

1 **STATE OF RHODE ISLAND AND**
2 **PROVIDENCE PLANTATIONS**

3
4 **PUBLIC UTILITIES COMMISSION**

DOCKET No. 3732

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6
7 **In re: The Application of Narragansett Electric**
8 **Company d/b/a National Grid, Southern Rhode**
9 **Island Transmission Project**

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12 **ISO-NEW ENGLAND STATEMENT OF POSITION**

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16 **I. INTRODUCTION**

17
18 ISO-New England (“ISO”) sought to intervene in this proceeding by a petition
19 filed April 3, 2006. The Public Utilities Commission (“PUC”) by letter dated April 14,
20 2006 allowed such intervention on the condition that ISO agreed to file a statement of
21 position or testimony addressing relevant issues and to provide a witness to be available
22 for questioning on such matters at a hearing before the PUC. ISO accepted such
23 condition by its letter filed with the PUC on April 20, 2006. This statement of position is
24 filed to address the PUC’s condition.

25 ISO supports the request of Narragansett Electric Company (“Narragansett” or the
26 “Company”) for approval under R.I.G.L. 42-98-11 of Narragansett’s proposed Southern
27 Rhode Island Transmission Project (the “Project”)¹. The reason is simple. As described
28 throughout Narragansett’s testimony and various studies and analyses reviewed by ISO,
29 which are referenced or described herein, there is a compelling and current need for

¹ In ISO-NE’s planning documents, the Project is referred to as the “Southwestern Rhode Island Transmission Project.” For ease of reference and to avoid confusion, ISO herein refers to the Project as “Southern Rhode Island Transmission Project”, as filed by Narragansett.

1 prompt approval and construction of the Project. As explained further below, ISO has
2 completed its independent review of the Project per the procedures outlined in its Tariff,
3 and in accordance with that review, ISO supports this Project as necessary and
4 appropriate for addressing the shortcomings facing the Rhode Island system. Not only is
5 the Project necessary for continued reliable service in Rhode Island, but because of the
6 highly integrated nature of the New England System, the Project is needed from the
7 regional perspective as well.

8 **II. ISO-NEW ENGLAND'S INTERESTS AND REVIEW OF THE PROJECT**

9 **A. Scope of ISO's Interests.**

10 ISO files this Statement of Position in accordance with the established
11 procedural schedule. ISO's Statement of Position² seeks to aid the PUC's process by
12 focusing on the area it can uniquely address – the current and projected condition of
13 the adequacy of the transmission system, the associated issues of need (and the timing
14 of such need) for the Project, and the nature and status of ISO's review and approval of
15 the Project. Therefore, ISO, for the most part, will not address environmental and site
16 selection issues.

17 **B. ISO's Responsibilities as the Regional Transmission**
18 **Organization for New England.**

19 **1. Overview.**

20
21 ISO is responsible for managing and operating the New England region's bulk
22 electric power system, operating the wholesale electricity market, administering the

² Consistent with the PUC's order allowing ISO's intervention, ISO will make witnesses available from ISO's System Planning Department to answer questions that may be related to or generated by this Statement of Position.

1 region's Open Access Transmission Tariff, and conducting centralized system planning.
2 More specifically, ISO's responsibilities include independently operating and
3 maintaining a highly reliable bulk transmission system, promoting efficient wholesale
4 electricity markets, and working collaboratively and proactively with state and federal
5 regulators, NEPOOL Participants, and other stakeholders. ISO was established as the
6 Independent System Operator of the New England bulk power grid on July 1, 1997,³ and
7 it assumed certain operating and transmission reservation responsibilities which had
8 previously been carried out by NEPOOL, which transferred staff and assets to ISO. In
9 June, 2001, and June 2003, FERC conferred authority on ISO to be primarily responsible
10 for the regional transmission planning process.⁴

11 **2. ISO's Process for Conducting Planning for System Expansion.**

12 Pursuant to its responsibility for conducting long-term system planning for the
13 New England region, ISO conducts and directs the studies that comprise the regional
14 system plan ("RSP"), formerly referred to as the regional transmission expansion plan
15 ("RTEP"). The ISO develops the RSP through an open process and through participation
16 of, and review by, interested parties, including NEPOOL Participants (such as generator
17 owners, marketers, load serving entities and transmission owners), governmental
18 representatives, state agencies (including those participating in the New England

³ New England Power Pool, Order Conditionally Authorizing Establishment of an Independent System Operator and Disposition of Control Over Jurisdictional Facilities, 79 FERC ¶ 61,374 (1997) (authorizing formation of ISO).

⁴ ISO New England Inc. & New England Power Pool, Order On Rehearing Requests and Compliance Filings, 95 FERC ¶ 61384 (2001)(authorizing ISO to oversee regional transmission planning); New England Power Pool & ISO New England Inc., 103 FERC ¶ 61,304 (2003) (accepting October 2001 compliance filing as to the directive regarding Sections 18.4 and 18.5 of the Restated NEPOOL Agreement, and stating that "[w]e are persuaded by ISO-NE's arguments that it is the appropriate authority to approve planning for transmission upgrades and changes to supply and demand-side resources.").

