

STATE OF NEW HAMPSHIRE
BEFORE THE
PUBLIC UTILITIES COMMISSION

In the matter of

Liberty Utilities (EnergyNorth Natural Gas Corp. d/b/a Liberty Utilities)

Docket No. DG 15-494

Petition for Approval of Firm Transportation Agreement

DIRECT TESTIMONY

OF

Dr. Pradip K. Chattopadhyay
Assistant Consumer Advocate/Rate and Market Policy Director

April 15, 2016

1 **I. Introduction**

2 **Q. Please state your name, business address and occupation.**

3 A. My name is Pradip K. Chattopadhyay. My business address is 21 South Fruit Street,
4 Suite 18, Concord, New Hampshire. I am employed as the Assistant Consumer Advocate/Rate
5 and Market Policy Director with the New Hampshire Office of Consumer Advocate (OCA).

6 **Q. Please describe your formal education and professional experience.**

7 A. I have a Ph.D. in Economics from the University of Washington, Seattle, which I earned
8 in 1997. I have also taken courses in City and Regional Planning with applications to Energy
9 Planning from Ohio State University, Columbus OH, in 2001-02. I have taught several courses
10 in economics at the University of Washington as an instructor and adjunct faculty at its Business
11 School. I am also associated with the Southern New Hampshire University (SNHU) as an
12 adjunct faculty, where I teach several courses in economics.

13 From March 1998 to October 1999, I was a consultant with the National Council of
14 Applied Economic Research, New Delhi, India. From November 1999 to August 2001, I was
15 the Economist at the Uttar Pradesh Electricity Regulatory Commission (UPERC) in India, and
16 advised UPERC on tariff issues. From September 2001 to June 2002, I worked at the National
17 Regulatory Research Institute, Columbus, Ohio, as a graduate research associate while pursuing
18 advanced courses in Energy Planning in the City and Regional Planning Program at Ohio State
19 University. From June 2002 to July 2002, I worked at the World Bank, Washington D.C. as a
20 short-term consultant/intern with its Energy and Water Division.

1 I worked at the New Hampshire Public Utilities Commission (Commission) from August
2 2002 to January 2007 in the capacity of a utility analyst. My responsibilities at the Commission
3 as an analyst were in electric utility issues including analyzing and advising the Commission on
4 rate design, cost of capital issues, wholesale market issues, and other regional matters. I briefly
5 worked at the Massachusetts Department of Telecommunications and Energy (later reorganized
6 into Department of Public Utilities (MA-DPU)) starting in January 2007 as an Economist. At
7 MA-DPU, I represented the staff and examined gas demand estimation and forecasting,
8 decoupling issues, and environmental remediation matters. I returned to the Commission in June
9 2007 to join its Telecom Division as its Assistant Director, and continued in that position until
10 December 2010. I was also helping other divisions as an expert witness in economics-related
11 issues as well as advising the Commission on regional electric matters including FERC
12 jurisdictional issues. I joined the Commission's Regional Energy Division in January 2010 as
13 the Regional Energy Analyst, and was advising the Commission in that capacity until I joined the
14 Antitrust and Utilities Division, Office of the Minnesota Attorney General, in August 2013. I
15 came back to New Hampshire in March 2014 and worked as an individual consultant until the
16 end of August, 2014, representing the Minnesota Attorney General. I joined Liberty Utilities at
17 the end of August, 2014 as a Forecasting Analyst for its Energy Procurement Department. I
18 worked with Liberty Utilities for about three months, before starting my own consultancy firm.
19 In December 2014, I joined the OCA as its Rate and Market Policy Director. I was later
20 appointed the Assistant Consumer Advocate.

21 **Q. Have you previously provided testimony before this Commission?**

22 A. Yes.

1 **Q. In which dockets did you provide testimonies before this Commission?**

2 A. I provided testimony before the Commission in the following dockets:

- 3 • DE 03-200 – rate design testimony which was about delivery rates for retail
4 ratepayers of Public Service of New Hampshire (PSNH);
- 5 • DE 06-028 - cost of capital testimony which was also about PSNH’s delivery rates;
- 6 • DT 07-027 - competition testimony in retail telephony;
- 7 • DG 08-009 - cost of equity testimony which related to gas delivery rates of National
8 Grid NH;
- 9 • DE 09-035 - cost of equity testimony in the matter of electric distribution rates
10 (PSNH).
- 11 • DG 14-380 – approval of firm transportation agreement (Liberty Utilities)
- 12 • DG 15-155 – Petition by Valley Green, LLC requesting franchise in City of Lebanon
13 and Town of Hanover, New Hampshire
- 14 • DG 15-289 – Petition by Liberty Utilities (EnergyNorth Natural Gas) requesting
15 franchise in City of Lebanon and Town of Hanover, New Hampshire

16 **Q. Have you ever provided testimony and affidavits before other Commissions?**

17 A. Yes. I have testified on cost of capital before the Minnesota Public Utilities Commission
18 in dockets G008/GR-13-316 and GR 13-617. I have also provided an affidavit before the
19 Federal Energy Regulatory Commission (FERC) in a Docket ER 09-14-000 on NSTAR’s
20 petition for ROE incentive adders on behalf of the New England Conference of Public Utilities
21 Commissioners (NECPUC).

