

STATE OF CONNECTICUT

SITING COUNCIL

<p>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.</p>	<p>DOCKET NO. 424</p> <p>MAY 21, 2012</p>
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**DIRECT TESTIMONY OF TIMOTHY F. LASKOWSKI
AND ROGER C. ZAKLUKIEWICZ**

**CONCERNING THE NEED FOR
THE INTERSTATE RELIABILITY PROJECT**

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1 **1.0 Introduction**

2 *Qualifications and Relevant Experience of the Witnesses*

3 **Q. Please state your names and occupations.**

4 A. My name is Timothy F. Laskowski. I am a power systems engineer employed by
5 NUSCO as Transmission Planning Project Manager.

6 A. My name is Roger C. Zaklukiewicz. I am an electrical engineer presently active as a
7 Consultant in the field of electric utility engineering.

8

9 **Q. In what type of engineering do you have special training and experience?**

10 A. [Mr. Laskowski] I have special training and experience in the areas of power system
11 modeling and transmission planning analyses.

12

13 [Mr. Zaklukiewicz] I have broad experience in most aspects of electric transmission
14 engineering, construction, maintenance, and operation. Although I am not a transmission
15 planner, I have had responsibility for supervising the activities of transmission planners,
16 and accordingly acquired familiarity with transmission planning analyses.

17

18 **Q. Please describe your education and employment history.**

19 A. [Mr. Laskowski] I received a Bachelor of Science degree in Electrical Engineering in
20 1972 and a Masters degree in Electrical Engineering with emphasis on power system
21 equipment and modeling in 1973, both from Worcester Polytechnical Institute. Before

1 joining NUSCO in 2004, I was Vice President of Power Technologies, Inc., with
2 responsibilities for its power-system modeling software products. My resume is included
3 in the separate volume of resumes filed as part of CL&P's pre-filed written testimony
4 (Resume Volume).

5
6 [Mr. Zaklukiewicz] I received a Bachelor of Science degree in Electrical Engineering
7 from the University of Hartford in 1966, and a Master of Science degree in Electrical
8 Engineering from Rensselaer Polytechnic Institute in 1967. I joined The Connecticut
9 Light and Power Company in 1966 and worked for CL&P and other Northeast Utilities
10 System Companies in a series of engineering and operations positions of increasing
11 responsibility until my retirement in 2006. At the time of my retirement, I was Vice
12 President of Transmission Engineering and Operations for the Northeast Utilities System
13 (NU), and had held various management positions for approximately sixteen years. In
14 these positions, I had responsibilities for engineering, construction, maintenance, and
15 operation of NU's transmission and distribution facilities. My resume is also included in
16 the Resume Volume.

1 **Q. Have you testified previously before administrative agencies concerning electric**
2 **power transmission?**

3 A. Yes, we have provided testimony on behalf of Northeast Utilities companies in
4 proceedings before the Connecticut Siting Council, the Federal Energy Regulatory
5 Commission (FERC), and the Connecticut Department of Public Utility Control.
6

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

8 A. The primary purpose of our testimony is to support CL&P's application in this Docket
9 (Application) by describing the background, need, scope and status of the proposed
10 transmission reinforcement plan for the Interstate Reliability Project (Interstate or the
11 Project). We will also describe assessments of transmission system alternatives to the
12 Project.
13

14 **2.0 Identification of the Need for the Project**

15 **Q. How was the need for Interstate identified?**

16 A. There have been three phases in the identification of the need for the Interstate Reliability
17 Project. The first phase, which began in 2004 and concluded in 2008, included the
18 identification of the need for widespread transmission improvements in Southern New
19 England. The second phase, which began in 2008 and concluded early this year,
20 involved a re-evaluation of this project and other projects by the Independent System
21 Operator - New England (ISO-NE) in light of changed conditions. The third phase

1 involves a final update of ISO-NE's analysis of the need for this project, which began in
2 2012, after this Application was filed, and is expected to conclude soon.

3
4 **Q. Please summarize the first phase of the identification of the need for the Interstate**
5 **Reliability Project.**

6 A. The need for the Interstate Project was identified along with that for the Greater
7 Springfield Reliability Project (GSRP), which the Council approved in its Docket 370 in
8 March, 2010. As the Council recognized in its decision approving the GSRP (Dkt. 370,
9 FOF ¶¶ 33-35; Opinion, p. 2), pursuant to federal statutes and regulations, and its
10 federally-approved tariffs, ISO-NE plans and operates the New England bulk power
11 transmission system to comply with national and regional reliability standards, in part
12 through an annual, comprehensive Regional System Plan (RSP). This regional system
13 plan is developed and reviewed by interested parties, including state regulators and New
14 England Power Pool (NEPOOL) market participants. When ISO-NE has determined that
15 system improvements are needed to maintain reliability, that need is broadcast to the
16 market through the RSP. If a viable market solution is not brought forward to address the
17 reliability need, transmission owners (TOs) such as CL&P and National Grid USA
18 (National Grid) are required to construct the improvements, subject to obtaining required
19 state approvals.

20

1 In 2004, ISO-NE began a study of deficiencies and interrelated needs throughout the
2 southern New England electric supply system, and in 2006 it released a draft report later
3 referred to as the “*Southern New England Transmission Reliability Report (SNETR) –*
4 *Needs Analysis, January 2008*” (*the 2008 Needs Report*). This work was undertaken by a
5 “Working Group” comprised of members of the planning staffs of Northeast Utilities
6 Service Company (NUSCO) and National Grid. Tim Laskowski was a member of this
7 original Working Group. SNETR was the genesis of the New England East-West
8 Solution (NEEWS) Plan. (Dkt. 370 FOF, ¶ 30; Opinion, p. 2). NEEWS “is a
9 comprehensive, long-range regional plan for expansion that addresses electric
10 transmission concerns throughout New England.” (Dkt. 370 Opinion, p. 3) A copy of
11 this report, redacted to remove Critical Energy Infrastructure Information (CEII) was
12 included as part of Volume 5 of the Application and a full copy has been filed under
13 protective order in the CEII Appendix. Copies were also filed in support of the GSRP
14 application in Docket 370.

15
16 NEEWS consists of four separate but related projects that would alleviate deficiencies in
17 the southern New England transmission system. These projects are:

- 18 a. The GSRP and the related Manchester to Meekville Junction Project, which were the
19 subject of Docket 370 and 370A-MR.
20
- 21
22 b. This project – the Interstate Reliability Project – which the Council described in its GSRP
23 Opinion as “a new 345-kV line from Millbury Switching Station in Massachusetts owned
24 by National Grid to its West Farnum Substation in North Smithfield, Rhode Island, to

1 CL&P's Lake Road Switching Station in Killingly, Connecticut and Card Street
2 Substation in Lebanon, Connecticut.”

3
4 c. The Central Connecticut Reliability Project – a new 345-kV line from CL&P's North
5 Bloomfield Substation to its Frost Bridge Substation in Watertown, Connecticut; and
6

7 d. The Rhode Island Reliability Project – a National Grid project entirely within the State of
8 Rhode Island.

9 (Dkt. 370 FOF ¶ 31; Opinion, p. 2)

10

11 **Q. Please describe the second phase of ISO-NE's analysis of the need for the Interstate**
12 **Reliability Project.**

13 A. ISO-NE is required by Attachment K to its FERC-approved Open Access Transmission
14 Tariff (OATT) to update its needs assessments as new resources materialize through the
15 Forward Capacity Auction, as load forecasts change, as new resources are built or
16 committed, or other important changes in system conditions occur. If ISO-NE
17 determines, as part of its periodic re-evaluation responsibility, that a transmission project
18 being implemented by a TO is no longer needed, or if a market solution that meets
19 specific reliability criteria is subsequently proposed, it will direct the TO to discontinue
20 its development effort, and the TO will be entitled to recover its costs incurred to that
21 point through regional rates. The analyses underlying the *2008 Needs Report* took
22 several years to complete, and were thus based on 2005 data. By the time the report was
23 finalized in 2008, system conditions were changing, with new, lower load forecasts, and
24 the addition of significant amounts of new resources (both generation and demand
25 response) to the Connecticut load zone. Accordingly, ISO-NE undertook a re-analysis of

1 the need for all four NEEWS components. It concluded its re-analysis of the GSRP need
2 shortly before testifying in support of that project in Docket 370, in July, 2009.

3 However, the re-analysis for the Interstate Reliability Project was more complex than that
4 for GSRP, so that ISO-NE did not complete and publish its re-analysis until April, 2011.

5 This re-analysis is described in a report titled *New England East-West Solution (NEEWS)*
6 *Interstate Reliability Project Component Updated Needs Assessment* (April, 2011) (*the*
7 *"2011 Updated Needs Report"*), a copy of which is provided in Volume 5 of the
8 Application in this Docket.

9
10 **Q. What needs did the 2011 Updated Needs Report evaluate?**

11 A. The *2011 Updated Needs Report* evaluated the reliability of the southern New England
12 transmission system for 2015 and 2020 projected system conditions. The studies
13 summarized in that report analyzed the ability of the system to reliably serve load in
14 Western New England, Eastern New England, Connecticut and Rhode Island.

15
16 **Q. What were the results of this 2011 re-evaluation of the need for the project?**

17 A. The results demonstrated widespread thermal and voltage violations under contingent
18 conditions in the study area for the two study years tested.

19
20 **Q. When did the study results indicate that these criteria violations would exist, if not**
21 **addressed by improvements to the transmission system?**

1 A. Violations related to modeled contingencies on the Rhode Island system were seen under
2 today's conditions.

3

4 The need for additional transmission transfer capability from western New England and
5 Greater Rhode Island to eastern New England was determined to occur in 2011. With
6 generation retirements in eastern New England, the need for additional eastern New
7 England transmission transfer capability would be greater.

8

9 The need for additional transmission transfer capability from eastern New England and
10 Greater Rhode Island to western New England was forecasted to occur between 2017 and
11 2018.

12

13 The need for additional transmission transfer capability into the State of Connecticut was
14 forecasted to occur between 2014 and 2015.

15

16 **Q. What system improvements did the 2011 Updated Needs Report indicate would be**
17 **needed?**

18 A. In summary, the report identified the following reliability needs:

19

- 20 • Reinforce the 345-kV system into a West Farnum Substation in Rhode Island for Rhode
21 Island reliability.

22

- 1 • Increase the transmission transfer capability from western New England and Greater
2 Rhode Island to eastern New England. With the retirement of Salem Harbor, there is a
3 need for additional transmission transfer capability to eastern New England.
4
- 5 • Increase the transmission transfer capability from eastern New England and Greater
6 Rhode Island to reliably serve load in western New England, if additional resources are
7 available in the exporting area.
8
- 9 • Increase the transmission transfer capability into the State of Connecticut.

10

11 **Q. What effect did ISO-NE’s re-evaluation of the Interstate Reliability Project have on**
12 **the timing of this application?**

13 A. CL&P had filed its initial Municipal Consultation Filing (MCF) for the Interstate
14 Reliability Project in June, 2008, looking forward to filing an application with the
15 Council in the fourth quarter of 2008. However, shortly after filing its MCF, CL&P
16 learned that ISO-NE was re-evaluating the NEEWS projects. CL&P recognized that
17 ISO-NE would not support any of the projects in siting until it had completed its
18 reassessment and, if the reassessment indicated that some change to a project was
19 required, until the completion of solution studies to identify the optimum configuration
20 for the revised project. Meanwhile, CL&P had filed its application for a certificate for
21 GSRP on October 20, 2008. ISO-NE completed its re-evaluation of GSRP in time to
22 testify in support of it, but its re-analysis of the Interstate Reliability Project required
23 more time. ISO-NE did not complete the needs re-analysis until April, 2011, and the
24 definition of the optimal solution to the enhanced need identified by that report was not

1 completed until December, 2011. CL&P filed its Application on December 23, 2011, the
2 earliest possible date.

