

STATE OF NEW HAMPSHIRE
BEFORE THE
PUBLIC UTILITIES COMMISSION

In the matter of

Northern Utilities, Inc. (Unitil Corporation)

Docket No. DG 19-126

Northern Utilities, Inc. 2019 Integrated Resource Plan

DIRECT TESTIMONY

OF

Dr. Pradip K. Chattopadhyay
Assistant Consumer Advocate

April 10, 2020

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

2 A. My name is Pradip K. Chattopadhyay. My business address is 21 South Fruit
3 Street, Suite 18, Concord, New Hampshire. I am employed as the Assistant Consumer
4 Advocate/Rate and Market Policy Director with the New Hampshire Office of
5 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
8 earned in 1997. I have also taken courses in City and Regional Planning with
9 applications to Energy Planning from Ohio State University, Columbus OH, in 2001-02.
10 I have taught several courses in economics at the University of Washington as an
11 instructor and adjunct faculty at its Business School. I am also associated with the
12 Southern New Hampshire University (SNHU) as an adjunct faculty, where I teach
13 courses in economics.

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

1 2002, I worked at the World Bank, Washington D.C. as a short-term consultant/intern
2 with its Energy and Water Division.

3 I worked at the New Hampshire Public Utilities Commission (Commission) from
4 August 2002 to January 2007 in the capacity of a Utility Analyst. My responsibilities at
5 the Commission as an analyst were in electric utility issues including analyzing and
6 advising the Commission on rate design, cost of capital issues, wholesale market issues,
7 and other regional matters. I briefly worked at the Massachusetts Department of
8 Telecommunications and Energy (later reorganized into Department of Public Utilities
9 (MA-DPU)) starting in January 2007 as an Economist. At MA-DPU, I represented the
10 staff and examined gas demand estimation and forecasting, decoupling issues, and
11 environmental remediation matters.

12 I returned to the Commission in June 2007 to join its Telecom Division as its
13 Assistant Director, and continued in that position until December 2010. I was also
14 helping other divisions as an expert witness in economics-related issues as well as
15 advising the Commission on regional electric matters including FERC jurisdictional
16 issues. I joined the Commission's Regional Energy Division in January 2010 as the
17 Regional Energy Analyst, and was advising the Commission in that capacity until I
18 joined the Antitrust and Utilities Division, Office of the Minnesota Attorney General, in
19 August 2013.

1 I came back to New Hampshire in March 2014 and worked as an independent
2 consultant until the end of August, 2014, representing the Minnesota Attorney General.
3 I joined Liberty Utilities in August, 2014 as a Forecasting Analyst for its Energy
4 Procurement Department. I worked with Liberty Utilities for about three months. In
5 December 2014, I joined the OCA as its Rate and Market Policy Director. I was later
6 appointed as the Assistant Consumer Advocate at the OCA.

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

8 A. Yes.

9 **Q. In which dockets did you testify?**

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

- 11 • DE 03-200 – Rate Design Testimony which was about delivery rates for retail
12 ratepayers of Public Service of New Hampshire (PSNH);
- 13 • DE 06-028 – Cost of Capital Testimony which was also about PSNH’s delivery rates;
- 14 • DT 07-027 – Status of competition in retail telephony under TDS;
- 15 • DG 08-009 – Cost of Equity Testimony related to gas delivery rates of National Grid
16 NH;
- 17 • DE 09-035 – Cost of Equity Testimony in the matter of electric distribution rates
18 (PSNH);
- 19 • DG 14-380 – Testimony in Petition of Liberty Utilities (EnergyNorth Natural Gas)
20 requesting approval of firm transportation contract (North East Direct (NED));

- 1 • DG 15-155 – Testimony in Petition of Valley Green, LLC requesting franchise in
2 City of Lebanon and Town of Hanover, New Hampshire;
- 3 • DG 15-289 – Testimony in Petition of Liberty Utilities (EnergyNorth Natural Gas)
4 requesting franchise in City of Lebanon and Town of Hanover, New Hampshire;
- 5 • DG 15-494 – Testimony in Petition of Liberty Utilities (EnergyNorth Natural Gas)
6 requesting approval of firm transportation contract (NED);
- 7 • DE 16-383 – Testimony in Petition of Liberty Utilities (Granite State Electric) for
8 Permanent Rate Increase;
- 9 • DE 16-384 – Testimony in Petition of Unutil for Permanent Rate Increase;
- 10 • DG 16-852 – Testimony in EnergyNorth’s Petition for Lebanon-Hanover Franchise
11 Approval;
- 12 • DG 17-048 – Testimony in EnergyNorth’s Gas Distribution Service Rate Case;
- 13 • DG 17-070 – Testimony in Northern Utilities’ Gas Distribution Service Rate Case;
- 14 • DW 18-165 – Abenaki-Rosebrook Rate Case; Oral Testimony on Return on Equity
- 15 • DW 18 –118 – HAWC Rate Case; Oral Testimony on Return on Equity
- 16 • DG 18-140 – Testimony in Liberty Utilities’ Petition for Approval of RNG Supply
17 and Transportation Contract.
- 18 • DG 17-198 – Testimony in Liberty Utilities’ Petition for Approval of Natural Gas
19 Supply Strategy
- 20 • DG 19-064 – Testimony in Granite State Electric Distribution Rate Case
- 21 • DG 19-057 – Testimony in Eversource Electric Distribution Rate Case
- 22 • DE 19-142 – Oral Testimony on Eversource/Burgess Power Contract and Cost
23 Recovery