1 **Q. What is the purpose of your testimony?**

2 A. The purpose of the testimony is to present the OCA’s position in response to Liberty
3 Utilities’ request in this docket for approval of the Precedent Agreement (PA) between
4 Tennessee Gas Pipeline (TGP) and EnergyNorth, that entails the purchase of firm capacity of
5 78,000 Dth per day on TGP’s proposed project from the Marcellus Shale region in Pennsylvania
6 to Wright, New York (the “Supply Path PA”).¹ Specifically, the OCA discusses the economics
7 of the Supply Path contract, in reference to determining the cost-effective volume. Based on its
8 analysis of the pricing fundamentals, the OCA finds that the upper limit of the reasonable range
9 for optimal firm capacity associated with the Supply Path is lower than that has been requested
10 by the Company by 11,000 Dth per day. The Commission should therefore require the Company
11 to renegotiate the Supply Path agreement, if needed, to ensure that ratepayers are not burdened
12 with excess capacity. The OCA also briefly reiterates its position on what constitutes a
13 reasonable planning horizon, as was conveyed in the Market Path docket, i.e. DG 14-380.

14 **Q. Please discuss how is your testimony organized?**

15 A. In the next section, we discuss the Company’s analysis and examine the assumptions that
16 underlie its approach in determining its optimal Supply Path volume. That look suggests that the

¹ In Docket DG 14-380, EnergyNorth received the Commission’s approval of its precedent agreement with TGP for the so-called Market Path, which connects Wright, New York with Dracut, Massachusetts. See the link below for that order:

[Order No. 25,822 Approving Stipulation and Settlement Agreement and Precedent Agreement](#)

Also, see Application for a Certificate of Public Convenience and Necessity (Northeast Energy Direct Project) of Tennessee Gas Pipeline Company, L.L.C. in FERC Docket CP16-21, et al. Tennessee Gas Pipeline Company has filed a combined Application for a Certificate of Public Convenience and Necessity for both the Market Path and the Supply Path.

1 focus ought to be on the price forecasts the Company uses in conducting the resource-mix
2 optimization, wherein the optimal Supply Path volume is determined endogenously. The
3 Company's pricing forecasts are based on its application of price multipliers capturing how the
4 price at Wright (in the absence of Supply Path) tracks relative to the price at Leidy (which it uses
5 as a proxy for gas produced in the Marcellus basin). Our analysis delves into the same issue in
6 greater detail in Section III. Finally, section IV discusses the OCA's approach to modifying the
7 Company's multiplier analysis in recommending a reasonable range for the level of the Supply
8 Path contract. Section IV also wraps up the testimony with OCA recommendation on the Supply
9 Path volume and concludes with additional remarks.

10 **II. Company' Approach, Input Assumptions, and Pricing Fundamentals**

11 **Q. Briefly describe the Company's analysis recommending 78,000 Dth per day Supply**
12 **Path capacity contract.**

13 A. The Company used the Resource Mix optimization module in SENDOUT to determine
14 the level of Supply Path capacity that achieves the lowest procurement cost. The modeling
15 inputs essentially included the Company's estimates of design-day requirements for the period
16 2018-38, the resources associated with existing contracts, existing peaking resources, a volume
17 of 115,000 Dth per day for the Market Path contract, assumptions about capacity releases and,
18 most importantly, assumptions about how the modeled supplies will be priced in the years 2018-
19 2038, etc. The Company's resource-mix analysis effectively examined only one new potential
20 capacity resource (Supply Path) and determined, based on its input assumptions, that a twenty
21 year contract of 78,000 Dth per day on the Supply Path is the most cost-effective solution.²

² The Market Path PA having been approved by the Commission in Docket DG 14-380, Liberty Utilities modeled 115,000 Dth per day for the Market Path as an existing supply contract. The Settlement Agreement between Staff

1 Needless to say, the validity of the input assumptions and how those assumptions influence the
2 optimization result is the essence of the inquiry into the reasonability of the Company's proposed
3 Supply Path's contracted volume.

4 **Q. Has the OCA investigated the reasonability of assumptions underlying the**
5 **Company's resource-mix optimization?**

6 A. Yes, somewhat generally, as well as consequently focusing more thoroughly on the
7 primary driver based on that general look. While the OCA would have strongly preferred
8 addressing the optimality question by analyzing the contract level for the entire Northeast Direct
9 project (i.e., both the Market and Supply Paths) in one go (even with the possibility of
10 contracting different levels for the two paths), we are cognizant that the Commission has already
11 approved the Market Path PA in Docket DG 14-380. It appears that the assumptions, with
12 respect to the demand for gas, given the uncertainty with the needs associated with iNATGAS
13 and growth potential in Keene and other potential new franchise territories in New Hampshire,
14 can be meaningfully investigated to inform the optimal contract level(s) only if both the Market
15 Path and the Supply Path volumes are modeled in the resource-mix mode at the same time. With
16 the Market Path volume being fixed at 115,000 Dth per day, as the Company's response to Data
17 Request (DR) Staff 2-3 indicates, the optimal Supply Path capacity is not sensitive to the above
18 assumptions about natural gas demand. The optimal Supply Path volume, however, even when

and the Company actually accommodates the possibility of the contract level being 100,000 Dth per day. While the Company did not model that possibility in its filing, responses to data requests propounded by Staff indicate that for the purpose of strictly determining the optimal Supply Path volume, whether we assume the Market Path firm capacity is 115,000 Dth per day or 100,000 Dth per day has little bearing. Also, it is important to point out that the Company had revised its resource-mix (Volume Scenario (3)) run accounting for updated fuel charges, which produces an optimal amount of 79,920 Dth per day rather than 78,080, as in the run reported in Mr. DaFonte's Testimony (Bates Page 025, Table 3).

