EXHIBIT #40 DE 16-576

UNITIL ENERGY SYSTEMS, INC.

REBUTTAL TESTIMONY OF

THOMAS P. MEISSNER JR.

New Hampshire Public Utilities Commission

Docket No. DE 16-576

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I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Thomas P. Meissner, Jr. My business address is 6 Liberty Lane West, Hampton, New Hampshire 03842.

Q. Have you already submitted testimony in this proceeding?

A. Yes, I have. My direct testimony was submitted with the Company's initial filing in this case on December 16, 2011.

Q. What is the purpose of this Rebuttal Testimony?

A. I will address the benefit-cost analysis of distributed solar generation ("Solar DG") provided in the Direct Testimony of Witness Beach on behalf of The Alliance for Solar Choice (TASC), including his chief conclusion that NEM has achieved a reasonable, equitable balance of benefits and costs for solar customers, ratepayers, and the utility system as a whole. I will offer clarification in response to certain testimony and discovery responses suggesting the Company is claiming the RECs from unregistered Class II eligible facilities to offset its Class II REC compliance obligation. I will respond to various witnesses' opinions that distributed generation extends equipment life by reducing stress or wear and tear on distribution equipment. Finally, I will address assertions, either in testimony or discovery, that solar DG improves the reliability and/or resiliency of the electric system.

II. BENEFITS AND COSTS OF DISTRIBUTED SOLAR GENERATION

Q. Have you reviewed Witness Beach's Testimony where he presents an analysis of the benefits and costs of distributed solar generation in New Hampshire?

A. Yes.

Q. Please summarize the analysis provided in Appendix D of Witness Beach's Testimony.

A. Appendix D purports to present a benefit-cost analysis of the impacts of distributed solar generation on ratepayers in the service territories of the three investor-owned utilities in New Hampshire by examining the benefits and costs of solar DG using the cost-effectiveness tests for demand-side resources commonly used in the industry. In calculating the benefits and costs of solar DG Witness Beach employed a long-term, life-cycle analysis that covers the useful life of a solar DG system (25 years). The calculated benefits and costs of solar DG were then used to calculate the Standard Practice Manual ("SPM") test results for Solar DG including the Total Resource Cost ("TRC"), and the Societal, Participant and Ratepayer Impact Measure ("RIM") tests. These tests are used as the basis to determine if "NEM has achieved a reasonable, equitable balance of benefits and costs for all concerned – solar customers, other ratepayers, and the utility system as a whole."[1]

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[1] Reference Direct Testimony of R. Thomas Beach, page 26, lines 22-25.

Q. Did Witness Beach conclude that NEM has achieved a reasonable, equitable balance of benefits and costs?

A. Yes. Witness Beach concluded that Solar DG is a cost-effective resource in New Hampshire because the benefits equal or exceed the costs in the Total Resource Cost and Societal Tests.[2] He also concluded that there is a balance between the costs and benefits of residential DG for both participants and non-participants because the results are close to or above a benefit-cost ratio of 1.0 for the Participant and RIM tests.[3] Witness Beach also concludes that the benefits of DG significantly exceed the costs in the commercial market.[4]

Q. Does the Company agree with the conclusions of Witness Beach?

A. No. While the Company does not disagree with the approach of examining the benefits and costs of solar DG using the cost-effectiveness tests for demand-side resources, these tests are generally performed as a "pass-fail" screening tool to compare various utility and non-utility alternatives as a means to ensure future resource adequacy. In New Hampshire, the Total Resource Cost (TRC) test is used to assess energy efficiency efforts, applying a concise set of benefits. However, Mr. Beach has not performed his analysis in a manner consistent with Commission-approved methodology. Instead, Mr. Beach calculates the benefits of solar DG using his own methodologies and claims benefits that are not accepted in the cost-effectiveness tests for other demand-side resources. Finally, while these tests may

[2] Id, page 28.
[3] Id
[4] Id

be useful to "screen" and compare resource alternatives, they are not appropriate for calculating avoided costs or payments for excess energy, nor are they useful for rate design purposes.

Q. Does the Company have concerns with the benefit-cost analysis performed by Witness Beach, as provided in Appendix D of Exhibit RTB-1?

