

UNITIL ENERGY SYSTEMS, INC.

JOINT REBUTTAL TESTIMONY OF

KEVIN E. SPRAGUE

JOHN B. BONAZOLI

JACOB S. DUSLING

New Hampshire Public Utilities Commission

Docket No. DE 20-002

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1 **I. INTRODUCTION**

2 **Q. Mr. Sprague, would you please state your name and business address?**

3 A. My name is Kevin E. Sprague. My business address is 6 Liberty Lane West,
4 Hampton, New Hampshire 03842.

5 **Q. What is your position and what are your responsibilities?**

6 A. I am Vice President of Engineering for Unitil Service Corp., which is a subsidiary
7 of Unitil Corporation (“Unitil”) that provides managerial, financial, regulatory and
8 engineering services to Unitil’s principal utility subsidiaries, including Unitil
9 Energy Systems, Inc. (hereinafter “UES” or the “Company”). In this capacity, I
10 manage all of the Company’s engineering functions, including electric
11 engineering, gas engineering, computer-aided design and drafting, Geographic
12 Information Systems (GIS), and management of utility-owned land and property.

13 **Q. Please describe your business and educational background.**

14 A. I have been employed by Unitil Service Corp. for approximately 24 years. I was
15 originally hired as an Associate Engineer in the Distribution Engineering group. I
16 have held the positions of Engineer, Distribution Engineer, Manager of
17 Distribution Engineering and Director of Engineering. I accepted the Vice
18 President of Engineering position in January of 2019. I hold a Bachelor of Science
19 in Electric Power Engineering from Rensselaer Polytechnic Institute and a Master
20 of Business Administration from the University of New Hampshire.

1 **Q. Do you have any licenses that qualify you to speak to issues related to**
2 **engineering?**

3 A. Yes. I am a registered Professional Engineer in the State of New Hampshire and
4 the Commonwealth of Massachusetts.

5 **Q. Have you previously testified before the Commission, or other regulatory**
6 **agencies?**

7 A. Yes, I have testified on previous occasions before the Commission, the ME PUC
8 and the MA DPU. I have testified before this Commission on UES rate cases,
9 Northern Utility rate cases, UES REP/VMP filings, previous UES LCIRP filings,
10 and as well as many other dockets.

11 **Q. Mr. Bonazoli, would you please state your name and business address?**

12 A. My name is John J. Bonazoli. My business address is 6 Liberty Lane West,
13 Hampton, New Hampshire 03842.

14 **Q. What is your position and what are your responsibilities?**

15 A. I am Manager, Distribution Engineering for Unitil Service Corp. In this capacity, I
16 manage the distribution engineering functions such as system and distribution
17 planning, generator interconnections, reliability, and customer related engineering
18 functions.

19 **Q. Please describe your business and educational background.**

1 A. I have been employed by Unitil Service Corp. for approximately 21 years. I was
2 originally hired as a Senior Engineer in the Protection and Control Engineering
3 group. I have held the positions of Senior Engineer, Manager of Energy Systems
4 Engineering, and Manager of Distribution Engineering. I hold a Bachelor of
5 Science in Electric Engineering from Northeastern University and a Master of
6 Science in Management from Leslie University.

7 **Q. Do you have any licenses that qualify you to speak to issues related to**
8 **engineering?**

9 A. Yes. I am a registered Professional Engineer in the State of New Hampshire and
10 the Commonwealth of Massachusetts.

11 **Q. Have you previously testified before the Commission, or other regulatory**
12 **agencies?**

13 A. Yes, I have testified on previous occasions before the Commission and the MA
14 DPU. I have testified before this Commission on UES REP/VMP filings as well
15 as previous UES LCIRP filings.

16 **Q. Mr. Dusling, would you please state your name and business address?**

17 A. My name is Jacob S. Dusling. My business address is 6 Liberty Lane West,
18 Hampton, New Hampshire 03842.

19 **Q. What is your position and what are your responsibilities?**

20 A. I am a Senior Engineer for Unitil Service Corp. In this capacity, I have
21 responsibility over the system and distribution planning activities as well as
22 reliability planning for the Company.