1 the Market Path contract level is assumed to be 115,000 Dth per day, is significantly influenced
2 by the pricing assumptions made for the resource-mix runs.

3 **Q. Please elaborate how the pricing assumptions have a significant bearing and prompt
4 a closer look.**

5 A. The pricing data assumed for the period 2018-2038 plays the most important role in
6 influencing the optimal Supply Path volume. This is corroborated by the Company's response to
7 DR Staff 2-4 (See Attachment 1). Under the Company's assumptions, the future commodity
8 prices of natural gas at Wright relative to Marcellus produce an optimal amount of 79,920 Dth
9 per day. In contrast, when the natural gas prices at Wright are proportionately less relative to
10 that of Marcellus, the optimal amount for the Supply Path tends to be perceptibly less. The
11 Company's response to DR Staff 2-4 indicates that the optimal contract level is quite sensitive to
12 the assumption about the price at Wright relative to that of Marcellus.³ This finding is not
13 surprising at all, as the economics of long-term contracts are indeed expected to be driven by
14 commodity pricing fundamentals.

15 **Q. Do you agree with the assumptions made by the Company with respect to future
16 natural gas prices at Wright? Please explain your position.**

17 A. No. I disagree with the Company that a historical look at prices, especially from a period
18 that is not typical, necessarily reflects how prices are expected to pan out in the future, especially

³ Using pricing and Heating Degree Days (HDD) data from November 1, 2011 to June 30, 2015, the Company analyzed the extent of divergence between Wright's price *without* access to Marcellus and the price at Wright *with* access to Marcellus (accounting for transportation cost) as reported in Table 2, Bates Page 024 of DaFonte's Direct Testimony. The last column reports the price multipliers that the company used to model the daily prices at Wright for the period 2018-2038, based on its analysis of daily HDDs, and daily spot prices at IROZ2 and Leidy. The response to DR Staff 2-4 shows that when the multipliers are 75 percent and 50 percent of what was used by the Company for HDDs above 40, the optimal contract level falls by 6,740 and 19,920 Dth per day, respectively.

1 in the long-term (2018-2038). Future prices for a key trading point (IROZ2 (proxy for Wright))
2 given the sole focus on the Supply Path as a potentially new resource, needs to be better
3 informed than simply accepting predominantly the spot-market realities experienced between
4 November 2011 and June 2015, as is the case with the Company's analysis. The OCA's look at
5 pricing fundamentals suggests (as discussed later) that the reliance on spot-market realities
6 experienced between November 2011 and June 2015 to inform future prices is completely
7 misplaced and inappropriate.

8 **Q. Please summarize what pricing fundamentals did the OCA investigate?**

9 A. Modeling what is the optimal capacity level for a contract that acquires firm capacity for
10 twenty years into the future, at the outset, requires understanding what markets are expecting the
11 prices to be at the relevant pricing points in the future. So to start with a look at the natural gas
12 Forwards/Futures ("Futures") markets is extremely helpful. Since the key pricing reality
13 modeled to judge the need for Supply Path capacity involves understanding the proxy pricing for
14 Wright (without access to Marcellus) and Marcellus, accepting that the proxies reasonably are
15 indeed IROZ2 and Leidy, a look at their Futures across the next seven years (as retrieved from
16 SNL) is helpful.⁴ Since the capacity contracts are essentially driven by design-day requirements,
17 we report the Futures' pricing data for the winter months of January and February. These
18 months tend to drive the design-day requirements.

⁴ To be clear, SNL simply relies on forward price data and analysis it receives from OTC Global Holdings (and OTCGH's affiliate EOX Holdings). The price curves for the first 2-3 years of Term Structure are valued strictly on market information. Longer-Dated curves are marked based on current market information to the extent possible. The Futures prices for the later years tend to be more in the nature of forecasts that EOX undertakes based on previous time spread and/or locational spread relationships. As for the monthly futures pricing, EOX values individual months only if it has market information confirming the value of those individual months or is extremely confident that individual months represent "fair market value." OTC Global Holdings is a leading independent interdealer broker in over the counter commodities. It and its subsidiaries hold a dominant market share in the US and Canadian natural gas markets, the U.S. power markets, crude oil products and crude oil product options, agricultural and soft commodities, as well as structured weather and emission derivatives.

1 Attachment 2 depicts the trends in Futures prices as expected based on market activity on
2 03/12/2012, 03/11/2013, 03/10/2014, 03/09/2015, and 03/08/2016, respectively. These are
3 denoted in the graphs as F2012, F2013, F2014, F2015 and F2016, respectively. As Futures
4 projections are reported by SNL for dates over the ensuing seven years, the trend line F2016 for
5 example runs until 2023, while that of F2012 runs only until 2019.

