

Massachusetts Electric Company
d/b/a
National Grid

Winter Storm 2008 Report

Book 3 of 5

February 23, 2009

Submitted to:
Massachusetts Department of
Public Utilities
Docket No. D.P.U. 09-01-B

Submitted by:

nationalgrid

Construction Delivery - Emergency Storm Roles

STORM MANAGER

1. Responsible for procurement of contractor crews as requested by divisions
2. Initiate and update Contractor Storm Crew Status Report
3. Interact with divisional management and emergency planning regarding crew management
4. Provide necessary information to senior management
5. Responsible for providing a designate or additional resources if required

CONTRACTOR COORDINATOR

1. Responsible for obtaining/maintaining all crew transfer sheets from contractors
 - a. review for accuracy
 - b. distribute to system storm room and ROD Coordinator
 - c. updating Contractor Storm Crew Status Report
2. Provide clarifications/updates to ROD coordinator
3. Assist division on clarifications of crew transfer sheets
4. Responsible for providing a designate or additional resources if required

SYSTEM STORM ROOM COORDINATOR

1. Responsible for all activities in the NY Storm Room.
2. Assist contractor crews with logistics; directions; divisional contacts; lodging; and contractor guideline clarifications.
3. Communicate relative information to the Storm Manager, Contractor Coordinator and ROD Coordinator.
4. Responsible for providing a designate or additional resources if required

ROD COORDINATOR

1. Receive crew transfer sheets from Contractor Coordinator
2. Enter all crew transfer sheets into ROD
3. Update data received from Contractor Coordinator
4. Responsible for providing a designate or additional resources if required

CONSTRUCTION SUPERVISOR

1. Supervise contracted field crews

Edison Electric Institute Mutual Assistance Agreement

Edison Electric Institute (“EEI”) member companies have established and implemented an effective system whereby member companies may receive and provide assistance in the form of personnel and equipment to aid in restoring and/or maintaining electric utility service when such service has been disrupted by acts of the elements, equipment malfunctions, accidents, sabotage, or any other occurrence for which emergency assistance is deemed to be necessary or advisable (“Emergency Assistance”). This Mutual Assistance Agreement sets forth the terms and conditions to which the undersigned EEI member company (“Participating Company”) agrees to be bound on all occasions that it requests and receives (“Requesting Company”) or provides (“Responding Company”) Emergency Assistance from or to another Participating Company who has also signed the EEI Mutual Assistance Agreement; provided, however, that if a Requesting Company and one or more Responding Companies are parties to another mutual assistance agreement at the time of the Emergency Assistance is requested, such other mutual assistance agreement shall govern the Emergency Assistance among those Participating Companies.

In consideration of the foregoing, the Participating Company hereby agrees as follows:

- (1) When providing Emergency Assistance to or receiving Emergency Assistance from another Participating Company, the Participating Company will adhere to the written principles developed by EEI members to govern Emergency Assistance arrangements among member companies (“EEI Principles”), that are in effect as of the date of a specific request for Emergency Assistance, unless otherwise agreed to in writing by each Participating Company.
- (2) With respect to each Emergency Assistance event, Requesting Companies agree that they will reimburse Responding Companies for all costs and expenses incurred by Responding Companies in providing Emergency Assistance as provided under the EEI Principles, unless otherwise agreed to in writing by each Participating Company; provided, however, that Responding Companies must maintain auditable records in a manner consistent with the EEI Principles.
- (3) During each Emergency Assistance event, the conduct of the Requesting Companies and the Responding Companies shall be subject to the liability and indemnification provisions set forth in the EEI Principles.
- (4) A Participating Company may withdraw from this Agreement at any time. In such an event, the company should provide written notice to EEI’s Director of Security of Transmission and Distribution Operations.

(5) EEI's Director of Security of Transmission and Distribution Operations shall maintain a list of each Participating Company which shall be posted on the RestorePower web site at www.restorepower.com. However, a Participating Company may request a copy of the signed Mutual Assistance Agreement of another Participating Company prior to providing or receiving Emergency Assistance.

Company Name

Signature

Officer Name:
Title:
Date:



SUGGESTED GOVERNING PRINCIPLES COVERING EMERGENCY ASSISTANCE ARRANGEMENTS BETWEEN EDISON ELECTRIC INSTITUTE MEMBER COMPANIES

Electric companies have occasion to call upon other companies for emergency assistance in the form of personnel or equipment to aid in maintaining or restoring electric utility service when such service has been disrupted by acts of the elements, equipment malfunctions, accidents, sabotage or any other occurrences where the parties deem emergency assistance to be necessary or advisable. While it is acknowledged that a company is not under any obligation to furnish such emergency assistance, experience indicates that companies are willing to furnish such assistance when personnel or equipment are available.

In the absence of a continuing formal contract between a company requesting emergency assistance ("Requesting Company") and a company willing to furnish such assistance ("Responding Company"), the following principles are suggested as the basis for a contract governing emergency assistance to be established at the time such assistance is requested:

1. The emergency assistance period shall commence when personnel and/or equipment expenses are initially incurred by the Responding Company in response to the Requesting Company's needs. (This would include any request for the Responding Company to prepare its employees and/or equipment for transport to the Requesting Company's location but to await further instructions before departing). The emergency assistance period shall terminate when such employees and/or equipment have returned to the Responding Company, and shall include any mandated DOT rest time resulting from the assistance provided and reasonable time required to prepare the equipment for return to normal activities (e.g. cleaning off trucks, restocking minor materials, etc.).
2. To the extent possible, the companies should reach a mutual understanding and agreement in advance on the anticipated length – in general – of the emergency assistance period. For extended assistance periods, the companies should agree on the process for replacing or providing extra rest for the Responding Company's employees. It is understood and agreed that if, in the Responding Company's judgment such action becomes necessary the decision to terminate the assistance and recall employees, contractors, and equipment lies solely with the Responding Company. The Requesting Company will take the necessary action to return such employees, contractors, and equipment promptly.
3. Employees of Responding Company shall at all times during the emergency assistance period continue to be employees of Responding Company and shall not be deemed employees of Requesting Company for any purpose. Responding Company shall be an independent Contractor of Requesting Company and wages, hours and other terms and conditions of employment of Responding Company shall remain applicable to its employees during the emergency assistance period.
4. Responding Company shall make available at least one supervisor in addition to crew foremen. All instructions for work to be done by Responding Company's crews shall be given by Requesting Company to Responding Company's supervisor(s); or, when



Responding Company's crews are to work in widely separate areas, to such of Responding Company's foremen as may be designated for the purpose by Responding Company's supervisor(s).

5. Unless otherwise agreed by the companies, Requesting Company shall be responsible for supplying and/or coordinating support functions such as lodging, meals, materials, etc. As an exception to this, the Responding Company shall normally be responsible for arranging lodging and meals en route to the Receiving Company and for the return trip home. The cost for these in transit expenses will be covered by the requesting company.
6. Responding Company's safety rules shall apply to all work done by their employees. Unless mutually agreed otherwise, the Requesting Company's switching and tagging rules should be followed to ensure consistent and safe operation. Any questions or concerns arising about any safety rules and/or procedures should be brought to the proper level of management for prompt resolution between management of the Requesting and Responding Companies.
7. All time sheets and work records pertaining to Responding Company's employees furnishing emergency assistance shall be kept by Responding Company.
8. Requesting Company shall indicate to Responding Company the type and size of trucks and other equipment desired as well as the number of job function of employees requested but the extent to which Responding Company makes available such equipment and employees shall be at Responding Company's sole discretion.
9. Requesting Company shall reimburse Responding Company for all costs and expenses incurred by Responding Company as a result of furnishing emergency assistance. Responding Company shall furnish documentation of expenses to Requesting Company. Such costs and expenses shall include, but not be limited to, the following:
 - a. Employees' wages and salaries for paid time spent in Requesting Company's service area and paid time during travel to and from such service area, plus Responding Company's standard payable additives to cover all employee benefits and allowances for vacation, sick leave and holiday pay and social and retirement benefits, all payroll taxes, workmen's compensation, employer's liability insurance and other contingencies and benefits imposed by applicable law or regulation.
 - b. Employee travel and living expenses (meals, lodging and reasonable incidentals).
 - c. Replacement cost of materials and supplies expended or furnished.
 - d. Repair or replacement cost of equipment damaged or lost.
 - e. Charges, at rates internally used by Responding Company, for the use of transportation equipment and other equipment requested.



- f. Administrative and general costs, which are properly allocable to the emergency assistance to the extent such costs, are not chargeable pursuant to the foregoing subsections.
10. Requesting Company shall pay all costs and expenses of Responding Company within sixty days after receiving an invoice therefor.
11. Requesting Company shall indemnify, hold harmless and defend the Responding Company from and against any and all liability for loss, damage, cost or expense which Responding Company may incur by reason of bodily injury, including death, to any person or persons or by reason of damage to or destruction of any property, including the loss of use thereof, which result from furnishing emergency assistance and whether or not due in whole or in part to any act, omission, or negligence of Responding Company except to the extent that such death or injury to person, or damage to property, is caused by the willful or wanton misconduct and / or gross negligence of the Responding Company. Where payments are made by the Responding Company under a workmen's compensation or disability benefits law or any similar law for bodily injury or death resulting from furnishing emergency assistance, Requesting Company shall reimburse the Responding Company for such payments, except to the extent that such bodily injury or death is caused by the willful or wanton misconduct and / or gross negligence of the Responding Company..
12. In the event any claim or demand is made or suit or action is filed against Responding Company alleging liability for which Requesting Company shall indemnify and hold harmless Responding Company under paragraph (11) above, Responding Company shall promptly notify Requesting Company thereof, and Requesting Company, at its sole cost and expense, shall settle, compromise or defend the same in such manner as it in its sole discretion deems necessary or prudent. Responding Company shall cooperate with Requesting Company's reasonable efforts to investigate, defend and settle the claim or lawsuit.
13. Non-affected companies should consider the release of contractors during restoration activities. The non-affected company shall supply the requesting companies with contact information of the contactors (this may be simply supplying the contractors name). The contractors will negotiate directly with requesting companies.

Last update September 2005

- Section 11 and 12 updated



**EI Mutual Assistance Agreement
Signing Companies as of October 30, 2007**

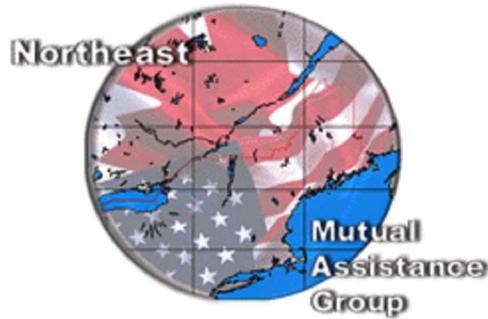
Company	Signed
Allegheny Energy Inc	October-05
American Electric Power	June-05
Avista Corp	June-05
Baltimore Gas and Electric Company	January-06
CenterPoint Energy Inc	February-06
Central Vermont Public Service	March-06
Cinergy Corp	June-05
Cleco Corp	February-06
CMS Energy Corp	December-05
Consolidated Edison Inc	July-05
Consolidated Edison Inc (Orange & Rockland Utilities)	July-05
Dayton Power & Light	October-05
Dominion	February-06
Duke Energy Corp	January-06
Duquesne Light Holdings	March-06
LG&E (E.ON US)	January-06
Entergy Corp	September-05
Exelon Corp (Com Ed)	October-06
First Energy Corp	February-07
FPL Group Inc	October-05
Great Plains Energy Inc (KCP&L)	June-05
Indianapolis Power & Light Co	September-05
International Transmission Company	September-05
Kentucky Utilities Company (E.ON US)	January-06
KeySpan Corp	June-06
National Grid	October-2007
Northeast Utilities	June-05
NSTAR	August-05
PNM Resources Inc	July-05
PPL Corp	October-05
Pepco Holdings Inc	October-06
Progress Energy Inc	September-05
Public Service Enterprise Group Inc	January-06



EI Mutual Assistance Agreement Signing Companies Continued

Company	Signed
South Carolina Electric & Gas	February-06
Southern Company (Alabama Power)	June-05
Southern Company (Georgia Power)	January-06
Southern Company (Gulf Power)	January-06
Southern Company (Mississippi Power)	June-05
TECO Energy Inc	March-06
UIL Holdings Corp	March-06
Vectren Corp	November-05
We Energies	August-05
Westar Energy	March-06
Wisconsin Public Service Corp	August-05
Xcel Energy	February-06

Total Signed Companies is 44 of 82 or 53.7%



Charter for the Northeast Mutual Assistance Group or NEMAG

Purpose: This Charter has been formed as a result of past major storms that have impacted the service territories of the companies forming the Northeast Mutual Assistance Group (NEMAG), as detailed in Attachment A – collectively known as the Parties.

While the frequency of experiencing a major storm is uncertain, the likelihood is real and always threatening within the Parties' respective service territories. When a major storm does strike, though, electrical transmission and distribution systems are noticeably and adversely impacted. Planning for the timely, efficient and cost-effective restoration of these systems is in the interests of the Parties and their customers.

The major objectives of this Charter are:

- To provide an enhanced line of communication between the Parties before, during, and after major storm planning, restoration, and invoicing activities;
- To plan (proactively) for the rendering of mutual assistance between the Parties, as the weather situation and resource needs dictate; and
- To share resources, where applicable and permitted, separate of a major storm, enhancing the service and quality of storm/emergency planning between and for the Parties.
- To document the proactive means by which the Parties respond to a major storm via common guidelines and procedures.

Reasons: There are several reasons for following this Charter rather than using another teaming format (e.g., service alliance agreement). These key reasons follow:

- Ability to share existing mutual assistance resources without transfer of ownership or other corporate-related activities outside the existing Parties;
- Ability to retain local control of the respective Parties' operations, while benefiting from the potential of emergency/storm planning standardization; and
- Ability to "be heard" in the industry, other regional mutual assistance groups (RMAGs) and/or regulatory community by maintaining a unified yet collective front.

Structure: The Parties agree to abide by this Charter provided such participation benefits their emergency/storm planning interests. However, if one of the Parties elect to leave the NEMAG for whatever reason(s), written notice should be issued to the remaining members (if any) at least 90 days before the date of dissolution. If all Parties mutually agree, then the Charter may terminate at any time, with no advance notice.