1 Conference of Public Utilities Commissioners), representatives of local communities, and
2 consultants. This group of interested parties is known as the Planning Advisory
3 Committee (“PAC”). The PAC meets regularly throughout the year, and PAC meetings
4 are open to any interested party and have included representatives of many entities
5 throughout New England, including market participants and government regulators. The
6 ISO formally updates the RSP on an annual basis, and does so only after a subcommittee
7 of the ISO Board of Directors has met with the PAC, and any other interested parties.
8 The ISO typically publishes the RSP in the Fall of each calendar year. As a result, each
9 RSP summarizes results from the planning efforts that examine system needs throughout
10 New England. The RSP is a comprehensive planning assessment comprised of numerous
11 studies and analyses of New England’s bulk electric power system. By identifying
12 problem areas and discussing those needs through regular meetings with the PAC, the
13 RSP, along with any interim reports published by the ISO throughout the year, provides
14 appropriate information to the wholesale electricity marketplace on power system
15 problems and the needs that might possibly be addressed through investment in market
16 solutions. Market solutions might include private investment in generation, merchant
17 transmission facilities, and demand response programs. If the market does not respond
18 with adequate solutions or market solutions are not practical to address defined system
19 needs, ISO is charged with identifying a coordinated transmission plan that contains
20 appropriate upgrades for reliability and economic needs.

21 The transmission solutions contained in the plan would be implemented only in
22 the absence of market solutions. Thus, the RSP is a planning process that responds to and

1 integrates market responses with needed reliability and economic transmission upgrades
2 in order to achieve a reliable system of generation, distributed resources, and
3 transmission.

4 **C. ISO Actions on this Project.**

5 **1. Since 2004, ISO Has Endorsed the Need for a Transmission**
6 **Solution in this Area of Rhode Island.**

7 In 2004, the ISO concluded that the transmission project that Narragansett
8 proposes herein would be needed for continued reliable service in Rhode Island and New
9 England. The RTEP04 report included the Narragansett Project as an approved
10 transmission upgrade for reliability reasons for New England because thermal and
11 voltage problems had been identified in the Southern Rhode Island area at a summer peak
12 load level of 27,400 MW. *See Attachment A* (relevant excerpts from RTEP 04). These
13 thermal and voltage problems are in violation of ISO-NE reliability standards. The ISO
14 reiterated the need for the Project in its 2005 Regional System Plan.

15 **2. The ISO Has Approved the Specific Design Characteristics of**
16 **this Project.**

17
18 In addition to identifying the reliability problems in this portion of Rhode Island
19 (which, again, have potential reliability impacts beyond the local area), identifying the
20 need for a transmission solution, and reviewing the effectiveness of this Project, ISO also
21 conducted a detailed review of this Project under Section I.3.9. of its Tariff.⁵ Section
22 I.3.9 of the ISO Tariff provides that the ISO must approve a transmission project design
23 to ensure that it will not have a significant adverse impact on the reliability or operating

⁵ The ISO's Tariff is available at: <http://www.iso-ne.com/regulatory/tariff/index.html> (see the Tab for Section I to access the Tariff provision discussed herein).

1 characteristics of the system of the entity seeking approval or upon the system of any
2 other participant in the ISO-NE system. Like the RSP process described above, ISO
3 makes its decisions after receiving input from interested stakeholders. In this instance,
4 ISO made a determination that this Project complied with Section I.3.9 of the Tariff
5 January 28, 2005, after having received input from multiple stakeholder groups, including
6 the NEPOOL Reliability Committee and its subordinate Stability and Transmission Task
7 Forces. ISO's determination letter, finding no significant adverse impact associated with
8 the Project, is attached hereto as Attachment B.

9 **3. The ISO Has Approved the Regional Cost Allocation for this**
10 **Project.**
11

12 Finally, pursuant to Section 2 of Schedule 12C of Part II of the ISO Open Access
13 Transmission Tariff⁶ and ISO Planning Procedure 4⁷, owners of transmission facilities
14 can seek an ISO determination that the costs of new Pool Transmission Facilities ("PTF")
15 be allocated to all electric customers throughout the New England region, through rolling
16 the costs into the regional transmission rate. Under this Schedule of the ISO Open Access
17 Transmission Tariff, ISO makes a determination that the costs associated with a project
18 should be Pool-Supported PTF costs where it determines that the project provides a
19 regional reliability benefit, is consistent with Good Utility practice, and is consistent with
20 current engineering and design practices in the area in which the project is being
21 constructed. In this case, ISO determined that the Project was beneficial and well-
22 designed as described above and that the costs proposed by Narragansett for regional rate

⁶ See *supra* n. 5 (see the Tab for Section II to access the Tariff provision discussed herein).

⁷ See http://www.iso-ne.com/rules_procedures/isonone_plan/index.html.