6 It is important to recognize first that the Futures pricing data depicted in Attachment 2
7 were per market days in the period March 8 through March 12. That implies that the unusual
8 winter that was witnessed in 2013-2014 informs the Futures predominantly in the trends in
9 Attachment 2 only for F2014, F2015, and F2016. The other trends, i.e., F2012 and F2013 are
10 not informed by that winter, though it is possible that some market participants had predicted the
11 occurrence of such an unusual weather pattern.

12 Finally, the Company's assumptions about future commodity prices associated with
13 resources that are part of the existing portfolio also need to be informed by current realities and
14 market expectations. It is necessary not only to update Leidy's prices (which has clear
15 implications for the prices being assumed for IROZ2, per the Company's analysis), but also the
16 prices that are associated with other resources that are modeled in the Resource-Mix run.
17 Therefore, as reported in Attachment 3, the Futures' trends were also examined for Henry Hub
18 (proxy for (USGC), Algonquin Gate (proxy for PNGTS)), Dawn, and Niagara.⁵

19 **Q. What are the primary takeaways from the investigation of the pricing**
20 **fundamentals?**

21 A. Based on the trends depicted in Attachments 2 and 3, the important takeaways follow.

⁵ PNGTS and USGC denote existing contracts that EnergyNorth currently has with Portland Natural Gas Transmission and Tennessee Gas Pipeline respectively.

- 1) The trends for both January and February Futures' prices for Leidy are very similar. As for IROZ2, other than that of F2015, the trends are very similar. The F2015 February Futures' prices across all future years are roughly \$2/MMBtu lower than what the market indicated for January.
- 2) Overall, Leidy's Futures saw a significant downward shift after 2013. As for IROZ2, the Futures in the wake of the winter in 2013-2014 seem to have adjusted prices upward quite significantly, with that adjustment persisting even for F2015.⁶ Interestingly, for IROZ2, even for F2013, the prices had adjusted upward relative to F2012. This seems consistent with at least some recognition of the impending demand and supply dynamics prior to the winter episode in 2013-2014.
- 3) As for current expectations (F2016) for IROZ2, one finds that the market is predicting future prices even lower than what the Futures for 2012 (F2012) suggested. This strongly implies that market participants are no longer expecting the persistence of the demand/supply dynamics that produced the 2013-14 winter prices into the long-term future. As an example, if one views the price for January Futures, the F2015 price for 2017 is \$3.82/MMBtu higher than that the F2016 price of \$6.78/MMBtu. In percentage terms, the F2016 price for January 2017 is 36 percent lower than the F2015 price for January 2017.
- 4) Given the approach adopted by the Company to forecast daily prices for Wright, just as it is important to understand how IROZ2 behaves relative to Leidy with respect to historical spot prices (the multiplier analysis conducted by the Liberty Utilities), it is important to check how the two pricing points behave relatively in the Futures market. That

⁶ For example, for January 2016, the F2015 price exceeds the F2012 price, i.e. \$7.36/MMBtu, by more than \$3/MMBtu.

1 investigation is necessary for a better informed position about how the future is expected
2 to play out. Also, while it is true that the Futures market is for a monthly product, and the
3 Company's multiplier approach is focused on estimating the daily prices for the future, it
4 cannot be ignored that Futures markets provide significant insight into what market
5 participants are expecting about the spot market behavior in the future. Further, we
6 disagree with the Company that it is sound economic analysis to use Futures prices for all
7 pricing points except that of IROZ2 to model prices into the future.⁷ The market-
8 informed forecast for IROZ2 prices cannot be ignored if one has to reasonably predict
9 what prices are expected to be at Wright in the future. This is not to suggest that the
10 Company's multiplier analysis cannot be a reasonable starting point, but adjustments to
11 the multipliers, based on a closer look at IROZ2 and Leidy Futures, are unquestionably
12 warranted. As the look at multipliers is relatively in-depth, we discuss it in a separate
13 section that follows this section.

14 5) As for the prices associated with other resources that are relevant for the resource-mix
15 optimization, a current look (as of March 2016) at the Futures' prices indicates that the
16 prices for Dawn, Niagara, PNGTS, and Henry Hub are consistently lower than what were
17 projected during the middle of 2015 (See Attachment 3).⁸ It is always a good idea to rely

⁷ For all resources, except IROZ2, that have pricing points associated with them in the Futures markets and are relevant for the Company's Resource-mix optimization, the Company has relied on prices dictated by the Futures market. In contrast, the company uses the Leidy Futures' prices and the multipliers derived from looking at IROZ2 *spot prices* relative to Leidy's *spot prices* (adjusted for transportation costs) from November 2011 to June 2015, using daily HDDs data, to essentially calculate the product of the Leidy's Futures prices and the multipliers, to estimate future prices at Wright.

⁸ The Company's analysis used data that was gathered by the Load Consortium going back to the filing of the request for approval of the PA for the Market Path. Based on our access to SNL Futures data, we have used July 2015 and March 2016 looks at Futures to investigate the shift in Futures. The response to data request OCA Tech 1-1 indicates that even compared to what the Company has modeled in its SENDOUT run, the current Futures reflect perceptible downward shift in the prices.