Additionally, this Charter should not be construed as a legally-binding document with respect to the rendering of mutual assistance by the Parties. Rather, any service, quality and/or billing issues should be addressed as detailed in the Guidance section below.

This Charter, though, may be modified at any time with the concurrence of a majority of the Parties. Once modified, the date of the revision should be noted in the footer to ensure that the most current copy of the Charter is referenced.

Guidance: When rendering mutual assistance to one another, the Parties agree to follow the “*Suggested Governing Principles Covering Emergency Assistance Arrangements Between Edison Electric Institute Member Companies*”, revised in March 2005 and detailed under separate cover in NEMAG-A-001 “*NEMAG Administrative Procedure - General*”.

If both parties are members of the Edison Electric Institute (EEI), the Parties may execute and submit for retention and management to EEI copies of the “*Mutual Assistance Agreement*”, as detailed under separate cover in NEMAG-A-001 “*NEMAG Administrative Procedure - General*”. Submittal to EEI of the *Mutual Assistance Agreement*, in conjunction with the verbal authorization between the Parties, shall be construed as the formal start of the rendering of mutual assistance.

Alternatively, the Responding Company may submit to the Requesting Company for execution a copy of the “*NEMAG Mutual Assistance Agreement*” detailed under separate cover in NEMAG-A-001 “*NEMAG Administrative Procedure - General*”. The terms “Responding Company” and “Requesting Company” are used in this agreement in the same manner as in the *Suggested Governing Principles Covering Emergency Assistance Arrangements Between Edison Electric Institute Member Companies*).

Return of an executed copy of the *NEMAG Mutual Assistance Agreement* to the Responding Company shall be construed as the formal start of the rendering of mutual assistance.

Additional guidance information (e.g., conference call format, resource tracking sheet, and foreign utility evaluations) is detailed under separate cover in NEMAG-A-001 “*NEMAG Administrative Procedure - General*”.

Effective Date: This Charter will be effective as of the date noted in the footer.

Attachment A
Northeast Mutual Assistance Group Member Companies

DRAFT

Bangor Hydro
Central Vermont Public Service Company
Green Mountain Power
Hydro One
Hydro-Quebec
National Grid
New Brunswick Power
Northeast Utilities
NStar
South Norwalk Gas & Electric
United Illuminating Company
Unitil Corporation

DRAFT

	NEMAG PROCEDURE	Procedure No.	NEMAG-A-001
		Revision No.	1
ADMINISTRATIVE PROCEDURE - GENERAL		Page No.	COVER
		Date:	12/07/08
		Supersedes Date:	None

FOREWORD

The purpose of this document is to detail the general, administrative procedures developed by the Northeast Mutual Assistance Group (NEMAG), as well as management guidelines for the same. The format used for all subsequent administrative procedures (if any) should be similar to that used throughout this document.

Any questions or inquiries regarding information provided in this document should be referred to the current leadership member.

_____ /signed/ _____

Robert A. Kearns
 NEMAG Current Leadership (Date of Review)
 Director, Emergency Planning - National Grid
 508-389-3179

RECORD OF CHANGES

DATE OF REVIEW: 12/07/08

REVISION	DATE	DESCRIPTION
0	10/31/07	Initial DRAFT Issue
1	03/24/08	Revised DRAFT Issue
2	12/07/08	Revised DRAFT Issue

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		Supersedes Date:	None

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1.0 INTRODUCTION

As a result of the creation of the Northeast Mutual Assistance Group (NEMAG), this procedure has been developed by the Working Group with the consent of all NEMAG members or Parties to standardize the process by which conference calls are conducted, resource sharing is affected, resource evaluation is performed, and invoice processing facilitated.

1.1 Purpose

The purpose of this document is to detail the general, administrative procedures implemented by the NEMAG, as well as management guidelines for the same. For reference, the format used for all subsequent administrative procedures (if any) should be similar to that used throughout this document.

1.2 Applicability and Scope

This document applies to the Parties referenced in the *NEMAG Charter* as detailed under separate cover.

1.3 Updating the Procedure

The current Leadership is responsible for maintaining this procedure. Annually or sooner, if warranted, material in the procedure will be updated or revised, in an attempt to stay current with changes in the NEMAG's organization or policies, applicable state and Federal regulations, or best management practices (BMPs). All revisions and/or additions shall detail a revision date and number on the top right corner of each page within the header, as well as a brief description in the Record of Changes section on the cover.

Comments are welcomed and should be documented (using the Request for Procedure/Change Form referenced in Appendix I) and addressed to the current Leadership. All documented comments shall be retained in a separate file and reviewed each time this procedure is revised. These comments will ensure that the contents of the procedure are current.

1.4 Availability

NEMAG members will have access to this document via hardcopy distribution (with an electronic back-up copy) via the current Leadership, whenever a change is made following a review.

NOTE: Only up-to-date versions of the documents will be distributed by the current Leadership. All other revisions (both hardcopy and electronic) should not be referenced and discarded.

1.5 References

Documents used in the creation of this procedure are no longer traceable.

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2.0 RESPONSIBILITIES

The following responsibilities have been assigned to ensure the proper maintenance of this and other NEMAG documents:

2.1 Current Leadership

- 2.1.1 The current Leadership will be selected from the Parties in alphabetical order, starting with Northeast Utilities. A member may elect not to serve as the current Leadership provided a reasonable explanation is presented to the Parties. In this instance, the next utility in alphabetical order will assume the current Leadership.
- 2.1.2 The current Leadership will coordinate and chair semi-annual conferences, which will be held (whenever possible) in the Spring and fall months. Coordination includes any monetary fees associated with hosting the conferences, as well as agenda creation and distribution.
- 2.1.3 The current Leadership is responsible for coordinating conference call requests by providing notification to other members of a pending call by providing the date, time, and contact numbers.
- 2.1.4 The current Leadership will record and retain the call minutes and the outcomes of actions items that arise from the conferences. These documents will be retained for the time period of the current Leadership.
- 2.1.4 The current Leadership is also responsible for coordinating the NEMAG’s participation in storm calls and/or conferences of other RMAGs, as needed or requested. Following these instances, the current Leadership will provide a summary of its participation to the Parties.
- 2.1.5 The current Leadership chairs the NEMAG Working Group, and includes determining the composition of this group.
- 2.1.6 The current Leadership coordinates the management of and authorizes the use of NEMAG procedures by the Parties, which result from periodic reviews and/or updates, as well as procedures created and/or modified as a result of ongoing operations.

2.2 Working Group

- 2.2.1 This group, which is composed of NEMAG members only, will be tasked to review the need for charter and/or procedural recommendations or changes.
- 2.2.2 The group composition will vary between three (3) and five (5) members that report to the current Leadership for guidance and/or action on pertinent issues and documents.
- 2.2.3 Membership in the group will either be indefinite or until removed/replaced by the current Leadership.

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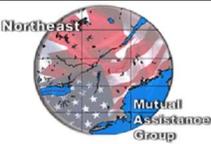
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2.3 NEMAG member

- 2.3.1 Ensure that representation on applicable conference calls is provided.
- 2.3.2 Participate in scheduled semi-annual conferences, whenever possible.
- 2.3.3 Share storm-related documentation, procedures, critiques, and with other members, when requested and if permitted to do so by respective management.
- 2.3.4 Provide input on issues raised by either the current Leadership or Working Group.

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3.0 CONFERENCE CALLS

Any point of contact for a NEMAG member can request that a conference call be held for any generation, transmission, and/or distribution-related incident or event (see Appendix A). The current Leadership will coordinate the conference call notification to other NEMAG members. Notification may be conducted via e-mail and/or text/voice notification applications. As parts of the notification, the current Leadership will detail the date, time, and contact numbers for the call.

During any incident or event, the current Leadership will oversee the call format as the Host; call frequency; and drafting, distributing, and retaining of the call minutes.

3.1 Call Format

The call format will consist of the Host conducting the following actions (see Appendix B), unless the participating members agree to a modified format following the roll call:

3.1.1 A roll call of the participating NEMAG members will be performed at the date/time of the scheduled conference call.

Company	Contact Names	Company	Contact Names
Bangor Hydro		New Brunswick Power	
Central Maine Power		Nova Scotia Power	
Central Vermont Public Service		NStar	
Green Mountain Power		South Norwalk Electric & Water	
Hydro One, Inc.		United Illuminating Co.	
Hydro-Quebec		Unitil Corp	
National Grid		Other	

3.1.2 Each participating member, in alphabetical order, will provide a weather forecast and current conditions update for its respective service territory, which spans the next 24 hours.

3.1.3 Each participating member, in alphabetical order, will provide a projected impact (as troubles cases) and date/time of the predicted damage issues and/or assessment. If damage already exists, (a) the member will provide the current level of damage assessment that been conducted thus far (three-phase main, single phase side, side taps, etc...) and (b) an estimate on when the overall assessment will be completed.

3.1.4 Each participating member, in alphabetical order, will provide a resource update as to their current needs and/or available resources. The updates will respond personnel and not "crews" because crew composition varies amongst the

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members. Worker types (e.g., transmission line, distribution line, contractor line, tree, etc...) and desired arrival times for the requesting utility will also be noted.

- 3.1.5 Each participating member will be queried on whether or not other company (i.e., non-NEMAG members) has requested mutual assistance.
- 3.1.6 The Host will request that other issues of concern (e.g., logistics) be forwarded for discussion before the conference call completion.
- 3.1.7 The current Leadership will set the date and time for the next NEMAG conference and include a distribution of the same to all NEMAG membership.

3.2 Call Frequency

Depending upon the nature of the incident/event, subsequent conference calls should be scheduled every 12 hours until the collective restoration activities are completed or a majority of the participating members agree to no longer scheduling calls. NEMAG member conference calls should be scheduled around this frequency, as much as possible.

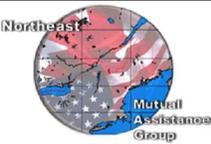
3.3 Call Minutes

The current Leadership will record and retain the call minutes and the outcomes of actions items that arise from the conferences (see Appendix B). The minutes will not be distributed but will be available upon request by a NEMAG member.

3.4 Call Minutes Retention

The call minutes will be retained for the time period of the current Leadership. Disposition of the documents at the time of Leadership transfer will be at the discretion of the two companies. For reference, some New England states and Canadian provinces have established record retention time periods for certain types of documents.

As a result, these minutes may require additional retention or archiving. The current Leadership will ensure that such retention or archiving is accomplished, when (a) NEMAG member(s) request(s) such actions.

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4.0 RESOURCE TRANSFERS AND EVALUATIONS

Resource transfers (i.e., mutual assistance) will be coordinated between the requesting and responding companies. The current Leadership is not involved in the transfer process unless they represent one of the two parties to a transfer activity.

4.1 Resource Availability

- 4.1.1 Resource availability will be documented within the conference call minutes by the current Leadership. Although this information will not be distributed routinely following a call, large-scale mutual assistance events (i.e., two or more members rendering assistance simultaneously to NEMAG, other regional mutual assistance groups (RMAGs), or non-EEI members) may require the distribution of status updates.
- 4.1.2 If the majority of conference call participants agree that such a distribution is beneficial and worthwhile, then the current Leadership will prepare and distribute the “*NEMAG Resource Tracking Sheet*” to all the NEMAG members (see Appendix C).

4.2 Resource Requests

- 4.2.1 When rendering mutual assistance to one another, NEMAG members agree to follow the “*Suggested Governing Principles Covering Emergency Assistance Arrangements between Edison Electric Institute Member Companies*”, revised in March 2005 (see Appendix D).
- 4.2.2 If both parties are members of the Edison Electric Institute (EEI), the Parties may execute and submit for retention and management to EEI copies of the “*Mutual Assistance Agreement*” (see Appendix E). Submittal to EEI of the “*Mutual Assistance Agreement*”, in conjunction with the verbal authorization between the parties, shall be construed as the formal start of the rendering of mutual assistance.
- 4.2.3 Alternatively, the responding company may submit to the requesting company for execution a copy of the “*NEMAG Mutual Assistance Agreement*” (see Appendix F). The terms “Responding Company” and “Requesting Company” are used in this agreement in the same manner as in the “*Suggested Governing Principles Covering Emergency Assistance Arrangements Between Edison Electric Institute Member Companies*”.
- 4.2.4 Return of an executed copy of the “*NEMAG Mutual Assistance Agreement*” by the requesting company to the responding company shall be construed as the formal start of the rendering of mutual assistance.
- 4.2.5 Resource transfers between NEMAG members shall be documented, whenever possible or practical, via the “*NEMAG Crew Transfer Sheet*” (see Appendix G).

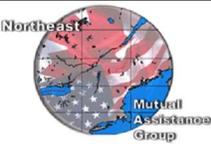
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4.3 Resource Evaluations

- 4.3.1 Following the rendering of mutual assistance from one member to another, the “*NEMAG Mutual Assistance/Foreign Utility Evaluation Form*” should be completed by the responding company and forwarded to (a) the requesting company point of contact and (b) the current Leadership (see Appendix H).
- 4.3.2 The current Leadership will review and summarize the observations noted in the forms for presentation and discussion at the spring NEMAG meeting. The intent is to recommends BMPs to the members that will streamline the efficiency of mutual assistance activities across the NEMAG.

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5.0 DOCUMENT REVIEW PROCESS

This document will be reviewed by the Working Group every two (2) years and coincide with the appointment of the next alphabetical order for the current Leadership. The current Leadership will chair the Working Group during the review. Any revision resulting from the Working Group's review will be coordinated, communicated, and distributed to the Parties by the current Leadership.

The Working Group should include in its review, comments from the NEMAG members, input from regulatory agencies (as needed), submitted "Request for Procedure/Change Forms", and industry-accepted best management practices (see Appendix I).