3
4 **Q. What role did CL&P and National Grid have in the 2008 – 2011 re-evaluation of the**
5 **need for the Interstate Reliability Project?**

6 A. The re-evaluation studies and analyses were conducted by ISO-NE. The CL&P and
7 National Grid planners executed specific technical analyses assigned by ISO-NE.

8
9 **Q. Please describe the third phase of ISO-NE’s evaluation of the need for the Interstate**
10 **Reliability Project.**

11 A. In March, 2012, after CL&P had filed its Application in this Docket, ISO-NE undertook
12 to update its needs assessments of all New England reliability projects, including the
13 Interstate Reliability Project, in light of new planning information. We further
14 understand that the reassessment now includes the outcome of the Forward Capacity
15 Auction #6 held on April 2-3, 2012 and approved changes to the New England system
16 other than the Interstate Reliability Project. Significantly, ISO-NE is also considering the
17 potential impact of a contemplated change in its approach to modeling energy efficiency
18 measures in long-term planning studies. It has been ISO-NE’s practice to reduce the load
19 modeled in planning studies to reflect demand resources that have been committed in a
20 Forward Capacity Auction, but not to reduce forecasted load by projected increases in
21 those resources beyond the three years for which auctions have been held. Rather, the

1 committed demand resources are assumed to continue at their current level through the
2 ten-year planning period. This approach is consistent with ISO-NE's practice of
3 assuming that generation resources that have made capacity commitments in the most
4 recent FCA will continue in operation through the planning period, rather than projecting
5 future additions and retirements that may occur. ISO-NE has been developing an
6 approach for forecasting future energy efficiency measures, and it is now considering
7 how that Energy Efficiency (EE) forecast should be used in planning studies, and which
8 projects should be re-evaluated using the new methodology. This subject was the topic
9 of a Planning Advisory Committee (PAC) meeting on May 17, 2012, and ISO-NE is still
10 considering these issues. It is CL&P's position that this new methodology should not be
11 applied to projects defined in approved solution studies, for which a Proposed Plan
12 Application (PPA) approval has been issued pursuant to section I.3.9 of ISO-NE's
13 OATT. The Interstate Reliability Project is one of two such projects. (The other is the
14 Lower SEMA Project, which has recently received its siting approval.) CL&P does not
15 know whether ISO-NE will accept this position, and if not, how the EE forecast will be
16 applied in re-evaluating the Interstate Reliability Project, and what the outcome will be.

17
18 **Q. When do you expect that ISO-NE will announce its decision concerning these issues**
19 **and the results of its updating of its analysis of the need for the Interstate Reliability**
20 **Project?**

1 A. ISO-NE has advised CL&P that it expects to have completed its reassessment and to be
2 ready to disclose its results and participate in siting proceedings by July 9, 2012.

3

4 **Q. What does the current published draft of Connecticut’s Integrated Resource Plan**
5 **have to say concerning the need for and benefits of the Interstate Reliability**
6 **Project?**

7 A. The draft Integrated Resource Plan posted by the Department of Energy and
8 Environmental Protection (DEEP) includes the Interstate Reliability Project in its “base
9 case” for Connecticut’s energy future, and noted: “There are adequate resources in
10 Connecticut to meet the Transmission Security Analysis criteria well beyond
11 2022...Projected retirements...are not enough to eliminate the surplus. However, a
12 critical element is the completion of the various components of the New England East-
13 West Solution (NEEWS) transmission project that is being planned to address several
14 transmission security reliability issues. These transmission enhancements will also
15 support locational resource adequacy in Connecticut once they are completed between
16 2013 and 2016...”

17

18 **3.0 Need Criteria and Studies**

19 **Q. How was the need for the Interstate Reliability Project determined?**

20 A. Both the original needs analysis and the re-analysis described in the *2011 Updated Needs*
21 *Report* were performed in accordance with the national and regional reliability standards

1 and criteria and the planning approach recognized by the Council in its Docket 370. The
2 Council summarized the principles and methodology of the studies that identified the
3 need for both GSRP and the Interstate Reliability Project in its decision in that Docket as
4 follows:

5 ISO-NE and the New England TO's are obliged to plan and operate the
6 transmission systems to comply with mandatory North American Electric
7 Reliability Corporation (NERC) reliability standards; violations of these standards
8 are punishable by federal fines. However, fines are not imposed if the utility
9 company has a plan to adequately address modeled violations and is actively
10 pursuing such a plan. (Dkt. 370 FOF ¶¶ 27, 28, 34)

11
12 NERC's definition of reliability encompasses two concepts: adequacy and
13 security. Adequacy is defined as the "ability of the system to supply the
14 aggregate electric power and energy requirements of the consumers at all times."
15 Security is defined as "the ability of the system to withstand sudden
16 disturbances." (Dkt. 370 FOF ¶ 34)

17
18 A key element in planning for and testing transmission reliability (in the sense of
19 transmission security) is the concept of "contingency" events, wherein certain
20 generation and/or transmission facilities are assumed to be out of service or
21 otherwise unavailable. The transmission system is designed to withstand multiple
22 contingencies while operating reliably. (Dkt. 272, FOF ¶ 36, Opinion, p. 2)

23
24 In accordance with ISO-NE Planning Procedure 3 (PP3), planners use the terms
25 "N-1" and "N-1-1" to designate the contingency conditions in which the
26 transmission system must be capable of reliable operation. N-1 designates the
27 state of the transmission system following the occurrence of a single contingency.
28 N-1-1 designates the condition of the transmission system following the
29 occurrence of a second contingency, assuming that one element is already out of
30 service. (Dkt. 370 FOF ¶ 17)

31
32 To evaluate compliance with the PP3 reliability criteria, these contingencies are
33 simulated on computer models developed to represent actual and future system
34 conditions. If the simulation shows that transmission lines will overload and/or
35 voltage will not be maintained within specified limits under one or more
36 contingencies, the electric system is judged to be unreliable, and the system must
37 be brought back into compliance within 30 minutes of a first contingency, so that

1 it will be able to operate reliably in the event of a second contingency. (Dkt. 370
2 FOF ¶ 38)

3
4 The particular contingencies modeled are simulated for normal loads forecast for
5 the future, extreme weather peak loads, inter-regional power transfers, and
6 “reasonably stressed” conditions, which are generally considered to be the
7 unavailability of generation proximate to load – often with multiple units being
8 unavailable. Requiring the transmission system to operate effectively under such
9 “reasonable stress” recognizes that generation units may be unavailable for many
10 reasons, such as economics, equipment failure, lack of fuel, maintenance
11 requirements, and environmental restrictions. (Dkt. 370 FOF ¶ 39)

12
13 Major unplanned outages of generating units, as extreme and more extreme than
14 those modeled, do occur in the electric industry. In Connecticut, for instance,
15 outages involving thousands of MWs at a time have happened in 1996, 2003, and
16 2008. Transmission failures have also occurred recently, affecting Connecticut.
17 In November 2002, cables running underwater from Norwalk Harbor to
18 Northport, New York were broken by a dragged anchor and out of service for
19 eight months. (Dkt. 370 FOF ¶ 40)

20
21 Notwithstanding such actual occurrences, the contingencies selected for any given
22 planning simulation are “deterministic,” that is, determined by planners’
23 judgments of “reasonable stress,” not calculated per statistical probability or on
24 the basis of historical evidence. (Dkt. 370 FOF ¶ 41)

25
26 Contingency modeling under “reasonably stressed” conditions is meant to test the
27 strength of the system in general. Planners design improvements to the system
28 that address more than just the specific conditions and contingencies tested in
29 power-flow simulations. Events represented in the simulations serve as proxies
30 for multiple other potential future events that cannot be defined or predicted, but
31 that the system should be able to survive. (Dkt. 370 FOF ¶ 42)

32
33
34 **Q. Since the Council’s decision in Docket 370, has the system continued to experience**
35 **significant unplanned outages that support modeling of the system with significant**
36 **generation unavailable before contingencies are applied?**

1 A. Yes, such events have continued to occur since the Council’s decision in Docket 370.
2 For instance, Millstone Unit 2 (882 MW) was lost from service from July 3 to July 27,
3 2010 – nearly an entire summer month. And on July 22, 2011, when the second highest
4 New England historic peak load was reached, the forced outages and reductions during
5 the peak hour totaled 3,400 MW.
6

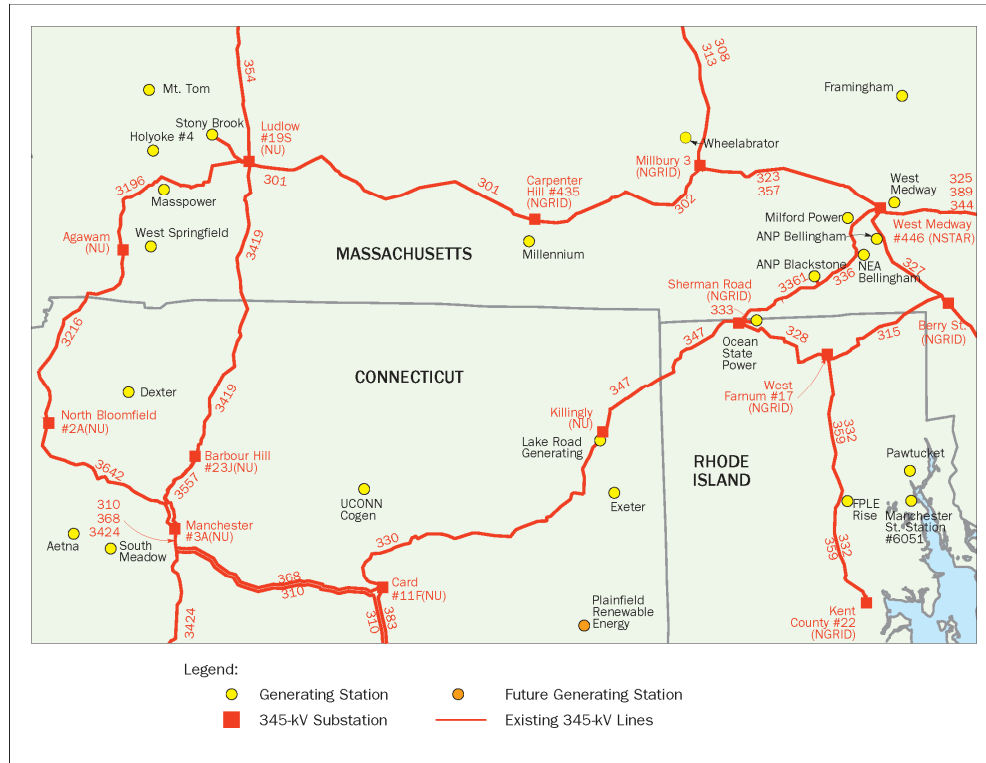
7 **4.0 The Study Area and Its Transmission Interfaces**

8 **Q. What was the “study area’ in which the reliability problems to be addressed by the**
9 **Interstate Reliability Project were identified?**

10 A. The “study area” included portions of the three southern New England states of
11 Massachusetts, Rhode Island and Connecticut. Figure N-1 is a geographic map of the
12 existing 345-kV transmission system in the study area. As we will explain later on, the
13 New England East-West transmission interface bisects the study area, and shifts in
14 location.