1 treatment did not include costs providing only a local benefit. Again, ISO made its
2 decision after having received input from stakeholder groups – in this instance, the
3 NEPOOL Reliability Committee. On March 29, 2005, ISO approved regional rate
4 treatment of the entire cost of the Project.⁸ See Attachment C [Whitley 3/29/05 letters].

5
6

D. Summary of ISO's Position on the Project.

7 ISO's position with respect to the proposed Project is that serious reliability
8 concerns exist (both as to compliance with voltage and thermal standards) in southern
9 Rhode Island that necessitate action at the earliest possible time and that Narragansett's
10 proposed Project best addresses those concerns at the most reasonable cost.

11 **III. NEED FOR THE PROJECT**

12 **A. Under Current and Projected Conditions, the Rhode Island System**
13 **Appears to be Non-Compliant with Regional and Local Planning**
14 **Standards.**
15

16 There is a need for the Project because of concerns about the ability of the electric
17 system in Southern Rhode Island to provide reliable electric service under summer peak
18 load conditions. To assess system reliability, electric system studies review power flow
19 and voltage levels under usual conditions and various contingency conditions. See Scott
20 Testimony, p. 3. A review of expected loads and system capabilities in Southern Rhode
21 Island shows that area transmission requirements are not satisfied in certain
22 circumstances. Specifically, the Northeast Power Coordinating Council (NPCC) criteria

⁸ As shown in the Narragansett filing, the Project involves various costs (e.g. the Tower Hill substation) that are local - not transmission level facilities, so the ISO review did not extend to those facilities.

1 (as well as ISO-NE's reliability standards and the National Grid Transmission Planning
2 Guide) are not met. As stated in Narragansett's filing:

3 These criteria are followed so that transmission system facility loadings
4 remain within system capabilities and transmission equipment is kept within a
5 reasonable range of voltages for foreseeable contingencies, including the loss of a
6 single element such as a transmission line or substation transformer. The loading
7 capabilities are determined using maximum allowable equipment temperatures as
8 criteria. The allowable temperatures are established by manufacturer's design,
9 American National Standards Institute (ANSI) and other national standards,
10 known material properties, or, in the case of a transmission line, the design basis
11 of the line. The range of allowable voltage is established by manufacturer's
12 design, and ANSI and other standards. The transmission system is designed to
13 meet these deterministic criteria to promote the reliability and efficiency of
14 electric service on the bulk power system and also with the intent of providing an
15 acceptable level of reliability to the customers.

16 Transmission planning studies identified reliability concerns under
17 summer peak load conditions in the southern Rhode Island area. The transmission
18 supply to the southern Rhode Island area did not meet the reliability criteria as
19 described in NEPOOL [now referred to as ISO-NE] Reliability Standards. The
20 reliability concerns included both thermal and voltage violations of the criteria in
21 the event of a contingency such as the loss of a transmission system component.

22
23 Environmental Report, pp. 3-1, 3-2.

24
25
26 More simply stated, if there is a contingency event pursuant to ISO-NE reliability
27 standards that takes components of the Southern Rhode Island system out of service
28 when the system is experiencing reasonably likely summer peak load levels, serious and
29 unacceptable concerns arise with respect to transmission lines overheating and sagging
30 and with respect to low voltage levels at various parts of the system.

31 **B. Non-Compliance with Planning Standards Can Damage the System**
32 **and Cause Blackouts.**

33
34 Specifically, these analyses show that the loss of a section of the 115kV
35 transmission corridor (at either end - Kent County to West Kingston (G-185 S) or

1 Montville to Mystic (1280)) results in low voltages on the entire corridor and overloading
2 on the G-185S section. *See, e.g.*, ISO-NE, RTEP-04, p. 285. Also, unacceptably low
3 voltages were observed at the West Kingston Substation located in South Kingstown, the
4 Kenyon Substation located in Charlestown, and the Wood River Substation in Warwick.
5 Further, excessive loading on the 115 kV line G-185S would result from the loss of the
6 115 kV line 1280, from Mystic Substation in Stonington, Connecticut to Montville
7 Substation in Montville, Connecticut. Scott Testimony, p.4.

8 The unacceptably low voltages that result from the loss of the 115kV line G-185S
9 could potentially lead to a slow voltage recovery or a voltage collapse due to the resulting
10 weak system. With large loads and inadequate system support, such as transmission
11 reinforcement, a voltage collapse could result in tripping of lines and load which leads to
12 a blackout. Excessive loading of the 115 kV line G-185S could result in damaging the
13 transmission line by heating up the wire beyond its capability. The wire might then sag
14 below its sag limit creating safety concerns. Such sagging could result in the wire
15 creating a disturbance which would lead to tripping the line, or a physical public safety
16 hazard. Tripping the 115kV line G-185S while the 115kV line 1280 is out of service will
17 result in the loss of all load (blackout condition) in the SRI area and the southeast
18 Connecticut area served by this transmission path. Scott Testimony, p.5.

