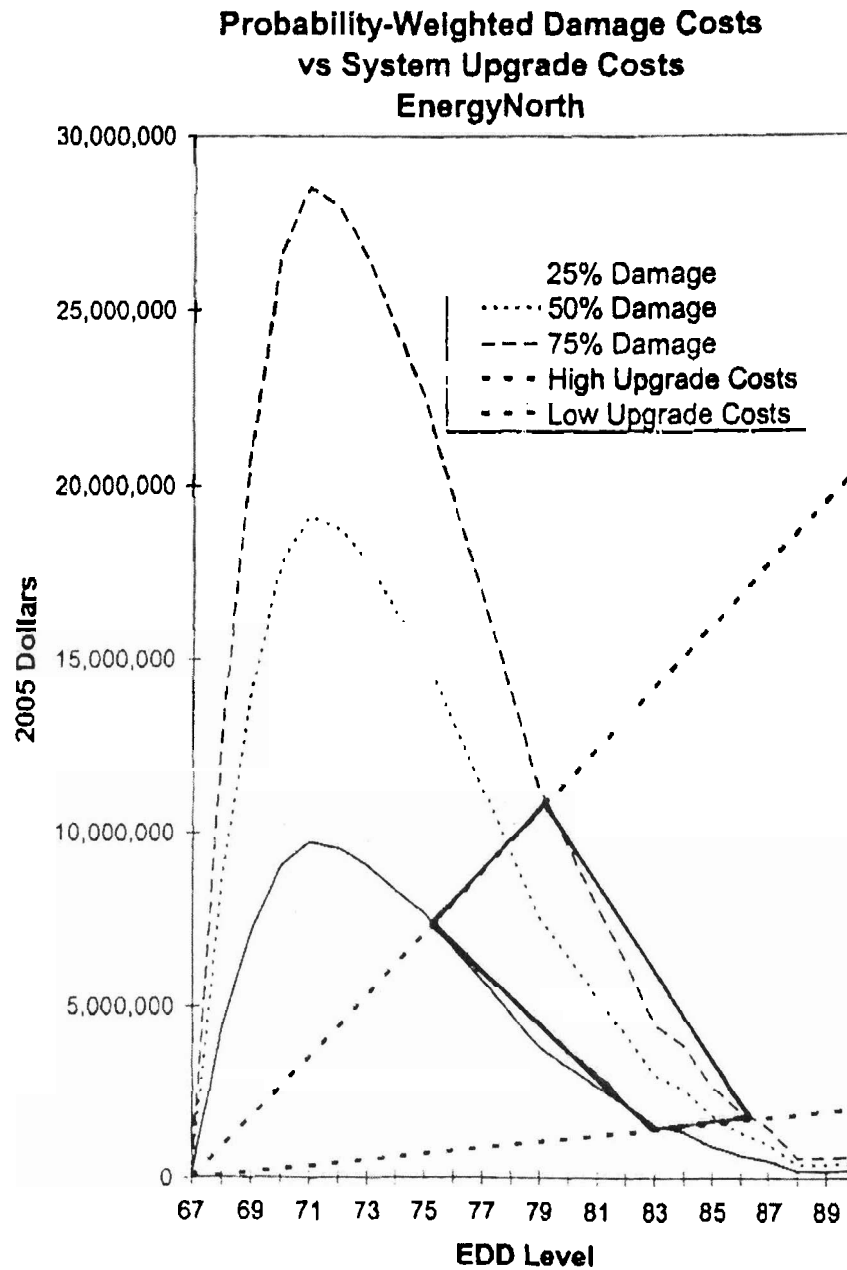
³ See KeySpan response to Staff 1-58 shown as Staff Surrebuttal Exhibit-1 to this testimony.

⁴ This cost is referred to as the system upgrade cost in the financial analysis.

1 clarify the Company's analysis, I have drawn on the chart the geometric shape
2 that is formed by the intersection of the damage cost curves and the system
3 upgrade cost curves. According to the Company, the center of this geometric
4 shape represents the design day standard and is located at 80.2 EDD.

5
6 Using Figure 1, it seems clear that if the incremental supply costs in the
7 financial analysis are understated the gradient of each cost curve will be too
8 low. Correcting for this error will result in new intersection points at lower
9 EDD levels and a new geometric shape that is shifted to the left of the shape
10 shown in the chart. This means that the center of this new shape will be located
11 below 80.2 EDD. In conclusion, the Company's proposed design day standard
12 of 80 EDD cannot be supported by the updated cost estimates provided in DG
13 07-101.

