November 16, 2006

**Via Hand Delivery**

The Honorable Magalie R. Salas
Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Re: Filing of "Procedure to Protect for the Loss of Phase II Imports;"
Docket No. ER07-___-000

Dear Ms. Salas:

PJM Interconnection, LLC ("PJM"), the New York Independent System Operator, Inc. ("NYISO") and ISO New England Inc. ("ISO-NE") (collectively, the "Filing Parties") hereby jointly submit for filing, on an informational basis, an original and six copies of the "Procedure to Protect for the Loss of Phase II Imports" (the "Procedure"). The Procedure is Attachment 1 hereto.

## I. BACKGROUND

The Procedure became effective on January 1, 1991, and was formulated by the predecessors of the Filing Parties: namely, the PJM Interconnection Office ("PJM IO"), the New York Power Pool ("NYPP") and the New England Power Exchange ("NEPEX") (collectively, the "Predecessors"). The Procedure has been utilized continuously since that time – initially by the Predecessors and subsequently by the Filing Parties – as a cooperative protocol to ensure the operation of the Hydro-Québec/NEPOOL Phase II transmission tie (the "Phase II Tie") in a manner that protects reliability throughout the three respective control areas. The Procedure helps to ensure compliance with certain conditions of the Presidential Permit issued by the U.S. Department of Energy to operate the Phase II Tie.[1] One such condition of the Presidential Permit is that the Phase II Tie "shall be operated at appropriate levels of import, up to a maximum of 2000 MW, that do not jeopardize regional reliability or place restrictions on the

[1] *See Amendment to Presidential Permit PP-76 authorizing the Vermont Electric Transmission Company to Construct, Connect, Operate and Maintain the Electric Transmission Facilities at the International Border Between the United States and Canada*, issued September 16, 1988.

MEN system, unless such restrictions are agreed to by the affected parties within the interconnected systems in accordance with applicable interpool operating agreements."[2]

The operation and administration of the Phase II Tie (and the related "Phase I" Tie built prior to the Phase II Tie, the Phase I Tie and the Phase II Tie being referred to herein collectively as the "HQ Tie") are addressed in detail in four agreements that were filed with the Commission pursuant to Section 205 of the Federal Power Act: the HVDC Transmission Operating Agreement (the "HVDC TOA"), the Interconnection Operators Agreement (the "IOA"), the Asset Owners Agreement (the "AOA"), and the Phase I/II HVDC-TF Transmission Service Administration Agreement (the "TSAA"). Additional operational provisions, as well as rates, terms and conditions for use of the HQ Tie are contained in the ISO New England Inc. Transmission, Markets and Services Tariff (the "ISO-NE Tariff"), FERC Electric Tariff No. 3, on file with the Commission pursuant to Section 205. In particular, Schedule 20A to Section II of the ISO-NE Tariff reflects rates, terms and conditions for service over the HQ Tie.[3]

Because the Procedure simply provides additional reliability-related detail, does not contain rates, terms or conditions, and is not a contract affecting rates, the Filing Parties are providing the Procedure as an informational filing, rather than one made under Section 205.

## II. DEVELOPMENT OF THE HQ TIE

As noted above, the HQ Tie was built in two phases. The Phase I Tie was initiated in 1983 and commenced commercial operations in 1986. The Phase II Tie was initiated in 1986 and commenced commercial operations in 1990. The cost of constructing the HQ Tie exceeded $600 million.

The United States portions of the Phase I Tie are owned by New England Electric Transmission Corporation and Vermont Electric Transmission Company. The United States portions of the Phase II Tie are owned by New England Hydro-Transmission Electric Company, Inc. and New England Hydro-Transmission Corporation. The Canadian portion of the interconnected HQ Tie is owned by Hydro-Québec TransÉnergie ("HQTÉ"), the transmission division of Hydro-Québec.

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[2] The term "MEN system" refers to the utility systems within the "MEN regions," *i.e.*, the Mid-Atlantic Area Council (MAAC), the East Central Area Reliability Council (ECAR) and the Northeast Power Coordinating Council (NPCC). Recently, MAAC and ECAR have merged (along with the Mid-American Interconnected Network, as well) to form ReliabilityFirst Corporation.