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Appendix A

**Northeast Mutual Assistance Group
Member Points of Contact**

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Northeast Mutual Assistance Group (NEMAG)						
Points of Contact						
Company	Name	Work Number	Home Number	Pager	Cell Number	Fax
Bangor Hydro	Bob Platt	(207) 973-2608	(207) 949-3568	Use Cell	(207) 949-3935	(207) 973-2504
	Jim Cameron	(207) 941-6657	(207) 667-9375	(207) 580-2667	(207) 949-3967	(207) 973-2790
	Calvin Luther					
Central Maine Power	Constance Hayward	(207) 628-9712		207-750-1655	(207) 458-2612	
	Brian Pierce	(207) 629-1049		(207) 750-3557	(207) 458-1204	
Central Vermont Public Service Company	Scott Massie	(802) 747-5800				
	John teRele, Jr.	(802) 747-5239				
Green Mountain Power	Charlie Pugh	(802) 655-8468	(802) 425-5186	(802) 450-2324	(802) 316-6826	
	Joe Ferro	(802) 655-8502	(802) 872-9092	(802) 450-4932	(802) 355-1971	
	GMP Dispatch - 24 hour	(802) 655-8478	(802) 655-8479			
	Bill Chant	(705) 743-2193 x3257	905-725-8253		(705) 749-4899	
Hydro One Inc.	Mitch Ouellette				(905) 391-6151	(905) 623-0636
	Daniel Dumas	(514) 289-2211			(514) 346-8758	
Hydro-Quebec						
National Grid	Robert Keams	(508) 385-3179	(608) 926-2207		(508) 438-2157	(508) 389-3001
	Thomas Murphy (NE)	(508) 389-2877	(603) 888-2012		(603) 498-3333	(508) 389-3001
	Victoria Leadderaf (NY)	(315) 428-6919	(315) 898-4139		(315) 439-3286	(315) 428-5823
New Brunswick Power	Harry MacLean	(506) 458-4423	(506) 458-1701		(506) 447-0971	
Northeast Utilities (CLIPSN&MIECO)	Mark Fanelli	(860) 665-5552	(860) 599-7115	(860) 665-3138 x2343	(860) 543-5413	(860) 665-6878
Nova Scotia Power	Steve Hazel	(902) 428-7511	(902) 497-8693		(902) 483-4431	
Nstar	Harris E Robinson	(617) 541-7018	(781) 2954284		(339) 987-8433	
South Norwalk Electric & Water	Michael L. Giordano	(203) 866-4446	(203) 483-5895		(203) 943-0667	
United Illuminating Company	William Ostrum	(203) 926-4503	(860) 346-9146		(203) 257-4446	
	Pat Lynch	(203) 926-4611	(203) 881-0394			
	Joseph Dolan	(203) 926-4403	(203) 377-7728	(203) 528-9269	(203) 260-7162	
	Joe Flach	(203) 926-4551	(203) 881-2972		(203) 868-4431	
	Al Felice	(203) 926-4458	(203) 734-6708		(203) 623-6829	
Unitil Corporation	Raymond A. Letourneau Jr.	(603) 777-5502	(603) 928-8736		(603) 502-9253	
	Kevin Sprague	(603) 773-6554	(603) 750-4253		(603) 502-8978	
	Justin Eisteller	(603) 773-6437	(603) 659-3104		(603) 502-9633	

Attachment A

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Appendix B

**Northeast Mutual Assistance Group
 Conference Call Format – Roll Call**

Date: _____ Time: _____ Phone No.: _____
 Meeting No.: _____

Roll Call

Bangor Hydro _____
 Central Maine Power _____
 CVPS _____
 Green Mountain Power _____
 Hydro One, Inc. _____
 Hydro-Quebec _____
 National Grid _____
 New Brunswick Power _____
 Northeast Utilities _____
 Nova Scotia Power _____
 NStar _____
 South Norwalk W&E _____
 United Illuminating _____
 Unitil Corp. _____
 Other _____

Weather Forecast/Current Conditions

Bangor Hydro _____
 Central Maine Power _____
 CVPS _____
 Green Mountain Power _____
 Hydro One, Inc. _____
 Hydro-Quebec _____
 National Grid _____
 New Brunswick Power _____
 Northeast Utilities _____
 Nova Scotia Power _____
 NStar _____
 South Norwalk W&E _____
 United Illuminating _____
 Unitil Corp. _____
 Other _____

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**Northeast Mutual Assistance Group
Conference Call Format – Damage Assessment/Impact**

Date: _____ Time: _____ Phone No.: _____
Meeting No.: _____

Same as Page 1 (circle)

Company	Customer Outages (Sustained)	Cases of Trouble	Feeder Lockouts	Protective Devices	Transformers	House Services
Bangor Hydro						
Central Maine Power						
CVPS						
Green Mountain Power						
Hydro One, Inc.						
Hydro-Quebec						
National Grid						
New Brunswick Power						
Northeast Utilities						
Nova Scotia Power						
NStar						
South Norwalk W&E						
United Illuminating						
Unitil Corp.						
Other						

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**Northeast Mutual Assistance Group
 Conference Call Format – Estimate Restoration Time**

Date: _____ Time: _____ Phone No.: _____
 Meeting No.: _____

Same as Page 1 (circle)

Bangor Hydro	Date: _____	AM or PM (circle)
Central Maine Power	Date: _____	AM or PM
CVPS	Date: _____	AM or PM
Green Mountain Power	Date: _____	AM or PM
Hydro One, Inc.	Date: _____	AM or PM
Hydro-Quebec	Date: _____	AM or PM
National Grid	Date: _____	AM or PM
New Brunswick Power	Date: _____	AM or PM
Northeast Utilities	Date: _____	AM or PM
Nova Scotia Power	Date: _____	AM or PM
NStar	Date: _____	AM or PM
South Norwalk W&E	Date: _____	AM or PM
United Illuminating	Date: _____	AM or PM
Unitil Corp.	Date: _____	AM or PM
Other	Date: _____	AM or PM

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**Northeast Mutual Assistance Group
 Conference Call Format – Resource Update**

Date: _____ Time: _____ Phone No.: _____
 Meeting No.: _____

Same as Page 1 (circle)

Company	Holding	Mutual Assistance Personnel Available	Mutual Assistance Personnel Requested
Bangor Hydro			
Central Maine Power			
CVPS			
Green Mountain Power			
Hydro One, Inc.			
Hydro-Quebec			
National Grid			
New Brunswick Power			
Northeast Utilities			
Nova Scotia Power			
NStar			
South Norwalk W&E			
United Illuminating			
Unitil Corp.			
Other			

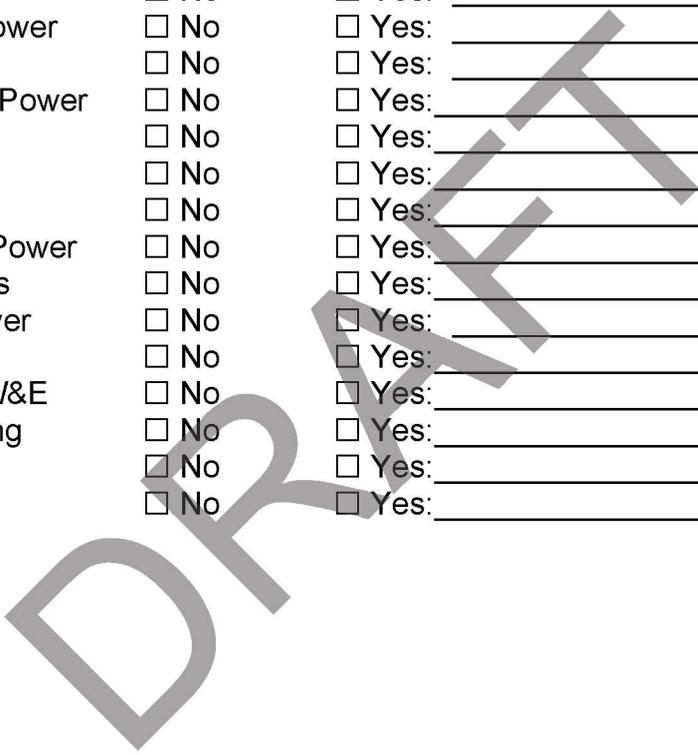
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**Northeast Mutual Assistance Group
 Conference Call Format – Other Utility Mutual Assistance Requests**

Date: _____ Time: _____ Phone No.: _____
 Meeting No.: _____

Same as Page 1 (circle)

- | | | |
|----------------------|----------------------------------------|-------------------------------------|
| Bangor Hydro | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| Central Maine Power | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| CVPS | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| Green Mountain Power | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| Hydro One, Inc. | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| Hydro-Quebec | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| National Grid | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| New Brunswick Power | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| Northeast Utilities | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| Nova Scotia Power | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| NStar | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| South Norwalk W&E | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| United Illuminating | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| Unitil Corp. | <input checked="" type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| Other | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |



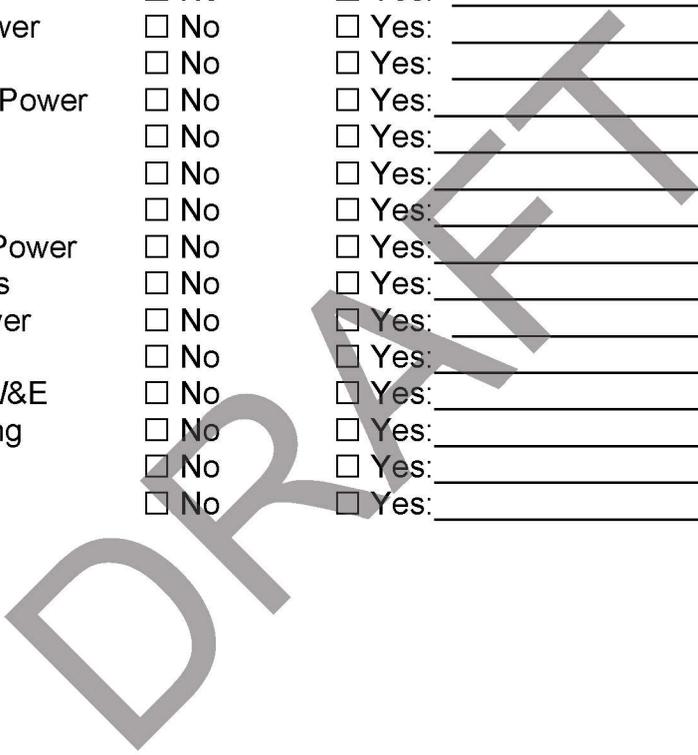
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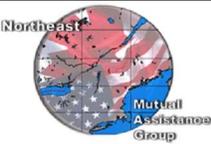
**Northeast Mutual Assistance Group
 Conference Call Format – Regulator or Media Issue(s)**

Date: _____ Time: _____ Phone No.: _____
 Meeting No.: _____

Same as Page 1 (circle)

- | | | |
|----------------------|----------------------------------------|-------------------------------------|
| Bangor Hydro | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| Central Main Power | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| CVPS | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| Green Mountain Power | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| Hydro One, Inc. | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| Hydro-Quebec | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| National Grid | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| New Brunswick Power | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| Northeast Utilities | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| Nova Scotia Power | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| NStar | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| South Norwalk W&E | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| United Illuminating | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| Unitil Corp. | <input checked="" type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |
| Other | <input type="checkbox"/> No | <input type="checkbox"/> Yes: _____ |



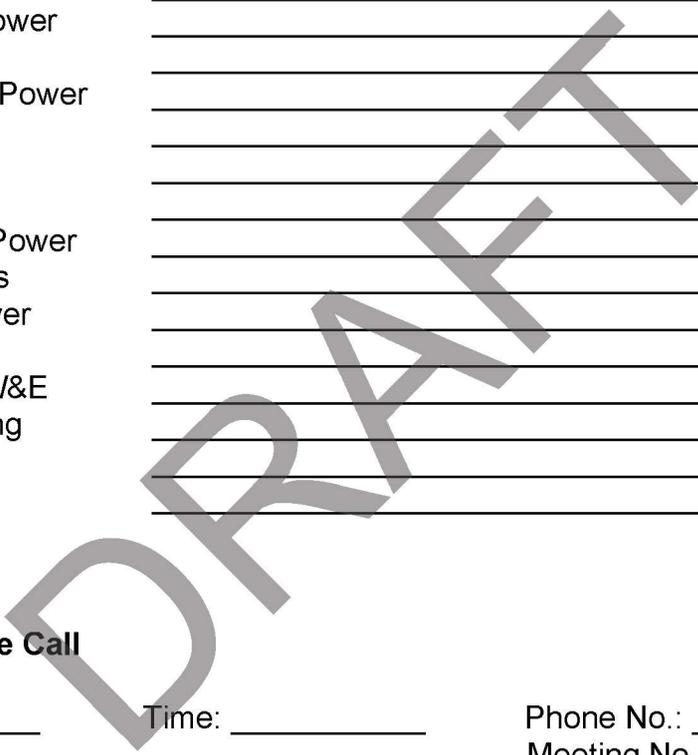
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**Northeast Mutual Assistance Group
 Conference Call Format – Action Item(s) and Next Call**

Date: _____ Time: _____ Phone No.: _____
 Meeting No.: _____

Same as Page 1 (circle)

- Bangor Hydro _____
- Central Maine Power _____
- CVPS _____
- Green Mountain Power _____
- Hydro One, Inc. _____
- Hydro-Quebec _____
- National Grid _____
- New Brunswick Power _____
- Northeast Utilities _____
- Nova Scotia Power _____
- NStar _____
- South Norwalk W&E _____
- United Illuminating _____
- Unitil Corp. _____
- Other _____



Next Conference Call

Date: _____ Time: _____ Phone No.: _____
 Meeting No.: _____

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Appendix C

**Northeast Mutual Assistance Group
Resource Tracking Sheet**

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NEMAG Resource Tracking Sheet

Available resources should be the first wave resources that can be sent once the responding utility is known to be in the clear.