1
2
3

Figure N-1
Study Area 345-kV Transmission System



4
5

6 **Q. What is meant by a “transmission interface?”**

7 A. “Interfaces” are specific sets of transmission facilities that can be used to reliably transfer
8 power, within defined limits, from one area to another. They can be visualized as
9 “boundaries” between areas of the system – all transmission lines that cross such a
10 boundary are by definition part of that interface. The transfer capability across an
11 interface depends on the power flows that all of the transmission elements crossing the
12 interface can carry without violating prescribed limits of system stability, current-
13 carrying capability, or permissible ranges of voltage following a contingency. Transfer

1 capabilities are expressed in terms of the power flow that the transmission elements can
2 reliably carry under normal conditions (i.e., in anticipation of an N-1 event), and that
3 which they can carry after an initial contingency condition (i.e., in anticipation of an N-1-
4 1 event). Since system conditions, such as load and the amount and location of available
5 generation, can vary significantly from day-to-day and sometimes from hour-to-hour,
6 transfer capabilities across an interface are properly expressed as a range of values.
7 These transfer limit values will always be much lower than the sum of the individual
8 current-carrying capacities of each of the transmission elements that make up the
9 interface. This is because the system must be planned to reliably withstand the potential
10 contingent loss of any of the elements of the interface, and the overlapping loss of a
11 second element within 30 minutes of the first contingency event. When such contingent
12 events occur, the power flowing on the element lost from service automatically
13 redistributes onto the remaining elements of the interface.

14
15 **Q. What significance do transmission interfaces have to reliability planning studies?**

16 A. The ability to move power across interfaces when there is supply available on one side of
17 the interface and a need for it on the other side is a key determinant of system reliability.
18 Thus, interface transfer limits are important tools for transmission planning studies. ISO-
19 NE establishes transfer limit levels for each New England interface for use in planning
20 studies. The limits are expressed as a range, since they will vary with system conditions.
21 Transfer limits are published annually in FERC Form 715, and are considered the

1 “applicable” limits for use in planning studies. However, when the object of the studies
2 is to define and, if necessary, improve interface transfer capability, a different approach is
3 used. The actual transfer capabilities that result from modeled system conditions are
4 determined, and if the existing transfer capability is insufficient to comply with reliability
5 requirements, then system improvements are designed to increase transfer capability.
6 This was the case in the recent studies that confirmed the need for the Interstate
7 Reliability Project.

8
9 **Q. What is the New England East-West Interface?**

10 A. The New England East-West Interface is made up of the facilities that connect the two
11 large operating areas of New England. In its traditional configuration, this interface
12 roughly corresponds to the boundaries of the service areas of major electric utilities, and
13 divides New England approximately in half, separating the load centers of the Southeast
14 Massachusetts Area (SEMA)/Boston area and Connecticut. The interface follows the
15 Connecticut – Rhode Island border (except for a jog around the Lake Road Generating
16 Station in northeast Connecticut), then passes through Massachusetts, just west of the
17 Millbury, Massachusetts hub, proceeds northeast into New Hampshire, west of the major
18 generating facilities in southern New Hampshire, and then extends north through New
19 Hampshire and Vermont, westerly of the high-voltage direct current (HVDC) line from
20 Québec and its terminal facilities. The location of this interface is illustrated in Figure N-
21 2.

1

Figure N-2: Approximate Boundary of New England East – West Interface



2

3

Three 345-kV transmission lines currently cross this interface. In addition, there are two 230-kV transmission lines, and a few underlying 115-kV facilities. Most of the 230-kV and 115-kV facilities extend for relatively long distances and have relatively low thermal capacity.

4

5

6

7

8

Q. Why is the capability for transferring power across the East-West interface

9

important to reliability?

1 A. A constrained interface can prevent the delivery of power needed to serve load, New
2 England has adequate quantities of generation and load-reducing resources to meet its
3 electric power supply needs under normal system conditions, and this situation can be
4 expected to continue into the indefinite future, even with some retirements of existing
5 generation. However, in many circumstances, the available generation would not be
6 deliverable to all resource-deficient load centers. In particular, ISO-NE's analyses have
7 shown that, in the modeled system conditions, there is surplus generation on one side of
8 the New England East-West Interface that cannot be delivered to the other side of the
9 Interface when it is needed following certain contingency events. Such undeliverable
10 generation is said to be "locked-in."

11

12 **Q. Is it important to be able to transfer power across the interface in both directions –**
13 **east to west and west to east?**

14 A. Yes. The needed flows across the interface change both over time, and in the short term,
15 depending on changes in system conditions. In the mid-1980s and early 1990s,
16 monitoring the New England East-West Interface was important in day-to-day operations
17 because of constraints in moving significant amounts of power from generating stations
18 located in the west (including four nuclear generating units in Connecticut) to Boston and
19 its suburbs in the east. At that time, Connecticut was a net exporter of power.
20 However, in the late 1990s, following the influx of new generation in the east and the
21 multi-year loss of four Connecticut nuclear generating units with an aggregate capacity of

1 approximately 3,260 MW, this interface became severely constrained in the opposite
2 direction, from east to west, as Connecticut became a large net importer of power.
3 Following this period, only two of the Millstone generating units (units 2 and 3) returned
4 to service in the late 1990s. Both Connecticut Yankee and Millstone Unit 1 were retired,
5 resulting in a loss of approximately 1,240 MW. In the following years, Connecticut
6 continued to be a heavy importer of power, often at levels approaching its import transfer
7 limit. More recently, largely as the result of state sponsored contracts, approximately
8 2,000 MW of new resources were committed in locations to the west of the interface,
9 mostly in Connecticut, which has reduced Connecticut's need to import power.

10
11 **Q. How do the needs that were documented in the 2011 re-evaluation of the Interstate**
12 **Reliability Project differ from those that the project was originally designed to**
13 **meet?**

14 A. The *2008 Needs Report* focused on a deficiency in the system's capability to move power
15 from Eastern New England to Western New England and into Connecticut. The studies
16 described in the *2011 Updated Needs Report* showed that the combination of lower load
17 forecasts and the commitment of additional resources on the west side of the interface,
18 particularly in Connecticut, had mitigated but not eliminated the need for increased
19 transfer capability to the west of the interface and into Connecticut. At the same time, the
20 location of the new resources to the west and the loss of generation in the east of the
21 interface created a need to increase the transfer capability across the interface from west

1 to east. The need for relieving constraints on west to east transfers had not been
2 manifested in the initial studies.

3
4 **Q. Why is transfer capability across the east-west interface in Southern New England**
5 **constrained?**

6 A. The interface is constrained because the 345-kV Card Street – Lake Road – Sherman
7 Road – West Medway corridor, which is illustrated in Figure N-1, is required to perform
8 the double duty of transferring power across the interface and also serving numerous
9 large generators located along the corridor. This corridor provides the only direct 345-kV
10 tie between Connecticut and Rhode Island, and one of two 345-kV ties between Rhode
11 Island and Massachusetts. Several modern and efficient gas-fired generators, most
12 constructed since electric restructuring, are located along this corridor. These generators
13 are listed in Table 2-2 of the Application and their location is indicated in Figure N-1
14 above. They have an aggregate summer capacity of approximately 2,480 MW. These
15 generators may not all be dispatchable at the same time because of a potential for
16 overloading one or more of the lines making up the New England East-West Interface
17 and other lines in the event of a contingency. For the same reason, ISO-NE has refused
18 requests from generation developers to site an additional 430 MW of capacity along this
19 corridor.

20

1 The Card Street – Lake Road – Sherman Road – West Medway 345-kV transmission
2 line corridor is unusual in that it performs dual purposes. It serves as a “super highway”
3 transporting power from Connecticut resources to serve load in southeast Massachusetts
4 (including the Boston area) and also transports power from southeast Massachusetts
5 resources to Connecticut load centers. In addition, this “super highway” has several large
6 “on ramps” between the Card Street and West Medway Substations – the four large,
7 highly efficient base load generating stations that connect to the 345-kV transmission
8 network at various locations along the transmission corridor.

9
10 As a result, the New England East-West Interface shifts according to whether power is
11 flowing on this transmission corridor into Connecticut or into southeastern
12 Massachusetts. The aggregate flows on the New England East-West Interface must be
13 maintained at levels where overloads will not result following the contingent loss of any
14 interface, or other, transmission system element.

15
16 System operators must measure, in real time, the remaining capacity of each line that will
17 be available in the event of a contingency. In order to maintain the required reliability
18 margins following the loss of the most limiting transmission element, system operators
19 must consider the generators along the Lake Road to West Medway corridor as being on
20 the side of the interface from which power is being exported.

21

1 Thus, if power is flowing toward eastern Massachusetts, the flow will be measured just
2 west of the West Medway Substation. On the other hand, if power is flowing into
3 Connecticut, the power flow will be measured just west of the Lake Road Switching
4 Station.

5
6 The power flow over the Lake Road – Sherman Road – West Medway 345-kV
7 transmission line corridor is thus treated as part of the “transfer” across the Interface, and
8 power flows on the remaining elements of the Interface are maintained at levels such that
9 overloads will not result in the event the Lake Road – Sherman Road – West Medway
10 transmission lines or any of the other elements that make up the Interface are suddenly
11 lost. This practice has the effect of including greater Rhode Island resources with those
12 on the west side of the New England East-West Interface when power flows toward
13 eastern Massachusetts or greater Boston, and with those on the east side of the Interface
14 when power flows toward Connecticut.

15
16 The concentration of resources along the Lake Road – Sherman Road – West Medway
17 corridor also results in shifts of the Connecticut – Rhode Island and Rhode Island –
18 Massachusetts interfaces. When the Lake Road plant was placed in-service in 2002,
19 Connecticut was typically a net importer of power. Because imports into Connecticut are
20 monitored just west of the Lake Road Switching Station, the Lake Road Generating
21 Station is treated as electrically in Rhode Island. However, when Connecticut is

1 exporting power to or through Rhode Island, the Lake Road Generating Station capacity
2 is treated as being within Connecticut, so as to avoid overloading the Connecticut -
3 Rhode Island interface. Similarly, when power is being exported to southeastern
4 Massachusetts, the flow on the line between Sherman Road (in Rhode Island) and West
5 Medway (in Massachusetts) is monitored just west of the West Medway Substation to
6 avoid overloading the interface.

7
8 The shifting New England East-West Interface is illustrated in Figures N-3 and N-4.

