STATE OF CONNECTICUT

SITING COUNCIL

DOCKET NO. 424 - The Connecticut Light & Power Company application for a Certificate of Environmental Compatibility and Public Need for the Connecticut portion of the Interstate Reliability Project that traverses the municipalities of Lebanon, Columbia, Coventry, Mansfield, Chaplin, Hampton, Brooklyn, Pomfret, Killingly, Putnam, Thompson, and Windham, which consists of (a) new overhead 345-kV electric transmission lines and associated facilities extending between CL&P's Card Street Substation in the Town of Lebanon, Lake Road Switching Station in the Town of Killingly, and the Connecticut/Rhode Island border in the Town of Thompson; and (b) related additions at CL&P's existing Card Street Substation, Lake Road Switching Station, and Killingly Substation.	**DOCKET 424** **JULY 17, 2012**

SUPPLEMENTAL TESTIMONY OF TIMOTHY F. LASKOWSKI AND ROGER C. ZAKLUKIEWICZ

CONCERNING THE NEED FOR THE INTERSTATE RELIABILITY PROJECT

Q. Have you reviewed the draft ISO-NE report entitled "Follow-Up Analysis to the 2011 New England East-West Solution (NEEWS) Interstate Reliability Project Component Updated Needs Assessment" (the *2012 Follow-Up Needs Analysis*), which was filed with the Council on July 10, 2012, pursuant to a protective order that the Council has entered in this Docket?

A. Yes, we have.

Q. Did the NUSCO or National Grid planners participate in the preparation of this report or in the design or execution of the analyses described in the report?

A. No, we did not. All of this work was performed exclusively by ISO-NE.

Q. Why did ISO-NE undertake this "follow-up" study after publishing the *2011 Updated Solution Study Report* in February of this year, in which ISO reported that The Interstate Reliability Project was the optimum solution for needs that had been under study since 2004?

A. ISO-NE is required by Attachment K to its FERC-approved Open Access Transmission Tariff (OATT) to update its needs assessments as new resources materialize through the Forward Capacity Auction, as load forecasts change, as new resources are built or committed, or if other important changes in system conditions occur. If ISO-NE determines, as part of its periodic re-evaluation responsibility, that a transmission project being implemented by a transmission owner (TO) is no longer needed, or if a market solution that meets specific

viability criteria is subsequently proposed, it will direct the TO to discontinue its development effort, and the TO will be entitled to recover its costs incurred to that point through regional rates. ISO-NE's previous analyses were based on FCA #4 results and after completing those analyses in 2011, ISO-NE had adopted and began to implement a new methodology for predicting future EE in load forecasts. ISO-NE determined that, pursuant to Attachment K, these changes in assumptions and methods, together with certain changes to the system that were planned or had occurred, required a fresh look at the Interstate Reliability Project and other regional projects that had not yet entered the construction stage.

Q. What is the overall conclusion of the draft *2012 Follow-Up Needs Analysis*?

A. ISO-NE concluded that the results of its most recent power-flow analyses show a need to:

- Reinforce the 345-kV system into West Farnum Substation for Rhode Island reliability;
- Increase the transmission transfer capability from eastern New England and Greater Rhode Island to western New England if additional resources are available in the exporting area;
- Increase the transmission transfer capability from western New England and Greater Rhode Island to eastern New England, particularly in light of the retirement of the Salem Harbor units; and
- Increase the transmission transfer capability into the State of Connecticut

ISO-NE noted that these issues were seen in its previous needs re-analysis, to which we refer in our previous testimony as the "*2011 Updated Needs Report;*" and that the studies undertaken for the *2012 Follow-Up Needs Analysis* continue to show similar concerns within the 10-year planning horizon.

Q. What is the status of that the draft *2012 Follow-Up Needs Analysis*?

A. The draft report has been posted on the ISO-NE Planning Advisory Committee (PAC) website for comment by interested stakeholders. It will also be presented to the PAC at a meeting scheduled for tomorrow, July 18, 2012. Comments will be received up to August 8, 2012, at which time ISO-NE will respond to the comments, finalize the report, and issue a public version that has been redacted to eliminate Critical Energy Infrastructure Information (CEII).