Resources Requested				Resources Available (When Cleared)					
Company	# Utility Line	# Tree Personnel	Date/Time Needed	# Utility Dist. Line	# Contract Dist. Line	# Trans. Line	# Tree Personnel	# Patrol Personnel	Comments (commitments, release date/time, other resources)
Bangor Hydro									
Central Maine Power									
CVPS									
Green Mountain Power									
Hydro One, Inc.									
Hydro-Quebec									
National Grid									
New Brunswick Power									
Northeast Utilities									
Nova Scotia Power									
Nstar									
South Norwalk E&W									
United Illuminating									
Unitil Corp.									
Totals	-	-		-	-		-	-	

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Appendix D

**Suggested Governing Principles Covering
Emergency Assistance Arrangements
Between Edison Electric Institute Member Companies (Updated March 2005)**

Electric companies have occasion to call upon other companies for emergency assistance in the form of personnel or equipment to aid in maintaining or restoring electric utility service when such service has been disrupted by acts of the elements, equipment malfunctions, accidents, sabotage or any other occurrences where the parties deem emergency assistance to be necessary or advisable. While it is acknowledged that a company is not under any obligation to furnish such emergency assistance, experience indicates that companies are willing to furnish such assistance when personnel or equipment are available.

In the absence of a continuing formal contract between a company requesting emergency assistance ("Requesting Company") and a company willing to furnish such assistance ("Responding Company"), the following principles are suggested as the basis for a contract governing emergency assistance to be established at the time such assistance is requested:

1. The emergency assistance period shall commence when personnel and/or equipment expenses are initially incurred by the Responding Company in response to the Requesting Company's needs. (This would include any request for the Responding Company to prepare its employees and/or equipment for transport to the Requesting Company's location but to await further instructions before departing). The emergency assistance period shall terminate when such employees and/or equipment have returned to the Responding Company, and shall include any mandated DOT rest time resulting from the assistance provided and reasonable time required to prepare the equipment for return to normal activities (e.g. cleaning off trucks, restocking minor materials, etc.).
2. To the extent possible, the companies should reach a mutual understanding and agreement in advance on the anticipated length – in general – of the emergency assistance period. For extended assistance periods, the companies should agree on the process for replacing or providing extra rest for the Responding Company's employees. It is understood and agreed that if, in the Responding Company's judgment such action becomes necessary the decision to terminate the assistance and recall employees, contractors, and equipment lies solely with the Responding Company. The Requesting Company will take the necessary action to return such employees, contractors, and equipment promptly.
3. Employees of Responding Company shall at all times during the emergency assistance period continue to be employees of Responding Company and shall not be deemed employees of Requesting Company for any purpose. Responding Company shall be an independent Contractor of Requesting Company and wages, hours and other terms and conditions of employment of Responding Company shall remain applicable to its employees during the emergency assistance period.
4. Responding Company shall make available at least one supervisor in addition to crew foremen. All instructions for work to be done by Responding Company's crews shall be given by Requesting Company to Responding Company's supervisor(s); or, when Responding Company's crews are to work in widely separate areas, to such of Responding Company's foremen as may be designated for the purpose by Responding Company's supervisor(s).
5. Unless otherwise agreed by the companies, Requesting Company shall be responsible for supplying and/or coordinating support functions such as lodging, meals, materials, etc. As an exception to this, the Responding Company shall normally be responsible for arranging lodging and meals en route to the Receiving Company and for the return trip home. The cost for these in transit expenses will be covered by the requesting company.
6. Responding Company's safety rules shall apply to all work done by their employees. Unless mutually agreed otherwise, the Requesting Company's switching and tagging rules should be followed to ensure

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consistent and safe operation. Any questions or concerns arising about any safety rules and/or procedures should be brought to the proper level of management for prompt resolution between management of the Requesting and Responding Companies.

7. All time sheets and work records pertaining to Responding Company's employees furnishing emergency assistance shall be kept by Responding Company.
8. Requesting Company shall indicate to Responding Company the type and size of trucks and other equipment desired as well as the number of job function of employees requested but the extent to which Responding Company makes available such equipment and employees shall be at Responding Company's sole discretion.
9. Requesting Company shall reimburse Responding Company for all costs and expenses incurred by Responding Company as a result of furnishing emergency assistance. Responding Company shall furnish documentation of expenses to Requesting Company. Such costs and expenses shall include, but not be limited to, the following:
 - a. Employees' wages and salaries for paid time spent in Requesting Company's service area and paid time during travel to and from such service area, plus Responding Company's standard payable additives to cover all employee benefits and allowances for vacation, sick leave and holiday pay and social and retirement benefits, all payroll taxes, workmen's compensation, employer's liability insurance and other contingencies and benefits imposed by applicable law or regulation.
 - b. Employee travel and living expenses (meals, lodging and reasonable incidentals).
 - c. Replacement cost of materials and supplies expended or furnished.
 - d. Repair or replacement cost of equipment damaged or lost.
 - e. Charges, at rates internally used by Responding Company, for the use of transportation equipment and other equipment requested.
 - f. Administrative and general costs, which are properly allocable to the emergency assistance to the extent such costs, are not chargeable pursuant to the foregoing subsections.
10. Requesting Company shall pay all costs and expenses of Responding Company within sixty days after receiving an invoice therefore.
11. Requesting Company shall indemnify and hold Responding Company harmless from and against any and all liability for loss, damage, cost or expense which Responding Company may incur by reason of bodily injury, including death, to any person or persons or by reason of damage to or destruction of any property, including the loss of use thereof, which result from furnishing emergency assistance and whether or not due in whole or in part to any act, omission, or negligence of Responding Company. Where payments are made to Responding Company's employees under a workmen's compensation or disability benefits law or any similar law for bodily injury or death resulting from furnishing emergency assistance, Requesting Company shall make reimbursement to Responding Company to the extent such payment increases the Responding Company's workmen's compensation or disability benefits costs, whether such increase in costs occurs in the form of an increase in premiums or contributions or in the form of reduction in dividends or premium refunds, or otherwise.
12. In the event any claim or demand is made or suit or action is filed against Responding Company alleging liability for which Requesting Company shall indemnify and hold harmless Responding Company under paragraph (8) above, Responding Company shall promptly notify Requesting Company thereof, and Requesting Company, at its sole cost and expense, shall settle, compromise or defend the same in such manner as it in its sole discretion deems necessary or prudent.

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- 13 Non-affected companies should consider the release of contractors during restoration activities. The non-affected company shall supply the requesting companies with contact information of the contactors (this may be simply supplying the contractors name). The contractors will negotiate directly with requesting companies.

Updated - March 2005

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Appendix E

**Edison Electric Institute
 Mutual Assistance Agreement**

Edison Electric Institute (“EEI”) member companies have established and implemented an effective system whereby member companies may receive and provide assistance in the form of personnel and equipment to aid in restoring and/or maintaining electric utility service when such service has been disrupted by acts of the elements, equipment malfunctions, accidents, sabotage, or any other occurrence for which emergency assistance is deemed to be necessary or advisable (“Emergency Assistance”). This Mutual Assistance Agreement sets forth the terms and conditions to which the undersigned EEI member company (“Participating Company”) agrees to be bound on all occasions that it requests and receives (“Requesting Company”) or provides (“Responding Company”) Emergency Assistance from or to another Participating Company who has also signed the EEI Mutual Assistance Agreement; provided, however, that if a Requesting Company and one or more Responding Companies are parties to another mutual assistance agreement at the time of the Emergency Assistance is requested, such other mutual assistance agreement shall govern the Emergency Assistance among those Participating Companies.

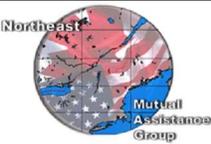
In consideration of the foregoing, the Participating Company hereby agrees as follows:

- (1) When providing Emergency Assistance to or receiving Emergency Assistance from another Participating Company, the Participating Company will adhere to the written principles developed by EEI members to govern Emergency Assistance arrangements among member companies (“EEI Principles”), that are in effect as of the date of a specific request for Emergency Assistance, unless otherwise agreed to in writing by each Participating Company.
- (2) With respect to each Emergency Assistance event, Requesting Companies agree that they will reimburse Responding Companies for all costs and expenses incurred by Responding Companies in providing Emergency Assistance as provided under the EEI Principles, unless otherwise agreed to in writing by each Participating Company; provided, however, that Responding Companies must maintain auditable records in a manner consistent with the EEI Principles.
- (3) During each Emergency Assistance event, the conduct of the Requesting Companies and the Responding Companies shall be subject to the liability and indemnification provisions set forth in the EEI Principles.
- (4) A Participating Company may withdraw from this Agreement at any time. In such an event, the company should provide written notice to EEI’s Director of Security of Transmission and Distribution Operations.
- (5) EEI’s Director of Security of Transmission and Distribution Operations shall maintain a list of each Participating Company which shall be posted on the RestorePower web site at www.restorepower.com. However, a Participating Company may request a copy of the signed Mutual Assistance Agreement of another Participating Company prior to providing or receiving Emergency Assistance.

 Company Name

 Signature

Officer Name:
 Title:
 Date:

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Appendix F

**Northeast Mutual Assistance Group
 Mutual Assistance Agreement**

[Date]

[Responding Company Official's Name]

[Responding Company Official's Title]

[Responding Company's Name]

[Responding Company's Address]

In recognition of the personnel, equipment, and/or other emergency assistance being sent to us by your Company and in accordance with a telephone request between your [Requesting Company Official's Name and Title] and our [Responding Company Official's Name and Title] on [Date of Telephone Request], we agree to be bound by the "Suggested Governing Principles Covering Emergency Assistance Arrangements Between Edison Electric Institute Member Companies", updated March 2005.

[Requesting Company's Name]

[Requesting Company's Address]

Signature: _____

[Requesting Company Official's Name]

[Requesting Company Official's Title]

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Appendix G

**Northeast Mutual Assistance Group
Crew Transfer Sheet**

DRAFT

Equipment	MF	YN	HQ	Location	Region/Division	Company	Role	Grid
Superior/FCC							Elect - Linc	
Supervisor	D1		Yes	Albany	EOC		Forestry	Ngrid NY/E Capital Albany
Material Handler	D2		Female	Albany	EOC		Forestry	Ngrid NY/E Capital Albany
District Contact	D3			Albany	EOC		Garage/ Crew Mechanic	Ngrid NY/E Capital Hudson
Forestry Truck	04			Albany	EOC		Crew Management	Ngrid NY/E Capital Troy
El- Chief Line Mech B Hot Stick - R	05			Albany	EOC		Trans - Line	Ngrid NY/E Capital West Cobleskill
El- Chief Line Mech A Hot Stick - R	06			Albany	EOC		Elect - SVC	Ngrid NY/E Capital West Northville
El- Line Mechanic Hot Stick - R	07			Albany	EOC		Ocean State-RI	Ngrid NY/E Capital West Gloversville
El- Trouble Mechanic D Hot Stick - R	08			Albany	EOC		Safety	Ngrid NY/E Capital West Schenectady
El- Trouble Mechanic C Hot Stick - R	09			Albany	EOC		Wires Down	Ngrid NY/E Northeast Olean Falls
El- Trouble Mechanic B Hot Stick - R	10			Albany	EOC		Guide	Ngrid NY/E Northeast Middle Falls
El- Trouble Mechanic A Hot Stick - R	11			Albany	EOC		Elect - Substation	Ngrid NY/E Northeast Saratoga
El- Chief Line Mechanic A - R	12			Albany	EOC		Stores	Ngrid NY/E Northeast Ticonderoga
El- Line Mechanic A - NR	13			Albany	EOC		Support	Ngrid NY/E Northeast Warrensburg
El- Line Mechanic B - NR	14			Albany	EOC		Trans - Substation	Ngrid NY/C Central Beacon No/Syracuse
El- Line Mechanic C - NR	15			Albany	EOC		Trans - Other	Ngrid NY/C Central Cazenovia
El- Line Mechanic Driver - NR	16			Albany	EOC		Elect - UG	Ngrid NY/C Central Cortland
El- Line Mechanic Helper - NR	17			Albany	EOC		Gas - Dist	Ngrid NY/C Central Hinsdale
El- Chief Maint Mechanic A - R	18			Albany	EOC		Gas - SVC	Ngrid NY/C Central Pultisli
El- Chief Mechanic A - R	19			Albany	EOC		Mech & Test	Ngrid NY/C Northern Malone
El- Mechanic C - NR	20			Albany	EOC		Other	Ngrid NY/C Northern Ogdensburg
El- Mechanic B - NR	21			Albany	EOC			Ngrid NY/C Northern Potsdam
El- Mechanic A - NR	22			Albany	EOC			Ngrid NY/C Northern Star Lake
El- Mechanic Helper - NR	23			Albany	EOC			Ngrid NY/C Northern Watertown
El- One-Person Line/Trouble Mech - R	24			Albany	EOC			Ngrid NY/C MV Oneida
El- Distribution Inspector C - R	25			Albany	EOC			Ngrid NY/C MV Rome
El- Distribution Inspector B - NR	26			Albany	EOC			Ngrid NY/C MV Utica
El- Distribution Inspector A - NR	27			Albany	EOC			Ngrid NY-W Frontier Deway/Ken/Bufalo
El- Chief SI Lt Svc Mech A - NR	28			Albany	EOC			Ngrid NY-W Frontier Niagara Falls
El- Street Light Svc Mech B - NR	29			Albany	EOC			Ngrid NY-W Frontier Tonawanda
El- Street Light Svc Mech C - NR	30			Albany	EOC			Ngrid NY-W Genesee Albion
El- Street Light Svc Mech Helper - NR	31			Albany	EOC			Ngrid NY-W Genesee Avon
El- Journeyman/Foreman - R	32			Albany	EOC			Ngrid NY-W Genesee Batavia
El- Apprentice - NR	33			Albany	EOC			Ngrid NY-W Genesee Tonawanda
El- Groundman/Driver - NR				Albany	EOC			Ngrid NY-W Southwest Angola
El- Equip Operator - NR				Albany	EOC			Ngrid NY-W Southwest Franksville
El- Conl Foreman - R				Albany	EOC			Ngrid NY-W Southwest Fredonia
Forestry - Chief Tree Trimmer A				Albany	EOC			Ngrid NY-W Southwest Olean
Forestry - Trimmer C				Albany	EOC			Ngrid NY-W Southwest Wellsville
Forestry - B Foreman				Albany	EOC			
Forestry - A Foreman				Albany	EOC			
Forestry - T-3				Albany	EOC			
Forestry - T-2				Albany	EOC			
Forestry - T-1				Albany	EOC			
Forestry - IGM				Albany	EOC			
Forestry - General				Albany	EOC			
Trans - Equipment Operator				Albany	EOC			
Trans - Journeyman				Albany	EOC			
Trans - Apprentice				Albany	EOC			
Trans - Groundman/Driver				Albany	EOC			
Trans - General Foreman				Albany	EOC			
SVC-El- Chief Service Rep A - R				Albany	EOC			
SVC-El- Service Rep C - R				Albany	EOC			
SVC-El- Service Rep B - NR				Albany	EOC			
SVC-El- Service Rep A - NR				Albany	EOC			
SVC-El- Service Rep C Electric - NR				Albany	EOC			
SVC-El- Service Rep B Electric - NR				Albany	EOC			
SVC-El- Service Rep Helper - NR				Albany	EOC			
SVC-El- Service Repair				Albany	EOC			
UG- Chief Cable Splicer A - R				Albany	EOC			
UG- Cable Splicer C - R				Albany	EOC			
UG- Cable Splicer B - NR				Albany	EOC			
UG- Cable Splicer A - NR				Albany	EOC			
UG- Cable Splicer Helper - NR				Albany	EOC			
UG- Maintenance Mechanic C - R				Albany	EOC			
UG- Maintenance Mechanic B - NR				Albany	EOC			
UG- Maintenance Mechanic A - NR				Albany	EOC			
UG- Maintenance Helper - NR				Albany	EOC			
UG- Splicer - R				Albany	EOC			
UG- Apprentice - NR				Albany	EOC			
Patrol				Albany	EOC			
Wires Down				Albany	EOC			
Support Office				Albany	EOC			
Support Staging Area				Albany	EOC			
Safety				Albany	EOC			
Stores				Albany	EOC			
Garage- Chief Equip Operator A				Albany	EOC			
Garage- Equipment Operator C				Albany	EOC			
Garage- Equipment Operator B				Albany	EOC			
Garage- Equipment Operator A				Albany	EOC			
Garage- Equipment Operator Helper				Albany	EOC			
Garage- Chief Fleet Technician				Albany	EOC			
Garage- Fleet Technician C				Albany	EOC			
Garage- Fleet Technician B				Albany	EOC			
Garage- Fleet Technician A				Albany	EOC			
Garage- Fleet Utility Person				Albany	EOC			
Crew Mechanic				Albany	EOC			
Garage- General				Albany	EOC			
Sub- Chief Operator B - R				Albany	EOC			
Sub- Chief Operator A - R				Albany	EOC			
Sub- District Operator C - R				Albany	EOC			
Sub- District Operator B - NR				Albany	EOC			
Sub- District Operator A - NR				Albany	EOC			
Sub- Chief Electrician A - R				Albany	EOC			
Sub- Electrician C - R				Albany	EOC			
Sub- Electrician B - NR				Albany	EOC			
Sub- Electrician A - NR				Albany	EOC			
Sub- Electrician Helper - NR				Albany	EOC			
Sub- Maintenance Mechanic C - R				Albany	EOC			
Sub- Maintenance Mechanic B - NR				Albany	EOC			
Sub- Maintenance Mechanic A - NR				Albany	EOC			
Sub- Maintenance Helper - NR				Albany	EOC			
Sub- General				Albany	EOC			
Trans- Other				Albany	EOC			
Trans- Sub- Substation				Albany	EOC			
M&T- Chief Tester & Installer				Albany	EOC			
M&T- Chief Tester & Installer A Special				Albany	EOC			
M&T- Chief Tester A				Albany	EOC			
M&T- Field Tester E				Albany	EOC			
M&T- Field Tester D				Albany	EOC			
M&T- Field Tester C				Albany	EOC			
M&T- Field Tester B				Albany	EOC			
M&T- Field Tester A				Albany	EOC			
Construction - Svc Co				Albany	EOC			
Other				Albany	EOC			