14
15
16
17
18
19
20 Figure 1
21



2 Q. IS THERE A SECOND REASON TO QUESTION THE PROPOSED DESIGN
3 DAY STANDARD?
4 A. Yes. In my direct testimony at page 12, I argued that the cost side of the
5 cost/benefit analysis should reflect not just the fixed costs to increase supply

1 reliability but also the commodity costs associated with the use of the
2 incremental capacity. At the low end of the cost range, this would mean adding
the loss adjusted cost of propane to the fixed costs of the propane facilities. At
the high end of the cost range, this means adding the loss adjusted delivered cost
of natural gas, off-set by any commodity cost savings associated with the
inclusion of addition pipeline capacity in the resource portfolio. The fact that
neither of these costs was integrated into the financial analysis provides further
evidence that the cost curve gradients in the above chart are too low and that the
proposed design day standard of 80 EDD is too high.

10

11 Q. DO YOUR CRITICISMS OF THE COMPANY'S DESIGN DAY ANALYSIS
APPLY ALSO TO ITS DESIGN YEAR ANALYSIS?

13 A. Yes.

14 Q. REGARDING YOUR RECOMMENDATION THAT THE DESIGN DAY
15 STANDARD BE SET EQUAL TO THE MEAN OF THE MONTE CARLO
16 PROBABILITY DISTRIBUTION PLUS ONE STANDARD DEVIATION,
17 THE COMPANY ASSERTS THAT THAT RECOMMENDATION IS
18 ARBITRARY BECAUSE YOU FAILED TO EXPLAIN ITS BASIS. DO
19 YOU ACCEPT THAT YOUR RECOMMENDATION IS ARBITRARY AND
20 THAT YOU FAILED TO EXPLAIN ITS BASIS?

21 A. No, on both counts. **The recommendation is not arbitrary (which I take to**
22 **mean uninformed)** because it was based on standard statistical theory. In
23 addition, I explained the basis of my recommendation in a Staff discovery
24 response which reads as follows:

1 If, as the Company claims, the probability distribution
2 created by its Monte Carlo simulation of peak day
3 temperatures is normally distributed, statistical theory says
4 that the observed temperature on a peak day has a 95%
5 chance of falling within the interval bounded by the
6 distribution mean plus/minus two standard deviations. That
7 is, the probability of exceeding a design day standard of
8 mean plus two standard deviations is equal to only 2.5% or
9 a 1 in 40 year chance of occurrence. Mr. McCluskey
10 believes that such a standard not only establishes a
11 reasonable level of reliability for firm customers, but is
12 consistent with the Company's prior practice.⁵
13

14 **IV. SUPPLY-SIDE RESOURCE ASSESSMENT**

15 Q. THE COMPANY STATES AT PAGE 10 THAT THE RESOURCE
16 SELECTION PROCESS THAT STAFF SEEKS TO IMPOSE IS AN
17 ACADEMIC AND MEANINGLESS EXERCISE BECAUSE IT IS BASED
18 ON HYPOTHETICAL PRICE QUOTES FOR POTENTIAL FUTURE
19 RESOURCES. HOW DO YOU RESPOND TO THAT POINT OF VIEW?

20 A. The Company's opposition to Staff's position appears to be based on the
21 conviction that any evaluation process that involves a future (as opposed to a
22 current) resource need and uncertain acquisition costs will have limited value to
23 the Company and its customers. Instead of evaluating the costs of available
24 resource options that are capable of filling the resource need, the Company
25 appears to be asking the Commission to allow it to make resource selections
26 with no or little regulatory oversight and without the aid of cost estimates for
27 the resource alternatives.
28

⁵ See Staff response to KeySpan 1-7 shown as Staff Surrebuttal Exhibit-2 to this testimony.

2 A good example of the risks created by such a process is provided in the 2006
3 IRP. That document points to a need for incremental resources in 2009/10
4 under the Company's base case design day load forecast. While the 2006 IRP
5 does not state in definitive terms how the Company plans to meet that need, it
6 does state that the Company has initiated discussions with Tennessee Gas
7 Pipeline ("TGP") regarding the acquisition of incremental pipeline capacity to
8 fill that shortfall at a capital cost of between \$12 million - \$16.5 million.
9 Inquires of the Company revealed that this incremental capacity would actually
10 cost KeySpan customers between \$70 million to \$80 million over the first
11 twenty years after taking into account TGP's return on investment, associated
12 taxes, and related O&M. Subsequent negotiations with TGP have resulted in a
13 negotiated capital cost of almost \$20 million and revenue requirements of \$83
14 million over twenty years. The point is that the decision to begin discussions
15 with TGP on an investment that could cost customers approximately \$80
16 million over twenty years was made without the benefit of an assessment of
17 alternative resources, thus exposing customers to the risk of excess supply
18 costs.⁶ Had the Company included such an assessment in its 2006 IRP, the risk
19 of excess costs could have been substantially mitigated.