A. Yes. As a general matter, the screening model used for energy efficiency and other demand-side resources in New Hampshire is not well adapted to solar PV. However, rather than attempting to follow Commission approved methodologies for New Hampshire, Mr. Beach instead sifted through the various value-of-solar methodologies and benefits developed in other studies and jurisdictions (especially Maine), selected those that were most advantageous, and incorporated them as either direct or societal avoided costs when calculating his cost-effectiveness tests. In some cases it appears that Mr. Beach has cherry-picked his inputs to achieve test results above 1.0, whereas different inputs and assumptions would produce markedly different results. In other cases Mr. Beach is incorporating benefits that are not accepted for any other EE or demand-side resources in New Hampshire. Most of his calculations of costs and benefits are not consistent with accepted methodology in New Hampshire.

Q. Can you provide an example of Witness Beach cherry picking his inputs or assumptions?

A. Yes. In calculating the benefits and costs of solar PV, Mr. Beach tends to ignore anything that reduces benefits while including anything that reduces costs. Given that the cost-effectiveness tests generally involve dividing the benefits of the resource by the costs of the resource, assumptions that increase the numerator and/or decrease the denominator obviously improve the results of the tests. With regard to participant benefits, Mr. Beach has chosen to ignore sources of compensation such as subsidies and policy incentives (e.g., RECs) arguing that they are "assumed to be the result of an explicit state policy to develop a market for solar DG systems in New Hampshire." He further states that the intent of his analysis is to "show the elements of a benefit/cost calculation focused on NEM alone, beyond the explicit subsidy that is represented by the existing solar incentives."[5] In response to a request from Eversource, Mr. Beach states "[t]he intent of the benefit/cost calculation is to determine whether or not there is a further cost shift to non-participating customers from NEM alone, that is, beyond the explicit subsidy that is represented by the existing solar incentives."[6]

Yet, in direct contradiction with these statements, on the cost side it appears that Mr. Beach is reducing the costs of solar PV by the 30% Investment Tax Credit and $0.5/watt state incentive (up to $2,500). This in turn reduces the levelized costs of solar energy ("Solar LCOE"), thereby significantly improving the TRC, Societal and Participant tests results. Clearly, it is contradictory and inappropriate to exclude

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[5] See TASC response to Unitil 1-13.
[6] See TASC response to Eversource 1-35.

all subsidies that reduce the benefits (numerator) while including all benefits that reduce the costs (denominator). Removing the ITC and state incentives from the Solar LCOE will likely reduce the TRC below 1.0 for both residential and commercial systems.

Q. Has Witness Beach included benefits that are not incorporated in the benefit-cost analysis for other EE or demand-side resources in New Hampshire?

A. Yes. Generally, only those benefits that are directly related to avoided energy costs are included in the direct benefits when evaluating demand-side resources. Mr. Beach has included both DRIPE and "Avoided Fuel Price Uncertainty" in his direct benefits. "Avoided Fuel Price Uncertainty," which was apparently adopted from the Maine VOS study, is not a direct benefit and is not included in the cost-effectiveness tests in New Hampshire. This reduces the direct benefits by $31.67 per MWH. DRIPE has not been included in the TRC for energy efficiency and demand-side measure to date, though it has been proposed for 2017 (pending Commission approval). Even if approved, Mr. Beach's calculation of DRIPE is inconsistent with how it should be calculated and produces a result far higher than what the Company would calculate for DRIPE. In the Company's calculation, DRIPE is so small that it can largely be ignored, reducing the direct benefits by another $29.75 per MWH. Taken together, these two changes reduce Mr. Beach's direct benefits by about $60 per MWH.

Q. Are there other concerns with Mr. Beach's calculations?

A. Yes, the avoided capacity calculations are inconsistent with how avoided capacity would be calculated for other EE and demand resources in New Hampshire, and overstates avoided capacity costs. Mr. Beach has developed his own methodologies for calculating avoided capacity. Without even considering the "intermittent" nature of the generation, and whether *any* capacity value should be awarded, it is clear that Mr. Beach's calculations produce unrealistic estimates of avoided capacity, especially for transmission and distribution.

Q. Should societal benefits be included in the cost-effectiveness tests for solar DG?

A. No. The tests that are used to evaluate the cost effectiveness of EE and demand-side resources are done in the context of an Integrated Resource Planning (IRP) evaluation. The screening tools used for demand-side resources are used to compare non-utility solutions to utility solutions to address future resource adequacy. As a result, the Total Resource Cost (TRC) is the test used to evaluate these resources in New Hampshire. Furthermore, as already discussed, a variety of subsidies and policy incentives already exist to compensate solar DG for its beneficial societal attributes and to encourage the development of a market for solar systems in New Hampshire. These include RECs, the ITC, and state and local incentives. Given that these other policy mechanisms are intended to increase the benefits or reduce the costs of solar DG, only those benefits that are directly related to avoided energy costs should be included in the direct benefits when evaluating demand-side resources.