1 **Q. Please describe your business and educational background.**

2 A. I have been employed by Unitil Service Corp. for approximately 16 years. I was
3 originally hired as an Associate Engineer in the Distribution Engineering group. I
4 have held the positions of Engineer, Distribution Engineer, Design Engineer, and
5 Senior Engineer. I hold a Bachelor of Science in Electric Engineering from the
6 University of New Hampshire and a Master of Science in Power Systems
7 Engineering from Worcester Polytechnic Institute.

8 **Q. Do you have any licenses that qualify you to speak to issues related to**
9 **engineering?**

10 A. Yes. I am a registered Professional Engineer in the State of New Hampshire and
11 the Commonwealth of Massachusetts.

12 **Q. Have you previously testified before the Commission, or other regulatory**
13 **agencies?**

14 A. No. I have not testified before the Commission but I have been an active
15 participant in the technical session with the Staff and OCA in this docket.

16

17 **Q. What is the purpose of your testimony and how is it organized?**

18 A. The purpose of this testimony is to clarify and correct some of the statements in
19 the Direct Testimony of Mr. Demmer, Utility Analyst NHPUC.

20 **Q. What is the Company's position on the Direct Testimony of Mr. Demmer?**

1 A. The Company appreciates the time and effort that the Staff and the OCA have put
2 into this docket. In general, the Company believes that the Direct Testimony of
3 Mr. Demmer is reasonable, but there are some points the Company would like to
4 clarify to make certain that everyone understands the information the Company
5 has presented.

6 **Q. Please summarize your testimony.**

7 A. The Company seeks to clarify a few points made in the Direct Testimony of Mr.
8 Demmer:

- 9 • Power Factor – The Company uses actual measurements to develop models of
10 the electric system. Calculations are made in locations where actual
11 measurements are not available. The difference between the modeled power
12 factor and actual measurements in the field are not expected to be greatly
13 different.
- 14 • The Company reduced the threshold at which it evaluates load-related
15 distribution system needs from 90% to 80% as a means to identify potential
16 concerns earlier and allow more time for NWA analysis. Projects are still
17 implemented when the load is expected to reach 100%.
- 18 • Commission Staff has reviewed the Company's planning criteria on several
19 occasions and have not proposed any changes to the criteria.

- 1 • The Company deferred a project to reconductor the 37 Line to allow time for a
2 NWA review process. That process did not result in economic alternatives.
3 The 37 Line loading is forecast to be loaded to 117% of its normal rating and
4 the Company needs to move forward with the reconductoring project to ensure
5 the safe and reliable operation of the electric system.
6

7 **II. PLANNING GUIDELINES AND CRITERIA**

8 **Q. Did Mr. Demmer's Direct Testimony identify any areas of concern with the**
9 **Company's planning criteria?**

10 A. Yes. Mr. Demmer questioned the Company's planning models with respect to
11 power factor. Mr. Demmer's testimony suggests that the Company is simply using
12 assumed values for power factor where actual measurement was not available.
13 This is not the case. The Company has metering in place throughout its system
14 that is used to build and verify planning models. However, it is not cost effective
15 or required to have power factor measurement everywhere on the system. The
16 Company uses calculated power factor in locations where direct measurement is
17 not installed.
18

19 **Q. Mr. Demmer suggests capacitors can be installed to improve power factor,**
20 **resulting in a reduction in peak load. Did he identify any projects that could**
21 **be deferred through the use of capacitors?**

1 A. The Company agrees that capacitors can be used to improve power factor and
2 reduce loading. The Company has been using capacitors for decades to improve
3 power factor, regulate voltage and reduce losses. Mr. Demmer did not identify
4 any projects where the Company would defer investment through the use of
5 capacitors.