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

2 A. Yes. I have testified on cost of capital before the Minnesota Public Utilities
3 Commission in dockets G008/GR-13-316 and GR 13-617. I have also provided an
4 affidavit before the Federal Energy Regulatory Commission in a FERC Docket ER 09-14-
5 000 on NSTAR's petition for ROE incentive adders on behalf of the New England
6 Conference of Public Utilities Commissioners (NECPUC).

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

8 A. The objective of this testimony is to provide a few forward-looking
9 recommendations that the Commission and Northern Utilities should consider for
10 future Least Cost Integrated Resource Plans (LCIRPs) in view of the inclusion of natural
11 gas utilities into the purview of RSA 378:37-40. First, the OCA highlights the
12 importance of putting in place, going forward, a process to allow natural gas utilities to
13 analyze and carefully consider non-gas alternatives and environmental considerations
14 in its LCIRP filing. To answer the question of what resource portfolio produces the
15 lowest reasonable cost of providing the citizens' energy needs while maintaining
16 reliability and diversity of resources, it is imperative that the utilities conduct a more
17 thorough analyses of non-gas-alternatives and environmental impact than was
18 considered in the instant docket.¹ The requested process as mentioned above would

¹ While the Company updated its analysis of environmental and other impacts in its supplemental filing of the LCIRP, the OCA believes that a more streamlined approach to analyzing these impacts will be beneficial going forward. Stakeholders should be encouraged by the Commission to bring the perspective of environmental and perhaps even health experts into the mix.

1 allow the Commission to provide more pointed guidance on environmental planning
2 and integration of non-gas alternatives in future LCIRPs. The OCA submits that doing
3 so will be crucial to give effect to the intent behind the modified RSA 378:38 which
4 includes natural gas utilities as of 2014.

5 Second, we would also bring to the notice of the Commission the findings from a
6 recent audit conducted by Liberty Consultants on the natural gas supply procurement
7 and management protocols and practices of Northern Utilities.² That examination was
8 commissioned by the Maine Public Utilities Commission (MPUC), but given that
9 Northern Utilities operates an integrated portfolio approach for Maine and New
10 Hampshire, the report also informs how New Hampshire future LCIRP filings can be
11 further improved.

12 **Q. Please provide the OCA's recommendations on the need to develop a process**
13 **to comprehensively analyze all resources, including non-gas alternatives, and all**
14 **impacts identified in RSA 378, including environmental ones, in LCIRP filings.**

15 A. RSA 378:38 commits natural gas utilities to consider demand management, other
16 non-gas alternatives, and environmental and public health impacts to fulfil its
17 obligation of meeting citizens' energy needs through reasonably lowest cost resources.
18 The OCA therefore recommends that the Staff, OCA, and EnergyNorth commence a

² "Examination of Natural Gas Supply Resource Procurement and Management by Northern Utilities Inc. d/b/a Unital" Final Report – Public Version Confidential Material Redacted, Dec. 10, 2019, is provided as Attachment PKC-1.

1 process to determine going forward what should be considered in evaluating non-gas
2 alternatives and environmental impacts to properly and more thoroughly address those
3 in future LCIRPs. In addition to efficiency, non-gas alternatives should include
4 additional demand-side energy management programs such as conservation and load
5 management. Such a process should give heed to the statute's requirement that "[t]he
6 commission is encouraged to consult with appropriate state and federal agencies,
7 alternative and renewable fuel industries, and other organizations in evaluating such
8 impacts." While the OCA would like this commitment to be addressed in this instant
9 docket, it is worth noting that the Company asserts in its LCIRP that

10 Because many of the strategies aimed at reducing natural gas consumption
11 during peak periods include an increase in the use of electricity for heat and
12 other end uses, and because the generation of electricity in our region is also
13 dependent on the supply of natural gas, it is critical that utilities and regulators
14 take a holistic approach to fuel reduction. This approach, which takes all fuels
15 into consideration, is often referred to as "energy optimization". Because
16 reducing natural gas use by end users is not in and of itself a complete solution
17 to the problem of limited capacity and high peak prices, the Company's gas and
18 electric energy efficiency programs are integrated into a coherent whole.