Q. Have other witnesses referenced, supported or relied upon Witness Beach's benefit-cost analysis in their testimonies?

A. Yes. Nathan Phelps on behalf of the New Hampshire Sustainable Energy Association, and Patrick Bean on behalf of the Energy Freedom Coalition of America, both testify that they reviewed the cost-benefit analysis provided by Witness Beach of Crossborder Energy and agree with his methodology. They then rely upon this analysis to draw their own conclusions from the Mr. Beach's results. Witness Phelps testifies that he agrees with the methodology used by Crossborder Energy and argues that the analysis for the residential and commercial sectors is consistent with well-established frameworks for energy efficiency. He then relies upon Mr. Beach's calculations to conclude that New Hampshire as a whole receives $1.60 worth of benefits for every dollar invested in residential solar DG systems.[7] He further argues based on the same analysis that if a cost shift exists in New Hampshire as a result of DG, that cost shift is from non-participants to participants.[8] Witness Bean testifies that he reviewed Mr. Beach's analysis and found it reasonable, and therefore did not see the need to repeat the analysis. He then relied upon Witness Beach's analysis to draw a conclusion that net metering does not result in unjust and unreasonable cost-shifting and provides net benefits to all of New Hampshire's electricity consumers.[9] Neither Witness Bean nor Witness Phelps provided any independent analysis or data to support their conclusions, beyond the

[7] Direct Testimony of Nathan Phelps, page 23.
[8] Id, page 26.
[9] Direct Testimony of Patrick Bean, page 3.

analysis provided by Witness Beach. As a result, if Witness Beach's analysis is found to be deficient, then the conclusions drawn by Mr. Bean and Mr. Phelps from that analysis are unsupported.

III. RENEWABLE ENERGY CERTIFICATES (RECS)

Q. Does the Company have any concerns with testimony or discovery responses related to Renewable Energy Certificates (RECs)?

A. Yes. A number of witnesses, whether in testimony or discovery, have suggested that the Distribution Companies are claiming the RECs from unregistered Class II eligible facilities to offset their Class II REC compliance obligation, and further, that the RECs associated with these facilities are transferred to the utility without compensation for the benefit of non-participating ratepayers. This is not correct, at least in the case of Unitil.

For example, Witness Bride, testifying on behalf of the New Hampshire Sustainable Energy Association, notes "[p]er NHPUC 2503.04, the Distribution Utilities are allowed to claim credit against their Class II REC compliance obligation by estimating the output of non-registered Class II eligible PV facilities using a formula."[10] He then testifies that this practice causes inequities among customer groups, and puts commercial and industrial customers served by Competitive Energy Suppliers at a disadvantage in that they end up paying more for Class II

[10] Bride testimony at p. 29.

REC compliance than residential customers on Default Energy Service.[11] Witness Bride also argues that customers whose Class II RECs are being claimed by the Distribution Utilities are being deprived of the revenue associated with the environmental attributes of their PV system.[12]

In discovery, Witness Beach suggests that Table 1 of his testimony includes RECs under the heading "Environmental / RPS," because RECs are used for RPS compliance. He then states that "Table 1 implicitly assumes that the RECs associated with DG are transferred to the utility without compensation for the benefit of non-participating ratepayers."[13]

The OCA expresses concern that both the utility and customer may think and claim they have "gone 100 percent solar."[14]

Q. Does Unitil claim the RECs from unregistered Class II eligible facilities to offset its Class II REC compliance obligation?

A. No. As noted in discovery, UES does not maintain data on customer owned net metering production.[15] The Company also does not have information on customers with behind-the-meter renewable distributed generation who sell RECs to third parties.[16] As a result, the Company does not account (for RPS purposes) for the

[11] Id, page 30.
[12] Id, page 31
[13] See TASC response to Unitil 1-13
[14] Huber Testimony p. 30.
[15] See Unitil responses to CLF-UES 1-24 and NHSEA-UES 1-1.
[16] See Unitil response to CLF-UES 1-25.

renewable energy produced by behind-the-meter distributed generation.[17] In addition, UES has not directly purchased NH Class II (solar) RECs from customers with rooftop solar facilities in 2013, 2014 or and 2015.[18]

Q. Should the compensation associated with RECs be considered in the context of Net Energy Metering?

A. Yes. As stated clearly by the New Hampshire Sustainable Energy Association, "RECs are part of the compensation regime and therefore warrant consideration in this proceeding."[19] The same discovery response goes on to state "[t]he plain language of HB 1116 suggests a legislative intent look broadly at the issue which would warrant consideration of the role of RECs in any net metering compensation program. All customers pay RPS charges and it is reasonable that alternative schemes for REC monetization be considered." The Company agrees.