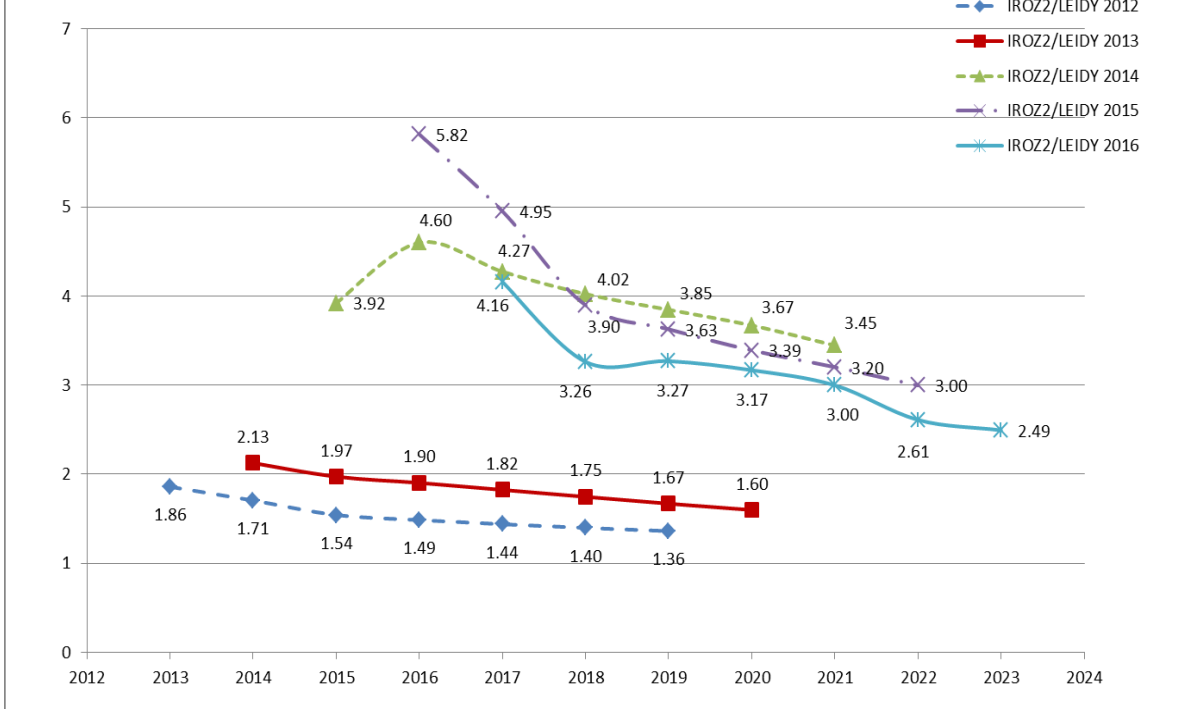
1 on data that is as current as possible. Updating the pricing information about existing
2 supplies modeled is warranted in its own right.

3 **III. A Look at Futures and the Implications for the Company's Multiplier Approach**

4 **Q. What do the Futures indicate about how IROZ2's price is expected to trend in the**
5 **future relative to Leidy's price?**

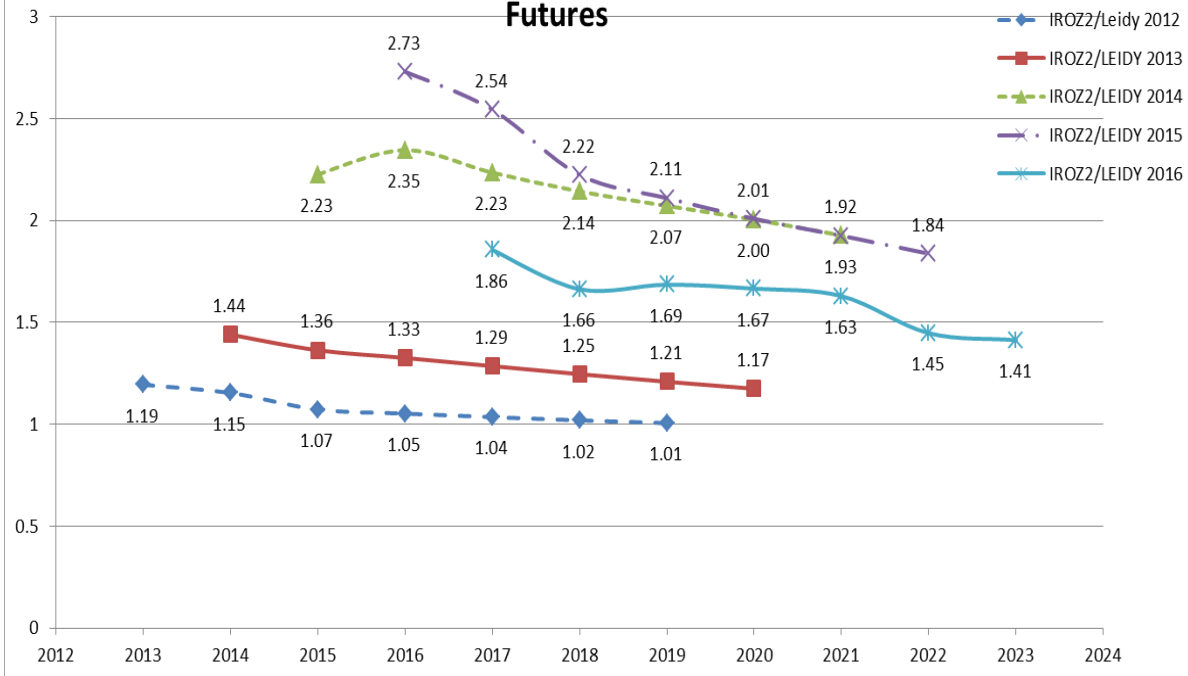
6 A. The comparison is depicted below graphically in Figure 1 and Figure 2. We have chosen
7 two ways to report the findings. First, a direct comparison of Futures prices of IROZ2 with
8 Leidy is depicted in terms of the ratio of those prices. We rely on the data that is already
9 reported in Attachment 2, to derive Figure 1 below. Second, we use the same information from
10 Attachment 2 but also adjust the Leidy prices by the transportation and fuel costs (as was done
11 by the Company in its analysis of multipliers), to derive Figure 2. I have reported the analysis
12 based on January Futures, as that represents demand realities that is most consistent with a
13 design-day requirement. The transportation cost adjustment is therefore based on the Company's
14 analysis for January (See response to DR Staff Tech-1). The response to DR Staff Tech-1 was
15 also used to inform the fuel cost adjustments.