[3] *See ISO New England Inc., et al.*, 111 FERC ¶ 61,244 (2005) (accepting HVDC TOA, TSAA and Schedule 20A); Delegated Letter Order, Docket No. ER05-1250-000 (issued September 19, 2005) (accepting IOA and AOA).

The Phase I Tie includes a 107-mile direct current (DC) transmission line from Sherbrooke, Québec to Monroe, NH. The nominal transfer capability of the Phase I Tie is 690 MW. There are two 690 MW AC/DC converter terminals at either end of the Phase I Tie. The Phase II Tie was constructed when (1) HQTÉ extended the Phase I transmission line from Sherbrooke, Québec approximately 700 miles north to James Bay, in northern Québec and (2) New England Hydro-Transmission Electric Company, Inc. and New England Hydro-Transmission Corporation extended the Phase I transmission line from Monroe, NH to Ayer, MA. The addition of the Phase II Tie facilities increased the nominal transfer capacity between HQTÉ and New England from 690 MW to approximately 2000 MW.

## III. THE NEED FOR THE PROCEDURE

While the HQ Tie was designed with a nominal transfer capacity of 2000 MW, joint reliability studies performed by the Predecessors in advance of operation of the Phase II Tie indicated that under certain system conditions the loss of the Phase II Tie under conditions in which a full 2000 MW of energy was being imported from Québec into New England could cause the bulk power system in the Northeast and Middle Atlantic regions of the U.S. to experience instability, uncontrolled separation or cascading outages, and that these adverse events could also occur at significantly lower import levels. Specifically, these studies:

> concluded that the loss of the Phase II facilities at high levels of imports could have a worse effect on NYPP and PJM than the worst internal contingency that these individual systems normally protect against.[4]

In the parlance of the NERC Reliability Standards, a failure to operate so as to account for a large-source contingency such as the loss of the Phase II Tie can result in a violation of an Interconnection Reliability Operating Limit ("IROL").[5] Under NERC Reliability Standards, the Filing Parties are obligated to operate their control areas to respect IROLs.[6] The Procedure thus

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[4] Procedure, at 1.

[5] An IROL is defined in NERC's "Glossary of Terms Used in Reliability Standards" as: "The value (such as MW, MVar, Amperes, Frequency or Volts) derived from, or a subset of the System Operating Limits, which if exceeded, could expose a widespread area of the Bulk Electric System to instability, uncontrolled separation(s) or cascading outages."

[6] This obligation is reflected in Standards IRO-001-0 ("Reliability Coordination – Responsibilities and Authority"), IRO-003-1 ("Wide Area View"), IRO-005-1 ("Reliability Coordination – Current Day Plan"), IRO-014-1 ("Procedures to Support Coordination Between Reliability Coordinators"), IRO-015-1 ("Notification and Information Exchange Between Reliability Coordinators") and IRO-016-1 ("Coordination of Real-Time Activities Between Reliability Coordinators"), among others.

represents the means by which an IROL is calculated, and through which this reliability obligation is fulfilled by the Filing Parties.

In formulating the Procedure, the three control area operators determined that imports over the Phase II Tie would be limited to the extent necessary to insure that NYPP and PJM IO operational reliability criteria are not violated by this "Loss of Phase II Contingency." The absolute maximum Loss of Phase II Contingency allowable under this Procedure is 2200 MW.

At the time the Procedure was developed, the largest source in any of the three control areas, other than the Phase II Tie, was 1200 MW. Accordingly, it was determined by the PJM IO, NYPP and NEPEX that imports of energy over the Phase II Tie exceeding 1200 MW would be made subject to monitoring of reactive conditions at three interfaces in PJM, three interfaces in western New York and the Central-East interface in NYPP. These data are currently transmitted by telemetering equipment to the ISO-NE control room and are used by ISO-NE to develop the hourly schedules for imports over the Phase II Tie that are consistent with reliable operation of all three control areas.[7] This procedure is designed to determine the maximum level at which the Phase II Tie could be operated to ensure that the Northeast and Middle Atlantic regions would not experience instability, uncontrolled separation or cascading outages.