Q. Do you expect any significant changes to be made to the draft report in light of these comments?

A. That is always possible. However, changes made to ISO-NE reports after they have been posted in draft tend to concern matters of detail and not significant changes.

Q. Does the draft 2012 Follow-*Up Needs Analysis* conclude that the Interstate Reliability Project will meet the continuing needs documented in that report?

A. No. ISO-NE states in the report that it is working on a second follow-up study to confirm that the transmission solutions outlined in the *2011 Updated Solution Study Report* continue to meet the identified needs.

Q. Do you have any information about the results of that follow-up solutions analysis?

A. Yes. ISO-NE will present the results of both the *2012 Follow-Up Needs Analysis* and the work it has done for a follow-up of the *2011 Updated Solution Study Report* at the July 18, 2012 PAC meeting. On July 12, 2012 ISO-NE posted on its website the Power Point presentation it plans to use in presenting these results. Fortunately, that document does not contain CEII. Accordingly, a copy of the presentation is attached to this testimony as Exhibit A. In this presentation, ISO-NE states (p.2): "The follow-up solutions study confirms that the preferred solution from the February 2012 solution study still meets the identified reliability needs."

Q. When do you anticipate that the follow-up report to the *2011 Updated Solution Study Report* will be issued?

A. The slides for the July 18 presentation state that a draft follow-up solution study addendum will be posted to the PAC website "in the near future" for a 30-day comment period. It is quite possible that this posting will occur before the hearings resume on July 31. Should that be the case, we will file it with the Council when we receive it.

Q. What are the changes in the assumptions used in the draft *2012 Follow-Up Needs Analysis*, as compared to those used in the *2011 Updated Needs Report* (which was actually released in February, 2012)?

A. Changes in assumptions were made to reflect developments in system resources, transmission topology, forecasted loads, and changes in ISO-NE forecasting methodology. The principal changes were as follows:

- The Capacity, Energy, Loads, and Transmission (CELT) Report for 2012 was used to forecast loads. The 2010 CELT report was used for the last needs study.
- The 2012 CELT incorporates a forecast of energy efficiency measures (EE) through the year 2022. This is a significant change in forecast methodology. In previous studies for NEEWS and other projects, only EE committed for the 3 year Forward Capacity Auction period was modeled.
- Because the latest study was being done in 2012, the 10-year forecast horizon was re-set to 2022. The year 2020 was used in the last needs study.
- Resources that cleared the most recent Forward Capacity Auction (FCA #6: Capacity Period June 1, 2015 – May 31, 2016) were modeled in this study, whereas the previous study used the FCA #4 results.
- Transmission projects with Proposed Plan Application Approvals as of the March 2012 Regional System Plan Project Listing were included to the base case. Some of these projects were approved in the period during which the Interstate Reliability Project was being studied and reassessed and were not included in the prior modeling.
- The following changes in generation dispatch assumptions were made:

    - On-shore wind-power output was modeled at 100% of its qualified capacity in the export area, but at 5% of qualified capacity in the import area, apparently in order to reflect the likelihood of low wind on a peak hot summer day. In the last study, the qualified capacity value was used in both cases. ("Qualified capacity" is the amount of capacity that has cleared the Forward Capacity Market qualification processes for a relevant period.)

    - Hydro power units were modeled using actual summer outputs documented in ongoing studies (Vermont / New Hampshire, Pittsfield / Greenfield, and Greater Hartford / Central Connecticut reliability studies.) In the prior study, they were modeled at their qualified capacity values.

    - Pumped storage units were kept at 50% of their output for all dispatches, to reflect the limit on their operability due to their limited storage capacity. The last study allowed them to go to 100% of their output when in the exporting area.