Figure 1: IROZ2/LEIDY January Futures' Price-Multipliers



1

Figure 2: IROZ2/Leidy (+Basis & Fuel Cost) Multiplier: January Futures



2

1 **Q. Please briefly explain what is the relevance of the multipliers depicted in Figures 1**
2 **and 2?**

3 A. Since the Company had relied on the relationship between IROZ2 and Leidy spot prices
4 over the period November 2011 to June 2015, and has modeled Wright's prices in the resource-
5 mix optimization run (Volume Scenario (3), Table 3, DaFonte Testimony, Page 025) using how
6 the price at IROZ2 relates to that of Leidy (with adjustments for basis and fuel charges) across
7 different HDDs, it helps to take a look at whether that relationship is expected to remain
8 unchanged into the future. A reasonable way to respond to that question is to investigate how the
9 unusual winter scenario likely impacted the Futures and whether the fundamentals (both through
10 a look at the Futures and other data) suggest that the multipliers assumed by the company are
11 expected to remain at those levels into the future. The look at the relative trends traced by the
12 Futures in IROZ2 and Leidy is therefore very helpful.

13 **Q. What inferences can be drawn from Figures 1 and 2 about the changes around the**
14 **winter of 2013-14?**

15 A. To draw any inference, it is instructive to look at Futures' trends for IROZ2 and Leidy for
16 market days in years 2012 through 2016 (currently) relatively with respect to the multipliers
17 depicted in Figures 1 and 2. They show that the winter episode in 2013-2014 marks a significant
18 shift in expectations with respect to how IROZ2 relates to Leidy in January. Figure 1 shows that
19 the January IROZ2/Leidy multiplier in 2016 was expected to be 1.97 on March 11, 2013, the
20 multipliers increase significantly to 4.60 and 5.82, respectively on March 10, 2014 and March 9,
21 2015. Similar relative shifts are also observed per Figure 2; 1.33 in 2013 to 2.35 and 2.73

1 respectively for 2014 and 2015. In short, Futures' prices indicate that the multipliers did spike
2 up right after the winter of 2013-14.

3 **Q. Is the shift around the winter of 2013-14 expected to be persistent?**

4 A. Figures 1 and 2 both show that the answer is in the negative. While both IROZ2/Leidy
5 2014 and IROZ2/Leidy 2015 have significant downward trends going into the future, the current
6 Futures' also show that IROZ2/Leidy multipliers (both Figures 1 and 2) are expected to be
7 significantly lower than the highs noted above, 4.60 and 5.82 per Figure 1 and 2.35 and 2.73 per
8 Figure 2, respectively. Figure 1 shows that IROZ2/Leidy 2016 is expected to be 3.27 in 2019
9 and 2.49 in 2023. Figure 2 shows that the multipliers are expected to be 1.69 in 2019 and 1.41 in
10 2023.

11 **Q. Why are comparisons between January 2016 for Futures dated 2014 and 2015 and
12 that of January 2019 and 2023 for Futures dated 2016 appropriate?**

13 A. First, the Company modeled the IROZ2 prices based on the historical spot prices
14 witnessed in 2014 and 2015 winter relative to Leidy's spot prices (see the derivation of the
15 "IROZ2/Wright Price Multiplier" at Page 024 of DaFonte Testimony). To capture that, it is
16 appropriate to use Futures prices that were expected relatively close to the winter episode of
17 2013-14. We therefore used the F2014 and F2015 projections for prices in 2016 to proxy what
18 the Company had done in its approach. Second, as for comparing those prices to the ones
19 expected in 2019 and 2023, the choice of these years is very reasonable as the Supply Path is
20 expected to be operational starting the winter of 2018-19, and will provide firm capacity to
21 EnergyNorth at least until 2038. The OCA contends that the prices should be informed by the
22 latest activity and expectations as informed by the Futures market for the future years. With

1 respect to relying on 2023, it is true that the longer-dated price curves tend to be in the nature of
2 forecasts and are less informed by actual market activity, but these forecasts are based on OTC
3 Global Holdings' reasoned look at time spread and locational spread relationships and is
4 unquestionably superior to blindly following historical spot market data around a winter episode
5 that was unprecedented.