IV. LIFE EXTENSION OF DISTRIBUTION EQUIPMENT

Q. Does the Company agree that distributed generation extends the life of equipment on the distribution system?

A. As a general matter – no. A number of witnesses in the proceeding have alluded in various ways to "stress" and "wear and tear" in the context of equipment life, and then suggested that distributed generation extends equipment life by reducing this

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[17] See Unitil response to CLF-UES 1-24.
[18] See Unitil response to TASC-UES 1-6.
[19] See NHSEA response to Eversource 22.

stress or wear and tear. For example, Witness Beach testifies that "by reducing load on individual circuits, rooftop solar systems reduce thermal stress on distribution equipment, thereby extending its useful life and deferring the need to replace it. (Beach Testimony, page 38.) Witness Chernick asserts that "[e]xisting transmission and distribution equipment wears out faster if it is more heavily loaded." (Chernick Testimony, page 15.) Witness Bride argues that solar PV shortens the duration of peak load events, thereby lessening wear associated with thermal stress since the duration of the peak event is shorter. (Bride Testimony, pages 17-18.) Witness Below testifies that "[p]ower lines sag the most and equipment like transformers tend to experience their greatest wear and tear and failure rates when they are most heavily loaded, especially when ambient temperatures are high, such as on hot summer days." (Below Testimony, pages 18-19.) Even our colleagues at Liberty Utilities have suggested that solar DG "lessens the burden on the distribution system equipment, which in theory should extend the life of that equipment." (Tebbetts Testimony, page 6.) While there is a kernel of truth in some of what has been said, virtually no facts, data or analyses have been submitted in this proceeding to support any conclusion that DG extends the life of distribution equipment. Instead, the conclusions of all of the witnesses on this subject are based on broad generalizations, flawed hypotheses and unsupported assumptions.

Q. Do distribution components experience stress or wear and tear as suggested by the witnesses you have identified?

A. Generally no. As I have already testified, most equipment on the distribution system is entirely static (no moving parts); therefore, the concept of "wear and tear" is a misnomer. For example, the expected life of many distribution components has no relationship to voltage, current, demand or electric system characteristics. Poles, crossarms, guy wires, and other plant are entirely structural in nature and do not even come directly in contact with the electrified part of system. Electrical components such as insulators, wire, and cutouts are rated for the voltage and current they carry and their expected life is not determined by loading as long as they operate within design parameters.

Q. Have any witnesses offered evidence to support their claim that DG lessens stress or wear, thereby extending the life of equipment?

A. With one exception, no. Various witnesses have made such statements but offer nothing more than an opinion. The one exception is Witness Chernick. Mr. Chernick offers testimony in which he essentially argues that equipment wears out faster if it is more heavily loaded and therefore, conversely, must not wear out as quickly if it were not so heavily loaded.

Q. What are the Company's concerns with Witness Chernick's testimony?

A. Mr. Chernick seems to confuse or comingle two distinct concepts throughout his testimony – the rating of equipment and the life of that equipment. For example, Mr. Chernick testifies that the capacities of transformers and underground power lines are limited by the build-up of heat created by electric energy losses in the equipment. This is true. He also states that the capacity of overhead lines is often limited by the sagging caused by thermal expansion of the conductors which occurs more readily with summer peak conditions of high air temperatures, light winds and strong sunlight. This too is true. By “capacities,” Mr. Chernick is referring to the *rating* of the equipment which is indeed limited by thermal constraints. However, while the rating of a piece of equipment may be determined by thermal constraints, the life of that equipment is a completely different concept.