- The Salem Harbor, AES Thames, Bridgeport Harbor 2, Somerset 6, Somerset Jet 2, Holyoke 6 & 8, Bio Energy, Potter Diesel, and Ansonia generating units were assumed out of service in the base case due to their delist bids, retirement, or interconnection queue withdrawals. These units were all modeled as available in the last needs study.

- The Lake Road generating station was modeled as "on" for all stresses. These units were assumed to be out of service for the East to West stressed cases in the last needs study. (The result of this change was to impose less stress on the transmission system east of Lake Road for East to West power transfers.)

Q. How did the loads modeled in the draft *2012 Follow-Up Needs Analysis* compare with those modeled in the previous *2011 Updated Needs Report*?

A. The peak load for each year that was modeled in both the last study and the most recent study was lower, largely because of the inclusion of predicted future energy efficiency measures, which grew to 1,260 MW for the region (including 168 MW for Connecticut) by 2022. For instance, the 2019 Summer 90/10 load in New England was 33,225 MW in the 2010 CELT. The same year in the 2012 CELT it was 33,040 MW, a reduction of 185 MW. However, because the draft update used a 10-year planning horizon beginning in 2012, it incorporated two more years of predicted load growth. These extra two years, even with a lower forecast, caused an overall increase of 575 MW in system-wide peak load demand in the follow-up study. But the loads were not higher in every sub-region modeled. For instance, in Connecticut, the 2022 modeled load derived from the 2012 CELT was 30 MW lower than the 2020 load that had previously been modeled in the *2011 Updated Needs Report,* based on the 2010 CELT. The comparison of the modeled loads is set forth in table 3-5 of the draft *2012 Follow-*

Up Needs Analysis Report, which is reproduced below as Table 1 of this testimony:

Table 1

90/10 CELT Load Comparison (without losses)

State	2020 Load 2010 CELT (MW)	2022 Load 2012 CELT (MW)	Difference (MW)	Difference (%)
Maine	2,500	2,480	-20	-0.80%
New Hampshire	3080	3,120	+40	+1.30%
Vermont	1,255	1,230	-25	-1.99%
Massachusetts	15,575	16,060	+485	+3.11%
Rhode Island	2,300	2,430	+130	+5.65%
Connecticut	8,840	8,810	-30	-0.34%
ISO New England	33,555	34,130	+575	+1.71%

Q. Please explain how ISO-NE came to adopt the new methodology of reducing future loads by the predicted impact of energy efficiency measures beyond the Forward Capacity Market period, and why this predicted EE was not modeled in the *Updated Needs Report* that was published in April, 2011, or in the *Updated Solution Report* that was published in February, 2012.

A. ISO-NE was developing the new EE forecast methodology in parallel with its work on the *2011 Updated Solution Report.* ISO presented a "Proof of Concept" for forecasting future EE to the PAC in November, 2011 and developed a long-term EE forecast which it issued in April 2012. NUSCO was aware of this on-going project, but believed that the new methodology would be applied prospectively, for new projects, and not retroactively to advanced stage projects that had been developed using traditional EE modeling. This turned out not to be the case.

In May, 2012 ISO-NE held a PAC meeting for the purpose of considering how the new EE forecast would be used in planning studies. NUSCO, on behalf of the NU operating companies, made a presentation at that meeting suggesting that the new methodology be implemented cautiously and gradually, and that it not be applied in update studies for advanced stage projects such as the Interstate Reliability Project, which had by then been issued an I.3.9 approval. Other transmission owners submitted similar comments. NUSCO also advocated this position to the New England Power Pool Reliability Committee and to the ISO-NE Board of Directors. ISO-NE did not find these comments and presentations persuasive, and completed its Attachment K reanalysis of the Interstate Reliability Project using the new methodology.

Q. What was the impetus for ISO-NE's adoption of its new EE forecasting methodology?

A. In 2010, The New England States Commission on Energy (NESCOE), which represents the New England states in the PAC, began urging ISO-NE to forecast EE savings beyond the FCM results across the ten-year planning horizon The New England states have been making large investments in EE through many programs and have committed to continue to do so. NESCOE maintained that in order for consumers to receive the full benefits of their EE investments, expected future EE should be modeled. NESCOE's view prevailed.