6 **Q. What are the overarching reasons for using the analysis reported in the Figures**
7 **above?**

8 A. The OCA strongly contends that given the context of how the Company had forecasted
9 the prices at Wright, it is reasonable to focus on the findings from Figure 2, to inform any
10 adjustment to the prices at Wright that should be addressed in the resource-mix optimization
11 Volume Scenario (3). The multipliers used to conduct the Volume Scenario (3) SENDOUT run
12 do not represent what the prices associated with Wright are reasonably forecasted to be in the
13 future. Using spot prices from November 2011 to June 2015 to extrapolate how design-day
14 prices at Wright are going to pan out over 2018-2038 completely ignores the reality that markets
15 react to unusual events, and there are significant shifts taking place as well as are expected to
16 take place in the future.⁹ The Futures market, which is forward-looking, is a better barometer to
17 gauge how the prices at IROZ2 relative to Leidy will trend going forward. The look at that data

⁹ "Several other projects plan to add natural gas transmission capacity later in 2016: The [Algonquin Incremental Markets expansion project](#) will add 342 MMcf/d of capacity to Algonquin Gas Transmission's pipeline in the highly constrained New England region. The [Constitution Pipeline](#) will have the capacity to transport up to 650 MMcf/d of natural gas from the Appalachian Basin to the Iroquois Gas Transmission and Tennessee Gas Pipeline systems in New York, which will provide access to markets in the Northeast and New England. The Wright Interconnect Project expands Iroquois's facilities and supports the Constitution Pipeline where the Iroquois and Constitution pipelines interconnect in Wright, New York." See <http://www.eia.gov/todayinenergy/detail.cfm?id=24732&src=email>.

Other projects (apart from NED) relevant for New England that are in different stages of planning and are expected to become operational in 2018 are Access Northeast and Atlantic Bridge. The total capacity with these projects amounts to 2.3 Bcf/d. See www.eia.gov for more details.

1 capturing markets' expectations about future natural gas prices suggests that unlike what
2 transpired in winter 2013-14 and that fed near-term expectations in 2014 and 2015, the markets
3 have settled significantly and the disparity between the prices in IROZ2 and Leidy in the future
4 will tend to be significantly less than what was modeled by the Company in its Volume Scenario
5 (3). As already mentioned above, for the multipliers discussed above with respect to Figure 2,
6 while the January 2016 multipliers associated with IROZ2/Leidy 2014 and IROZ2/Leidy 2015
7 curves are 2.35 and 2.73 respectively, the January 2019 and January 2023 multipliers associated
8 with the IROZ2/Leidy 2016 curve are 1.69 and 1.41 respectively. It is therefore useful to see
9 how much the multipliers have decreased now compared to where things were relatively soon
10 after the winter episode in 2013-14. The multiplier 1.69 as a percentage of 2.35 and 2.73 is 71.9
11 percent and 61.9 percent (average is 66.9 percent), respectively. On the other hand, the
12 multiplier 1.41 as a percentage of 2.35 and 2.73 is 60.0 percent and 51.6 percent (average is 56.2
13 percent), respectively. This has implications for how to reasonably adjust the Company's
14 original analysis. That is discussed in the next section.

15 **IV. OCA's Recommendation and Concluding Remarks**

16 **Q. What is the OCA's recommendation about a reasonable application of the**
17 **multiplier approach that the Company has used?**

18 A. In view of the above, the OCA's position is that a reasonable determination of the
19 capacity level for the Supply Path would require a downward adjustment to the multiplier
20 modeled by the Company in its resource-mix run, after also accounting for updated pricing data
21 on the Futures for Dawn, Niagara, PNGTS, Leidy, and Henry Hub. As for the downward

1 adjustment, the analysis above suggests that it is not unreasonable to expect that the prices at
2 IROZ2 will track approximately 60 percent of that of Leidy.

3 **Q. Please provide the basis for your recommendation.**

4 A. Since the analysis heavily relies on prices well beyond 2018, it is important that adequate
5 weight should be given to years well into the future. Using the Futures from 2023 is quite
6 appropriate, given that the SENDOUT runs have modeled years 2018-2038. Of course, this is
7 not a precise science but, as was already observed, one must take clues from the Futures market
8 to project where the IROZ2 and Leidy prices are heading beyond 2018. Looking merely at what
9 happened in the winter of 2013-14 and soon thereafter, and assuming that is how IROZ2 prices
10 will behave well into the future relative to Leidy, is not supported by a careful look at the
11 Futures. Also, the point about markets reacting to an unusual winter is not a trivial one. The
12 observed current market reality actually demonstrates that market participants are reacting and
13 have reacted to experience from the winter in 2013-14. The need to rely on sufficiently forward-
14 looking prices vindicates using 60 percent of the Company's multipliers to inform the optimal
15 Supply Path volume.