19 2019 Integrated Resource Plan at VI-97.

20 It is possible that an integration across all utilities might yield greater value for
21 ratepayers. The OCA therefore respectfully submits that the Commission could also
22 consider an approach that requires all utilities to address the issue in a unified manner.
23 The ultimate task at hand for such an initiative would be to assist the Commission to
24 provide guidance on how non-gas alternatives and environmental considerations
25 should specifically be considered in future LCIRPs from natural gas utilities.

1 **Q. Does the OCA have any thoughts on when such a process could be initiated and**
2 **how it should proceed?**

3 A. We are cognizant that the COVID-19 situation may impact the timeline, but our
4 recommendation at this point would be to allow this process to be started after the
5 middle of this year. After ruling on this LCIRP, a working group would be formed
6 with participants from each of the parties in this docket as well as the appropriate
7 consultants. The result of the working group would be a report and recommendation to
8 the Commission under this docket. The Commission could then issue an order in
9 response to the recommendation that may provide further guidance for expectations
10 from natural gas utilities in future LCIRP filings.

11 **Q. Please provide the OCA's recommendation on the need to implement further**
12 **improvements to the LCIRP process and filing.**

13 A. The OCA appreciates that the Company has provided the MPUC-commissioned
14 report from Liberty Consultants to Staff and the OCA (Attachment PKC-1). The OCA
15 has attached the report for the Commission's benefit. While most of the
16 recommendations listed in the document deserve proper consideration, the OCA
17 wishes to highlight (1) the report's stress on using Monte Carlo simulations when
18 forecasting load,³ (2) optimization of newly procured pipeline capacity by leveraging

³ www.palisade.com/risk/monte_carlo_simulation.asp describes Monte Carlo Simulation as a "computerized mathematical technique that allows people to account for risk in quantitative analysis and decision making. The technique is used by professionals in such widely disparate fields as finance, project management, energy, manufacturing, engineering, research and development, insurance, oil & gas, transportation, and the

1 the difference in summer and winter loads, and (3) the need for increased written
2 policies and procedures, including the documentation of various factors in gas supply
3 decisions. While the Company's current approach relies inherently on a theoretical
4 normal distribution, the Monte Carlo based weather distribution simulated to actual
5 data could potentially provide a superior portfolio planning. The effects of climate
6 change seem to be producing effects on either side of the normal distribution that justify
7 an evaluation of the Monte Carlo alternative analysis, described by the report
8 (Attachment PKC-1) as an "industry best practice"⁴ which "is finding increasingly
9 broad use in utility-company supply planning."⁵ As recommended in the report, we
10 would encourage the Company to use the Monte Carlo approach as a test of its efficacy,
11 if possible, even in the next Cost of Gas filing.

12 Another point worth mentioning is that the report raises concerns about the
13 Company's focus on meeting peaking requirements without sufficient consideration of
14 how to use the available gas pipeline capacity when newly procured pipeline capacities
15 become operational (for example, the additional 10,000 Dth per day Westbrook Xpress
16 capacity in the near future; *see* Order No. 26,309 in DG 19-116). The Liberty Consultants'

environment. Monte Carlo simulation furnishes the decision-maker with a range of possible outcomes and the probabilities they will occur for any choice of action. It shows the extreme possibilities—the outcomes of going for broke and for the most conservative decision—along with all possible consequences for middle-of-the-road decisions."

⁴ See page 18 of the report (page 30 of the PDF). "Examination of Natural Gas Supply Resource Procurement and Management by Northern Utilities Inc. d/b/a Unitil" Final Report – Public Version Confidential Material Redacted, Dec. 10, 2019, is provided as Attachment PKC-1.

⁵ *Id.* at page 20 of the report (page 32 of the PDF).

1 report suggests that it may be economical to consider Liquid Natural Gas (LNG) based
2 storage facilities to use additional capacity in summer to meet winter needs. It notes,

3 New England's differences between summer prices and the value of gas in
4 winter can be significant. Substituting gas bought in the summer for gas that
5 would have been bought in the winter would likely provide considerable
6 economic benefit. That benefit should be considered in any analysis of a new
7 LNG facility.

8 Liberty Consulting Report at 20.

9 This suggests that in the upcoming years, there may be opportunities for the Company
10 to better manage its portfolio by optimizing the use of newly available pipeline capacity
11 in conjunction with new LNG based storage capability. The OCA would encourage the
12 Company to explore those opportunities.

13 The MPCU-commissioned report also addresses a need for increased written
14 policies and procedures, including the integration of qualitative decision factors.⁶ As
15 part of the working group process identified earlier in my testimony, we would like to
16 see incorporation of non-gas alternatives, environmental, and health concerns
17 incorporated into the documentation of the planning process.

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

19 A. It does.

⁶ *Id.* at 5 (page 17 of the PDF).