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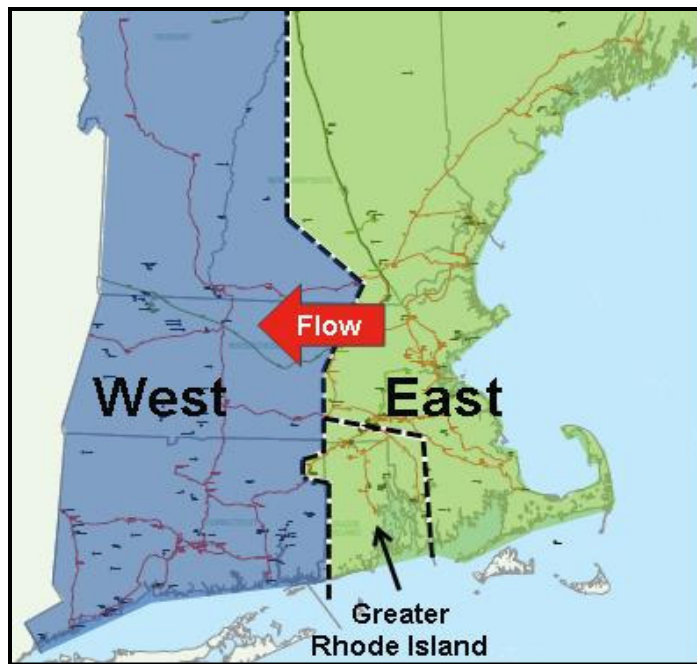
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Figure N-3: East – West Interface and Greater Rhode Island Corridor Limit Flows From the West and Greater Rhode Island to the East



3
4

Figure N-4: East – West Interface Limits Flows to the West From the East and Greater Rhode Island



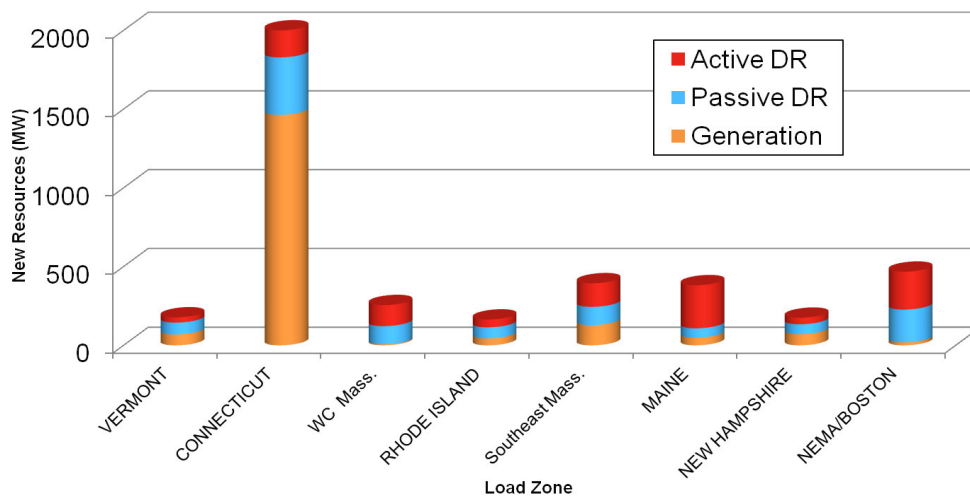
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1 **5.0 The 2011 Updated Needs Report**

2 **Q. What quantity of new resources in Southern New England on the west side of the**
3 **East-West interface was included in the re-evaluation of the need for the Interstate**
4 **Reliability Project that had not been included in the original studies?**

5 A. Since the original SNETR *Needs Analysis* was finalized in 2008, approximately 2,000
6 MW of new resources were committed in Connecticut and other areas west of the New
7 England East-West Interface. These additions are illustrated in Figure N-5 below:

8 **Figure N-5: Resource Additions by Load Zone Since 2008 Needs Analysis¹**



9
10

¹ DR stands for Demand Response, which is a temporary change in electricity consumption by a demand resource in response to market or reliability conditions. Passive Demand Resources (Passive DR) save energy (MWh) when on during peak hours and are not dispatchable. Active Demand Resources (Active DR) are designed to reduce peak loads (MW) and can reduce load based on real-time system conditions or ISO-NE instructions. Generation is any electric generating or storage facility using any fuel, including nuclear materials, that furnishes electricity (but not including an emergency generating device). Figure N-5 is extracted from the *2011 Updated Needs Report*.

1 **Q. Was all of this additional capacity modeled in the power-flow simulations that were**
2 **run in the re-evaluation studies?**

3 A. Yes, it was. In fact, with one exception, all existing generation plants and new projects
4 expected to be in-service during the study years, because they have accepted a Forward
5 Capacity Market (FCM) Capacity Supply Obligation, were included in the study base
6 case. That included all of the new capacity illustrated in Figure N-5. The one existing
7 plant that was not included was the Vermont Yankee nuclear power station, because there
8 was significant uncertainty concerning its continued operation after 2012.

9

10 **Q. What forecasted loads were used in the re-evaluation studies?**

11 A. In accordance with ISO-NE planning procedures, the modeled load was based on the
12 90/10 weather forecast in ISO-NE's 2010 CELT load forecast. These values were 31,810
13 MW for all of New England in 2015 and 33,555 MW in 2020, allocated among the New
14 England states as shown in Table N-1 below:

15

Table N-1: 2010 90/10 CELT Load

State	2015 Load (MW)	2020 Load (MW)
Maine	2,275	2,400
New Hampshire	2,750	2,957
Vermont	1,138	1,205
Massachusetts	14,160	14,952
Rhode Island	2,098	2,208
Connecticut	8,112	8,486
Total*	31,810	33,555

*after adjustment for transmission losses

16
17

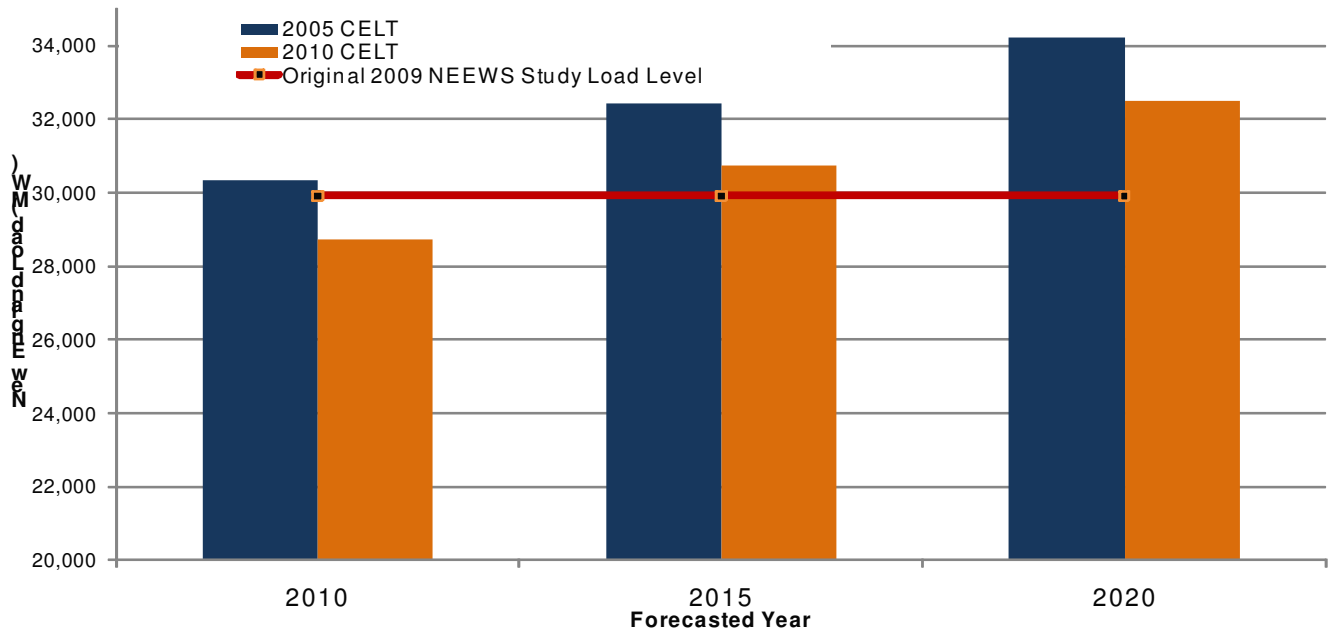
1 The modeled loads were based on the 2010 CELT forecasted loads, and were adjusted
2 downwards to reflect the effect of passive and active demand response measures.
3

4 **Q. How did the loads modeled in the 2011 Updated Needs Report compare to those**
5 **modeled in the original need studies?**

6 A. The loads were quite similar in both studies, even though forecasts of future loads were
7 somewhat lower at the time the re-evaluation was performed than they had been when the
8 original study was done. The reason for the similarity is that different years were
9 modeled in the two sets of studies. The years modeled in the re-evaluation were later
10 than those considered in the original studies. The 2008 Needs Report considered a load
11 projected by ISO-NE's 2005 CELT² forecast to occur in 2009, whereas the re-evaluation
12 considered system conditions beginning in 2015 – as a practical matter the first full year
13 in which the Interstate Reliability Project could be in-service in light of its deferral for
14 further study. The 2010 load forecast for 2015 (31,810 MW) was actually higher than the
15 2005 vintage forecast for 2009 (30,000 MW) that initially showed the criteria violations
16 identified in the 2008 Needs Report. This relationship is shown in Figure N-6.
17

² ISO-NE publishes annually its Forecast Report of Capacity, Energy, Loads, and Transmission, known as the CELT Report.

1 **Figure N-6: Comparison of Original NEEWS Load Level to 2005 & 2010 CELT Forecasts**



2
3 (Note: y axis is entitled “New England Load (MW)”)

4 **Q. What transmission improvements were assumed to be in place in the studies**
5 **described in the 2011 Updated Needs Report?**

6 A. All transmission projects with ISO-NE Proposed Plan Application approvals as of the
7 June 2010 Regional System Plan Project listing were included in the base case. These
8 projects included two NEEWS projects - the GSRP (including the variation of the
9 Manchester to Meekville Junction Project known as the MMP-V) approved by the
10 Council in its Docket 370A-MR; and the Rhode Island Reliability Project. They did not
11 include the Central Connecticut Reliability Project, which is still being re-evaluated, or
12 the Interstate Reliability Project, which was the subject of the study.

1 **Q. Was the system modeled under stressed conditions in the studies described in the**
2 ***2011 Updated Needs Report?***

3 A. Yes. ISO-NE constructed dispatch scenarios in each sub-area modeled, which assumed
4 the two largest generation resources in the study area to be out-of-service. Some
5 additional capacity in each area was also assumed to be unavailable, consistent with
6 summer peak conditions.

7

8 **Q. For the East to West analyses, how were the western generators modeled?**

9 A. Millstone 2 and 3 were assumed to be the two large resources in western New England
10 that were unavailable. Eighty percent (80%) of available quick-start units were modeled
11 as in-service in western New England. In order to represent the typical forced outage rate
12 of the western New England generation fleet, Berkshire Power was modeled as out-of-
13 service. Finally, the Bear Swamp and Northfield Mountain pumped storage hydro units
14 were dispatched at 50% output because these resources often serve as reserve for New
15 England and also often can not be totally replenished during off-peak hours in summer
16 conditions. Finally, Vermont Yankee was assumed to be unavailable because of the
17 uncertainty with respect to the outcome of ongoing permitting and license renewal issues.

18

19

1 **Q. For the West to East analyses, how were the eastern generators modeled?**

2 A. Eighty percent (80%) of available quick-start units were modeled on in eastern New
3 England. Seabrook was assumed out of service to capture the first large resource being
4 unavailable. The Hydro Quebec Phase II HVDC line that provides imports from Hydro-
5 Quebec was assumed out of service to capture the second large resource being
6 unavailable. It should be noted that there is only a small contract to provide capacity
7 over Phase II, which expires over the planning horizon. Therefore, it could be argued
8 that it should not be included in the base case and an additional resource in the east
9 should be assumed to be unavailable. However, due to the size of Seabrook and Phase II
10 (totaling 3,245MW), assuming the unavailability of additional large resources did not
11 seem reasonable. The New Brunswick interface was assumed to be operating at zero, as
12 its ability to provide support during high and peak load periods is questionable,
13 especially in light of the continuing long-term outage of Point Lepreau.

14
15 **Q. What were the results of the power-flow simulations in the 2011 Updated Needs**
16 ***Report?***

17 A. Numerous thermal criteria violations were found in New England for N-1 and N-1-1
18 contingency events. These violations occurred when the system attempted to deliver
19 power from western New England to serve load in eastern New England, and when it
20 attempted to move power from eastern New England to serve load in western New
21 England. Overloads also occurred within Connecticut and Rhode Island.

1 The power-flow modeling also showed voltage violations following N-1-1 contingency
2 events in Eastern New England, Western New England, and Connecticut. The detailed
3 results are provided in the *2011 Updated Needs Report*.