Mr. Chernick goes awry when he makes the leap that the Company routinely exceeds the rated capacity of its equipment – a conclusion unsubstantiated by any facts. With regard to transformers, Mr. Chernick testifies that “every time a transformer approaches or exceeds its rated capacity (a common occurrence, since transformers can typically operate above their rated capacity for short periods of time), its internal insulation deteriorates and it loses a portion of its useful life.”[20] He also asserts that overheating and sagging reduces the operating life of conductors. He provides a simple analysis showing the extent to which a transformer can be “overloaded” if operated at less than its rating during the afternoon and includes a figure showing permissible overloads for transformers for varying periods of time.[21] While all of this makes for interesting reading, Mr.Chernick never actually provides any facts or data supporting his conclusion that utility equipment is operated in the manner he suggests. Ultimately, Mr. Chernick focuses primarily on transformer overload ratings and blurs his conclusions to suggest that that the same concepts

[20] Chernick Testimony page 16.
[21] Reference Figure 3 of Chernick Testimony.

apply to other distribution components more generally, while simultaneously insinuating that utilities operate their equipment at the extreme overload limits represented in Figure 3. This is not correct.

Q. Has Mr. Chernick provided workpapers or supporting documentation to support his claims that DG reduces wear and tear on equipment?

A. No. In discovery, Mr. Chernick provides ten academic papers, chapters from text books, or other reference literature that purportedly support his statement that customer-sited solar generation reduces "wear and tear" on the transmission and distribution system. Mr. Chernick does not respond directly to most of the questions posed in discovery, and instead refers back to these ten references. In reality, most of the papers provided in discovery have nothing to do with the hypothesized wear and tear that is the subject of Mr. Chernick's testimony. Six of the ten papers deal with thermal modeling of power transformers for purposes of developing transformer ratings and permissible loading.[22] In some cases, these are the very methods the Company relies upon to rate its transformers. A 7th paper deals with ratings (ampacity) of underground cables.[23]

These reference materials do not in any way support Mr. Chernick's hypothesis that DG extends the life of the equipment. While there is a relationship between the thermal properties of transformers and cables, the ratings of this equipment and the

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[22] Reference Attachments Liberty-CLF 1-2(a), 1-2(d), 1-2(f), 1-2(g), 1-2(i), 1-2(j)
[23] Reference Attachment Liberty-CLF 1-2(c)

life of the equipment, reduced life occurs only when equipment is operated at levels approaching or above thermal limits. Contrary to Mr. Chernick's testimony – equipment does not necessarily "wear out" faster if it is more heavily loaded or last longer if it is less heavily loaded. Equipment that is operated within appropriate thermal limits is expected to operate reliably for its full anticipated life. According to Mr. Chernick himself, transformers "are often assumed to have useful lives over 30 years, limited by corrosion and (for line transformers) accidents."[24]

Q. Did any of the studies provided by Mr. Chernick support his assertion that transmission and distribution equipment wears out faster if it is more heavily loaded?

A. Mr. Chernick provided three papers related to the aging of equipment. One paper, provided as Attachment Liberty-CLF 1-2(b), provides a case study based on a sample of a transmission line in Kluang, Johore, Malaysia. The paper essentially concludes that increases in conductor temperature at elevated operating levels causes annealing, resulting in the loss of tensile strength in aluminum strands of the conductor along the line. The Company does not disagree with this statement. However, the Company's conductor ratings are developed to ensure annealing and loss of tensile strength does not occur. Therefore, this paper too offers no support from which to conclude solar PV lessens thermal stress and extends the life of overhead wire or underground cables.

[24] Reference response to Eversource 1-10.

Q. Are you aware of any instances where the Company has replaced overhead wire or underground cable due to heat buildup, overheating or sagging resulting in end of life?

A. No. Not one.

Q. Did any of the papers address the effect of load on aging of distribution transformers?

A. Yes. Two papers did address aging of distribution transformers and concluded that distributed generation can extend the life of distribution transformers. The first paper, titled "Effects of Loads and Other Key Factors on Oil-Filled Transformer Ageing: Sustainability Benefits and Challenges,"[25] includes a brief section on distributed generation. The paper does not provide any relevant facts or data of its own, and instead references other studies in the literature that attempted to quantify the economic benefits and the life extension of distribution transformers resulting from customer-owned DG units. None of these other papers were provided in discovery; several appear to be studies conducted in other countries including Iran and Australia. Whether any of these studies are in any way pertinent to circumstances in New Hampshire is unclear.