In addition, to ensure that reliability in the Eastern Interconnection is not put at risk by the occurrence of a contingency in New England that is larger than NYISO or PJM can absorb, the principles and limitations reflected in the Procedure are applied to other large output sources (or combinations of output sources) in New England. Examples of the application of the Procedure to those units are provided and discussed below.

## IV. DESCRIPTION OF THE PROCEDURE

The Procedure consists of a **primary document** and an **Attachment I** thereto.

The **primary document** contains:

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[7] The close coordination called for by the Procedure is consistent with the observation in Commission Staff's *Preliminary Assessment of NERC Reliability Standards* – with respect to the IRO-series standards – that "…Reliability Coordinators must be continuously aware of the status and loading of critical facilities in neighboring systems that could have an adverse impact on their own system." *Federal Energy Regulatory Commission Staff Preliminary Assessment of the North American Electric Reliability Council's Proposed Mandatory Reliability Standards*, issued May 11, 2006 in Docket No. RM06-16-000, at 68.

The specificity with which the Procedure identifies monitored interfaces and facilities also avoids the concern expressed by Commission Staff that: "The IRO standards do not specify the criteria for identifying critical facilities whose operating status can affect the reliability of neighboring systems and, therefore, hampers effective Wide Area visualization." *Id.*

- an **Introduction** explaining the contingency which the Procedure is designed to address.

- a **System Monitoring** section explaining the roles of the three operators:

  - NYPP and PJM monitoring their systems to provide NEPEX with data required to calculate Phase II import limits

  - NEPEX requesting forecasted data from NYPP and PJM required to establish Phase II schedules

  - NEPEX setting schedules with Hydro-Québec that are within acceptable limits

  - NEPEX monitoring real-time system conditions in NYPP and PJM to ensure that Phase II imports are within acceptable limits.

  This section also explains how the calculations will be performed: with a NEPEX software package.

- a **Definition of Terms** section, defining phrases used in connection with the indicators of reactive conditions in PJM and NYPP. Two key definitions included in that section are:

  - **Loss of Phase II Contingency**, defined as "The total of the MW of Phase II import and MW armed for runback in New Brunswick (Keswick Power Relays) which would be lost as a result of a single contingency (See Attachment I for Method of Calculating the Loss of Phase II Contingency). While the Keswick Power Relays will normally be disabled, they will be enabled during outages of the Chester Static VAR Compensator. MW armed during these periods must be included in the Loss of Phase II Contingency."

  - **Phase II Import Limit (Phase II Limit)**, defined as "The most restrictive Loss of Phase II Contingency allowable based on NYPP and PJM reactive conditions (See Attachment I for Method of Calculating the Phase II Import Limit)."

- a **Procedures** section, in two parts:

  - **Setting Phase II Schedules**, explaining the five steps used to set next-hour schedules on the HQ Tie: (i) determine the total of the desired level of Phase II import plus anticipated arming in New Brunswick (if Keswick Power Relays are enabled) for the next hour; (ii) determine the Phase II Limit with no margin for the next hour; (iii) if the Phase II Limit (no margin) is less than the desired Phase II import plus arming in New

Brunswick, request that NYPP and/or PJM forecast and authorize use of any available margin for the next hour; (iv) determine the Phase II Limit using authorized margin; and (v) thirty minutes in advance of the hour, establish a next hour Phase II schedule with Hydro-Quebec for which the L/O Phase II Contingency (import plus arming) will be equal to or less than the Phase II Limit (which includes any authorized margin).

- **Monitoring System Conditions**, describing the check of actual system conditions in NYPP and PJM performed at least hourly, and the steps taken to determine whether the Loss of Phase II Contingency must be reduced and, if so, to reduce New Brunswick or Phase II imports so that the Loss of Phase II Contingency is less than the Phase II Limit. Actions to reduce the Loss of Phase II Contingency must be accomplished within ten minutes from identification of a problem.

**Attachment I**, entitled "Methods For Calculating The Loss Of Phase II Contingency And The Phase II Import Limit":

- Restates the definitions of Loss of Phase II Contingency and Phase II Import Limit, and notes that conditions monitored include: (i) MW flows across the Eastern, Central and Western interfaces of PJM; (ii) station voltages on the three western New York interfaces (Rochester 345, Oakdale 345, Oakdale 230); and (iii) MW flows across the Central-East Interface of NYPP.