1 **IV. NARRAGANSETT'S PROPOSAL IS THE PREFERABLE SOLUTION TO**
2 **THE NOTED RELIABILITY CONCERNS**

3
4 **A. Description of the Project.**

5 As described by Narragansett,

6 The Southern Rhode Island Transmission Project is a grouping of projects
7 which collectively will expand and reinforce the existing transmission system in
8 southern Rhode Island. A new 115 kV transmission line, two new transmission
9 tap lines and a new 115-12.47 kV substation will be constructed, existing 115 kV
10 transmission lines will be reconductored, and an existing substation will be
11 expanded and modified as part of the Southern Rhode Island Transmission
12 Project. Collectively, these projects span from Warwick to Charlestown along an
13 existing right-of-way ("ROW").

14 The Project will establish a second 115 kV transmission supply line to
15 Narragansett Electric's existing West Kingston Substation by extending the L-190
16 115 kV transmission line a distance of approximately 12.3 miles from its existing
17 terminus at the Old Baptist Road Tap Point in East Greenwich to a new terminal
18 at the West Kingston Substation will be expanded and modified through
19 equipment additions.

20 The proposed Project also includes the construction of a new 115-12.47
21 kV substation in the vicinity of Tower Hill Road in North Kingstown. This
22 proposed substation will be served by two new 115 kV transmission tap lines,
23 each approximately 2,800 feet in length originating from the existing G-185S
24 ROW.

25 Lastly, the proposed transmission system reinforcements include the
26 reconductoring of three existing 115 kV transmission lines in the southern Rhode
27 Island area: the L-190 transmission line from the Kent County Substation in
28 Warwick to the Old Baptist Road Tap Point in East Greenwich, the 1870N
29 transmission from the West Kingston Substation in South Kingstown to the
30 Kenyon Substation in Charlestown, and the 1870 transmission line from the
31 Kenyon Substation to the Wood River Substation in Charlestown.

32
33 Brown Testimony, pp. 3-4.
34

35 The specific component parts are as follows:

- 36
37 • Reconductor the existing L-190 115kV transmission line from the Kent
38 County Substation to the Old Baptist Road Tap Point (5.3 miles in
39 Warwick, East Greenwich and North Kingstown);

- 1 • Construct new L-190 115 kV transmission line extension from the Old
2 Baptist Road Tap Point to the West Kingston Substation on existing right
3 of way (“ROW”) (12.3 miles in East Greenwich, North Kingston, Exeter,
4 and South Kingstown);
- 5 • Reconductor the existing 1870 115 kV transmission line from the Kenyon
6 Substation to the Wood River Substation (3.9 miles in Charlestown);
- 7 • Construct two new 115 kV transmission tap lines between the existing G-
8 185S ROW and new Tower Hill Substation (0.75 miles in North
9 Kingstown);
- 10 • Construct a new 115-12.47 kV low-profile substation in the vicinity of
11 Tower Hill Road in North Kingstown to be supplied by the new 115 kV
12 transmission tap lines; and
- 13 • Upgrade existing 115 kV equipment, add new 115 kV equipment and
14 expand the existing 115kV switchyard at the West Kingston Substation in
15 South Kingstown to accommodate the new L-190 115 kV transmission
16 line extension.

17
18 Narragansett Initial Application, p. 1.
19

20 As discussed throughout this Statement of Position, ISO believes that the
21 proposed Project is the best way to address a demonstrated need and provides several
22 significant benefits to Southern Rhode Island area electric customers.

23 The proposed Project has been reviewed by ISO and the NEPOOL Reliability
24 Committee (the “RC”). ISO and the RC have approved the Project as described above in
25 Section II.

26 **B. The Project Is Necessary and Will Benefit the Bulk Power System in**
27 **Rhode Island and New England.**
28

29 The various thermal and voltage concerns noted above will be adequately
30 addressed by the Project, which is critical for reliable service both in the Southern Rhode
31 Island area, as well as neighboring areas. Further, under current forecasts the Project
32 provides solutions that will be adequate through at least the year 2020. Further, the
33 Project will allow Narragansett to remove the short term special protection system on the

1 1870S line. That special protection system is not an optimal transmission solution to the
2 shortcomings on the bulk power system, and is best removed from the bulk power
3 system, because it can result in “the separation of the 115 kV systems between Wood
4 River and Shunock substations” National Grid System Impact Study Report for the
5 Removal of the 1870 Special Protection System, Executive Summary. Finally, as
6 discussed further in the following section, the Project has the further benefit of being less
7 costly than the range of alternatives and better performing than the two alternatives that
8 are generally within a similar cost range.

9 **C. Market Based Solutions Have Not Appeared to Address the System’s**
10 **Needs and Other Transmission Solutions are Either More Costly**
11 **and/or Less Effective**
12

13 ISO has reviewed the alternative solutions that Narragansett has identified and
14 concluded that the preferred option, the Project, performs better and is slightly less costly
15 than two other options (which would require additional reinforcement by about year
16 2015) and is far less costly than the last alternative, which would perform adequately.
17 See RTEP04 Technical Report, p. 286, Table 15.13. ISO states there succinctly that “the
18 preferred plan has been selected based on technical preference and lower cost.”

