

STATE OF NEW HAMPSHIRE
PUBLIC UTILITIES COMMISSION

DOCKET DE 19-139

IN THE MATTER OF: Public Service Company of New Hampshire d/b/a
 Eversource Energy
 2019 Least Cost Integrated Resource Plan.

DIRECT TESTIMONY

OF

Kurt Demmer
Utility Analyst NHPUC

January 22, 2020

1 **Q. Please state your full name.**

2 A. Kurt Demmer.

3

4 **Q. By whom are you employed and what is your business address?**

5 A. I am employed as a Utility Analyst in the Electric Division of the New Hampshire Public
6 Utilities Commission (Commission or PUC). My business address is 21 South Fruit St.,
7 Suite 10, Concord, NH, 03301.

8

9 **Q. Please summarize your education and professional work experience.**

10 A. I graduated from Merrimack College in North Andover, Massachusetts with a Bachelor of
11 Science degree in Electrical Engineering in 1987. In 2002, I received a Master's degree in
12 Electrical Engineering and Power Systems Management from Worcester Polytechnic
13 Institute in Worcester, Massachusetts. Since 1996, I have been a registered professional
14 engineer in the State of New Hampshire.
15 In June 1988, I joined Massachusetts Electric Company as an Operations Field Engineer. In
16 1996, I became a Senior Engineer for Massachusetts Electric Company. In 1999, my area of
17 responsibility expanded to include distribution planning engineering. In 2000, I accepted a
18 position as Area Supervisor for the Salem NH area of National Grid USA and was
19 responsible for all distribution engineering, distribution overhead/underground/substation
20 construction, substation operations, and warehousing in the Salem/Pelham area. In 2002, I
21 was promoted to Superintendent of Electric Operations in the Salem/Beverly/Cape Ann
22 Massachusetts area. As Superintendent, I was responsible for distribution engineering
23 immediate oversight, distribution overhead/underground/substation construction, substation

1 operations, and warehousing. From 2003 to 2004, I was a project manager for a 14-mile, \$19
2 million subtransmission 34.5kV underground distribution project consisting of manhole and
3 duct construction housing (1) 34.5kV distribution supply circuit and (1) 34.5kV distribution
4 circuit connecting East Beverly substation to a downtown Gloucester distribution substation.
5 In 2005, as Superintendent of electric overhead distribution operations, I was assigned to the
6 Merrimack Valley district area in Massachusetts. In 2008, I was promoted to Manager of
7 Electric Operations in New Hampshire for National Grid, responsible for the operations,
8 construction, and maintenance functions for the electric distribution organization. In 2010, I
9 was promoted to Acting Director of Electrical Operations in New Hampshire for National
10 Grid. In 2012, I became Director of Electrical Operations in New Hampshire for Liberty
11 Utilities (Liberty). My continued areas of responsibility were to oversee the construction,
12 maintenance, and operation of the electric distribution system. Since 2017, I have been
13 employed as a Utility Analyst in the Electric Division for the Commission.

14
15 **Q. What is the purpose of your testimony?**

16 A. My testimony in this proceeding will review and evaluate the Eversource Energy
17 (Eversource) limited Least Cost Integrated Resource Plan (LCIRP) submittal as required in
18 Order No. 26,262. The evaluation will determine whether Eversource complied with the
19 Commission order and recommend next steps to the Commission for the Company's June 19,
20 2020 full LCIRP submittal.

1 **Q. Did Eversource file a Least cost Integrated Resource Plan (LCIRP) on August 23, 2019?**

2 A. No. Eversource requested—and was granted—a waiver of the 2019 LCIRP requirements in

3 Order No. 26,262 (June 14, 2019). That order stated, in pertinent part:

4 While we will allow Eversource to delay its LCIRP filing, we will nonetheless
5 require a more limited filing by the Company on or before August 25, 2019. The
6 purpose of that filing will be to ensure that Eversource is adhering to the
7 commitments made in its prior approved LCIRP. Our prior approval of
8 Eversource’s 2015 LCIRP contained a number of specific deliverables and we will
9 require updates of those no later than August 25, as listed below:

- 10 • Confirmation that the utility is currently following the process of system
11 planning utilizing those established procedures, criteria, and policies
12 outlined in its 2015 LCIRP, and achieving the objectives included in its
13 2015 LCIRP;
- 14 • A copy of the Eversource-UES and Eversource-NHEC Joint
15 Recommendations Report from each of the most recent joint planning
16 meetings with UES and with NHEC;
- 17 • 2019 Organization charts for field distribution operations, planning, and
18 engineering;
- 19 • An updated crew complement report (include bucket crews, digger crews,
20 and troubleshooters assigned to each area work center in all five regions)
21 for 2017, 2018, and 2019;
- 22 • The Company’s evaluation of targeted energy efficiency solutions for
23 potential projects for 4 & 12 kV substations due to loading;
- 24 • An update on the HeatSmart customer recertification results;
- 25 • A copy of the most recent list of proposed capital projects which were
26 presented to senior management for consideration of approval; and
- 27 • Details on the three highest-cost distribution capital projects completed
28 within the last two years, and a demonstration of how the LCIRP plan was
29 followed through the planning process.

30 Instead of an LCIRP, Eversource provided a “more limited filing” pursuant to Order No. 26,262

31 (June 14, 2019). In the testimony below, I review the Company’s more limited filing for

32 consistency with the Commission’s direction in Order No. 26,262, and make recommendations

33 for the full LCIRP the Company must file on or before June 19, 2020.

34

35

36

1 **Criteria, Procedures, and Policy Changes**

2

3 **Q. Is the Company following the process of system planning utilizing the established**
4 **procedures, criteria, and policies outlined in its 2015 LCIRP?**

5 A. No. The Company notes three distribution planning procedures that have been revised or
6 adopted since the 2015 LCIRP:¹

7 SYSPLAN-008 - Calculation/Documentation of Bulk Distribution Transformer²
8 Ratings

9 This procedure changed the bulk transformer rating from a “loss of life” determined
10 rating (which is referred to as “TFRAT”) to a rating typically limited by hot spot
11 temperature. SYSPLAN-008 also assumes a 75% preload and a fixed peak load period
12 (12 hours summer, 4 hours winter) rather than a 24-hour load curve. An industry
13 standard PTLoad software is used. SYSPLAN-008 is not applicable to non-bulk
14 substation transformers; however, the Company is utilizing the new criteria in order to
15 provide a consistent methodology when reviewing non-bulk distribution transformer
16 ratings.

17

18 SYSPLAN-010 – Bulk Distribution Substation Assessment Procedure

19 This procedure provides the planning criteria used to assess bulk substations. The 2015
20 LCIRP was based on Eversource Operating Procedure ED3002 – Distribution System
21 Planning and Design Criteria Guidelines (which included the bulk substation planning
22 criteria as well as other planning criteria). ED3002 allowed for the loss of up to 30 MW
23 for up to 24 hours as an acceptable loss of load planning criteria. SYSPLAN 010 does
24 not allow for permanent loss of load for the loss of a bulk transformer. SYSPLAN-010
25 is not applicable to non-bulk distribution substations.

26

27 Peak Load Forecasting Methodology

28 The peak load forecasting methodology was modified from a planning area forecast
29 based Eversource operating procedure ED-3029 to a demand forecasting methodology
30 at the substation level. The process begins by forecasting the peak demand at the
31 Eversource system level using an econometric model that evaluates historical peak
32 demand as a function of peak day weather conditions and the economy. Eversource
33 produces a ‘50/50’ and a ‘90/10’ peak demand forecast. The ‘50/50’ forecast is based
34 off normal 10-year weather and has a 50 percent change of being exceeded. The 90/10
35 forecast is the extreme weather scenario that has only a 10 percent chance of being
36 exceeded. Once the Eversource system level forecast has been finalized, the substation
37 level forecasts are developed. Each substation is forecasted using an econometric

¹ Attachment KFD-1, Docket No DE 19-139, Eversource Response to Staff 1-001.

² Bulk Distribution Transformers are substation transformers that have a transmission primary source i.e. 115kV and a secondary voltage of 46kV or less.