- Provides details of calculation of limits for next hour scheduling, utilizing the definitions provided in the primary document.

- Provides details of calculation of realtime limits, again utilizing the definitions provided in the primary document.

## V. UTILIZATION OF THE PROCEDURE

The Procedure has been utilized consistently by all three control areas since it was finalized in 1991. In addition, the Filing Parties and HQTÉ periodically review the Procedure on a joint basis to confirm its protocols and improve the efficiency of its implementation.[8]

[8] The report of the most recent "Review of the PJM-NY-NE Procedures and Methodology for the TÉ-NE HVDC Line," issued May 6, 2005, is posted on the ISO-NE website at http://www.iso-ne.com/trans/ops/limits/pjm_ny_ne_proc_method_te_ne_hvdc.doc. The purpose of the review is to "assess how [the] limit is applied in today's operation and to determine any improvement to the existing methodology that could maximize the use of this line to the advantage of all parties." *Id.* at i.

The Procedure (and the loss-of-source-based scheduling limitations calculated pursuant thereto) has played a significant role in the reliability review by New England stakeholders and NEPEX/ISO-NE of large New England generation projects since the time of Phase II energization. Specifically, Section I.3.9 of the ISO-NE Tariff provides that new generation projects and project uprates, *inter alia*, must undergo a technical review by ISO-NE (with the assistance of NEPOOL task forces) to determine whether the project/uprate will have a "significant adverse affect on the stability, reliability or operating characteristics of the Transmission Owner's transmission facilities, the transmission facilities of another Transmission Owner, or the system of a Market Participant."[9] If so, Section I.3.10 requires, *inter alia*, the Market Participant to take action as the ISO determines to be reasonably necessary to avoid such adverse effect.[10] This "action" can take the form of compliance with conditions for project operation that are necessary to protect reliability.

For example, a two-phased project to increase the net megawatt output (ultimately, to approximately 1250 MW) of Seabrook Station Unit 1, located in Seabrook, New Hampshire, was reviewed under the Section I.3.9 Process and authorized by ISO-NE only under the condition that the unit

> limit its gross output level in real-time operation such that the net loss of source that results from a contingent Seabrook generator trip is at or below the *real-time-based maximum allowable net source loss for the NEPOOL Control Area*. Any reductions to the gross output of Seabrook Station Unit 1 to meet this requirement will be required within 30 minutes of being directed to do so by ISO New England.[11]

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9 The I.3.9 process is currently integrated so as to be consistent with, and timely under, the large and small generator interconnection study process timelines.

10 Prior to the effective date for Regional Transmission Organization ("RTO") arrangements in New England, this process was set forth in Sections 18.4 and 18.5 of the Restated NEPOOL Agreement. For purposes of this document, the process will be referred to generically as the "Section I.3.9 Process," whether occurring before or after the RTO operations date.

11 See September 3, 2004 letter from Stephen G. Whitley (Senior Vice President & Chief Operating Officer – ISO-NE) to Mark R. Sorensen and Fernando DaSilva (FPL Energy), Subject: FPLE-04-GO2 (Attachment 2 hereto).

The emphasized portion of the foregoing quotation refers to the limitations set forth in the Procedure.[12] In practice, few output limitations have occurred at Seabrook, and those have occurred mostly during off-peak periods.

The reliability considerations reflected in the Procedure also figure in the operation of Mystic Units 8 and 9. A loss of the combination of those two units (resulting, for example, from a loss of a common fuel supply to those units) represents a large potential single-source contingency of 1600 MW. Accordingly, ISO-NE provides real-time output information for these two units to PJM and NYISO, and the combined generation output of the units is limited to the Phase II Import Limit as calculated under the Procedure. Any exceedance of the Phase II Import Limit will be remedied within 30 minutes from the time the problem is identified.

Likewise, a project to increase the megawatt output (to approximately 1260 MW) of the Millstone Nuclear Power Station Unit 3 generator, located in Waterford, Connecticut, was reviewed under the Section I.3.9 Process and authorized by ISO-NE only under the condition that the unit

> limit its gross output level in real-time operation such that the net loss of source that results from a contingent Millstone Nuclear Power Station Unit 3 generator trip is at or below the *real-time based maximum allowable net source loss for the NEPOOL Control Area*. Any reduction to the gross output of Millstone Unit 3 to meet this requirement will be required within 30 minutes of being directed to do so by ISO New England.[13]

Again, the emphasized language in the foregoing quotation refers to the limitations set forth in the Procedure.