19 Also, Narragansett considered three “no-build” alternatives. The first “No-Build”
20 alternative would rely on Demand Side Management (“DSM”) and/or Distributed
21 Generation (“DG”) to address the electrical system reliability issues that were identified
22 in the planning studies. In the case of DSM, Narragansett noted that its load forecasts
23 already incorporate the expected load and energy reductions to DSM programs, and that
24 the need for the proposed transmission system improvements still exists despite these

1 expected reductions, so DSM is not a viable solution. With regard to DG, Narragansett
2 concluded that generation supply in New England is based on a competitive market
3 model, which relies on the premise that if generation is a viable solution to market needs,
4 then the market will respond to the needs. However, because the market has not
5 responded by means of construction of DG projects sufficient to eliminate the current
6 need, DG was determined not to be a viable solution to meet the electrical needs of the
7 southern Rhode Island area. Beron Testimony, p. 5.

8 The second "No-Build" alternative addressed thermal line loadings with a
9 reconductoring of the G-185S 115 kV transmission line, and maintained voltages with the
10 installation of 115 kV capacitors. This option was not chosen because it is more costly
11 and would not perform as well as the proposed L-190 transmission line extension and
12 thus would provide lower quality of service. This option would also create a more
13 complicated system to operate. *Id.*

14 The third "No-Build" alternative addressed thermal line loadings with a
15 reconductoring of the G-185S 115 kV transmission line and maintained voltages with the
16 installation of a Flexible AC Transmission System device. This option was not chosen
17 because it is more costly and would not perform as well as the L-190 transmission line
18 extension and thus would provide lower quality of service. This alternative is more fully
19 discussed in the testimony of Melissa Scott, and in Section 3.4.2.1 and 5.1 of the
20 Environmental Report. Beron Testimony p. 6.

1 **V. CONCLUSION**

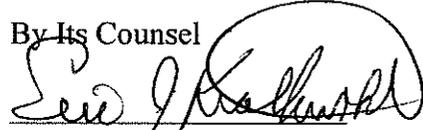
2 ISO supports Narragansett's transmission project, as proposed, and urges the PUC
3 to find that the Project is necessary to address critical reliability concerns that exist now
4 under already experienced summer peak loads. The concerns need to be addressed at the
5 earliest possible time to maintain reliable electric service in Southern Rhode Island and
6 beyond.

7 For all the reasons discussed above, the Board should expeditiously approve the
8 transmission project as proposed by Narragansett.

9 Respectfully submitted

10 ISO-New England, Inc.

11 By Its Counsel



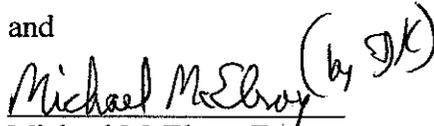
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26
27
28 June 9, 2006

15.3. RHODE ISLAND

The Rhode Island transmission system consists of 345 kV connections to Massachusetts and Connecticut, and an underlying 115 kV network. The 345 kV system is connected to Brayton Point via line 315 from West Farnum, to ANP-Blackstone via line 3361 from Sherman Road, and to Lake Road via line 347 from Sherman Road. The Ocean State Power plant is connected to Sherman Road via radial line 333.

The underlying 115 kV system is supplied by 345/115 kV substations at Brayton Point in Somerset, Massachusetts, West Farnum in N. Smithfield, Rhode Island, and Kent County in Warwick, Rhode Island. The system is tied to the Northeast Utilities system by a 115 kV interconnection from Kent County to Mystic, Connecticut, and to Massachusetts via two 115 kV lines to Millbury and several 115 kV lines that ultimately terminate at Brayton Point and Somerset stations. The Manchester Street station in downtown Providence and the FPLE RISEP plant in Johnston are connected to the 115 kV system.

Various studies have indicated that thermal and voltage based reliability problems will occur with continued load growth in the area. Some of these problems are also affected by the availability of generation and market conditions.

Thermal concerns have been identified in the area that will be addressed in the Southeastern Massachusetts/Rhode Island Reliability study. These concerns include:

- ◆ Loading on the 345/115 kV transformers at Kent County and West Farnum following loss of a transformer or local generation.
- ◆ Loading of S-171 and T-172 (West Farnum – Hartford Avenue – Drumrock) for loss of either line, or loss of the parallel 345 kV line 332 (West Farnum – Kent County).
- ◆ Loading of E-105/F106 (Manchester Street – Hartford Avenue) upon the loss of either cable.
- ◆ Loading of Q-143/R-144 (Franklin Square – Admiral Street) upon the loss of either cable.

A preliminary reliability assessment is being conducted to examine the National Grid portion of the Southeastern Massachusetts/Rhode Island transmission system for the years 2006-2016. System performance will be evaluated under stressed conditions by simulating various transfer levels across the SEMA/RI and East-West interfaces combined with various dispatch scenarios, including assessment of unit unavailability. It will address the known concerns with the 345/115 kV transformation and the transmission lines identified above, and any other potential problems identified by the study. It will also develop a long-term, comprehensive solution for the area through at least the year 2016. Study completion is anticipated at the end of 2004.