1 model that evaluates substation historical demand as a function of the Eversource
2 system peak demand history and forecast.
3
4

5 **Q. Did the Company estimate incremental costs associated with these changes?**

6 A. Yes. In Response to Staff 2-2 the Company describes the incremental costs as approximately
7 \$42.5 million over 15 years for transformers to meet the SYSPLAN-008 methodology and
8 SYSPLAN-010 criteria.³
9

10 **Q. Are there other incremental costs for this criteria and methodology?**

11 A. The Company states “When the Company performs a significant substation upgrade, it
12 generally takes advantage of construction efficiencies and planned outages to address other
13 issues like the replacement of oil circuit breakers with vacuum circuit breakers, replacement of
14 electromechanical relays with numerical relays, upgrading the ground grid, the addition of a low
15 side bus-tie breaker, as well as other prudent investments.”⁴ The Company’s incremental cost
16 estimate is based only on the cost of transformer replacement (17 transformers at \$2.5M each,
17 replaced over the next 15 years). As the Company suggests, the incremental costs of this
18 methodology and criteria change are likely much higher due to the replacement of other assets
19 associated with the transformer replacement.
20
21
22
23

³ Attachment KFD-2, Docket No DE 19-139, Eversource Response to Staff 2-002.

⁴ Attachment KFD-2.

1 **Q. Has the Company begun making investments based on these criteria changes?**

2 A. In response to Staff 3-9, the Company states “No costs associated with the change in
3 planning criteria have been requested for recovery. No projects proposed to address the new
4 criteria have been constructed.”⁵

5
6 **Q. Is the Company planning any further revisions to its planning procedures?**

7 A. Yes. The Company is retiring its TD-190, which had required evaluation of targeted
8 application of Conservation and Load Management (C&LM) measures to meet peak load
9 planning needs.⁶ Instead, the evaluation of non-wire alternatives will be incorporated into a
10 company-wide Distribution Planning Guide which will explain “how the company performs
11 planning studies and will include or reference all aspects of planning including load forecasting,
12 bulk and non-bulk substation planning, circuit planning, and DER/Electrification penetration
13 scenario planning.”⁷ The Company will also be moving to a new power distribution system and
14 electrical simulation software known as Synergi Electric on a company-wide basis with
15 foundational deployment occurring in 2020. Synergi Electric appears to allow circuit-specific
16 hourly (8760) load forecasting on for up to ten years in the future.⁸

17

18

19

20

⁵ Attachment KFD-3, Docket No. DE 19-139, Eversource Response to Staff 3-009

⁶ Attachment KFD-4. Eversource T&D procedure TD-190 “Targeted Application of C&LM Measures to Meet Peak Load Planning Needs”

⁷ Attachment KFD-5, Docket No DE 19-139, Eversource Response Staff 3-001.

⁸ DNV-GL. Power Distribution System and Electrical Simulation Software. Synergi Electric. Available at:
<https://www.dnvgl.com/services/power-distribution-system-and-electrical-simulation-software-synergi-electric-5005>

1 **Joint Planning Recommendations Report**

2

3 **Q. Did the Company file a copy of the Eversource-Unitil Energy System (UES) and**
4 **Eversource-NH Electric Cooperative (NHEC) Joint Recommendations Report from each of**
5 **the most recent joint planning meetings with UES and with NHEC?**

6 A. The Company did provide a copy of the Eversource-UES Joint Planning Recommendations
7 Report in the Docket DE 19-139 filing,⁹ however, the Company did not provide a copy of the
8 Eversource-NHEC Joint Planning Recommendations Report as required in Order No. 26,262.
9 The Company stated “With respect to NHEC, a joint planning report with NHEC has not been
10 generated. Regular contact and coordination have been maintained and specific studies are
11 performed on an ad hoc basis.”¹⁰

12

13 **Q. What is Staff’s position on the Company’s omission of this Eversource-NHEC report?**

14 A. The requirement of the Eversource-NHEC joint planning report was established in the
15 Settlement in Docket DE 15-248, Order No. 26,050, and Order No. 26,262. In addition to the
16 aforementioned Orders, Eversource operating procedure ED-3022 Section D states, “Joint
17 recommendations shall be documented as a result of the Joint Planning Committee effort.”¹¹ Staff
18 recommends that the Company should formalize the annual joint planning sessions with NHEC
19 by providing the last 12 months of joint planning activity in a form similar to the Eversource-
20 UES submitted document in the June 2020 LCIRP filing.