## VI. COMMUNICATIONS AND CORRESPONDENCE

All correspondence and communications to PJM, NYISO and ISO-NE regarding this filing should be addressed to:

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[12] The Phase II Import Limit is specifically accounted for throughout the NEPOOL task forces' review of Section I.3.9 Process applications.

[13] See April 8, 2004 letter from Stephen G. Whitley (Senior Vice President & Chief Operating Officer – ISO-NE) to J. Alan Price and Jason Hickman (Dominion Nuclear Connecticut, Inc.), Subject: DNC-04-G01 (Attachment 3 hereto).

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|---|---|
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A copy of this filing is being sent electronically to the Filing Parties' market participants. A paper copy of the filing has also been sent to governors and utility regulatory agencies in states within the control areas served by the Filing Parties.

Please acknowledge receipt of the foregoing by date-stamping the three enclosed extra copies of this filing and returning it to the courier delivering this filing.

Respectfully submitted,

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Attachment

**Attachment 1**

January 1, 1991
Review Date: 10/1/2006

# PROCEDURE TO PROTECT FOR THE LOSS OF

# PHASE II IMPORTS

**Reference:** Procedure to Protect for the Loss of Hydro-Quebec Exports

## INTRODUCTION

The Hydro-Quebec/NEPOOL Phase II tie has maximum transfer capability of 2,000 MW. Joint PJM/NYPP/NEPEX studies have concluded that the loss of the Phase II facilities at high levels of imports could have a worse effect on NYPP and PJM than the worst internal contingency that these individual systems normally protect against. Accordingly, it has been agreed that Phase II imports will be limited to the extent necessary to insure that NYPP and PJM operation reliability criteria are not violated by the loss of Phase II contingency. This procedure is designed to prevent the occurrence of a loss of Phase II contingency applicable when Phase II is operated in the isolated or synchronous mode. The absolute maximum loss of Phase II contingency allowable under this procedure will be 2,200 MW.

## SYSTEM MONITORING

1. NYPP and PJM will monitor their respective systems to provide NEPEX with the data required to calculate Phase II import limits.

2. NEPEX will request forecasted data from NYPP and PJM required to establish Phase II schedules.

3. NEPEX will set schedules with Hydro-Quebec which are within acceptable limits.

4. NEPEX will monitor real time system conditions in NYPP and PJM to insure that Phase II imports are within acceptable limits.

5. The calculations required to determine Phase II limitations will normally be done using a software package in the NEPEX computer. The data required to perform the calculations is received in part via the Interpool Network and by manual entry for those values not telemetered. The program fulfills the requirements of this procedure. In the event that the NEPEX computer is unavailable for use, the necessary calculations will be performed by operator use of a personal computer with data being exchanged by telephone.

**DEFINITIONS OF TERMS**

**The following terms apply to the three (3) NYPP voltage indicators, Rochester 345 KV, Oakdale 345 KV and Oakdale 230 KV. Each indicator will have unique values for each of these terms.**

**(Limit) Pre-contingency Low Voltage Limit – the lowest precontingency voltage allowed at the station based on contingencies within NYPP.**

**Actual Voltage – Actual voltage at the station**

**Voltage Margin – Actual voltage minus Pre-contingency Low Voltage Limit**

**Base NE/NB Contingency Limit – The maximum total loss of generation within NE/NB or loss of HQ HVDC Exports to NE/NB allowable when the station voltage is at the Pre-contingency Low Voltage Limit (for the purposes of this procedure, the Base NE/NB Contingency Limit is the maximum level of Phase II Imports allowable).**

**Margin Sensitivity – The number of MW of increase in the Base NE/NB Contingency Limit allowed for each one (1) KV or Voltage Margin.**