	NEMAG PROCEDURE	Procedure No.	NEMAG-A-001
		Revision No.	1
ADMINISTRATIVE PROCEDURE - GENERAL		Page No.	H-1
		Date:	12/07/08
		Supersedes Date:	None

Appendix H

**Northeast Mutual Assistance Group
Mutual Assistance/Foreign Utility Evaluation Form**

DRAFT

Northeast Mutual Assistance Group Mutual Assistance/Foreign Utility Evaluation Form														
Utility Name:	Lead supervisor													
Utility Address:	Telephone (cell)													
Telephone:	Crew members and vehicle nos.													
In-processing Completion														
Assistance type: (circle one)	Storm	Heat	Cable	Other: (explain)								Administrative and Work Evaluation		
Safety brief (held)	Yes	No	N/A	Other: (explain)	Crew Transfer Sheet (correct)	Yes	No	N/A	Other: (explain)					
Safety brief (attended by all)	Yes	No	N/A	Other: (explain)	Communication: (timely)	Yes	No	N/A	Other: (explain)					
Work brief (attended by all)	Yes	No	N/A	Other: (explain)	Environmental (awareness)	Poor	Fair	Good	Excellent					
Safety Evaluation														
Backfeed (discussed)	1	2	3	4	5	N/A	Equipment stock: (adequate)		Yes	No	N/A	Other: (explain)		
Clearance/control	1	2	3	4	5	N/A	Lodging (complaints)		Yes	No	N/A	Other: (explain)		
Door card (use)	1	2	3	4	5	N/A	Meal (complaints)		Yes	No	N/A	Other: (explain)		
Grounding (present)	1	2	3	4	5	N/A	Work attitude: (circle one)		Poor	Fair	Good	Excellent		
Job briefing (conducted)	1	2	3	4	5	N/A	Work completion: (timely)		Poor	Fair	Good	Excellent		
PPE (proper use)	1	2	3	4	5	N/A	Work packet: (complete)		Yes	No	N/A	Other: (explain)		
Work area (rubber use)	1	2	3	4	5	N/A	Comments:							
Work area (protection)	1	2	3	4	5	N/A								
Work clearances (maintained)	1	2	3	4	5	N/A								
Overall safety assessment	1	2	3	4	5	Not evaluated	Overall work assessment		1	2	3	4	5	Not evaluated

Notes:

1 = Minimal or no assurance, 2 = Limited assurance, 3 = Suitable assurance, 4 = Positive assurance, 5 = Maximum assurance

	NEMAG PROCEDURE	Procedure No.	NEMAG-A-001
		Revision No.	1
ADMINISTRATIVE PROCEDURE - GENERAL		Page No.	I-1
		Date:	12/07/08
		Supersedes Date:	None

Appendix I

Request for Procedure/Change Form

Requestor: _____
 Company: _____
 Department: _____
 Date: _____

Item(s) to be changed (if applicable):

Procedure No: _____
 Section: _____
 Page: _____
 Table: _____
 Figure: _____
 Formula: _____
 Appendix: _____

FOR LEADERSHIP USE ONLY		
1. Change Approved:	YES	NO
2. Change Implemented:	YES	NO
Respective Date(s):	Initials	
1. _____	_____	
2. _____	_____	

Description of Requested Procedure/Change (circle applicable):

Reason for Requested Procedure/Change (circle applicable):

Instructions:

The Individual requesting a procedure/change shall complete the *Request for Procedure/Change Form* and submit it to the current NEMAG Leadership. Please attach a copy of the procedure item to be changed with revisions indicated on the copy.

Requester Signature _____ Date: _____

Contractors Released from Mutual Aid Utilities

Actual Totals	Contractor	Destination
Released from AEP		Worcester
10	AEP (Asplundh)	Worcester
9	AEP (Pike)	Worcester
4	AEP (New Rive Elec)	Worcester
4	AEP (JF Electric)	Worcester
Released from NIPSCO		Worcester
10	Dominion (MasTec)	Worcester
8	Dominion (Riggs Distler)	Worcester
10	Dominion (Riggs Distler)	Worcester
4	UGI (Utility Lines Const Serv)	Worcester
6	LI (Asplundh Line)	Worcester
10	LI (Asplundh Line)	Worcester

Mutual Aid In-House Line Crews

Actual Totals	Utility	Destination
28	AEP	Worcester
20	BG&E	Worcester
25	Consumers Energy	Worcester
12	PHI - Delaware	Worcester
30	PSE&G	Worcester
20	NStar	Worcester

Note: 25 Con Ed crews were dispatched from Albany to the Worcester area on Wednesday.

Contract Crews Assigned to Massachusetts

Anticipated Totals	Contractor	Destination
4	Hawkeye	Northampton
5	Hawkeye	Northampton
5	Hawkeye	Northampton
5	Hawkeye	Leominster
5	Hawkeye	Leominster
1	Hawkeye	Athol
3	Hawkeye	M. Valley
5	Grattan Line	N. Adams
5	Grattan Line	Worcester
6	McDonough Electric	Leominster
6	McDonough Electric	Leominster
10	Harlan	Worcester
10	Harlan	Tewksbury
6	Harlan	Tewksbury
4	Thiro	Lebanon
6	Thiro	Lebanon
5	Thiro	Leominster
5	Thiro	Leominster
4	Thiro	Westfld/Worc
5	Thiro (CT)	Worcester
54	Pike	N. Andover
5	Harlan (Detroit)	Worcester
5	Harlan (IN)	Worcester
3	Harlan (IL)	Worcester
7	Harlan (PA)	Worcester
44	Citi Lights	Worcester

5	N.E. Line	N Andover
18	Lee Electric (NC)	Worcester
3	Thayer Power	Worcester
8	IB Abel	Worcester
6	Serco/Vectren	Worcester
4	Serco/Vectren	Worcester

Available Resources NE North Division-MA

Date : 12/12/08 **Time** 10am

East Region

PLATFORM	OH Crews	T. Shooters	Intra Dist	Contractors	UG Crews	Substation Workers	Tree Crews	Wires Down		Field Guides		Damage Appraisers	Service Crews
								MS	Other	MS	Other		
NORTH ANDOVER	7 1/2	2	10	13	5	14	6	19	1		10	6	
TEWKSBURY	8	2		10			8						
NEWBURYPORT	3 1/2	2					9						
MALDEN	9	4			9		2	10		9			
LYNN													
BEVERLY	7	2			5		2	8		3			
EAST REGION TOTALS	35	12	10	23	19	14	27	37		22		6	0

West Region

WORCESTER / MILBURY	5	4	40	10	5 1/2	12	6	15	29			6	6
LEOMINSTER / GARDNER	3	0		30		4	9	5		5			
ATHOL	1	2					5	6		6			
MONSON	5	2				6	8						
SPENCER							2						
NORTHAMPTON	2	2		15			4	5		6		14	6
GREAT BARRINGTON	3 1/2	2					7	4		4			
NORTH ADAMS	3	2		5		4	5	4		4			
WEST REGION TOTALS	22 1/2	14	40	60	5 1/2	26	46	39		25		20	12
NE NORTH DIVISION TOTALS	57 1/2	26	50	83	24 1/2	40	73	76		47		26	12

Available Resources NE North Division--MA

Date : 12/13/08 **Time** 6am

East Region

PLATFORM	OH Crews	T. Shooters	Intra Dist	Contractors	UG Crews	Substation Workers	Tree Crews	Wires Down		Field Guides		Damage Appraisers	Service Crews
								MS	Other	MS	Other		
NORTH ANDOVER	7 1/2	2	10	13	5	14	6	19	1	10	6		
TEWKSBURY	8	2		10			8						
NEWBURYPORT	3 1/2	2					9						
MALDEN	9	4			9		2	10		9			
LYNN													
BEVERLY	7	2			5		2	8		3			
EAST REGION TOTALS	35	12	10	23	19	14	27	37		22	6		0

West Region

WORCESTER / MILBURY	5	4	40	10	5 1/2	12	6	15	28		6		6
LEOMINSTER / GARDNER	3	0		30		4	9	5		5			
ATHOL	1	2					5	6		6			
MONSON	5	2				6	8						
SPENCER							2						
NORTHAMPTON	2	2		15			4	5		6	14		6
GREAT BARRINGTON	3 1/2	2					7	4		4			
NORTH ADAMS	3	2		5		4	5	4		4			
WEST REGION TOTALS	22 1/2	14	40	60	5 1/2	26	46	39		25	20		12
NE NORTH DIVISION TOTALS	57 1/2	26	50	83	24 1/2	40	73	76		47	26		12

Available Resources **NE North Division-MA**

Date : 12/14/08 **Time** 7am

East Region

PLATFORM	OH Crews	T. Shooters	Intera Crews	Contractors	UG Crews	Substation Workers	Tree Crews	Wires Down		Field Guides		Damage Appraisers
								MS	Other	MS	Other	
NORTH ANDOVER	6 1/2	1		11	5	16	69	72				30
TEWKSBURY	8	1										
NEWBURYPORT	5	1										
MALDEN	8	2			9							
LYNN												
BEVERLY	6	2			5							
EAST REGION TOTALS	33.5	7	0	11	19	16	69	72	0	0	0	30

West Region

WORCESTER / MILBURY	6		40	300		22	197	155				60
LEOMINSTER / GARDNER	2											
ATHOL	2											
MONSON	6											
SPENCER	7											
NORTHAMPTON	7											
GREAT BARRINGTON	4											
NORTH ADAMS	3											
WEST REGION TOTALS	37	0	40	300	0	22	197	155	0	0	0	60
NE NORTH DIVISION TOTALS	70 1/2	7	40	311	19	38	266	227	0	0	0	90

Available Resources NE North Division-MA

Date : 12/15/08 **Time** 7am

East Region

PLATFORM	OH Crews	T. Shooters	NE South	Contractors Crews	UG Crews	Substation Crews	Tree Crews	Wires Down		Field Guides		Damage Appraisers
								MS	Other	MS	Other	
NORTH ANDOVER	6 1/2	1		11	5	7	45	98				18
TEWKSBURY	8	1		20								
NEWBURYPORT	5 1/2	1										
MALDEN	10	3			9	6						
LYNN												
BEVERLY	6	2			5							
EAST REGION TOTALS	36	8	0	31	19	13	45	98	0	0	0	18