21

⁹ Docket No. DE 19-139 Attachment A

¹⁰ Docket No. DE 19-139 Company filing, Bates 17-18.

¹¹ Attachment KFD-6, Eversource operating procedure ED-3022 “Joint Planning Process for Wholesale Delivery Service”.

1 **2019 Organization Charts, an Updated Crew Complement Report, and an Update on the**
2 **HeatSmart Customer Recertification Results**

3

4 **Q. Did the Company comply with the requirements of Order No. 26,262 in filing the**
5 **Company's latest Organizational charts, Crew Complement report, and HeatSmart**
6 **Customer Recertification results?**

7 A. Yes, the Company did submit the required documentation in Docket DE 19-139.¹²

8

9 **The Company's Evaluation of Targeted Energy Efficiency Solutions for Potential Projects**
10 **for 4 & 12 kV Substations Due to Loading**

11

12 **Q. Did the Company provide an assessment of non-bulk transformers that are loaded**
13 **above 85% of the TFRAT or long-term emergency rating?**

14 A. Yes. The Company provided its annual assessment of non-bulk transformers that are loaded
15 above 85% of the TFRAT or long-term emergency rating in Attachment Staff 1-004.¹³ Although
16 the Company identified three transformers that might be CLM candidates based on their 2019
17 projections, none of those transformers were projected to exceed 100% of TFRAT by 2028.

18

19 **Q. Did the Company provide any further information related to possible capacity-related**
20 **needs?**

¹² Docket No. DE 19-139, Attachments B, C, D, F, and G.

¹³ Docket No. DE 19-139, Attachment E and Attachment KFD-7, Docket No. DE 19-139, Eversource Response to Staff 1-004.

1 A. Yes. In Response to Staff 2-1, the Company provided projected loading information for all
2 of its 4kV, 12kV, and 34kV transformers between now and 2022. These spreadsheets identify
3 several transformers facing foreseeable peak constraints.

4

5 **Q. At what threshold does a Company determine a transformer may need to be replaced**
6 **due to peak loading?**

7 A. The threshold varies according to whether a transformer is bulk (115kV or higher) or non-
8 bulk (under 115kV). Currently, the Company's threshold for replacing a transformer at a bulk
9 substation is a base case loading above 75% of nameplate; that same criteria at a non-bulk
10 substation is a base case loading above the long term emergency rating.¹⁴ Long term emergency
11 ratings are generally, but not always, higher than nameplate ratings. The company determines a
12 transformer's long term emergency rating based on transformer characteristics (core weight, oil
13 amount, etc.) and the load curve. In some instances where the Company has not analyzed a non-
14 bulk transformer to determine a long term emergency rating, it assigns the nameplate as the long
15 term emergency rating.¹⁵

16

17 **Q. Order No. 26,262 requested the Company's evaluation of targeted energy efficiency**
18 **solutions for potential projects for 4 & 12 kV substations due to loading. Does the**
19 **Company regularly consider targeted energy efficiency as a means of alleviating capacity-**
20 **based grid need?**

¹⁴ Attachment KFD-8, Docket No. DE 19-139, Eversource Supplemental Response Staff 3-003-SP01.

¹⁵ Attachment KFD-9, Docket No. DE 19-139, Eversource Response Staff 3-004.

1 A. No. The Company provided a 2014 feasibility review of two projects considered for targeted
2 C&LM in Staff 2-008 (confidential response). The Company was unable to provide any other
3 analysis for any other year where it considered targeted C&LM in accordance with its TD 190.

4 **Distribution Capital Projects and Least Cost Planning**

5
6 **Q. Did the Company submit a copy of the most recent list of proposed capital projects**
7 **which were presented to senior management for consideration of approval?**

8 A. Yes.

9
10 **Q. Did the Company submit the details on the three highest-cost distribution capital**
11 **projects completed within the last two years, and a demonstration of how the LCIRP plan**
12 **was followed through the planning process?**

13 A. Yes.

14
15 **Q. Please summarize the Company's planning process.**

16 A. When a planning criteria violation or reliability/asset condition need is identified, the
17 Company completes an area study, which identifies several potential solutions to the grid need.
18 Based on a review of the area study, an approach is selected and a solution selection form is
19 brought before the System Design Committee (SDC). Once a project is approved by the SDC,
20 "initial funding is provided to allow engineering to be performed to refine the scope, review
21 constructability and equipment outage constraints."¹⁶ After this further refinement, and subject

¹⁶ Attachment KFD-10, Docket No DE 19-139, Eversource Response Staff 3-005.