**The following terms apply to the fourth indicator of NYPP Reactive Conditions, the Central/East (C/E) Interface.**

**C/E Critical Transfer Level – Postcontingency transfer limit for the C/E interface based on NYPP reactive conditions**

**C/E Transfer – Actual MW transfer on the C/E interface**

*** Phase II C/E Distribution Factor – The number of MW by which the C/E flow would be increased for each one (1) MW of the total of Phase II imports and MW armed for runback in New Brunswick which would be lost as a result of a single contingency.**

**The following terms apply to the PJM Eastern, Central, and Western interfaces and are used in determining limitations based on PJM reactive conditions.**

**PJM Transfer Limits – Precontigency transfer limits for each PJM interface based on contingencies within PJM.**

**PJM Transfers – Actual MW transfers on each PJM interface.**

**PJM Transfer Margins – Transfer limit minus actual transfer for each PJM interface.**

**PJM Base New England/New Brunswick (NE/NB) Contingency Limit – The maximum total loss of generation within NE/NB or loss of HQ HVDC Export to NE/NB which is allowable when any of the three (3) PJM interfaces is loaded to its precontingency transfer limit (for the purposes of this procedure, the PJM Base NE/NB Contingency Limit is the maximum level of Phase II Imports allowable).**

**PJM Transfer Margin Sensitivity – The number of MW of increase in the PJM Base NE/NB Contingency Limit allowed for each one (1) MW of Transfer Margin. Each PJM interface has an associated Transfer Margin Sensitivity. By exception, the PJM Operations Planning Section will notify NEPEX supervision of any required change in the Transfer Margin Sensitivities.**

***THE TERMS DEFINED ABOVE ARE THE SAME TERMS USED IN THE PROCEDURE TO PROTECT FOR LOSS OF HYDRO-QUEBEC EXPORTS WITH THE EXCEPTION OF THE PHASE II C/E DISTRIBUTION FACTOR.**

**Loss of Phase II Contingency – The total of the MW of Phase II import and MW armed for runback in New Brunswick (Keswick Power Relays) which would be lost as a result of a single contingency (See Attachment I for Method of Calculating the Loss of Phase II Contingency). While the Keswick Power Relays will normally be disabled, they will be enabled during outages of the Chester Static VAR Compensator. MW armed during these periods must be included in the Loss of Phase II Contingency.**

**Phase II Import Limit (Phase II Limit) – The most restrictive Loss of Phase II Contingency allowable based on NYPP and PJM reactive conditions (See Attachment I for Method of Calculating the Phase II Import Limit.**

**PROCEDURES**

**I. Setting Phase II Schedules – All required limitations on Phase II imports are to be recognized in the establishment of Phase II schedules for the next hour. In order to set next hour schedules for the Phase II tie, NEPEX will;**

**A. Determine the total of the desired level of Phase II import plus anticipated arming in New Brunswick (if Keswick Power Relays are enabled) for the next hour.**

**B. Determine the Phase II Limit with no margin for the next hour.**

**C. If the Phase II Limit (no margin) is less than the desired Phase II import plus arming in New Brunswick, request that NYPP and/or PJM forecast and authorize use of any available margin for the next hour.**

**D. Determine the Phase II Limit using authorized margin.**

E. Thirty minutes in advance of the hour, establish a next hour Phase II schedule with Hydro-Quebec for which the L/O Phase II Contingency (import plus arming) will be equal to or less than the Phase II Limit (which includes any authorized margin).

II. Monitoring System Conditions – At least once each hour, NEPEX will make a complete check of actual system conditions in NYPP and PJM. Whenever a condition exists such that the L/O Phase II Limit based on those conditions, NEPEX will;

A. Contact NYPP and/or PJM to determine if the L/O Phase II Contingency must be reduced.

B. If the L/O Phase II Contingency must be reduced, reduce imports from New Brunswick to a level at which arming (KPR) is not required and/or reduce Phase II imports so that the L/O Phase II contingency is less than the Phase II Limit.

ACTION(S) TAKEN TO REDUCE THE L/O PHASE II CONTINGENCY MUST BE ACCOMPLISHED WITHIN TEN (10) MINUTES FROM THE TIME THE PROBLEM IS IDENTIFIED.