4
5 **Q. Since the studies described in the *2011 Updated Needs Report* were undertaken, have**
6 **there been any relevant changes in the modeled system conditions?**

7 A. Yes. Since work on those studies was begun, the owners of the 745-MW Salem Harbor
8 Station, located on the north shore area of Massachusetts, confirmed that all of the plant's
9 units would be retired in 2014, notwithstanding requests from ISO-NE that two of the
10 units continue to be available to operate for reliability reasons. ISO-NE therefore
11 directed the New England transmission owners not to include Salem Harbor in any
12 reliability studies for any year after 2014. The Salem Harbor capacity was included in
13 the base case for the analyses in the *2011 Updated Needs Report*. As a sensitivity
14 analysis showed, thermal overloads are increased when the Salem Harbor capacity is
15 removed from the case, and the need for additional eastern New England import
16 capability is even greater than demonstrated in the base case.

17
18 The 186-MW AES Thames coal-fired power plant, in Montville, Connecticut, ceased
19 operations in January, 2011 when its then-owner declared bankruptcy. In December,
20 2011, the purchaser of the plant announced that it would be decommissioned and
21 dismantled. The Thames plant was included in the *2011 Updated Needs Report* base

1 case. The impact of removing Thames from the case would probably be modest.
2 However, the example of its sudden, non-price retirement is significant, because it
3 illustrates the sudden changes that the system must be prepared to withstand.

4
5 In Forward Capacity Auction held in April, 2012 (FCA#6), West Springfield Unit 3 (94
6 MW) and Bridgeport Harbor Unit 2 (131 MW) were de-listed.

7
8 Finally, as previously described, the Phase III re-evaluation that ISO-NE is currently
9 conducting models some transmission system improvements not previously modeled, and
10 may model projected additional future energy efficiency measures.

11 12 **6.0 Redesign of the Proposed Facilities**

13 **Q. After ISO-NE determined that the need for the Project had evolved to include new**
14 **reliability problems of insufficient capability to use resources in the west to serve**
15 **load in the east, what work was done to refine the design of the Project to meet that**
16 **enhanced need?**

17 A. ISO-NE undertook a further study to determine if any changes to the Project were
18 necessary to serve this enhanced need, and to identify the optimal and most cost effective
19 design for any such required changes. ISO-NE assigned responsibility for these studies
20 to the previously formed Working Group of planners from ISO-NE, NUSCO, and

1 National Grid. For the purpose of this study, the group was expanded to include
2 representatives of NSTAR, a Massachusetts utility.

3
4 **Q. Did the Working Group determine that any additions to the Project facilities were**
5 **required to meet the enhanced need?**

6 A. Yes. They determined that additional facilities in Rhode Island would be required,
7 principally the rebuilding of a switching station and an existing 345-kV line. These
8 changes are described in the next section of this testimony.

9
10 **Q. Did the Working Group determine that any additions to the Connecticut portion of**
11 **the Project were required?**

12 A. No. There were no required additions to the Connecticut portion of the Project.

13
14 **Q. Has the proposed construction in Connecticut changed at all since the first**
15 **Municipal Consultation Filing was issued in 2008?**

16 A. Yes. Although no additional facilities are being proposed, there is one transmission
17 system change that is no longer being proposed as part of the Interstate Reliability
18 Project. That is the “310 Line Loop,” by which a segment of the 345-kV Millstone to
19 Manchester 310 Line would have been looped into the Card Street Substation over a 1-
20 mile long ROW segment in Lebanon, Connecticut, with an associated expansion of the
21 footprint of the Card Street Substation.

1 **Q. Why was the 310 Line Loop eliminated from this project?**

2 A. The 310 Loop was required to eliminate overloads that occurred with higher flows on the
3 existing eastern Connecticut transmission system that could result from the construction
4 of the Interstate Reliability Project, together with the loss of the double circuit 345-kV
5 line (circuits 310 and 348). The 310 circuit extends between the Millstone Switching
6 Station and the Manchester Substation, and the 348 circuit extends between the Millstone
7 Switching Station, Haddam Substation and the Beseck Switching Station. The worst
8 such overload occurred in the event of an N-1-1 contingency on the Card Street to
9 Manchester 345-kV line circuit 368. Since the Project was first proposed, the 310/348
10 single contingency has been eliminated by the planned separation of that double-circuit
11 line into two circuits supported by independent lines of structures. The Council approved
12 this circuit separation in October, 2011, in its ruling on Petition 1007. In addition, the
13 modeled flows on the 310 345-kV Millstone to Manchester line in the *2011 Updated*
14 *Needs Report* were lower than in the *2008 Needs Report*.

15
16 **Q. Why was the modeled flow on the Millstone to Manchester line lower in the re-**
17 **analysis described in the 2011 Updated Needs Report?**

18 A. There were several reasons. The most important was that the more recent case included
19 additional Connecticut generation that altered the current redistribution following
20 contingent events. In addition, as a result of the Council's order in Docket 370A-MR, the
21 system modeled in the re-analysis studies included two independent 345-kV line

1 segments between the Manchester Substation and Meekville Junction, rather than the
2 one three-terminal 345-kV line and one 115-kV line segment that had been previously
3 modeled. The effect of this improvement was that a larger share of the redistributed
4 power flows on the MMP lines following contingent events.

5
6 **Q. Does that mean that the 310 Line Loop will not be proposed?**

7 A. No, it means only that the 310 Line Loop is not needed as part of this project. The need
8 for a 310 Line Loop is now being evaluated as part of the Greater Hartford / Central
9 Connecticut study, and it could be proposed again as an outcome of that study. It is also
10 possible that it could be proposed as an independent project at some future time because
11 it would reduce the circuit outages required for maintenance of the 345-kV lines in the
12 Millstone to Manchester corridor. Finally, were there to be extensive future generation
13 retirements in Connecticut, the project could be proposed to further increase
14 Connecticut's import capability and east to west transfer capability.

15
16 **Q. As it has been redesigned, does the proposed Interstate Reliability Project address
17 the needs identified by the 2011 Updated Needs Report?**

18 A. Yes. The Interstate Reliability Project as redesigned eliminates the reliability criteria
19 violations that ISO-NE found were necessary to be addressed by this project. It
20 integrates generation resources with load in southern New England by eliminating
21 transmission constraints on the transfer of power from east to west and from west to east.

1 At the same time, the Project will resolve remaining reliability issues within Rhode Island
 2 and provide needed power-import capability to Connecticut. It will ensure that the
 3 approximately 2,500 MW of generation along the Card Street Substation (Connecticut) –
 4 West Medway (Massachusetts) corridor, most of which is relatively new and efficient,
 5 can be called upon to more reliably serve load in both western and eastern New England,
 6 as needed, over the long-term planning horizon.

7
 8 **Q. What additional transfer capability will the Interstate Reliability Project provide?**

9 A. ISO-NE has determined that the Interstate Reliability Project provides the following
 10 ranges in transfer capabilities:

N-1	Pre-Project	Post-Project
Western New England Import	3400-3950 MW	4150-5050 MW
Eastern New England Import	2600-2700 MW	3950-4450 MW
Connecticut Import	3050-3750 MW	3600-4100 MW
N-1-1	Pre-Project	Post-Project
Western New England Import	2250-3000 MW	3100-3900 MW
Eastern New England Import	1250-1350 MW	3150-3550 MW
Connecticut Import	1750-2400 MW	2550-3100 MW

20
 21 **Q. Do these transfer capabilities differ from those previously projected?**

22 A. Yes. The “Pre-Project” values include the additional transfer capability that will be
 23 provided by the GSRP and MMP projects when completed in December, 2013. These
 24 values are higher than originally projected, in large part because the projected values did

1 not take the MMP-V into account. However, the post-Interstate values are consistent
2 with previous projections.

3 **7.0 Connecticut-Specific Benefits**

4 **Q. In addition to addressing a regional reliability need that is common to all three**
5 **Southern New England states, does the Interstate Reliability Project offer any**
6 **Connecticut-specific benefits?**

7 A. Yes. The Interstate Reliability Project will provide several important Connecticut-
8 specific benefits.

9

10 **7.1 Increased Connecticut Import Capability**

11 As just discussed, the Project will significantly improve the Connecticut import
12 capability. Of all the New England states, Connecticut is the least able to import power
13 to supplement its internal supply resources. New Hampshire, Vermont, and Rhode Island
14 have enough import capability to serve 100% of their peak load under N-1 contingency
15 events. Massachusetts and Maine can import slightly less than 50% of their peak load.
16 Connecticut, however, will only be able to import approximately 33% of its peak load
17 even following the improvement in its import capability from completion of the GSRP
18 and MMP. Connecticut still requires power imports to maintain reliability for N-1-1
19 contingencies in accordance with mandatory reliability standards and criteria. Moreover,
20 this increased import capability will provide desirable flexibility to maintain reliability in
21 light of potential changes in system conditions that could occur on short notice. As the

1 DEEP has noted in its draft 2012 Integrated Resource Plan, this increase in transfer
2 capability will also provide resource adequacy benefits.

4 7.2 **Environmental Benefits**

5 As DEEP has also noted in its draft Integrated Resource Plan, the increased import
6 capability that will be provided by the Project provides a margin of protection against
7 generator retirements based on economics, including the cost of complying with
8 environmental regulations. Moreover, it provides a margin that will comfortably
9 accommodate temporary generator outages required for retrofitting plants to comply with
10 such regulations.

11
12 Similarly, recent government policy initiatives require access to low-emission and/or
13 renewable energy sources. In its draft 2012 Integrated Resource Plan, DEEP predicts that
14 there will be a region-wide shortfall of renewable generation required to meet the
15 Renewable Portfolio Standards adopted by the New England states, and recommends,
16 among other things, increased imports of renewable generation from New York and
17 Canada. While the Interstate Reliability Project will not by itself provide Connecticut
18 with direct access to such energy sources, it will serve as an essential link to the regional
19 transmission network necessary to do so.

20

1 **7.3 Increasing Connecticut’s Generation Resources – Lake Road**

2 DEEP’s draft 2012 Integrated Resource Plan also predicts that the Interstate Reliability
3 Project will benefit Connecticut by enabling the Lake Road Generating Station capacity
4 to be counted toward Connecticut’s Local Sourcing Requirement (LSR). While ISO-NE
5 makes such decisions, CL&P is hopeful that this will be the case.

6
7 The LSR is the minimum amount of generating capacity that must be electrically located
8 within an import-constrained load zone to meet system-wide resource adequacy
9 requirements. The Lake Road Generating Station is physically located in Killingly,
10 Connecticut, but because of the limitations of the existing transmission system, until
11 recently, none of its three units have been treated as electrically in Connecticut or
12 counted toward the Connecticut LSR. We understand that upon completion of the GSRP
13 and MMP and some minor improvements at the Lake Road Generating Station and
14 Switching Station, one of the three Lake Road units will be counted as a Connecticut
15 resource. Construction of the Interstate Reliability Project, which will provide a second
16 345-kV path in and out of the Lake Road Switching Station, should make the remaining
17 two of Lake Road Generating Station’s three generating units eligible for consideration as
18 local Connecticut resources. In the FERC Form 715 that it filed on April 1, 2012, ISO-
19 NE announced that it was undertaking a study to determine if the location of the
20 Connecticut import interface will change with the construction of the Project. Although
21 this is a decision that can be made only by ISO-NE, based on its own internal studies,

1 CL&P believes that ISO-NE should conclude that all three units may be counted as
2 Connecticut resources. Alternatively, ISO-NE may determine that, with the additional
3 import capability provided by the Interstate Reliability Project, Connecticut will no
4 longer be treated as an import-constrained zone, so that it will be relieved from the LSR
5 altogether.