15.3.1. SOUTHWEST RHODE ISLAND

15.3.1.1. AREA CHARACTERISTICS

The Southwest Rhode Island (SWRI) area is supplied from the transmission corridor between the Kent County substation in Warwick, Rhode Island and the Montville substation in Connecticut. The transmission corridor contains a single 115 kV circuit which is sectionalized by circuit breakers at several locations (G-185S, 1870, 1465, and 1280), and a radial line supplied from Kent County (L-190). The total SWRI and Southeast Connecticut (SECT) local load supplied

from this corridor is approximately 290 MW. There is no generation located along this transmission corridor.

15.3.1.2. PERFORMANCE ASSESSMENT

The Southwest Rhode Island Transmission Supply Study was conducted to assess the reliability of the supply to load in this area. Given the absence of generation, the analysis focused on a deterministic analysis utilizing powerflow analysis of potentially limiting thermal and voltage constraints for the period 2004-2020. Thermal and voltage concerns have been identified in SWRI along the 115 kV transmission corridor. Loss of the line section at either end of the corridor – Kent County to West Kingston (G-185S) or Montville to Mystic (1280) – results in the remaining line sections being supplied radially. Radial supply of the load results in significant voltage drop when supplied from either end, and in heavy loading on line G-185S when the Montville line terminal is open.

Prior to the summer of 2003, the loss of the G-185S 115 kV line from Kent County to West Kingston resulted in low voltages along the transmission corridor. As a result, seven distribution capacitor banks were installed at three SWRI substations as a short-term solution.

A Special Protection System (SPS) also exists on line 1870 at Wood River and Mystic substations to open the line if the flow from Wood River towards Mystic, Connecticut exceeds the rating of the G-185S line. The SPS may operate following a loss of the 347 (Sherman Road – Lake Road) or 330 (Lake Road – Card) 345 kV transmission line during high imports into Connecticut.

15.3.1.3. AREA PROBLEM STATEMENT

The SWRI area will not meet NEPOOL Reliability Standards at a NEPOOL load level of 27,400 MW. The limiting contingency is loss of the Montville to Mystic section of line 1280 in CT, which results in low voltages along the transmission corridor, and overloading of the G-185S line between the Davisville tap and West Kingston substation.

The Mystic-Wood River SPS was a short term measure to address CT import capability needs. A preferable longer term solution would consider elimination of the SPS by reconductoring the limiting lines, thereby potentially providing some further increase in CT import capability.

15.3.1.4. SUMMARY OF ALTERNATIVES CONSIDERED AND STUDIES

The Southwest Rhode Island Transmission Supply Study included testing at various load levels and transfer levels for the years 2003 through 2020 to identify problems and facilitate the development of effective longer-term solutions. NEPOOL load from 24,800 MW to 27,300 MW was modeled. Combined SWRI and SECT load from 260 MW to 340 MW was modeled. Four alternatives were studied to address the needs in the area, and they appear in Table 15.13 with their recent cost estimates.

**Table 15.13
Southwest Rhode Island - Transmission Alternatives**

Alternative	Relative Performance	Issues	Order of Magnitude Estimate
Extend L-190 from Davisville tap to W. Kingston (2006) Rebuild W. Kingston to include 115 kV ring bus (2006) Reconductor L-190 (2006) Reconductor G-185S (2012)	Addresses problems through 2020	Provides better reliability to load by connecting a third line at W. Kingston	\$11 Million
Reconductor G-185S and install six 10 MVAR capacitor banks	Additional reinforcements needed in 2015		\$16 Million
Reconductor G-185S and install 60 MVAR D-SMES	Additional reinforcements needed in 2015		\$20 Million
Construct a new 345 kV line from Kent County to Montville and a 345-115 kV substation at or near W. Kingston	Addresses problems through 2020		\$108 Million

The preferred plan has been selected based on technical preference and lowest cost.

In addition to these upgrades to solve thermal and voltage reliability problems through 2020, additional upgrades have been proposed to eliminate the need for the 1870 SPS. To achieve this objective, the projects in Table 15.14 have recently been estimated and are also included in the preferred plan:

**Table 15.14
Projects to Remove 1870 SPS**

Alternative	Relative Performance	Issues	Order of Magnitude Estimate
Reconductor lines 1870N and 1870	Eliminates need for 1870 SPS		\$4 Million

Removal of the 1870 SPS will improve reliability by avoiding the potential for opening the 1870 line between Rhode Island and Connecticut during times of heavy Connecticut imports.

15.3.1.5. PROGRESS UPDATE

Section 18.4 analysis has been initiated to verify that the proposed plan will not have a significant adverse effect on the stability, reliability or operating characteristics of the transmission system.

15.3.1.6. CONCLUSIONS / RECOMMENDATIONS

- ◆ Construct the L-190 line extension, and construct a 115 kV ring bus at West Kingston substation to terminate the line.
- ◆ Reconductor L-190 between Kent County and the Davisville tap.
- ◆ Reconductor G-185S between Kent County and the Davisville tap.
- ◆ Study and consider upgrading the Mystic-Wood River 115 kV lines to eliminate the SPS.
- ◆ Complete review of studies of planned facilities and pursue development.