6 **Q. Do you believe that the installation of measurement devices would identify**
7 **power factor measurements that were significantly different than the**
8 **calculated power factor in your models?**

9 A. No. The Company does not expect that temporary metering would identify that
10 the actual power factor is greatly different than the calculated power factor in the
11 Company's planning models.
12

13 **Q. Please discuss recent changes to the Company's planning criteria discussed**
14 **by Mr. Demmer.**

15 A. Mr. Demmer noted that the Company: 1) updated its substation loading criteria
16 and protective device loading criteria; 2) added criteria by which Non-Wires
17 Alternative projects should be reviewed. The revised criteria states that NWA
18 alternatives should be reviewed for any piece of Major Equipment that is expected
19 to exceed the either of the following:

20 • Normal/Basecase Conditions - 80% of its seasonal normal rating during the
21 first five years of the study period and 90% of its seasonal normal rating in
22 year five of the study period.

- 1 • Planned Contingency Conditions - 90% of its seasonal normal rating during
- 2 the first five years of the study period and 100% of its seasonal normal rating
- 3 in year five of the study period;
- 4 and 3) revised its planning assumptions to differentiate between customer-owned
- 5 and company-owned DERs.

6 **Q. Did Mr. Demmer express any concerns with any of these changes?**

7 A. No. Mr. Demmer made no recommendations regarding the changes.

8 **Q. Please explain the significance of the 90% threshold.**

9 A. The Company has detailed models that have the ability of comparing load to the

10 rating of every piece of equipment on the system. Once the load approaches 90%

11 of the equipment rating under normal/basecase conditions or exceeds its season

12 normal rating under planned contingency conditions, the condition is “flagged” for

13 further analysis. These thresholds have been used as a means of identifying

14 potential system constraints 1 to 2 years ahead of when the load would exceed the

15 rating of the equipment, thereby providing sufficient lead time for the Company to

16 design and implement a system improvement project.

17 **Q. Why did the Company lower the thresholds from 90% to 80% under normal**

18 **conditions and from 100% to 90% under planned contingency scenerios?**

1 A. The Company's 2019 planning process identified one proposed traditional project
2 that triggered the review of non-wires alternative projects. In early 2019, as part of
3 the UES-Capital system planning process, the Company identified the need to
4 reconductor the 37 Line from Penacook to the MacCoy Street Tap in 2020. The
5 estimated cost to reconductor the 37 line was estimated at \$750,000, without
6 construction overheads.

7
8 This project was originally evaluated pursuant to the Company's Project
9 Evaluation Procedure. Under this Procedure, non-wires alternatives (NWA) were
10 not required to be evaluated where the implementation date of the proposed
11 traditional option was less than three years in the future. However, in this
12 particular case the Company determined that it would defer the reconductoring of
13 the line in order to provide sufficient time to obtain information regarding possible
14 NWA options. Thereafter, the Company issued a request for information for
15 NWAs to nineteen vendors, and received responses from four vendors. A cost
16 benefit analysis of the NWAs was performed, and it was determined that none of
17 the proposed NWAs met the Company's criteria, and that Unitil would move
18 forward with the traditional reconductoring option.

1 After undertaking the NWA process for this project, the Company evaluated its
2 experience, and concluded that NWA projects generally require a longer lead time
3 to solicit, evaluate and implement. As a result, the Company lowered the
4 threshold “flags” to 80% of the equipment rating under normal/basecase
5 conditions and to 90%/100% under planned contingency conditions to identify
6 potential constraints sooner and allow more time for NWA project review and
7 development.

8 **Q. Is the Company being too conservative by lowering the threshold from 90%**
9 **to 80%?**

10 A. No. The threshold is simply a planning “flag” to identify areas requiring a more
11 detailed review. A lower threshold identifies constraints sooner to allow more
12 time for NWA projects to be evaluated and implemented. Projects are not
13 implemented until the load is projected to exceed the rating.

14

15 **Q. Has the Commission recently reviewed the Company’s processes and**
16 **procedures with respect to engineering and operations practices?**

17 A. Yes. In DE 10-055, the settling parties agreed that the PUC Staff would engage
18 the services of a consultant to conduct a review of the Company’s engineering and
19 operations practices and procedures.