7 **8.0 Long-Range Plan for Expansion of the Electric Power Grid**

8 **Q. Is the Interstate Reliability Project part of a long-range plan for expansion of the**
9 **electric power grid serving the state and interconnected utility systems that will**
10 **serve the public need for adequate, reliable and economic service?**

11 A. Yes. First, as the Council recognized in Docket 370 (Dkt. 370 Opinion, p. 3), the
12 NEEWS projects are in themselves a long-range plan for southern New England.
13 The four main NEEWS projects are designed to work together to address weaknesses in
14 the southern New England transmission system; resolve thermal overloads and low-
15 voltage reliability problems on the Rhode Island transmission system; increase system
16 capability to reliably move greater amounts of power across southern New England from
17 east to west and from west to east; significantly increase the Connecticut Import interface
18 transfer limits; and increase the capability of the Connecticut transmission system to
19 move power from east to west across the state to reach the concentrated load pockets in
20 southwest Connecticut. As a whole, the NEEWS projects address all of the major near-
21 term problems of the southern New England transmission system as identified by ISO-

1 NE. In addition, the NEEWS plan has been closely designed and integrated with the
2 recently completed 345-kV transmission loop in SWCT. The individual components of
3 the NEEWS Plan have been consistently re-evaluated since they have been proposed.
4

5 **The ISO-NE Regional System Plan**

6 Second, the NEEWS plan is part of a larger long-range plan for expansion of the southern
7 New England grid to provide adequate, reliable and economic electric service to southern
8 New England. NEEWS has been developed as part of the ISO-NE Regional System Plan
9 (RSP) process. The components of the NEEWS projects have been a part of each RSP
10 since the “SNETR” plan was initially presented in 2005. This project has an even longer
11 planning history. Before NEEWS was developed as an integrated plan, ISO-NE was
12 already considering new 345-kV lines from Card Street to Millbury, known as the
13 Southern New England Transmission Reinforcement Project. *See, e.g.*, ISO-NE’s 2004
14 Regional Transmission Expansion Plan (RTEP). The RTEP was the predecessor of the
15 RSP.
16

17 **Q. What is the current state of the NEEWS plan?**

18 A. The GSRP (including the MMP-V) and the RIRP have been approved and are in
19 construction. The Central Connecticut Reliability Project is still being re-evaluated by a
20 study group that is also considering needs in the Greater Hartford area, and will be re-
21 evaluated using ISO-NE’s new EE forecasting methodology. As a result, it is possible

1 that this component of NEEWS could change. As we explained earlier in this testimony,
2 this Project is also currently undergoing an updated needs assessment.

3
4 **Q. What do you foresee as the next element of a long-range plan for Connecticut after**
5 **the NEEWS projects are completed?**

6 A. Looking into the future, it is probable that at some point the ties with New York should
7 be reinforced with a second 345-kV transmission path, thereby providing a stronger
8 transmission interconnection with New York similar to the proposed strong transmission
9 interconnections with Massachusetts and Rhode Island that will be provided by the
10 NEEWS projects.

11 **9.0 System Alternatives**

12 **Q. What alternatives to the Interstate Reliability Project have been evaluated?**

13 A. In the course of the initial needs study, the Working Group evaluated a “no action”
14 alternative. ISO-NE, independent of the Working Group, considered a generation
15 alternative both at the time of the original *2008 Needs Report* and again at the time of the
16 *2011 Updated Needs Report*. NUSCO and National Grid considered numerous
17 transmission system alternatives to the project as originally designed, and then, together
18 with ISO-NE, revisited and refined that analysis after the project had been redesigned to
19 meet the enhanced need described in the *2011 Updated Needs Report*. NUSCO and
20 National Grid also retained a consulting firm, ICF International, to evaluate non-

1 transmission alternatives, including both generation and demand side management
2 alternatives such as conservation and load management programs and demand response.

3 **Q. Why was the “no action” alternative rejected?**

4 A. The “no action” alternative was rejected because doing nothing to eliminate violations of
5 national and regional reliability standards and criteria would be inconsistent with the
6 tariff obligations of ISO-NE, CL&P, and National Grid to provide reliable transmission
7 service the region and specifically within the CL&P and National Grid service areas.
8 CL&P and National Grid are obligated under the ISO-NE Tariff to develop “backstop”
9 transmission solutions that can be implemented in a timely manner to ensure the
10 reliability of the transmission system when market solutions do not exist or do not come
11 forward. Failure to develop and construct “backstop” transmission solutions would
12 subject CL&P to federal fines for failing to take action to address known violations of
13 mandatory NERC standards.

14 **Q. Please describe ISO-NE’s evaluations of generation as a potential solution to the
15 problems addressed by the Interstate Reliability Project.**

16 A. In 2006, ISO-NE evaluated the potential of a generation alternative for addressing the
17 need for the various components of NEEWS. ISO-NE advised the Planning Advisory
18 Committee in December 2006 that its analyses did not show practical or feasible
19 generation alternatives to either the Greater Springfield Reliability Project or the Rhode
20 Island Reliability Project. However, it found that “the reliability concerns in CT for the

1 2012 summer peak load conditions can be resolved by installing two utility-grade, base-
2 load units (700-800 MW each). At least one of these units has to be placed in an
3 appropriate location in Western CT.” ISO-NE cautioned: “With further load growth
4 (beyond the 2012 summer peak load) and changing system conditions, additional,
5 strategically-placed generation or new transmission upgrades will be required to
6 maintain area reliability. This study did not analyze load conditions beyond the 2012
7 peak load.”

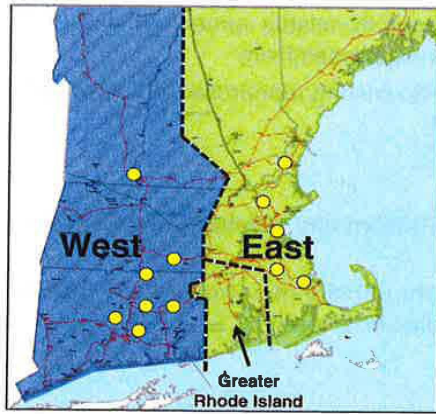
8 This 2006 analysis was reflected in the *2008 Needs Report*, but it was no longer pertinent
9 to the enhanced need identified in the *2011 Updated Needs Report*. The updated report
10 considered 2015 and 2020 conditions, and focused on the New England East-West and
11 West-East transfer needs as well as a need for an increased Connecticut import. In
12 December of 2010, ISO-NE made a presentation to the Connecticut Energy Advisory
13 Board in which it pointed out that a non-transmission alternative option would
14 necessarily entail adding qualified resources in both the East and the West to solve
15 problems in each area “but this requires [the] region to build excess supply, which will
16 increase the amount of locked-in resources.” A copy of a figure that ISO-NE used to
17 illustrate this concept is included below:

1 **Figure N-7: Excerpt from ISO-NE Presentation**

What are the Options?

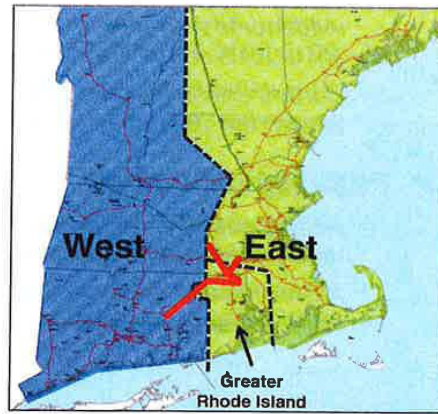
Add Resources

Add qualified resources in the East and West to solve problems in each area, but this requires region to build excess supply, which will increase the amount of locked-in resources



Strengthen Transmission

Strengthen transmission connections between East and West to reliably serve load with existing resources



or

Generation  and Transmission  are conceptual and are shown for illustration purposes only.

2

3

4 **9.1 Transmission Alternatives**

5 **Q. Now please describe the process by which alternative transmission improvements**
6 **for addressing the system needs identified in the original 2008 Needs Report and the**
7 **2011 Updated Needs Report were developed and evaluated, and the proposed**
8 **transmission solution was selected.**

1 A. This was a lengthy and intensive process that involved an interplay of planning,
2 economic, environmental, and social considerations. It was conducted in three distinct
3 phases.

4

5 In the first phase, the transmission planners who comprised the ISO-NE Working Group
6 identified several alternative “Options” that would meet threshold system performance
7 requirements for the Interstate Reliability Project element of the NEEWS Plan. This
8 work is described in detail in the ISO-NE Report entitled *New England East-West*
9 *Solutions (Formerly Southern New England Transmission Reliability) Report 2, Options*
10 *Analysis (the 2008 Options Analysis)*. A redacted copy of this report was provided in
11 Volume 5 of the Application, and a full copy was provided as part of the CEII Appendix.
12 The *2008 Options Analysis* was issued in April 2008, after drafts had been published for
13 stakeholder comment.

14

15 In the second phase, CL&P and National Grid, as the TOs, conducted detailed analyses to
16 select a preferred solution from the options initially identified by the Working Group.
17 This was a joint effort of transmission planners, civil and electrical engineers, and
18 environmental professionals. Their work is described in detail in a report entitled
19 “*Solution Report for the Interstate Reliability Project*,” dated August 2008 (the *2008*
20 *Solution Report*), copies of which were also provided as part of Volume 5 of the
21 Application.

1
2 The third phase occurred after ISO-NE re-evaluated the need for the Interstate Reliability
3 Project in 2010 and 2011. This re-evaluation identified a need for improvements to the
4 Project as then designed, which would provide additional capability for transferring
5 power from West to East across the New England East-West Interface. Therefore, the
6 ISO-NE Working Group reconsidered how the original options could be adapted to serve
7 the enhanced need identified in the *2011 Updated Needs Report*. For this purpose, the
8 Working Group was expanded by the inclusion of planners from NSTAR, a
9 Massachusetts electric public utility that owns facilities that could have been affected by
10 some of the alternative configurations considered. To evaluate these redesigned options
11 and select a proposed configuration, electrical and civil engineers and environmental
12 professionals designated by the Transmission Owners joined the group. The analysis and
13 conclusions of the expanded working group were presented to the ISO-NE Planning
14 Advisory Committee on November 30, 2010, and are described in detail in a report by
15 ISO-NE entitled *New England East-West Solution (NEEWS): Interstate Reliability
16 Project Component Updated Transmission Analysis Solution Report*. A draft of this
17 report was posted for review by ISO-NE stakeholders on November 22, 2011. In the
18 Application, we refer to this report as the *2011 Updated Solution Report*, because it was
19 expected to be issued in its final form in late 2011. For consistency, we will continue to
20 use that term in this testimony, although the report was actually issued in final form in
21 2012. A redacted copy of the report was filed as a supplement to the Application on

1 March 12, 2012, and a full copy has been filed pursuant to the CEII protective order. In
2 effect, the *2011 Updated Solution Report* combined the coverage of the *2008 Options*
3 *Analysis* and the *2008 Solution Report*. As such, it combined planning, cost, and
4 environmental analyses. For the sake of an orderly presentation, we will summarize each
5 of these analyses in this testimony. However, questions concerning the comparative costs
6 and environmental and social impacts of the various options should be directed to other
7 witnesses.

8
9 **Q. Now please describe the Transmission Options identified in the Working Group's**
10 ***2008 Options Analysis*.**

11 A. The *2008 Options Analysis* identified five options as meeting the basic performance
12 requirements that had been identified in the *2008 Needs Report* for the Interstate
13 Reliability Project component of NEEWS - strengthening the ties between the southern
14 New England states and increasing the ability to move power between eastern and
15 western New England and into the State of Connecticut. The major elements of these
16 five options were briefly described as follows:

- 17 • **Interstate Option A** – A new 345-kV transmission line from the Millbury Switching
18 Station in Millbury, Massachusetts to the West Farnum Substation in North Smithfield,
19 Rhode Island, to the Lake Road Switching Station in Killingly, Connecticut, and then to
20 the Card Street Substation in Lebanon, Connecticut.
- 21 • **Interstate Option B** – A new 345-kV transmission line from the West Farnum
22 Substation to the Kent County Substation in Warwick, Rhode Island and then to the
23 Montville Substation in Montville, Connecticut. (The 345-kV transmission line from the

1 West Farnum Substation to the Kent County Substation is part of the Rhode Island
2 Reliability Project.)

- 3 • **Interstate Option C** – A new 345-kV transmission line from the Millbury Switching
4 Station to the Carpenter Hill Substation in Charlton, Massachusetts and then to the
5 Manchester Substation in Manchester, Connecticut. This plan also required a new 345-
6 kV line from the Sherman Road Switching Station to the West Farnum Substation to
7 completely address all the needs identified.