A 2nd paper, titled "Impact of High PV Penetration on Distribution Transformer Insulation Life," was a case study of a single distribution transformer in Perth,

[25] Reference Attachment Liberty-CLF 1-2(e)

Australia.[26] The circumstances of this case study were very different from the customer and system characteristics that we see in our service territory. For example, the case study looked at a 200 kVA, 22 kV/400 V distribution transformer feeding 77 residential consumers. The size, voltage, and configuration of the transformer and feeder are not typical of transformers and secondary networks used by Unitil. Of the 77 residential customers fed from this transformer, 34 consumers had roof top PV systems with an average capacity of 1.88 kW. This is considerably smaller than the average capacity of the residential rooftop systems we are seeing in our territory. A more typical installation in our territory would consist of a single distribution transformer feeding a single residential customer, with the installed capacity of the rooftop solar approaching or exceeding the customer's peak load. It's not clear whether thermal loading in such a circumstance is increased or decreased. I think it is fair to argue that the results of a case study of a single transformer in Perth, Australia are not particularly relevant to our circumstances here in New Hampshire.

Q. Have any witnesses provided a quantification of the benefits of reduced stress or aging of distribution equipment?

A. No. In fact, when asked in discovery whether the record in this proceeding is complete enough to quantify the benefit of cooler transformers, Mr. Chernick responded – no.[27]

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[26] Reference Attachment Liberty-CLF 1-2(h)
[27] Reference response to Request No. Staff 1-7.

V. RELIABILITY

Q. Have any witnesses in this proceeding offered testimony suggesting solar DG improves the reliability and/or resiliency of the electric system?

A. Yes. Witness Beach on behalf of TASC argues that renewable distributed generation resources offer enhanced reliability and resiliency. This is apparently premised on his opinion that thousands of small, widely distributed systems are highly unlikely to fail at the same time, and further, that the impact of any individual outage at a DG unit will be far less consequential and less expensive for ratepayers than an outage at a major central station power plant. He further argues that renewable DG paired with on-site storage can provide customers with an assured back-up supply of electricity for critical applications should the grid suffer an outage of any kind.

Q. Has the Company experienced any capacity related outages due to insufficient generation? What is the impact on the Company's reliability?

A. No. The impact on the Company's reliability is therefore zero. Furthermore, his opinion that thousands of small, widely distributed systems are highly unlikely to fail at the same time fails to recognize that these resources are by definition "intermittent," and may stop producing electricity at any time due to cloud cover, snow or other weather-related effects. Environmental conditions can indeed cause thousands of small, widely distributed systems to stop producing electricity.

Q. Has Mr. Beach provided any facts, studies or evidence supporting his arguments?

A. No. In discovery TASC admits that it has not quantified the impact of DG on reliability indices. Instead, Mr. Beach merely surmises that "from a qualitative basis" DG improves reliability by adding capacity to the electric system, thereby reducing the likelihood of a loss of load due to insufficient generation.[28]

Q. Is there a reliability benefit to the customers by "adding capacity" to the electric system?

A. No. Adding capacity to a properly designed system that already has adequate capacity does not provide any incremental improvement in reliability.

Q. Can renewable DG paired with on-site storage provide customers with an assured back-up supply of electricity should the grid suffer an outage?

A. Perhaps. However, it is the on-site energy storage that is providing the assured back-up supply of electricity, not the solar DG. Mr. Beach seems to recognize this in discovery when he responds "No. However, the on-site solar enables the future installation of storage to allow backup service for critical needs during a blackout, thus enhancing reliability and resiliency."[29] It is ironic that Mr. Beach acknowledges that on-site energy storage can provide backup power to critical loads during an outage, thus enhancing reliability and resiliency for the participant, given that current NEM policy discourages the adoption of energy storage by providing a "no-cost" substitute. Not only does on-site solar does not "enable" the installation of

[28] Reference responses to Request No. Unitil 1-46 and 1-47.
[29] Reference responses to Request No. Eversource 1-67 and 1-68.

storage (energy storage can be installed with or without on-site solar), net metering makes it far less likely that solar DG customers will actually invest in in it.

Q. Is there any reliability benefit associated with Solar DG?

A. As I have already testified, there is no basis to assert any distribution reliability benefits from grid-connected solar or DER. Solar does not make the grid more reliable or resilient, nor does it improve power quality in any way. Solar generation does not benefit SAIDI, SAIFI, CAIDI or any other accepted measure of reliability. When the grid goes down, all interconnected generation also goes down.[30]

Q. Does this conclude your testimony?

A. Yes, it does.

[30] Direct Testimony of Thomas P. Meissner Jr., page 31.