- ◆ Complete the long-term assessment for the overall Rhode Island area.

15.3.2. RHODE ISLAND SUBSTATION CAPACITY ADDITIONS

The following projects increase distribution substation capacity to supply surrounding load growth through the addition of distribution substation transformers and equipment. These transformers are either installed in new substations, or added to existing substations where possible.

It is not always known at the initiation of a capacity addition, especially at an existing substation, whether or not modifications to Pool Transmission Facilities (PTF) will be required. Upon determination that a project will have no PTF impact, it will be removed from the RTEP process, and, therefore, from the Project Listing.

- ◆ Point Street
- ◆ Kilvert Street
- ◆ Farnum Pike
- ◆ Johnston
- ◆ Tower Hill

15.4. CONNECTICUT

This section discusses a number of different areas of concern within Connecticut, as have been identified and are in various stages of study. These areas include:

- ◆ Connecticut import capability
- ◆ Eastern Connecticut
- ◆ Middletown area
- ◆ Manchester- Barbour Hill area
- ◆ Northwestern Connecticut
- ◆ Southwest Connecticut, including Norwalk/Stamford
- ◆ Triangle / Middle River area
- ◆ Ansonia / Indian Wells voltage support

15.4.1. CONNECTICUT IMPORT CAPABILITY

15.4.1.1. AREA CHARACTERISTICS

Connecticut is integrated into the network primarily through three 345 kV lines, one 138 kV phase angle regulator-controlled line, and four 115 kV lines. One of the 345 kV lines and the 138 kV line are interconnections with New York. No exchange of power is currently scheduled on the 138 kV line as the tie is typically used for emergency conditions only. The remaining HVdc interconnection with Long Island Power Authority in New York, though installed, has been the subject of controversy between the Connecticut Department of Environmental Protection, the Army Corps of Engineers, and FERC. Currently it is being operated and an agreement seems to be forthcoming. The 115 kV connection to Rhode Island provides very



Stephen G. Whitley
Senior Vice President & Chief Operating Officer

January 28, 2005

Mr. Thomas Gentile
Ms. Melissa Scott
National Grid-USA
25 Research Drive
Westborough, MA 01582-0001

Subject: NEP-04-T27 and NEP-04-T28

Dear Mr. Gentile and Ms. Scott:

ISO New England Inc. has determined pursuant to Section 18.4 that implementation of the Participant plans identified in the following applications will not have a significant adverse effect on the reliability or operating characteristics of the Participant that submitted the applications or upon the system of any other Participant, subject to satisfaction of any conditions identified below with respect thereto:

The New England Power Company (NEP) Transmission Facilities 18.4 Applications NEP-04-T27 and NEP-04-T28 related to the Southwest Rhode Island Reliability Project for additional transmission upgrades to address reliability needs in Connecticut by increasing the Connecticut Import capability by approximately 150 MW, and address reliability to the local load supplied by the G-1855, 1870, and 1280 Lines in Rhode Island and Connecticut by eliminating the 1870 Special Protection System (SPS), with in service dates of June 2007, as detailed in Ms. Melissa Scott's November 22, 2004 transmittal to Mr. Stephen Rourke, Chairman - NEPOOL Reliability Committee.

The plans consists of the following 18.4 Transmission Facilities Applications:

1. Reconductoring 4.3 miles of the 115 KV 1870N Line portion from the West Kingston No. 62 Substation to the Kenyon No. 68 Substation utilizing size 1113 ACSR conductor, reconductoring the West Kingston No. 62 Substation and the Kenyon No. 68 Substation bus conductors utilizing size 1590 AAC, and replacement of the existing load break switch on the 1870N line at West Kingston, relocating it to within the new fence at the West Kingston Substation. (NEP-04-T27)
2. NEP-04-T28 - Reconductoring 3.9 miles of the 115 KV 1870 Line portion from the Kenyon No. 68 Substation to the Wood River No. 85 Substation utilizing size 795 ACSR conductor and reconductoring the Wood River No. 85 Substation bus conductor utilizing size 1113 AAC. (NEP-04-T28)

The above plans [consisting of Applications 1. and 2.] are hereby approved for implementation.
Sincerely,

SGW

Stephen G. Whitley
Senior Vice President and Chief Operating Officer

cc: 18.4 Application



Stephen G. Whitley
Senior Vice President and Chief Operating Officer

March 29, 2005

Mr. Philip J. Tatro
Consulting Engineer
National Grid-USA
25 Research Drive
Westborough, MA 01582-0001

Re: NEP-04-TCA-18: TCA Request for Pool-Supported PTF Cost Treatment for the 1870N and 1870 Upgrades Project; ISO New England Written Finding and Determination

Dear Mr. Tatro:

This letter is being sent in accordance with Section 2 of Schedule 12C of Part II of the ISO New England, Inc. ("ISO") Tariff and ISO Planning Procedure 4.¹

On November 22, 2004, New England Power Company ("NEP") filed a transmission allocation application ("TCA") pursuant to Schedule 12C of the ISO Tariff. The TCA application requested Pool Transmission Facility ("PTF") cost allocation treatment for the portion of the Southwest Rhode Island Reliability Project relative to the reconductoring of Lines 1870N and 1870, among other upgrades, at the West Kingston No. 62 Substation, Kenyon No. 68 Substation, and the Wood River No. 85 Substation. Pursuant to Schedule 12 of the ISO Tariff, the Reliability Committee reviewed the NEP application and, on January 18, 2005 recommended that the ISO approve NEP's application to treat \$3,304,000 as pool-supported PTF costs.