- 8 • **Interstate Option D** – A new 345-kV transmission line from the Millbury Switching
9 Station in Millbury, Massachusetts to the Carpenter Hill Substation in Charlton,
10 Massachusetts and then to the Ludlow Substation in Ludlow, Massachusetts. The plan
11 also includes a line from the Ludlow Substation to the Agawam Substation in Agawam,
12 Massachusetts to the North Bloomfield Substation in Bloomfield, Connecticut. (The
13 345-kV transmission line from the Ludlow Substation to the Agawam Substation to the
14 North Bloomfield Substation is part of the Greater Springfield Reliability Project
15 component.) This plan also required a new 345-kV line from the Sherman Road
16 Switching Station to the West Farnum Substation and reconductoring/rebuilds of an
17 existing 345-kV line from Sherman Road to the Connecticut/Rhode Island border and
18 from the Ludlow Substation to the Manchester Substation to completely address all the
19 needs identified.

- 20 • **Interstate Option E** – A new 1,200-MW high-voltage direct-current (HVDC)
21 transmission line between the Millbury Switching Station in Millbury, Massachusetts and
22 the Southington Substation in Southington, Connecticut. This plan also required a new
23 345-kV line from the Sherman Road Switching Station to the West Farnum Substation to
24 completely address all the needs identified.

25 Each of these five options were considered to meet the threshold performance objectives,
26 but their comparative technical advantages and disadvantages were not exhaustively
27 evaluated, and the *2008 Options Analysis* did not include any analyses of the cost,
28 constructability, or routing aspects of each option. These further analyses were deferred
29 and performed later, mainly by the Transmission Owners, and were described in the *2008*
30 *Solution Report*.

1 **Q. What was the result of the analysis described 2008 Solution Report?**

2 A. Option A, which is the basis of the proposed project configuration, was identified as the
3 preferred solution, with a variant of Option C running a close second. Option E (the
4 HVDC line) and Option B (the West-Farnum – Kent County – Montville 345-kV line)
5 were found to have distinct technical or performance disadvantages, and provided no cost
6 advantage. Option B was eliminated when examination showed that it required
7 additional construction that would make it virtually the same as Option C. Two different
8 routes for connecting the terminal points of Option C were identified, but only one of
9 them, denominated C-2 was found to be practical. These considerations are examined at
10 length in the 2008 Solution Report. Options A and C-2 are illustrated in Figures N-8 and
11 N-9, respectively.

12

**Figure N-8
Interstate Option A**



1

**Figure N-9
Interstate Option C-2**



2

3

We compared the system benefits of Option A and Option C-2 and found that, although they both performed well, Option A's performance in computer simulations was equal to or somewhat better than Option C-2's performance in all tested categories.

6

7

In parallel with our technical evaluation of the two finalist options, others performed a comparison of the routing, environmental impacts, and costs of the two options and found that Option A was preferable in those respects as well.

10

1 In summary, Option A was preferred to the other Options because:

- 2 • It comfortably exceeded the objective design criteria or “targets” of the *2008 Needs*
3 *Report*, and its system performance, measured by these metrics, was substantially
4 equivalent to or better than that of the other AC options.
5
- 6 • It reinforced the electrical connection between Massachusetts and Rhode Island and
7 between Connecticut and Rhode Island for the benefit of all, providing each with more
8 access to competitive power markets and potential access to renewable energy sources.
9
- 10 • It improved access to newer, more efficient generation resources in southeastern
11 Massachusetts – an area known to have excess generation.
12
- 13 • By extending to Millbury, it created a platform for accessing lower cost, low-emission,
14 and renewable generation sources in Northern New England and Canada.
15
- 16 • It also provided access to the natural gas pipeline paths in northeastern Connecticut,
17 northern Rhode Island and southern Massachusetts, near where future generation is
18 proposed.
19
- 20 • It established a new supply source to Rhode Island, thereby increasing the reliability of
21 the Rhode Island system.
22
- 23 • It established a 345-kV loop around several large generators in central Massachusetts, by
24 connecting National Grid’s Millbury Switching Station with its West Farnum Substation
25 and with NSTAR’s West Medway Substation, thereby improving the reliability of the
26 supply from those sources.
27
- 28 • By providing a second 345-kV source to the Lake Road Switching Station, Option A was
29 expected to make two units at Lake Road Generating Station in Killingly eligible to be
30 considered as Connecticut resources.
31
- 32 • It was preferred by system operations personnel.
33
- 34 • It could be constructed for almost its entire length within existing transmission line
35 rights-of-way.
36
- 37 • The Connecticut segment of the Project would not be adjacent to numerous facilities or
38 land uses that would trigger the rebuttable “underground presumption” of section 16-50p
39 (i) of the General Statutes.
40

- 1 • It was the least costly of all of the options.

2

3 **Q. Please describe the re-evaluation and redesign of the original options in order to**
4 **address the enhanced need identified by the *2011 Updated Needs Report*.**

5 A. This work is described in detail in the *2011 Updated Solution Report*, and is
6 summarized at length in Section 13.1 of the Application. We will provide a very
7 compressed summary here, focusing on the Connecticut segment of the project. The
8 Working Group first considered which of the original five options appeared, by
9 inspection, to be likely to be adaptable to meet the enhanced need cost effectively. We
10 concluded that there was nothing in the updated needs analysis that altered the previous
11 analysis that had eliminated Option B, Option C-1, Option D, and Option E from
12 consideration. However, because the system performance and cost of Option C-2 had
13 been a close competitor of Option A, Option C-2 was reconsidered in detail, along with
14 Option A.

15

16 Both Option A and Option C-2 were redesigned to meet the requirements of the analyses
17 in the *2011 Updated Needs Report*. In an iterative process, the original configurations
18 were modified by the additions or changes that the planners anticipated would improve
19 the capability of the Southern New England transmission system to move power from
20 west to east across the New England East-West interface. In addition, some of the
21 original components of each plan were reviewed and revised to meet detailed engineering

1 requirements. System performance with those modifications in place was then analyzed
2 by power-flow simulations in accordance with applicable reliability standards and
3 criteria, using inputs consistent with the *2011 Updated Needs Report* studies.

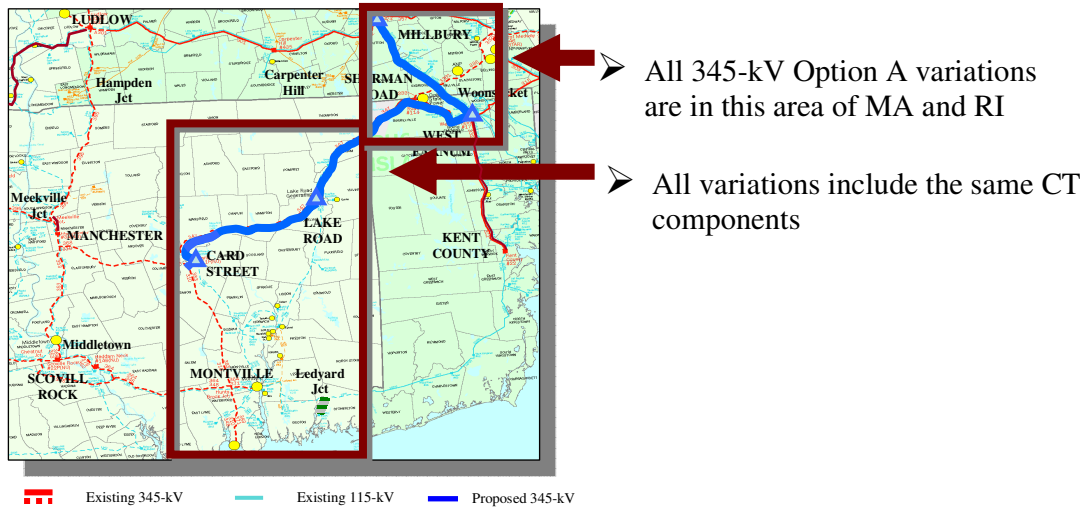
4
5 **Q. Please describe the redesign of Option C-2 to meet the enhanced need?**

6 A. Option C-2 was modified to include the construction of a new 345-kV switchyard at
7 Carpenter Hill, whereas the original Option C-2 contemplated only the installation of a
8 second autotransformer at Carpenter Hill. As re-designed, Option C-2 was designated
9 Option C-2.1. Option C-2.1 thus consists of a new 345-kV transmission line from
10 Millbury Switching Station to a new Carpenter Hill Substation to Manchester Substation.

11
12 **Q. Please describe the redesign of Option A to meet the enhanced need.**

13 A. Four distinct variants of the original Option A were identified as meeting the enhanced
14 need. These variants were designated Options A-1 through A-4. They differed from one
15 another only with respect to the construction required in Rhode Island and Massachusetts,
16 as illustrated in Figure N-10:

1 **Figure N-10: Location of Option A Variations**



2

3 All of the Option A variants have three primary components:

4

- 5 1. A new 345-kV line from Card Substation in Lebanon, Connecticut to the Lake Road
- 6 Switching Station in Killingly, Connecticut.
- 7
- 8 2. A new 345-kV line from West Farnum Substation in Rhode Island to the Lake Road
- 9 Switching Station in eastern Connecticut. (In one A option this line would loop in and
- 10 out of the Sherman Road Switching Station enroute.)
- 11
- 12 3. A new 345-kV line from the Millbury Switching Station in central Massachusetts to
- 13 either the West Farnum Substation or the Sherman Road Switching Station in Rhode
- 14 Island.
- 15

16 Each of the four A options and their differences are described in Section 13.1.3.2 of the

17 Application and in greater detail in the *2011 Updated Solution Report*. These differences

18 are subtle. The system benefits of each variant are similar and, for the most part, their

19 cost estimates are close (although the estimated cost of Option A-1 was the lowest.)