Q. What was the basis for NUSCO concerns with respect to the implementation of the new EE policy?

A. NUSCO was concerned that there were many uncertainties with respect to the future funding and performance of EE measures that warranted a cautious implementation of the concept, including de-rating the predicted quantities of EE by an appropriate percentage to reflect that uncertainty. NUSCO also considered that if the assumptions in planning analyses were to be changed to include EE measures beyond those that have cleared the FCA, other variables that could be affected by enhanced EE – such as the continued participation of generating units in the FCM – should be considered and modeled. That is, in the traditional planning approach, resources that cleared the latest FCA (both supply resources such as generation and demand resources, such as EE) were held constant through the planning period after the expiration of the three-year FCM commitment period. There was no attempt to predict either growth of EE or retirements of generation units. NUSCO suggested that if this assumption were to be changed for demand resources it should also be changed for supply resources, particularly since the reduction of load associated with the growth of EE can have a "ripple effect" on the economics of generation and thereby contribute to the retirement of marginal units. Finally, NUSCO submitted that application of the new methodology to a project such as this one, which had been studied for over 8 years, had received an I.3.9 approval, and was in siting, would be disruptive and risky.

Q. Do these concerns affect your evaluation of the draft *2012 Follow-Up Needs Analysis*?

A. Not really. If the new EE methodology had not been applied, or had been applied cautiously with a de-rating factor to reflect the uncertainty of all of the EE materializing and the potential of the full EE to cause retirements, the modeled overloads would have been more numerous and more severe. However, the end result would have been the same – the needs that drive the Interstate Reliability Project remain the same.

Q. How do the results of the power-flow modeling studies undertaken for the draft *2012 Follow-Up Needs Analysis* compare to those reported in the *2011 Updated Needs Report*?

A. The overloads produced by simulating design contingencies were similar to those documented in the *2011 Updated Needs Report.* In particular, in N-1 testing, thermal violations for Eastern New England were found in Rhode Island and on the 115-kV path connecting Rhode Island and Connecticut. In N-1-1 testing there were several thermal and voltage violations, the most severe of which were in Rhode Island, where a voltage collapse could occur. In addition, Eastern New England reliability testing indicated thermal violations on the central and southern 345-kV paths connecting Rhode Island to Connecticut and southeastern Massachusetts. Western New England and Connecticut reliability testing indicated thermal violations on the central 345-kV East-West path and 115-kV path connecting Rhode Island and Connecticut along the Long Island Sound

shoreline. However, overall, the thermal overloads in the draft *Follow-Up Needs Analysis* were somewhat less severe and fewer in number than those identified in the *2011 Updated Needs Analysis.*

Q. If the loads modeled in the draft 2012 *Follow-Up Needs Analysis* were somewhat higher than those modeled in the *2011 Updated Needs Analysis,* even after predicted future EE was accounted for, why were the thermal overloads in the later study less severe and numerous?

A. The logical conclusion is that the cumulative effect of the changes to the assumptions other than the modeled loads was to impose less stress on the system.

Q. How does the draft *2012 Follow-Up Needs Analysis* consider the risk of retirements of existing resources during the ten-year planning period?

A. The draft *2012 Follow-Up Needs Analysis* assumes that all generators that have cleared FCM #6 and have not sought to de-list, shut down, or announce a retirement plan will be in service throughout the planning period – until 2022. As we explained earlier, ISO-NE did not vary this traditional assumption when it decided to project new EE beyond the three-year FCM horizon. However, the draft report does recognize that there is a risk of additional retirements beyond those assumed, and that such retirements would make the need for the Interstate Reliability Project more pressing. Thus, the draft report states that with generation retirements, the need for additional eastern New England transmission transfer capability, the need for additional western New England transmission

transfer capability, and the need for additional transfer capability into Connecticut is advanced.