WEST Region

PLATFORM	OH Crews	T. Shooters	NE South	Contractors Crews	UG Crews	Substation Crews	Tree Crews	Wires Down		Field Guides		Damage Appraisers
								MS	Other	MS	Other	
WORCESTER / MILBURY	8	2	40	144		24	31	114			20	10
LEOMINSTER / GARDNER	8			227	10	3	98				49	40
ATHOL	8			5			15	8				
MONSON	2			0		1						
SPENCER	6			62			19					
NORTHAMPTON	1			6			6	28				
GREAT BARRINGTON	8			4			1					
NORTH ADAMS	6			5	4		27					
WEST REGION TOTALS	47	2	40	453	14	28	197	150	0	0	0	50
NE NORTH DIVISION TOTALS	83	10	40	484	33	41	242	248	0	0	0	68

Available Resources NE North Division-MA

Date : 12/16/08

Time 6am

East Region

PLATFORM	OH Crews	T. Shooters	Service Crew	NE South	Contractors	UG Crews	Substation Crews	Tree Crews
NORTH ANDOVER	6 1/2	1	17		11	5	7	45
TEWKSBURY	8	1			27			
NEWBURYPORT	5 1/2	1						
MALDEN	10	3				9	6	
LYNN								
BEVERLY	6	2				5		
EAST REGION TOTALS	36	8	17	0	38	19	13	45

Wires Down		Field Guides		Damage Appraisers
MS	Other	MS	Other	
98				18
98		0		18

East Region

PLATFORM	OH Crews	T. Shooters	Service Crew	NE South	Contractors	UG Crews	Substation Crews	Tree Crews
WORCESTER / MILBURY	8	2	15	40	177		24	56
LEOMINSTER / GARDNER	8		20		325	10	3	93
ATHOL	8				5			15
MONSON	2				0		1	17
SPENCER	6				14			19
NORTHAMPTON	1				6			6
GREAT BARRINGTON	8				4			1
NORTH ADAMS	6				5	4		27
WEST REGION TOTALS	47	2	35	40	536	14	28	234

Wires Down		Field Guides		Damage Appraisers
MS	Other	MS	Other	
120	13		20	10
			49	40
7				
127	13	0	69	50
225	13	0	69	68

NE NORTH DIVISION TOTALS	83	10	52	40	574	33	41	279
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Available Resources NE North Division-MA

Date : 12/17/08

Time 6am

added in CMP

East Region

PLATFORM	OH Crews	T. Shooters	Service Crew	NS Crews	Contractors	UG Crews	Substation Crews	Tree Crews
NORTH ANDOVER	7	1	11		15	5	7	45
TEWKSBURY	8	1	3	13	3			
NEWBURYPORT	4	1						
MALDEN		3				9	6	
LYNN								
BEVERLY		2				5		
EAST REGION TOTALS	19	8	14	13	18	19	13	45

Wires Down	Field Guides		Damage Appraisers
	MS	Other	
MS	97		23
C&C		8	
Other			
97	8	0	23

East Region

PLATFORM	OH Crews	T. Shooters	Service Crew	NE South	Contractors	UG Crews	Substation Crews	Tree Crews
WORCESTER / MILBURY	8	2	20	20	157		24	56
LEOMINSTER / GARDNER	0		18	27	317	10	3	93
ATHOL	8				5			26
MONSON	2				0		1	17
SPENCER	6				14			19
NORTHAMPTON	1				6			6
GREAT BARRINGTON	8				4			1
NORTH ADAMS	6				5	4		27
WEST REGION TOTALS	39	2	38	47	508	14	28	245

Wires Down	Field Guides		Damage Appraisers
	MS	Other	
MS	172		10
C&C		32	
Other			
7			40
179	32	0	50
276	40	69	73

NE NORTH DIVISION TOTALS	58	10	52	60	526	33	41	290
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Available Resources NE North Division-MA

Date : 12/18/08

Time 6am

East Region

PLATFORM	OH Crews	T. Shooters	Service Crew	NS Crews	Contractors	UG Crews	Substation Crews	Tree Crews
NORTH ANDOVER	7	1	7	3	5	4	7	32
TEWKSBURY	8	2	7	7	10			6
NEWBURYPORT	3	1		3				6
MALDEN		2					6	
LYNN								
BEVERLY		2				1		
EAST REGION TOTALS	18	8	14	13	15	5	13	44

	Wires Down		Field Guides		Damage Appraisers
	MS	C&C Other	MS	Other	
	97	8			23
	97	8	0	0	23

East Region

PLATFORM	OH Crews	T. Shooters	Service Crew	NE South	Contractors	UG Crews	Substation Crews	Tree Crews
WORCESTER / MILBURY	8	2	20	22	186		24	66
LEOMINSTER / GARDNER	0		18	14	416	10	3	93
ATHOL	8				5			26
MONSON	2				0		1	17
SPENCER	6				14			19
NORTHAMPTON	1				6			6
GREAT BARRINGTON	8				4			1
NORTH ADAMS	6				5	4		27
WEST REGION TOTALS	39	2	38	36	636	14	28	255

	Wires Down		Field Guides		Damage Appraisers
	MS	C&C Other	MS	Other	
	215	32		20	10
				49	40
	7				
	21				
	243	32	0	69	50
	340	40	0	69	73

NE NORTH DIVISION TOTALS	57	10	52	49	651	19	41	299
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Available Resources NE North Division-MA

Date : 12/19/08 **Time** 8am

East Region

PLATFORM	OH Crews	T. Shooters	Service Crew	NS Crews	Contractors	UG Crews	Substation Crews	Tree Crews
NORTH ANDOVER	7	1		3		4	7	21
TEWKSBURY	8	2		7				6
NEWBURYPORT	3	1		3				6
MALDEN		2					6	
LYNN								
BEVERLY		2				1		
EAST REGION TOTALS	18	8	0	13	0	5	13	33

Wires Down	Field Guides			Damage Appraisers
	MS	C&C Other	Other	
10				10
10	0	0	0	10

West Region

PLATFORM	OH Crews	T. Shooters	Service Crew	NE South	Contractors	UG Crews	Substation Crews	Tree Crews
WORCESTER / MILBURY	8	2	20	22	350	11	24	76
LEOMINSTER / GARDNER	0		18	14	416	10	3	93
ATHOL	8				5			26
MONSON	2				0		1	17
SPENCER	6				14			19
NORTHAMPTON	1				6			6
GREAT BARRINGTON	8				4			1
NORTH ADAMS	6				5	4		27
WEST REGION TOTALS	39	2	38	36	800	25	28	265

Wires Down	Field Guides			Damage Appraisers
	MS	C&C Other	Other	
215		32	20	10
			49	40
7				
21				
243	32	0	69	50

NE NORTH DIVISION TOTALS	57	10	38	49	800	30	41	298
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253	32	0	69	60
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NE North Region	
Platform	Cities / Towns Served
Worcester	Worcester, Auburn, Leicester
Millbury	Dudley, Grafton, Millbury, Oxford, Sutton, Webster
Leominster	Ayer, Berlin, Bolton, Clinton, Dunstable, Harvard, Lancaster, Leominster, Pepperell, Shirley
Gardner	Gardner, Hubbardston, Westminster, Winchendon
Athol	Athol, Barre, Erving, New Salem, Orange, Petersham, Phillipston, Royalston, Shutesbury, Warwick, Wendell
Spencer	Brookfield, East Brookfield, North Brookfield, West Brookfield, Charlton, New Braintree, Oakham, Rutland, Southbridge, Spencer, Sturbridge
Monson	Belchertown, Brimfield, East Longmeadow, Hampden, Hardwick, Holland, Monson, Palmer, Wales, Ware, Warren, Wilbraham
Northampton	Goshen, Granby, Northampton, Williamsburg
North Adams	Adams, Charlemont, Cheshire, Clarksburg, Florida, Hancock, Hawley, Heath, Monroe, North Adams, Rowe, Williamstown
Great Barrington	Alford, Gt. Barrington, Lenox, Monterey, Mt. Washington, New Marlboro, Egremont, Sheffield, Stockbridge, West Stockbridge
Malden	Everett, Lynn, Malden, Medford, Melrose, Nahant, Revere, Saugus, Swampscott, Winthrop
Beverly	Beverly, Essex, Gloucester, Hamilton, Manchester, Rockport, Salem, Topsfield, Wenham
North Andover	Andover, Boxford, Haverhill, Lawrence, Methuen, North Andover
Tewksbury	Billerica, Chelmsford, Dracut, Lowell, Tewksbury, Tyngsboro, Westford
Newburyport	Amesbury, Newbury, Newburyport, Salisbury, West Newbury

Req Number	LINE	PRIORITY (High, Low, Complete)	Area	Type of Incident	INCIDENT DATE & TIME	INCIDENT LOCATION INFO	PATROL START	PATROL TYPE	DAMAGE REPORTED	DAMAGE LOCATION	REPAIR CREW INFORMATION	REPAIR START DATE & TIME	ESTIMATED REPAIR COMPLETION	REPAIR COMPLETED DATE & TIME
1	U21	Complete	NE-N	Line Out	12/1/08 11:19 PM		12/2/08 01:00 am	Foot	Tree Str 6, plus multiple others	Multiple trees down Litchfield St, Leicester	Tom Crow On Site Cassie Schilling Out	12/1/08 6:30 AM	12/1/08 10:30 AM	12/2/08 4:30pm
2	A63	Complete	NE-N	Line Out	12/1/08 11:54 PM		12/2/08 1:00 AM	Foot	Trees on Wiles. Multiple locations with damage from tree contact	Trees on Wiles Str 91. Multiple locations. Str 175 leaning, str 199 leaning, not bud, str 170 broken insulator str 80 & 81 poles down, str 150 brown insulator	2 Tree Crews, TLS DCC	12/1/08 7:00 AM	12/15/08 6:44 PM	12/15/08 1:00 PM
4	M63	Complete	NE-N	Line Out	12/1/08 11:47 PM		12/2/08 7:00 AM	Foot	No Damage Found From Trees	Phase Down	Mark Hyland, 5 Linemen	12/1/08 09:00am	12/1/08 11:59 PM	12/1/08 1:00 PM
5	H85S	Complete	NE-N	Line Out	12/1/08 11:45 PM	Flag Pond to Pratt's Junction	12/2/08 01:00 am	Foot	Multiple areas of siltic wires & conductor down	Flag Pond	Apple/KT Power/13M	12/1/08 09:00am	12/1/08 11:59 PM	12/1/08 1:00 PM
6	E2	Complete	NE-N	Line Out	12/2/08 12:11 AM	Pratt's to Gardner	12/2/08 2:00 AM	Foot	Nothing found during Foot Patrol - shot wire & bud at 2:20 pm	Str Appelpark Hybrid foot patrol & repairs w/str 295-594/John Sibilac KT Power painting	Mark Hyland, 5 Linemen	12/1/08 09:00am	12/1/08 11:59 PM	12/1/08 1:00 PM
7	F6	Complete	NE-N	Line Out	12/2/08 12:13 AM		12/2/08 01:00 am	Foot	Nothing found during Foot Patrol - shot wire & bud at 2:20 pm	Str Appelpark Hybrid foot patrol & repairs w/str 295-594/John Sibilac KT Power painting	Apple/KT Power/13M	12/1/08 09:00am	12/1/08 11:59 PM	12/1/08 1:00 PM
8	E5	Complete	NE-N	Line Out	12/2/08 12:14 AM		12/2/08 01:00 am	Foot	Nothing found during Foot Patrol - shot wire & bud at 2:20 pm	Str Appelpark Hybrid foot patrol & repairs w/str 295-594/John Sibilac KT Power painting	Apple/KT Power/13M	12/1/08 09:00am	12/1/08 11:59 PM	12/1/08 1:00 PM
9	B64	Complete	NE-N	Line Out	12/2/08 12:19 AM		12/2/08 1:00 AM	Foot	Multiple trees down	Str 40, Thompson Rd, West Boylston	Rock St, Jean (6)	12/1/08 09:00am	12/1/08 11:59 PM	12/1/08 1:00 PM
10	H100	Complete	NE-N	Line Out	12/2/08 12:38 AM		12/2/08 2:00 AM	Foot	Multiple trees down	Str 40, Thompson Rd, West Boylston	Rock St, Jean (6)	12/1/08 09:00am	12/1/08 11:59 PM	12/1/08 1:00 PM
11	J126N	Complete	NE-N	Line Out	12/2/08 1:07 AM		12/2/08 2:00 AM	Foot	Multiple trees down	Str 40, Thompson Rd, West Boylston	Rock St, Jean (6)	12/1/08 09:00am	12/1/08 11:59 PM	12/1/08 1:00 PM
13	B128	Complete	NE-N	Line Out	12/2/08 2:22 AM		12/2/08 7:00 AM	Foot	Trees Down, Conductor Down	All Replaced. Trees Down str 210 & 211. Tree on Phase B w/str 282/288 2 sections of rd near Wellbats. Tree attached copper at Rio 911 - needs repair	Rock St, Jean (6)	12/1/08 09:00am	12/1/08 11:59 PM	12/1/08 1:00 PM
14	V22	Complete	NE-N	Line Out	12/2/08 2:22 AM		12/2/08 1:00 AM	Foot	Multiple trees & conductor down	Str 40, Thompson Rd, West Boylston	Rock St, Jean (6)	12/1/08 09:00am	12/1/08 11:59 PM	12/1/08 1:00 PM
19	A1	Complete	NE-N	Tip/Rock	12/2/08 2:55 AM	Pratt's to Otter River	12/2/08 5:00 am	Foot	Trees Across 2 Phases	Between str 282 & 283	Rock St, Jean (6)	12/1/08 09:00am	12/1/08 11:59 PM	12/1/08 1:00 PM
23	V174	Complete	NE-N	Line Out	12/2/08 3:46 AM		12/2/08 8:00 AM	Foot	Multiple trees on line	Between str 282 & 283	Rock St, Jean (6)	12/1/08 09:00am	12/1/08 11:59 PM	12/1/08 1:00 PM
24	A201	Complete	NE-N	Line Out	12/2/08 3:59 AM		12/2/08 8:00 AM	Foot	Multiple trees on line	Between str 282 & 283	Rock St, Jean (6)	12/1/08 09:00am	12/1/08 11:59 PM	12/1/08 1:00 PM
25	N188	Complete	NE-N	Line Out	12/2/08 4:41 AM	Hudson Main Desc	12/2/08 8:00 am	Foot	Multiple trees on line	Between str 282 & 283	Rock St, Jean (6)	12/1/08 09:00am	12/1/08 11:59 PM	12/1/08 1:00 PM
26	343	Complete	NE-N	Line Out	12/2/08 04:59 AM		12/2/08 7:00 AM	Foot	static wire down 2nd str out from canopy	Between str 282 & 283	Rock St, Jean (6)	12/1/08 09:00am	12/1/08 11:59 PM	12/1/08 1:00 PM
27	S27	Complete	NE-N	Tip/Rock	12/2/08 05:01 AM		12/2/08 7:00 AM	Helicopter	static wire down 2nd str out from canopy	Between str 282 & 283	Rock St, Jean (6)	12/1/08 09:00am	12/1/08 11:59 PM	12/1/08 1:00 PM
28	A127	Complete	NE-N	Line Out	12/2/08 05:01 AM	Herts to Wab St	12/2/08 7:00 AM	Helicopter	Conductors Down, Large Trees	Str 470 - 471 - 472 in Picket	Finon Hybrid	12/1/08 09:00am	12/1/08 11:59 PM	12/1/08 1:00 PM
29	O42	Complete	NE-N	Tip/Rock	12/2/08 05:38 AM	Tewksbury to W. Madison to Power St (PSNH)	12/2/08 7:00 AM	Helicopter	Conductors Down, Large Trees	Str 470 - 471 - 472 in Picket	Finon Hybrid	12/1/08 09:00am	12/1/08 11:59 PM	12/1/08 1:00 PM
30	E06E	Complete	NE-N	Line Out	12/2/08 5:38 AM		12/2/08 7:00 AM	Foot	Trees, Misc.	Str 470 - 471 - 472 in Picket	Finon Hybrid	12/1/08 09:00am	12/1/08 11:59 PM	12/1/08 1:00 PM
31	A1	Complete	NE-N	Tip/Rock	12/2/08 5:41 AM	Old River to Chestnut Hill	12/2/08 7:00 AM	Foot	Trees, Misc.	Str 470 - 471 - 472 in Picket	Finon Hybrid	12/1/08 09:00am	12/1/08 11:59 PM	12/1/08 1:00 PM
32	A1	Complete	NE-N	Line Out	12/2/08 7:12 AM	Pratt's Jct to Vernon	12/2/08 9:00 AM	Foot	Shield Wire Down, Conductor Down, Trees on wires	Multiple structures with Damage	Finon Hybrid	12/1/08 09:00am	12/1/08 11:59 PM	12/1/08 1:00 PM
33	E2	Complete	NE-N	Line Out	12/2/08 07:12 am	Pratt's Jct to Vernon	12/2/08 7:00 AM	Foot	Shield Wire Down, Conductor Down, Trees on wires	Multiple structures with Damage	Finon Hybrid	12/1/08 09:00am	12/1/08 11:59 PM	12/1/08 1:00 PM
34	Y151	Complete	NE-N	Line Out	12/2/08 7:45 AM	Tewksbury to W. Madison to Power St (PSNH)	12/2/08 7:00 AM	Foot	Trees Down	High Plain Rd, Andover	Steve Cullen with Hawkeye Crew	12/1/08 07:00am	12/1/08 11:59 PM	12/1/08 1:00pm
40	D4	Complete	NE-N	Tip/Rock	12/2/08 8:22 AM	Vernon to Deerfield 4	12/2/08 07:00 am	Helicopter	Trees	High Plain Rd, Andover	Steve Cullen with Hawkeye Crew	12/1/08 07:00am	12/1/08 11:59 PM	12/1/08 1:00pm
41	W23	Complete	NE-N	Line Out	12/2/08 8:26 AM	Northborough rd to Woodside	12/2/08 7:00 AM	Foot	Tree limbs Down	Tree limbs on Conductor Northborough to Woodside Station	Steve Cullen with Hawkeye Crew	12/1/08 07:00am	12/1/08 11:59 PM	12/1/08 1:00pm
42	U184	Complete	NE-N	Tip/Rock	12/2/08 8:36 AM	Tewksbury to N. Libbie's	12/2/08 07:00 am	Helicopter	Trees	Tree limbs on Conductor Northborough to Woodside Station	Steve Cullen with Hawkeye Crew	12/1/08 07:00am	12/1/08 11:59 PM	12/1/08 1:00pm
44	337	Complete	NE-N	Tip/Rock	12/2/08 4:54 AM	Sandy Pond to Tewksbury	12/2/08 07:00 am	Helicopter	Trees	Tree limbs on Conductor Northborough to Woodside Station	Steve Cullen with Hawkeye Crew	12/1/08 07:00am	12/1/08 11:59 PM	12/1/08 1:00pm
45	N40	Complete	NE-N	Tip/Rock	12/2/08 5:44 AM	Pratt's Jct to Fish Rd	12/2/08 07:00 am	Helicopter	Damaged Tower	Str 10 Leaning - Need to move over 1 pft	Mike DiCocco	12/1/08 7:00 AM	12/1/08 11:59 PM	12/1/08 1:00 PM
46	J10	Complete	NE-N	Line Out	12/2/08 10:45am	Adams to Desfield 5	12/2/08 8:00 am	Foot	Conductor Down, Shell Wires Broken and on ground	Str 10 Leaning - Need to move over 1 pft	Mike DiCocco	12/1/08 7:00 AM	12/1/08 11:59 PM	12/1/08 1:00 PM
48	H150L	Complete	NE-N	Line Out	12/2/08 12:20 AM		12/2/08 7:00 AM	Foot	Conductor Down, Shell Wires Broken and on ground	2 Sections Down @ Florida Creek Rd R12 to Monroe Rd to Clear Rd	Pauline/Egan/Bemis Gibson	12/1/08 10:00am	12/1/08 11:59 PM	12/1/08 1:00 PM