LOPIIPRO
10-20-90

**ATTACHMENT I**

# METHODS FOR CALCULATING THE LOSS OF PHASE II CONTINGENCY AND THE PHASE II IMPORT LIMIT

## I. The Loss of Phase II Contingency

The loss of Phase II Contingency is made up of two components; 1) the transfer on the Phase II tie line between Hydro-Quebec and NEPOOL and 2) any MW armed for runback in New Brunswick (Keswick Power Relays). While normally disabled, the Keswick Power Relays will be enabled when the Chester Static VAR Compensator is OOS. ALL MW armed for the Keswick Power Relays must be included as part of the Loss of Phase II Contingency. The maximum Loss of Phase II Contingency allowable is 2,200 MW.

Loss of Phase II Contingency
=
Phase II transfers
+
MW armed for Keswick Power Relays

## II. The Phase II Import Limit

The calculation of the Phase II Limit requires the examination of seven (7) different sets of reactive conditions, four (4) in NYPP and three (3) in PJM. Three (3) of the NYPP calculations are based on station voltages; Rochester 345, Oakdale 345, Oakdale 230.The remaining NYPP calculation is based on MW flow across the Central East Interface. The PJM calculations are based on MW flows across the Eastern, Central, and Western Interfaces.

The Phase II Limit is the most restrictive of the values calculated.

The methods for calculating the Phase II Limits are listed below.

### A. CALCULATION OF LIMITS FOR NEXT HOUR SCHEDULING

#### 1. Phase II Limit based on NYPP station voltages

a. Limit without Voltage Margin- The Phase II Limit without Voltage Margin for each of the three stations is the Base New England/New Brunswick (NE/NB) Contingency Limit for that station.

b. Limit with Voltage Margin – The Phase II Limit with Voltage Margin for each of the three stations is the Base NE/NB Contingency Limit for that station plus the amount of Voltage Margin authorized for that station multiplied by the Margin Sensitivity for that station.

Phase II Limit
=
Station Base NW/NB Contingency Limit
+
Station Margin Sensitivity x Authorized Voltage Margin

2. Phase II Limit based on NYPP Central East flow

The Phase II Limit is
(the C/E Critical Transfer Level minus the forecasted C/E transfer for the next hour)
divided by
the Phase II C/E Distribution Factor

Phase II Limit
=
(C/E Crit. Transfer Level- forecasted C/E Transfer
Phase II C/E Distribution Factor

3. Phase II Limit based on PJM interface flows

a. Limit without Transfer Margin – The Phase II Limit without Transfer Margin for each of the three (3) PJM interfaces is the PJM Base NE/NB Contingency Limit (same for all three interfaces)

b. Limit with Transfer Margin – The Phase II Limit with Transfer Margin for each of the three (3) PJM interfaces is the PJM Base NE/NB Contingency Limit
plus
the amount of Transfer Margin authorized for that interface multiplied by the Margin Sensitivity for that interface.

Phase II Limit
=
PJM Base NE/NB Contingency Limit
+
Margin Sensitivity x Authorized Transfer Margin

**ATTACHMENT I**

**B. CALCULATION OF REALTIME LIMITS**

**1. Phase II Limit based on NYPP station voltages**

**The Phase II Limit for real time conditions for each of the three (3) stations is the Base NE/NB Contingency Limit for the station**
**plus**
**the amount of actual Voltage Margin at the station multiplied by the Margin Sensitivity for the station**

**Phase II Limit**
**=**
**Station Base NE/NB Contingency Limit**
**+**
**Margin Sensitivity x actual Voltage Margin**

**2. Phase II Limit based on NYPP Central East Flow**

**The Phase II Limit for real time conditions is (the C/E Critical Transfer Level minus the C/E Transfer)**
**divided by**
**the Phase II C/E Distribution Factor**

**Phase II Limit**
**=**
$$\frac{\text{(C/E Crit. Transfer Level- actual C/E Transfer)}}{\text{Phase II C/E Distribution Factor}}$$

**3. Phase II Limit based on PJM interface flows**

**The Phase II Limit for real time conditions for each of the three (3) PJM interfaces is the PJM Base NE/NB Contingency Limit**
**plus**
**the amount of actual Transfer Margin on the interface multiplied by the Margin Sensitivity for the interface**

**Phase II Limit**
**=**
**PJM Base NE/NB Contingency Limit**
**+**
**Transfer Margin x Margin Sensitivity**