20 **Q. Can you provide more details on the focus of the review?**

1 A. Yes. The review focused on engineering and operations practices as they pertain
2 to system reliability and operational efficiency improvement in the following
3 areas:

- 4 • Engineering practices, procedures and standards;
- 5 • Maintenance practices, procedures, and standards:
- 6 • The load forecasting process used for system planning;
- 7 • Planning criteria
- 8 • Inspection and corrective maintenance process and practices;
- 9 • Identification of potential alternatives for the deferral of the second Kingston
10 transformer;
- 11 • NESC conformance with regard to inspections and vegetation management
12 (and safety issues if found in the course of the review), transformer ratings;
13 and
- 14 • Tracking and reporting of reliability metrics.

15 **Q. During what timeframe did this review occur?**

16 A. The review was completed in the years following the Order in DE 10-055.

17 **Q. What was the outcome of this review with respect to your planning criteria**
18 **and procedures?**

19 A. The review did not recommend any changes to the Company's planning criteria
20 and procedures.

21

1 **III. 37 LINE LOADING CONSTRAINT**

2 **Q. Can you briefly explain the 37 Line loading constraint?**

3 A. Yes. The 37 Line and circuit 4X1 are designed to provide backup to each other in
4 the event that one of the lines experiences an outage. Planning analysis has shown
5 that the 37 Line becomes overloaded upon the loss of circuit 4X1.

6 **Q. By how much is the 37 Line overloaded?**

7 A. The 2020-2029 planning study presented as part of this LCIRP identified that the
8 line was expected to experience loading of 115% of its normal rating in 2020. We
9 have begun developing the 2021-2030 planning study that now shows the line will
10 experience loading of 117% of the rating in 2021. The 37 Line violates Unitil's
11 planning criteria of a line being loaded above its normal rating for more than
12 twelve consecutive hours during contingency conditions.

13 **Q. Mr. Demmer identified the proposed Exit 17 commercial development as a**
14 **major driver of the 37 Line project. Do you agree?**

15 A. No. The 37 Line is forecast to be overloaded *without* the additional load of the
16 proposed Exit 17 development. The additional load from the development will
17 make the overload worse. The Company would be proposing a project to address
18 the overload concerns regardless of the proposed development.

19

1 **Q. Mr. Demmer expressed concern that the load of a single large customer who**
2 **currently participates in demand response was reconstituted into the**
3 **projected load for purposes of forecasting future load constraints. Was this**
4 **the case?**

5 A. The Company has clarified in technical sessions that the 700kW of demand
6 response has not been reconstituted into the load forecast.

7 **Q. What is Mr. Demmer's recommendation with respect to the 37 Line?**

8 A. Mr. Demmer recommends the Company reach out to the largest customer on the
9 37 Line and inquire about the customer's interest in enhanced load curtailment
10 opportunities. If the customer has no interest in such an arrangement, Staff
11 recommends that the Company work with the parties to identify another potential
12 project that would serve as an attractive non-wire solution considering the
13 Company's new 80% threshold.

14 **Q. Does the Company agree with the recommendation?**

15 A. The Company has explained to Staff that the largest customer on the system
16 already participates in demand response. The amount of load required to alleviate
17 the overload exceeds the total loading of the customer.

18

1 The NWA equipment rating threshold does not have any applicability to this
2 situation as the line is already forecast to be at 117% of its normal rating. As
3 explained above, the Company moved the threshold from 100% of normal under
4 contingency conditions to 90% for constraints identified in the first five years of
5 the study period to identify constraints earlier and allow more time for NWA
6 analysis. The Company has already deferred this project to evaluate NWA
7 projects. Unfortunately, those projects were up to ten times the cost of the
8 traditional reconductoring solution. The Company agrees that demand response
9 programs have the ability to reduce peak load and ultimately defer investment. In
10 this instance, however, the Company disagrees with Mr. Demmer's
11 recommendation to develop a demand response program since the line is already
12 forecast to be loaded to 117% of its normal rating.

13
14 **IV. CONCLUSION**

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

16 **A.** Yes, it does.