For more Detailed Information, Refer to Associated Damage Appraisal Form

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3. Plan Implementation - General Information

When it is apparent that all or part of the Emergency Plan must be implemented, the actual implementation phase must proceed in an organized manner. A typical sequence of events would include the following:

3.A. Damage Assessment

Early and accurate damage assessment is vital towards helping the Division determine the overall resource needs for accomplishing prompt service restoration following major emergency events. Procurement of certain resources, such as outside utility crews or additional quantities of poles and conductor from vendors can take many hours and sometimes days. In addition, a considerable amount of related support must often be arranged, such as meals and lodging for outside crews. Therefore, it is absolutely necessary to determine as soon as possible, whether resources in excess of those normally kept by the Company must be acquired.

It is imperative that the personnel assigned as Damage Appraisers be dispatched to identified locations once the storm or emergency has subsided sufficiently to permit field inspection of damage. They must report their findings within one hour of initial assignment, to the Damage Appraisal Field Coordinator. With the possible exception of circuits with critical customers, all surveying will be performed during daylight hours.

The surveys will be done in two phases:

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-
- Phase 1 – Three phase mainline distribution using form # NG0129. Findings will be noted on the form with all other pertinent information.
 - Phase 2 – Fused taps, single phase, secondary, services, and lighting using form # NG0107. These surveys will be initiated immediately after completing phase 1 surveys.

This procedure is described in EP-A-A01 dated 3/30/07

The Damage Appraisal team will immediately summarize and evaluate the reports and determine the overall resource needs for accomplishing prompt service restoration. The damage assessment results will be used to help determine the overall implementation of the emergency plan and an Estimated Restoration Time (ERT). This information will be given to the System E-room which in turn will be provided to Corporate Communications who will update the media and municipals.

These results will also determine the need for a Verizon representative to be assigned to the District Storm Center for MECo / TELCo coordination. The Emergency Operations Coordinator will make this request through the District Emergency Director.

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EP-A-A01 3/30/07

INTRODUCTION

The Storm Damage Appraisal is performed to assess physical damage such as wires down and poles broken on overhead distribution and transmission lines following a storm event. The Damage Appraisal process will be used to formulate the appropriate level of storm response by National Grid management.

This procedure describes the activities undertaken 72 hours in advance of the storm, 24 hours in advance of the storm, and immediately after the storm and clearly defines roles and responsibilities. Additionally, this procedure describes the discrete phases of the Storm Damage Appraisal.

Purpose

The purpose of this document is to define a process to organize damage appraisals and work packets for major and minor storm events; assess storm damage through Damage Patrols; estimate restoration time requirements at the division- and system levels; assemble and track work packets for restoration crews; record repairs made; and provide information to build Confirming Work plans following the storm.

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Applicability and Scope

This document applies to all company departments or functions that respond to major and minor storms, including Damage Appraisal Teams, Field Coordinators, and Work Packet Support Teams. By developing a clear process for damage appraisal the Company will mitigate the impact on a business interruption may have on our customers, employees, operations and public reputation.

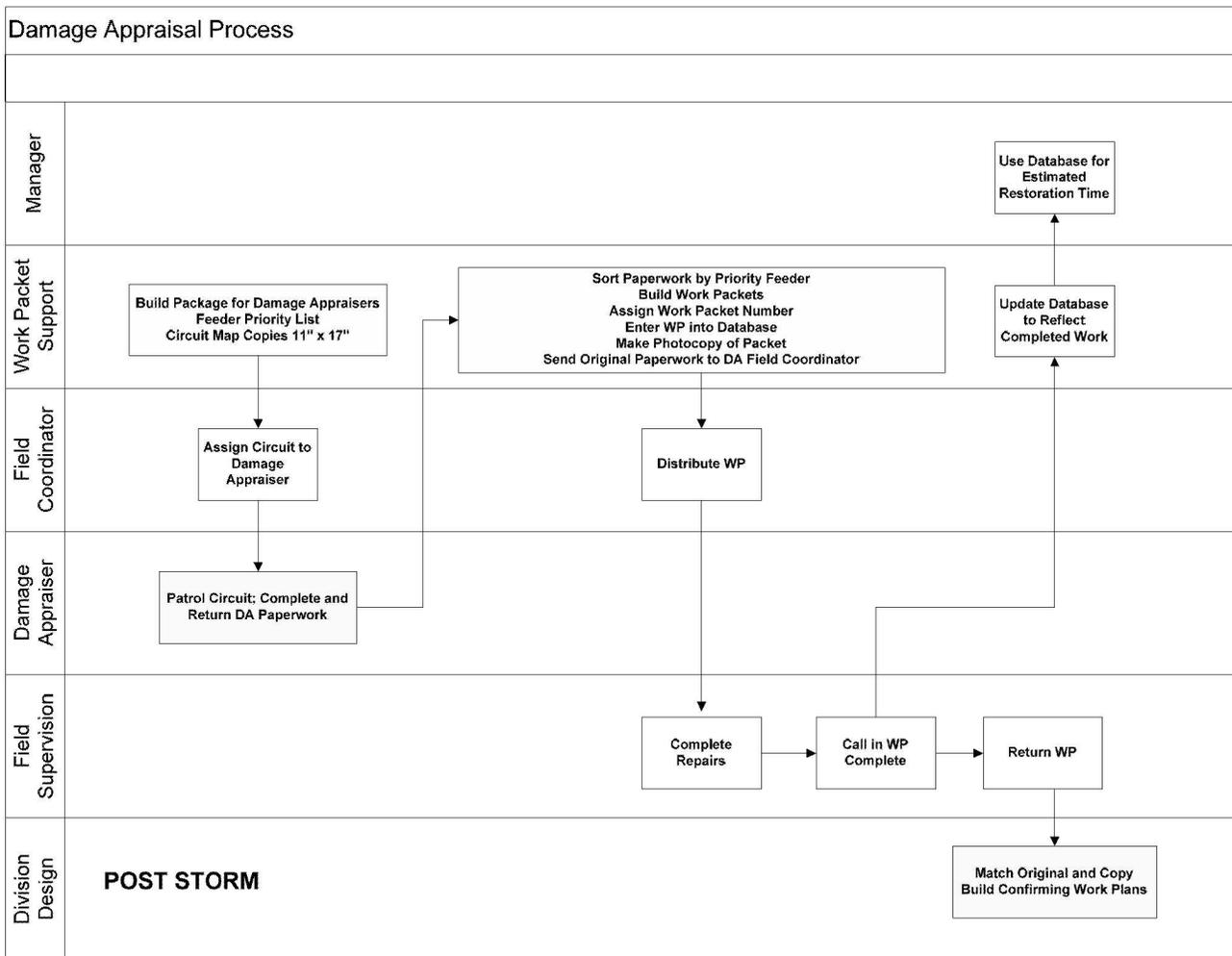


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Damage Appraisal Process Work Flow