20 Q. WAS THAT RISK SUBSTANTIAL IN YOUR OPINION?

21 A. Yes, I believe it was. As I argued in my direct testimony at pages 19-20, the
22 nature of the supply shortfall projected by KeySpan suggested that a peaking
23 facility was more likely to meet customer demands at least cost than additional

⁶ See Keyspan response to Staff 1-36 shown at Staff Surrebuttal Exhibit-3 to this testimony.

1 pipeline capacity. In addition, Staff had been informed by the Company that
2 \$55 per MMBtu was a representative annual cost of adding incremental propane
3 or LNG vaporization capacity, which is just one-tenth of the annual cost to add
4 pipeline capacity.⁷

5
6 **V. DEMAND-SIDE RESOURCE ASSESSMENT**

7 **Q. IN ADDITION TO CLAIMING THAT THE SETTLEMENT IN DOCKET DG**
8 **04-133 DOES NOT REQUIRE AN ASSESSMENT OF DEMAND-SIDE**
9 **RESOURCES, THE COMPANY STATES THAT INCLUDING SUCH AN**
10 **ASSESSMENT IN ITS IRP WOULD DUPLICATE WORK DONE IN**
11 **DOCKET DG 06-032, KEYSpan'S MOST RECENT ENERGY**
12 **EFFICIENCY PROCEEDING. DO YOU AGREE?**

13 **A. No.** As stated in my direct testimony, the Company in Docket DG 06-032
14 determined the cost-effectiveness of energy efficiency programs by using New
15 England-wide avoided supply costs rather than KeySpan-specific avoided costs.
16 Thus, it is not clear whether the programs approved in DG -6-032 are cost-
17 effective relative to KeySpan's supply alternatives. More importantly, no
18 attempt was made in DG 06-032 to determine the optimal amount of cost-
19 effective demand-side resources that could be included in KeySpan's resource
20 portfolio. Rather, as KeySpan testified in that docket, the program goals are to
21 increase awareness of the benefits of energy efficiency, induce lasting market

⁷ See Staff Surrebuttal Exhibit-1.

changes and realize energy efficiency saving that might not occur without the programs.⁸

2

3

4 Q. DID PSNH MAKE THE SAME DUPLICATION OF EFFORT ARGUMENT
5 IN ITS MOST RECENT IRP PROCEEDING?

6 A. Yes. Like KeySpan in this proceeding, PSNH argued that because the cost
7 effectiveness and size of its energy efficiency program had been fully vetted in a
8 separate proceeding it was appropriate to reflect the associated demand savings
9 as an offset to its demand forecast. The Commission in Order No. 24,695
10 disagreed and directed PSNH to include in its next IRP a systematic evaluation
11 of reasonably available DSM programs. The Commission also found that
12 comparing demand-side and supply-side resource options in the context of
13 integrated resource planning requires a methodology for measuring the avoided
14 costs associated with *not* having to purchase additional power supplies or
15 building new generation capacity. As a result of this finding, PSNH was
16 directed to include such an avoided cost methodology in its next IRP.

17

18 Q. WHAT DOES ORDER NO. 24,695 MEAN FOR GAS COMPANIES?

19 A. The Commission in Order No. 24,695 clearly re-affirmed its policy of requiring
20 electric utility demand-side and supply-side resources to be evaluated in IRPs in
21 an equivalent manner. I know of no reason why this policy should not also be
22 applied to gas company IRPs.

⁸ Order No. 24,636 (June 8, 2006) p. 6-7.

1 Q. THE COMPANY ARGUES AT PAGE 18 THAT BECAUSE GAS
2 COMPANIES HAVE LESS ABILITY TO RESPOND TO RESOURCE
3 SHORTAGES THAN ELECTRIC UTILITIES, THE OPERATIONAL
4 DIFFERENCES BETWEEN SUPPLY AND DEMAND RESOURCES
5 CREATE GREATER CONCERNS FOR GAS COMPANY PLANNERS.
6 THESE CONCERNS, ACCORDING TO THE COMPANY, JUSTIFY GAS
7 COMPANIES TAKING A DIFFERENT MODELING APPROACH TO
8 DEMAND RESOURCES. DO YOU AGREE?