20

1 **Q. Which variant of Option A was preferred by the planners in the Working Group?**

2 A. We preferred Option A-1, because of its superior expandability and flexibility.

3

4 **Q. Please describe Option A-1 in Massachusetts and Rhode Island.**

5 A. The key elements of Option A-1 within Massachusetts and Rhode Island include:

6 • A new 17.7-mile, 345-kV transmission line from the Connecticut border to the West
7 Farnum Substation, located within existing 345-kV transmission ROWs (347 Line and
8 328 Line);

9

10 • A new 20.2-mile, 345-kV transmission line from the West Farnum Substation to the
11 Millbury Switching Station within an existing transmission ROW (115-kV Q-143/R144
12 Lines);

13

14 • Rebuilding the existing 9-mile, 345-kV line on the ROW between Sherman Road and
15 West Farnum (328 Line); and

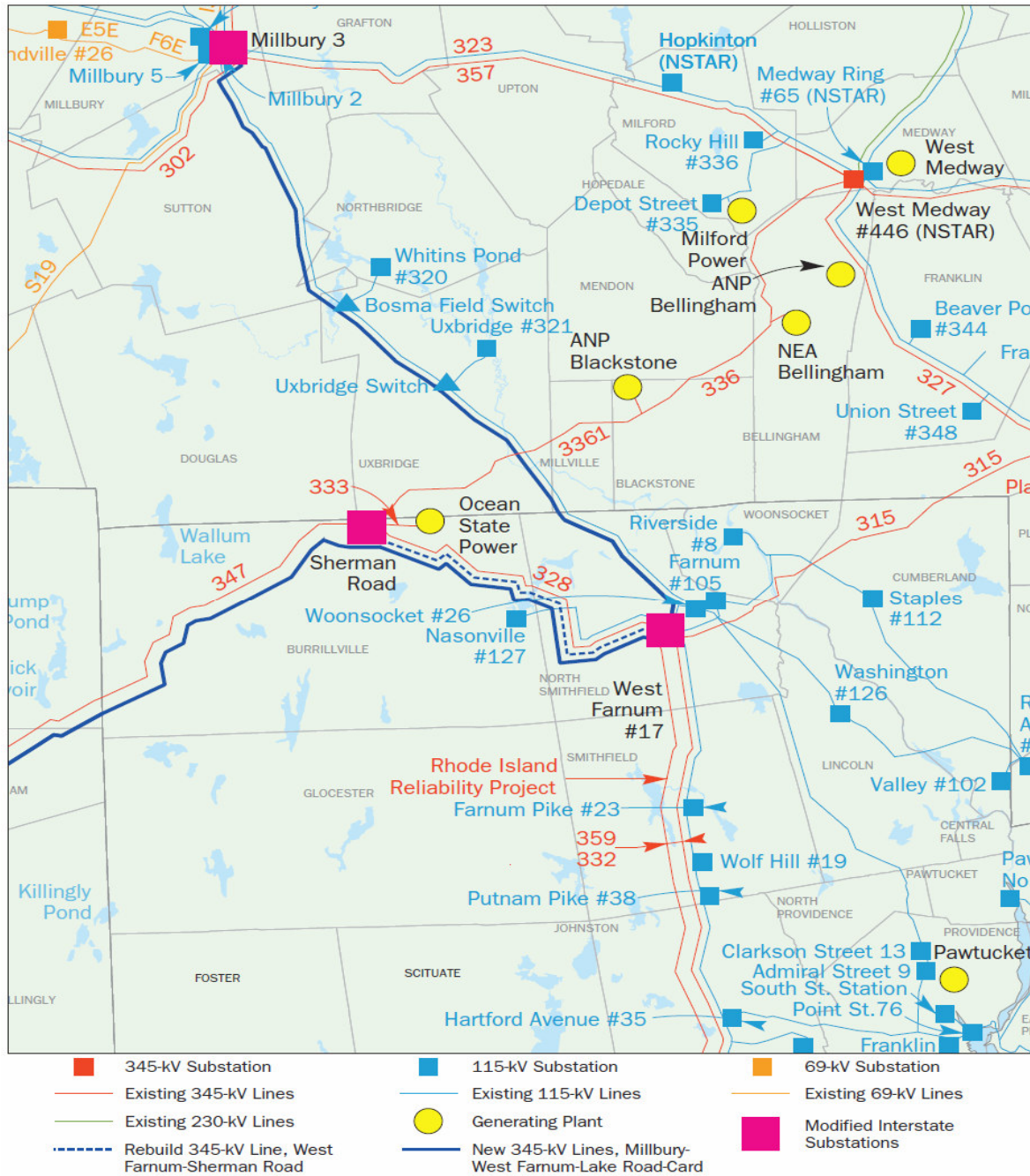
16

17 • A new 345-kV air-insulated switchyard at Sherman Road, and retirement of the existing
18 Sherman Road Switching Station.

19

20 Figure N-11 illustrates the Rhode Island and Massachusetts segments of Option A-1.

1 **Figure N-11: Option A-1 Elements in RI and MA**



2

1 **Q. Was Option C-2.1 compared to the variant A Options and, in particular, to Option**
2 **A-1?**

3 A. Yes. In fact, the four A variants and Option C-2.1 were all compared to one another.
4 But, for Connecticut stakeholders, the most meaningful comparison is probably between
5 the chosen A variant and Option C-2.1. From a system benefits point of view, this
6 comparison looked much like that between the original Option A and the original Option
7 C-2. Option A-1, like all of the A Options, provided a somewhat greater increase in the
8 N-1-1 import capability for Eastern New England, western New England, and
9 Connecticut; provided potential benefits by connecting to Lake Road, and offered better
10 system expandability and flexibility.

11
12 **Q. Which A variant did the other members of the Working Group prefer?**

13 A. They also preferred Option A-1. A comparison of the environmental and social impacts
14 of the various options favored the A options. And Option C-2.1 was the most expensive
15 option at \$714 million, whereas Option A-1 was the least costly, at \$542 million. Other
16 CL&P witnesses will be able to answer questions on these comparisons.

17
18
19
20
21

1 **9.2 Non-Transmission Alternatives**

2 **Q. Did NUSCO consider non-transmission system alternatives in the course of**
3 **examining the need for, and designing, the Interstate Reliability Project?**

4 A. No. In the course of planning the Interstate Reliability Project and the other NEEWS
5 projects, NUSCO did not undertake an analysis of possible non-transmission system
6 alternatives (NTAs). As a regulated provider of transmission service, NUSCO is
7 obligated to design and pursue backstop transmission solutions to reliability problems.
8 However, in preparation for this proceeding, NUSCO and National Grid contracted with
9 an international consulting firm with expertise in these subject-matter areas to perform a
10 comprehensive NTA analysis.

11

12 **Q. With whom did NUSCO contract for the NTA evaluation?**

13 A. NUSCO commissioned ICF Resources LLC (ICF) to perform the evaluation. ICF is a
14 management, technology and policy consulting firm that has an extensive energy
15 practice.

16

17 **Q. What alternatives to the Interstate Reliability Project did ICF analyze?**

18 A. ICF evaluated NTAs including generation additions, demand reductions, and
19 combinations of the two in order to determine if there might be a practical and cost-
20 effective non-transmission alternative to the Project.

1 **Q. What were ICF's conclusions?**

2 A. ICF concluded that there was no practical and cost-effective non-transmission
3 alternative to the Project. ICF set forth its analysis in detail in a report titled: *Assessment*
4 *of Non-Transmission Alternatives to the NEEWS Transmission Projects: Interstate*
5 *Reliability Project* (Dec. 1, 2011). A copy of the ICF report, redacted to eliminate CEII,
6 was provided as part of Volume 5 of this Application, and a full copy was filed as part of
7 the CEII Appendix. ICF's analysis and conclusions are summarized in Section 13.2 of
8 Volume 1A of the Application.

9 **Q. Who will sponsor the ICF Report as an exhibit in this proceeding and answer**
10 **questions concerning it?**

11 A. The principal authors of the ICF Report were Kenneth Collison, Judah Rose, and
12 Maria Scheller, all of ICF. They will be available to sponsor the report and answer
13 questions concerning it.

14
15 **10.0 Project Cost Recovery**

16 **Q. How does CL&P intend to recover the cost of the Interstate Reliability Project?**

17 A. CL&P will seek recovery of the costs of the Project through, and in accordance with,
18 ISO-NE's OATT.

19
20
21

1 **Q. What are the categories of transmission service in the ISO-NE Tariff and how do**
2 **they define cost recovery of transmission facilities?**

3 A. The ISO-NE Tariff contains two basic transmission services: Regional Network Service
4 (RNS) and Local Network Service (LNS). RNS defines the terms and conditions for
5 New England's pool transmission facilities (PTF), and LNS defines those for the non-
6 pool transmission facilities (Non-PTF).

7

8 **Q. What are pool transmission facilities?**

9 A. Pool transmission facilities are defined as those facilities that are rated 69 kV or above
10 and are required to allow energy from significant power sources to move freely on the
11 New England transmission system. In general these facilities form the interconnected
12 bulk power transmission grid. They exclude facilities such as radial lines, which are
13 considered non-pool transmission facilities.

14

15 **Q. What is the basic principle underlying this different rate treatment?**

16 A. The ISO-NE Tariff recognizes that all New England customers benefit from reliable and
17 economic power delivery throughout the region. PTF facilities provide utilities with
18 reliability benefits and access to remote generation resources. Accordingly, transmission
19 improvements required to enable reliable power flows throughout the region are deemed
20 by FERC to benefit all regional customers. For these reasons, New England customers
21 all share and support the recovery of transmission costs. Non-PTF facilities that provide

1 only a local area benefit are recovered under LNS service and charged to local area
2 system customers.

3

4 **Q. What is the method used to allocate RNS costs?**

5 A. The method used to allocate RNS costs is defined as load ratio share (LRS). LRS is the
6 ratio of a local area peak demand to the New England system peak demand at the same
7 hour.

8

9 **Q. What is Connecticut's load ratio share?**

10 A. Connecticut's share is approximately 27%. These costs would ultimately be borne by all
11 electric customers in the state, not just CL&P customers.

12

13 **Q. Will the Interstate facilities provide regional benefits such that you would expect
14 them to qualify for RNS rate treatment?**

15 A. Yes, provided that they are built to comply with traditional utility construction practices
16 for the area in which the facilities are being constructed and consistent with similar
17 transmission construction practices across New England. Any extra construction costs
18 incurred to satisfy local requirements would be considered to be "gold plating" and
19 would not be eligible for RNS treatment.

20

21

1 **Q. How will the regional treatment of the costs be determined?**

2 A. A project proponent must file a Transmission Cost Allocation application with ISO-NE.
3 The NEPOOL Reliability Committee advises ISO-NE on the allocation of project capital
4 construction costs, or portions thereof, eligible for regional rate treatment. The NEPOOL
5 Reliability Committee will conduct a comprehensive review of each project element and
6 its associated cost and recommend that ISO-NE approve regional cost treatment for
7 specific, eligible project elements. The final determination of the cost treatment
8 associated with any transmission project is made by ISO-NE.

9

10 **Q. How are local costs recovered?**

11 A. Costs determined by ISO-NE to be local would be recovered through the appropriate rate
12 recovery mechanism within the state in which the facility is located.

13

14 **Q. What do you expect would happen if a portion of the Interstate Reliability Project
15 were required by siting authorities to be placed underground?**

16 A. Since underground line construction is more expensive and would not be required by
17 standard utility practices in any of the areas where the Project will be constructed, we
18 expect that the cost increments for any underground line construction would be borne by
19 the load in the state that required the line to be constructed underground. The additional
20 incremental cost of any underground facilities would not be borne by the New England
21 region.

1 **Q. What cost recovery treatment do you expect the additional costs incurred for**
2 **reducing magnetic fields pursuant to the Council’s EMF Best Management**
3 **Practices will receive?**

4 A. Based on the cost allocation decision for the Middletown to Norwalk (M-N) Project, we
5 expect that the BMP costs will be localized.
6

7 **11.0 In-Service Date**

8 **Q. What is the projected in-service date for the Interstate Reliability Project?**

9 A. The projected in-service date for the Project is December, 2015. In order to achieve that
10 date, siting and environmental approvals from the three states of Connecticut, Rhode
11 Island, and Massachusetts, and a U.S. Army Corps of Engineers permit pursuant to
12 Section 404 of the federal Clean Water Act will be required.
13

14 **12.0 Conclusion**

15 **Q. Please summarize and conclude your testimony.**

16 A. Numerous studies and re-analyses, undertaken from 2004 through 2011, demonstrate that
17 the Interstate Reliability Project is needed to provide reliable electric service to the
18 Southern New England states of Connecticut, Massachusetts, and Rhode Island, and
19 should be constructed as soon as possible. The Project is once again being re-analyzed
20 by ISO-NE, with some new assumptions and perhaps with a new methodology.
21 Although we will not know the results of this re-analysis until July, we continue to

- 1 believe that this project is needed for system reliability and represents a sound investment
- 2 in Connecticut's energy future.