16 Further, very importantly, though the need to model forward-looking pricing expectations is the
17 primary consideration in recommending the 60 percent level, the OCA's position on what
18 constitutes a reasonable planning horizon strongly suggests that this recommendation is very
19 reasonable. As is discussed later, the OCA rejects the Company's reliance on a planning horizon
20 of 20 years. As was laid out in the OCA's position in Docket DG 14-380, at most a ten year
21 planning horizon is appropriate. It is the OCA's contention that the optimal level of Supply Path
22 volume will very likely be lower if the planning horizon is restricted to ten years. To sum up,

1 relying on the Company's analysis in its testimony, we find that a very reasonable threshold to
2 determining the optimal Supply Path level would be to consider the multipliers at 60 percent of
3 what was assumed by the Company. The OCA recommends that the Commission reject the
4 Company's requested contract level, as it is premised on prices for IROZ2 (proxy for Wright),
5 and other relevant pricing points, that are not well informed. We urge the Commission to inform
6 its decision on a resource-mix based SENDOUT run that reasonably mimics Wright prices to be
7 approximately 60 percent of the multiplier modeled for IROZ2 by the Company in its filing.
8 Also, the Commission should rely on the most current Futures' pricing for Leidy, Dawn,
9 Niagara, PNGTS and Henry Hub to recognize current market realities.¹⁰

10 **Q. Did the OCA request the Company to conduct a SENDOUT run to gauge what**
11 **Supply Path capacity is associated with 60 percent of the Company's multiplier?**

12 A. Yes. Both Staff and the OCA had asked the Company to run the resource-mix Volume
13 Scenario (3) using price multipliers of 75%, 67%, 60% and 50% by updating the pricing data
14 using the latest Futures' prices for the relevant pricing points.

15 **Q. Briefly summarize the results of the additional runs that the Company had**
16 **conducted and provide the OCA's recommendation on what it considers reasonable with**
17 **respect to the Supply Path volume that EnergyNorth should be allowed to contract.**

18 A. The runs conducted by the Company in response to the data requests OCA Tech 1-4 and
19 Staff Tech 2-2 are briefly depicted in the Table below. As can be seen from the Refreshed runs,

¹⁰ It should not be inferred that the OCA agrees with the Company about how it modeled its resource-mix optimization at large. Based on what is in the record, however, we think it is reasonable to rely on the Company's approach with the OCA's proposed tweaking.

1 the optimal volumes range from 55,720 Dth per day to 78,490 Dth per day for the range of
 2 multipliers, going from 50 percent to 100 percent.

Scenario	Reference	Optimal Supply Path Volume (Dth/Day)
Original Volume Scenario (3)	FCD-6R	79,920
Refreshed Volume Scenario (3)	Staff Tech 2-2.1	78,490
Staff Tech 2-2 (-25%)	Staff Tech 2-2.2	71,490
OCA Tech 1-4 (-33%)	OCA Tech 1-4.1	67,990
OCA Tech 1-4 (-40%)	OCA Tech 1-4.2	65,120
Staff Tech 2-2 (-50%)	Staff Tech 2-2.3	55,720

3
 4 Two quick preliminary observations are useful. First, the Refreshed Volume Scenario (3) run
 5 produces a volume that is 1,430 Dth/day lower than that was produced by the Original Volume
 6 Scenario (3) run; both runs are with the Company’s multipliers. This is solely attributable to the
 7 updating of the prices of the relevant pricing points. Second, with the updated prices, it appears
 8 that the model is more sensitive to the assumptions about the level of multipliers. Attachment 1
 9 (with the Company’s original prices for relevant pricing points) indicates that reducing the
 10 multipliers by half decreases the optimal Supply Path volume from 79,920 Dth/day to 60,000
 11 Dth/day (a decrease of 19,920 Dth/day). In contrast, the refreshed runs show that reducing the
 12 multipliers by half decreases the optimal Supply path volume from 78,490 Dth/day to 55,720
 13 Dth/day (a decrease of 22,770 Dth/day).

14 Focusing on the main purpose of this analysis however, based on what OCA recommends about
 15 the appropriate choice for the multipliers, one can interpolate that the Supply Path contract level
 16 is reasonably around 65,000 Dth per day. Given the imprecise nature of the optimality exercise,
 17 the OCA considers the reasonable range to be 63,000 Dth per day to 67,000 Dth per day.

1 **Q. You had indicated that the OCA rejects the Company's adoption of a planning**
2 **horizon of twenty years. Please elaborate on that position.**

3 A. The OCA continues to have the same concern that it had raised in Docket DG 14-380. A
4 capacity contract that is targeted at meeting the design-day need twenty years into the future
5 disproportionately burdens current customers relative to future customers. Particularly, as the
6 design-day need is caused by future customers, not current ones. This is especially unreasonable
7 for residential customers who tend to be more captive to regulated service.

8 The OCA asserts that any long-term contract should not be predicated on a planning horizon
9 beyond ten years. Also, there is no basis for expecting the contract length and the planning
10 horizon to be the same. The decision on the planning horizon involves what risks are reasonable
11 to impose on current ratepayers. For years well into the future, there is significant uncertainty as
12 to how energy prices will pan out. That strongly suggests that the planning horizon should not
13 be as long as has been used by the Company in its analysis. Moreover, even current market
14 activity suggests that any concerns about not adequately procuring resources ten years into the
15 future is misplaced. We strongly recommend that the Commission, at least in future filings of
16 this nature, require that the planning horizon should not be greater than ten years. Importantly,
17 the OCA's examination indicates that other members of the load consortium, that includes
18 EnergyNorth, have used planning horizons of at most about ten years in evaluating the PAs
19 associated with Northeast Energy Direct.

20 **Q. Does this conclude your testimony?**

21 A. Yes.