The ISO concurs with the Reliability Committee's vote in favor of approving PTF regional rate treatment of the \$3,304,000. Only actual expenditures may be included in the PTF regional rate. As explained below, the ISO finds that the proposed costs do not include Localized Costs.

The ISO Tariff requires submission and review of this TCA application because the amount of the transmission upgrade that NEP is seeking to be rolled-in to the PTF rate is in excess of \$500,000. In making its determination that the costs associated with this project should be Pool-Supported PTF costs, the ISO concurs with the Reliability Committee recommendation that the costs identified by NEP as PTF should be approved for regional allocation. The ISO's decision is based on the facts that the project provides a regional reliability benefit, is consistent with Good Utility Practice, and is consistent with current engineering and design practices in the area in which the project is being constructed. Further, the reconductoring of Lines 1870N and 1870 present the preferred reliability alternative to eliminate the possibility of overload of the 1870 line on the

¹ Capitalized terms not defined in this letter have the meanings ascribed thereto in the ISO Open Access Transmission Tariff ("Tariff").

loss of the 347 or 330 lines because the proposed project will eliminate the special protection system currently in place on the 1870 line, and in conjunction with the separate L-190 extension, will provide additional system reliability by increasing the Connecticut import capability.

Sincerely,

A handwritten signature in black ink, appearing to read "St D Whitley".

Stephen G. Whitley
Senior Vice President and Chief Operating Officer

cc: Eric K. Runge, NEPOOL Counsel



Stephen G. Whitley
Senior Vice President and Chief Operating Officer

March 29, 2005

Mr. Philip J. Tatro
Consulting Engineer
National Grid-USA
25 Research Drive
Westborough, MA 01582-0001

Re: NEP-04-TCA-T17: TCA Request for Pool-Supported PTF Cost Treatment for the Southwest Rhode Island Reliability Project; ISO New England Written Finding and Determination

Dear Mr. Tatro:

This letter is being sent in accordance with Section 2 of Schedule 12C of Part II of the ISO New England, Inc. ("ISO") Tariff and ISO Planning Procedure 4.¹

On October 19, 2004, New England Power Company ("NEP") filed a transmission allocation application ("TCA") pursuant to Schedule 12C of the ISO Tariff. The TCA application requested Pool Transmission Facility ("PTF") cost allocation treatment for costs associated with extending the L190 line from the Davisville/Old Baptist Road tap to the West Kingston Substation; installation of two load break switches on the L190 line, one on the tap to Davisville/Old Baptist Road and one at the West Kingston substation; replacement of existing West Kingston breaker 7085 and two associated disconnect switches; installation of a 2nd 115 kV breaker and associated disconnect switches at West Kingston; and reconductoring the existing Line L190 from Kent County to Davisville/Old Baptist Road tap. Pursuant to Schedule 12 of the ISO Tariff, the Reliability Committee reviewed the NEP application and, on November 1, 2004 recommended that the ISO approve NEP's application to treat \$10,141,000 as pool-supported PTF costs.

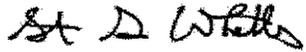
The ISO concurs with the Reliability Committee's vote in favor of approving PTF regional rate treatment of the \$10,141,000. Only actual expenditures may be included in the PTF regional rate. As explained below, the ISO finds that the proposed costs do not include Localized Costs.

The ISO Tariff requires submission and review of this TCA application because the amount of the transmission upgrade that NEP is seeking to be rolled-in to the PTF rate is in excess of \$500,000. In making its determination that the costs associated with this project should be Pool-Supported PTF costs, the ISO concurs with the Reliability Committee recommendation that the costs identified by NEP as PTF should be approved for regional allocation. The ISO's decision is based on the facts that the project provides a regional reliability benefit, is consistent with Good Utility

¹ Capitalized terms not defined in this letter have the meanings ascribed thereto in the ISO Open Access Transmission Tariff ("Tariff").

Practice, and is consistent with current engineering and design practices in the area in which the project is being constructed. Further, this project presents the preferred alternative for improving thermal and voltage performance to the levels necessary to meet reliability criteria while considering cost.

Sincerely,

A handwritten signature in black ink, appearing to read "St D Whitley".

Stephen G. Whitley
Senior Vice President and Chief Operating Officer

cc: Eric K. Runge, NEPOOL Counsel