1 to possible further review by the SDC, a Project Approval Form is developed and presented to
2 the Project Authorization Committee for funding approval.

3

4 **Q. Do you have any concerns about the Company's planning processes?**

5 A. Yes. The Company provided a number of area planning studies, solution selection forms,
6 and other documents in response to Staff 1-006, which requested all area distribution planning
7 studies completed by the Company in the past five years and a narrative describing any area
8 distribution planning studies the Company foresees completing in the next five years. In
9 response to a discovery request, the Company identified eight instances where it did not choose
10 the least cost alternative identified in the initial planning documents, and provided a paragraph-
11 long narrative justifying each. Within the area planning documents themselves, the choice of a
12 higher cost alternative is often justified by only a few bullet points, but means several million
13 dollars' worth of increased project costs to satisfy the grid need.

14

15 **Staff Recommendations and Expectations for the 2020 LCIRP**

16

17 **Q. Does Staff have any recommendations related to the Company's distribution capital
18 projects and least cost planning?**

19 A. For the next LCIRP due June 2020, Eversource should provide the level of detail and
20 transparency into least cost planning, planned capital projects, circuit level load forecasts, and
21 current system visibility that Unitil provided in its 2016 LCIRP and Attachments. This would
22 include any recently completed area planning studies, ten-year circuit level loading criteria and
23 forecasts, and an evaluation of planned investments and potential least cost alternatives.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Q. Do Staff have any recommendations regarding evaluation of targeted energy efficiency solutions?

A. Yes. In its next LCIRP, the Company should identify all capacity related infrastructure investments that may be candidates for deferral or alleviation via non-wire solutions (NWS), and provide in its initial filing a detailed analysis of the non-wire potential of at least one of those candidates.¹⁷ In its analysis of NWS, the Company should consider utility system benefits other than avoided distribution capacity costs in its analysis of NWS, including but not limited to avoided energy and transmission costs. The Company should consider geo-targeting the Company's existing energy efficiency and active demand management programs to the distribution system need.

Q. How does the Company plan to satisfy its obligation under Order No. 26,207?

A. When asked whether the Company would provide a grid needs assessment within its next LCIRP, the Company stated that it would file such an assessment in its next LCIRP, which would be due to the Commission on or before June 19, 2020 absent intervening Commission action.¹⁸

Q. What is Staff's position on the recent SYSPLAN-008 and SYSPLAN-010 methodology and planning criteria as it relates to this limited filing and the proposed June 2020 full LCIRP filing?

¹⁷ In identifying NWS investment candidates, the Company should consider and provide information in the LCIRP relating to: (1) the type of distribution need that may be deferred or avoided, as well as any associated cost projections; (2) the mix of commercial and residential customers on the circuit; (3) the hourly usage load profile on the equipment at issue during the ten peak days of the most recent year and the annual peak day for each of the most recent three years; and (5) the kW peak usage of the ten largest customers during the past three years.

¹⁸ Attachment KFD-11, Docket No DE 19-139, Eversource Response Staff 1-002

1 A. Staff does not support the planning criteria change for SYSPLAN -010 and the methodology
2 change for rating distribution transformers under SYSPLAN-008. The Company has not
3 provided the necessary documentation or support to justify the change in both the Bulk
4 Substation Assessment for loss of load and the proposed “take action” step at 75% for bulk
5 distribution transformers as well as the rerating of bulk and non-bulk distribution transformers
6 under the SYSPLAN-008 methodology. Staff recommends that the Commission require the
7 Company to suspend any investments arising from the planning criteria and methodology
8 changes that have been made since the 2015 LCIRP submission until approval of the Company’s
9 next full LCIRP, which is due to be filed in June 2020. During that proceeding, the Company
10 should provide Staff the necessary justification and documentation required for the
11 modifications, additions, or deletions, to the planning criteria, policies, procedures, and
12 methodologies that were submitted since the 2015 LCIRP docket DE 15-248.

13

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

15 A. Yes.