Q. Is there any basis for predicting that some generating units modeled in the base case of the draft *2012 Follow-Up Needs Analysis* will in fact retire during the planning period – before 2022?

A. Yes. Very recent and authoritative analyses have recognized this risk. The most pertinent is the Connecticut Department of Energy and Environmental Protection (DEEP) 2012 Integrated Resource Plan for Connecticut (the *Connecticut 2012 IRP*), which is Council Administrative Notice Item #38. The *Connecticut 2012 IRP* identifies both units that it characterizes as now "planned to retire" and additional units that it predicts will be forced to retire by economic pressures resulting from market price changes, the cost of upgrades required to comply with environmental regulations, and other economic factors. In the first category, DEEP, like ISO-NE in the *2012 Follow-Up Needs Analysis,* recognizes the retirement of the Salem Harbor units and the AES Thames plant, and assumes the retirement of the Vermont Yankee nuclear unit. These units represent an aggregate 1,532 MW of capacity. DEEP then goes on to cite a thorough and detailed economic analysis (performed by the Brattle Group) that predicts additional retirements in Connecticut aggregating 938 MW of capacity by 2015, including Middletown Units #2 and #3, Montville Unit #5, New Haven Harbor and Norwalk Harbor Units #1 and #2. DEEP further estimates economic

retirements in the rest of the ISO-NE region (outside Connecticut) aggregating 1,687 MW by 2016.

The second authoritative recent estimate was made by ISO-NE itself. Last month, ISO-NE published a "Discussion Paper" entitled *Aligning Markets and Planning* (June, 2012). In this paper, ISO-NE concluded that because of both new environmental regulations and market conditions, it is plausible that over 5,000 MW of capacity – a sixth of the region's existing generation fleet – may permanently shut down over the coming decade. Moreover, ISO-NE noted, many of these resources are situated in key locations on the grid, where their exit could lead to violations of transmission reliability criteria. This capacity includes 10 coal-fired generating units with an average age of 47 years and a combined capacity of 2,355 MW and 12 oil-fired (steam) generating units with an average age of 44 years and a combined capacity of 2,661 MW.

Q. Does the *2012 Connecticut IRP* address the benefits of the Interstate Reliability Project as a hedge against retirements?

A. Yes, DEEP notes in the *2012 Connecticut IRP* (p. 15) that its model results indicate that the Connecticut capacity price would not separate (differ) from the New England capacity price if the NEEWS projects continue to be developed and receive the necessary approvals. In that case, Connecticut could meet its Transmission Security Analysis requirement even if all 2,716 MW of the fossil steam capacity in Connecticut retired. DEEP also stresses that long-range

planning analysis must address uncertainty in order to be useful. DEEP stresses that regardless of the effort and attention that goes into the analysis, it is impossible to perfectly predict external factors – such as natural gas prices and economic growth – over which regulators and utilities do not have direct control. (p.28) The margin that will be provided by the Interstate Reliability Project will provide a robust hedge against such uncertainty.

Q. Please summarize your current opinion concerning the need for the Interstate Reliability Project, taking into account the latest information now available to you through the draft *2012 Follow-Up Needs Analysis*, published earlier this month.

A. We concluded our previous testimony by pointing out that numerous studies and re-analyses undertaken from 2004 through 2011 had demonstrated that the Interstate Reliability Project is needed to provide reliable electric service to the Southern New England states of Connecticut, Massachusetts, and Rhode Island, and should be constructed as soon as possible. ISO-NE's latest draft "Follow-Up" analysis confirms this need, notwithstanding that it incorporates a sharp departure from previous practice in assuming the attainment of aggressive energy efficiency in the future. The project should go forward now in order to assure compliance with national and regional reliability requirements and to provide a hedge against capacity retirements that are likely to occur by 2015. We continue to believe that this project is needed for system reliability and represents a sound investment in Connecticut's energy future. We concur with DEEP's conclusion

in its June 21, 2012 comment letter to the Council (p.2) that this project is needed and deserves Siting Council approval.