9 A. No. Implicit in KeySpan's argument is the contention that electric utilities
10 evaluate demand-side and supply-side resources in an equivalent manner only
11 because they have the ability to respond to supply shortages by implementing
12 brownouts or rolling blackouts, although the Company provides no evidence to
13 support this contention. Nor does KeySpan demonstrate that its ability to
14 reliably meet customer demands on the peak day would be adversely affected
15 by increasing the amount of demand-side resources in its portfolio.

16

17 **VI. CONCLUSION**

18 Q. DO YOU STAND BY YOUR CONCLUSION THAT THE 2006 IRP IS NOT
19 ADEQUATE?

20 A. Yes, I do.

21 Q. DOES THIS CONCLUDE YOUR SURREBUTTAL TESTIMONY?

22 A. Yes.

ENERGYNORTH NATURAL GAS, INC.
d/b/a KeySpan Energy Delivery New England

DG 06-105

Commission Staff Discovery Requests - Set 1

Data Request Received: September 8, 2006 Date of Response: December 1, 2006
Request No.: Staff 1-58 Witness: Theodore Poe, Jr.

Request: Ref. 2006 IRP, III-57. Please provide support documentation, including assumptions, calculations, correspondence, etc., used to determine the low-upgrade cost scenario of adding propane vaporization and high-upgrade cost scenario of adding 365-day interstate pipeline service for associated Delta Supply as described at III-57 and shown graphically on Chart III-E-7.

Response: In the Company's design day cost/benefit analysis, the Company used a range of capacity costs for the 'cost' side of the analysis, which are representative of the types of firm capacity to deliver supply to the EnergyNorth customers on a firm basis on the design day.

On the high end of the range of capacity costs, the Company used \$558.52/MMBtu (Chart III-E-6). This represents the annual cost per MMBtu of long-haul pipeline transportation capacity that the Company was paying for its Eastern Canadian supply path (Maritimes and Northeast Pipeline – Canada to Maritimes and Northeast Pipeline – US to backhaul on Tennessee Gas Pipeline) as of May 2006.

On the low end of the range of capacity costs, the Company used \$55.40/MMBtu (Chart III-E-6). This figure, in current dollars, is the annualized cost per MMBtu of adding incremental propane or LNG vaporization capacity. The original information was based on an internal Company study performed in 1994. Discussions with the Company's Engineering Department representatives confirm that the 1994 cost estimate adjusted for inflation is appropriate.

**KeySpan Energy IRP
DG 06-105**

Staff Responses to Company Requests – Set No. 1

March 2, 2007

Witness: George R. McCluskey

Request 7. Page 10, lines 1-11. Please provide all documentation, workpapers, analyses and other materials developed by or on which Mr. McCluskey relied or to which he referred to support his selection of a design day of mean plus two standard deviations?

Response 7. The Company is able regulate the probability that the actual observed temperature (expressed in EDD) on the peak day exceeds some acceptable level, resulting in customer curtailment, by judiciously selecting the design day planning standard. If, as the Company claims, the probability distribution created by its Monte Carlo simulation of peak day temperatures is normally distributed, statistical theory says that the observed temperature on a peak day has a 95% chance of falling within the interval bounded by the distribution mean plus/minus two standard deviations. That is, the probability of exceeding a design day standard of mean plus two standard deviations is equal to only 2.5% or a 1 in 40 year chance of occurrence. Mr. McCluskey believes that such a standard not only establishes a reasonable level of reliability for firm customers, but is consistent with the Company's prior practice.

ENERGYNORTH NATURAL GAS, INC.
d/b/a KeySpan Energy Delivery New England

DG 06-105

Commission Staff Discovery Requests - Set 1

Data Request Received: September 8, 2006
Request No.: Staff 1-36

Date of Response: November 13, 2006
Witness: Nancy G. Culliford

Request: Please identify the resource alternatives to expanding the Concord lateral for meeting the forecasted increase in firm sendout requirements and provide all associated cost-benefit analyses and related assumptions.

Response: Please refer to the Company's responses to Data Requests Staff 1-27 and Staff 1-28. As noted therein, access to incremental upstream pipeline or storage resources will require an expansion of the Concord lateral. Absent that upgrade the Company would need to evaluate an expansion of its on system resources. The Company has not yet performed a cost benefit analysis of an expansion to its on-system facilities versus the Concord lateral upgrade, nor has the Company determined if such an upgrade would be best accomplished by an expansion of existing facilities or the construction of new facilities.