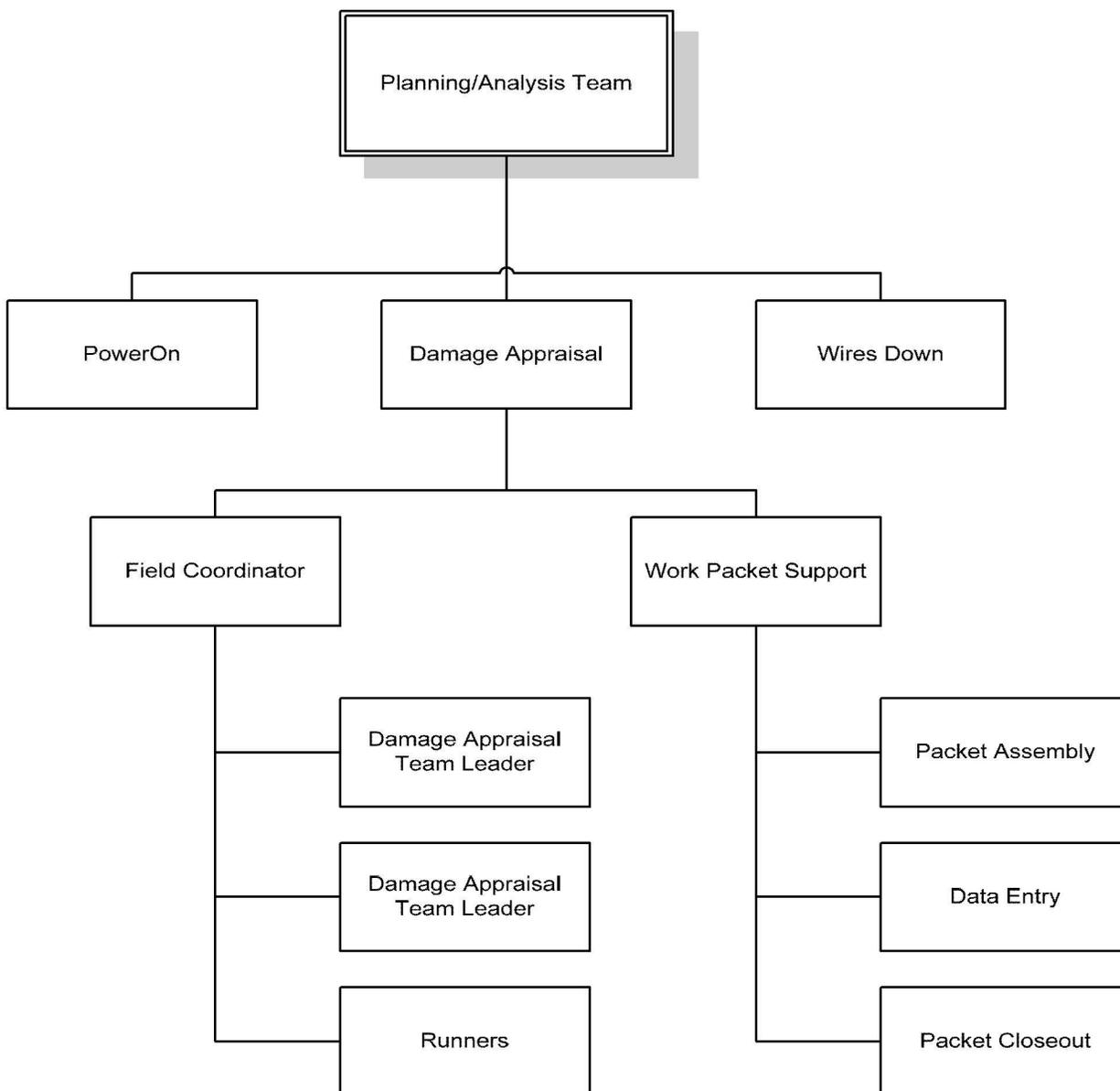


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Damage Appraisal Team Organizational Chart



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DAMAGE PATROL

Summary

Damage Patrols will be performed by Damage Appraisers (local division personnel, SEALS, personnel from unaffected divisions, or outside vendors). The Damage Patrol has two phases: A Work Packet is created using the Damage Patrol Detail Sheets and the Damage Patrol Envelope. At each work site, the Damage Appraiser enters the repair details on Damage Patrol Detail Sheets. The Detail Sheets are summarized on the Damage Patrol Envelope.

Division Damage Patrol Teams will prioritize the patrol sequence with an emphasis on Critical Customers. Damage appraisal, restoration assignments, and restoration recordkeeping shall be by Circuit Number.

The Damage Patrol and Work Packet process is paper-driven. Paper forms require minimal training, require minimal equipment, and are the most reliable information transfer method during a major event.

It is essential that qualified switching personnel be dispatched in sufficient numbers to determine feeder lockout conditions and be available for Clearance and Control sectionalizing efforts. If damage to the overhead transmission system and/or the

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distribution system is expected to be extensive, helicopter damage patrols should be initiated as soon as practicable.

Phase 1 Damage Patrol

Phase 1 Damage Patrols will begin as soon as practicable following the storm.

The Phase 1 Damage Patrol will identify physical damage, such as primary wires down, poles broken, transformers down, on Circuit Mainlines or Transmission Lines as assigned by the Division Damage Appraisal Team.

Appraisers will note the position of protective devices such as line reclosers and fuses for validation of PowerOn predictions, if requested by the Manager.

All physical damage and tree work details from this Damage Patrol are entered on the Phase 1 Damage Patrol Detail Sheet (See Examples 1 and 2 in the Appendix).

Critical Customers shall be Phase 1 priority. Critical Customer Circuits are assigned to the Damager Appraiser by the Division Damage Appraisal Team.

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Phase 2 Damage Patrol

Phase 2 Damage Patrols will begin immediately following completion of the Phase 1 Damage Patrol process.

The Phase 2 Damage Patrol will identify physical damage on fused taps, single phase primary, secondary, and services. Phase 2 details are entered on the Phase 2 Damage Patrol Detail Sheet (See Examples 3 and 4 in the Appendix).

Damage Patrol Detail Sheets

The Phase 1 and 2 Damage Patrol Detail Sheet is a two-sided document. Phase 1 is on side one and Phase 2 is on the reverse side. Damage Appraisers will be issued multiple pads of Damage Patrol Detail Sheets to record the details of their surveys.

A Damage Patrol Detail Sheet is prepared for each local trouble spot. The sheet should include all required repairs and equipment replacements.

NOTE: Line work and Tree work should be detailed on separate sheets and envelopes. Tree Crew Work Packets and Line Crew Work Packets will not be combined

Damage Patrol Envelope

1. The Damage Appraiser prepares a Damage Patrol Envelope

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for each location. It is likely that many Damage Patrol Envelopes will be prepared for each circuit. The Damage Patrol Detail Sheets are summarized on the envelope cover and the sheets are placed inside.

2. The Division Damage Appraisal Team receives the Damage Patrol Envelopes from the Appraisers.
3. The Division Damage Appraisal Team reviews the material and completes the envelope.
4. After review, the Division Damage Patrol Coordinator assigns the envelope a Work Packet Number.

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3.0 EMERGENCY/STORM RESTORATION PLAN IMPLEMENTATION

3.1 Plan Implementation - General Information

Policy Statement:

The Company Emergency/Storm Restoration Plan works to provide a multi level response that is adaptable to a variety of emergency situations. When an emergency occurs, the situation is constantly monitored by the System and District Emergency Directors to identify the appropriate level of response.

3.2 Damage Assessment

Policy Statement:

During major emergency events, early and accurate damage assessments are needed to determine the resources required enabling rapid service restoration. These assessments are essential to making all subsequent personnel and materials allotments.

Each District is required to have a procedure for damage assessment as part of its emergency plan. Company procedures for performing damage assessment will be issued as they are developed.

3.3 Restoration Sequence

Policy Statement:

While remedying serious safety hazards is the highest priority, the restoration sequence shall generally strive to restore service to the greatest number of customers as quickly as possible. This effort can involve hundreds of crews at scores of locations, necessitating a careful consideration of many factors.

The most fundamental strategy of electric service restoration is to connect the sources of electricity to the delivery system, and then to the customers. Accordingly, the restoration sequence must begin with generation units (sources), then work through the transmission system, substations, distribution feeder main lines, feeder branches, distribution transformers, and, finally, the individual customer services. While specific circumstances may warrant a shifting of priorities, the restoration work is normally performed on several of these segments simultaneously.

As restoration proceeds to the point where decisions can be made about

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prioritizing restoration to individual customers, the following categories have been identified, with "A" being the highest priority:

- A. Hospitals, central water and sewer pumping facilities, life-support customers (LSCs)
- B. Fire, police, emergency management agency headquarters
- C. Radio, television, major newspapers, nursing homes, elderly residence facilities
- D. Critical industry
- E. Essential commercial and industrial
- F. Commercial and residential
- G. Industrial and residential
- H. Remaining individual services

Many considerations factor into restoration priority such as a customer with emergency generation, which may permit other customers to take precedence. Also, other customer requests for priority restoration will be considered. Communication with customers is crucial to an effective restoration strategy.

Action Required:

1. All individuals involved with emergency restoration must be aware of established restoration priority criteria.
2. The District Emergency Director or others need to modify appropriately the restoration sequence as information becomes known, and communicate decisions to restoration crews.



National Grid

Notice of Life-Sustaining Equipment

Account Number:	_____
Customer Name:	_____
Service Address:	_____
City/Town, Zip:	_____
Telephone Number:	_____

The following life-sustaining equipment is in my home:

- | | |
|----------------------------------------------------------------------------------------------|-----------------------------------------------|
| <input type="checkbox"/> Tank-type Respirator (Iron Lung) | <input type="checkbox"/> Heart Rate Monitor |
| <input type="checkbox"/> Curaisse-type Respirator (Chest) | <input type="checkbox"/> PD APNEA Monitor |
| <input type="checkbox"/> Rocking Bed | <input type="checkbox"/> Diaphragm Stimulator |
| <input type="checkbox"/> Electrically operated Respirator | <input type="checkbox"/> Oxygen Concentrator |
| <input type="checkbox"/> Suction Machine (Pump) | <input type="checkbox"/> Medical Pump |
| <input type="checkbox"/> Hemodialysis Equipment (Kidney Machine) | <input type="checkbox"/> Press Respirator |
| <input type="checkbox"/> Intermittent Positive Pressure Respirator | <input type="checkbox"/> CPM Drum ventilator |
| <input type="checkbox"/> Special Air Conditioner (<i>Please explain why you need this</i>) | |

Other types of life-sustaining equipment or medical condition (*Please be specific*)

If you would like to authorize someone that we may discuss your account with other than yourself, please provide that party's information below.

Third Party Name: _____

Third Party Address: _____

Third Party City, State, Zip: _____

Third Party Telephone: _____

**National Grid
8-Digit (3-Tier) Critical Facility/Feeder Weighting System**

Feeder Weight is determined by counting Critical Facilities on the feeder, as follows:

Hospitals n	High Priority Critical Facilities n	Medium Priority Critical Facilities nn	100's of customers nn	Medical Priority Customers nn
Type	Code	Description		
Hospitals:	HOS	Hospitals/Facilities with life-sustaining equipment		
High Priority Critical Facilities:	AV1	Airport – major, regional or essential FAA		
	EVA	Evacuation Center – school, senior center, etc...)		
	FP1	Fire/Police – headquarters and 911 centers		
	MIL	Military – active, reserve, national guard and coast guard		
	NU1	Nursing Home – skilled care/life support		
	ST1	Essential State Government – state police, emer mgmt and correctional facilities		
	US1	Essential US Government		
	UT1	Essential Utility – electric and gas supplies		
	WS1	Water/Sewer Plant/Pump - > 20 kW operation		
Critical Facilities (Other)	AUT	Housing Authority - > 20 kW operation		
	AV2	Airport – local or FAA repeater location		
	COM	Essential Communications – radio/TV/CATV/satellite		
	EDU	College/University Campus		
	FP2	Fire/Police – secondary stations		
	HAZ	Biological or Chemical Hazard		
	MED	Medical – ambulatory care (not physician offices)		
	MUN	Municipal Office – town hall, DPW, etc...		
	NU2	Nursing Home – semi-skilled care		
	RRS	Railroad Signal		
	SCH	School – not used as an evacuation center		
	ST2	State Government – public safety, DPW district HQ		
	US2	US Government – public safety		
	UT2	Utility – non-essential electric, gas, telecommunications		
	WS2	Water/Sewer Pump - < 20 kW		
Non-critical Facility	NO	Account marked for review is not a critical facility		

Notes:

1. Criteria for critical customers based on public safety or providing power
2. UT1 examples include natural gas compression stations or transmission cable oil pumps

Examples:

1. Feeder No. 009W41 has 1 hospital, 2 high priority critical facilities, 12 critical facilities, and 2,236 customers. This feeder would have a weighting factor of **121222nn**.
2. Feeder No. 912W73 has 0 hospitals, 5 high priority critical facilities, 16 critical facilities, and 3,166 customers. This feeder would have a weighting factor of **051632nn**.



Operating Procedures

ISO New England Operating Procedure No. 19

Transmission Operations

Effective Date: April 13, 2007

Revision No. 4

ISO New England Operating Procedure No. 19 Transmission Operations

Effective Date: April 13, 2007

REFERENCES:

1. NPCC Basic Criteria for Design and Operation of Interconnected Power Systems
2. NPCC Emergency Operation Criteria
3. Capacity Rating Procedures - System Design Task Force
4. Master/Local Control Center Procedure No. 2 - Abnormal Conditions Alert (M/LCC 2)
5. ISO New England Operating Procedure No. 4 - Action During a Capacity Deficiency (OP 4)
6. ISO New England Operating Procedure No. 7 - Action In an Emergency (OP 7)
7. ISO New England Operating Procedure No. 8 - Operating Reserve and Regulation (OP 8)
8. ISO New England Transmission Operating Guides
9. ISO New England Operating Procedure No. 3 - Transmission Outage Scheduling (OP 3)

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APPENDICES:

- A. Methods and Criteria Overview
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- C. 345 kV Stuck Breaker Contingencies That Can Have Unacceptable Inter-Area Impacts
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- F. Summary of OP 19 - Transmission Operations
- G. Screening Method for Determining If a Stuck Breaker Contingency Has Unacceptable Inter-Area Impact
- H. General List of Dispatch Actions to Minimize Cost of Stuck Breaker Protection
- I. Bus Fault Contingencies That Can Have Unacceptable Inter-Area or Stability Impacts

I. INTRODUCTION

This Operating Procedure describes reliability criteria for the analysis and operation of the New England Transmission System. The provisions contained herein are intended to be in accordance with Northeast Power Coordinating Council Inc. (NPCC) and ISO New England Operating Procedures listed as references for this document. Prescribed operator actions are further detailed in several ISO New England Transmission Operating Guides.

The provisions in this document are used to determine data, methods and limits for operation of the New England Transmission System (69 kV and above). The ISO and Local Control Centers use these data, methods and limits to operate the transmission system in accordance with this procedure.

Appendix F contains a summary of OP 19 Transmission Operations Procedure.

II. RELIABILITY CRITERIA FOR TRANSMISSION OPERATIONS

The New England Transmission System is operated so that the most severe single contingency can be sustained without causing:

- Equipment damage due to thermal overload,
- Cascading thermal overloads,
- Excessively high or low voltage or voltage collapse,
- Unit or area instability,
- Undamped oscillations.

Any single contingency should not cause the loss of other critical facilities or portions of the bulk power system. Single contingencies within the New England Control Area should not result in violation of neighboring Areas' operating reliability criteria.

Two levels of transmission reliability are prescribed and define the condition of the bulk power system. During NORMAL (non-stressed) Conditions, the higher level of prescribed reliability is maintained. During stressed or EMERGENCY Conditions, a lower level of reliability is permitted to allow for increased operating flexibility and to minimize the impact on customers during power system emergencies.

Actions should be taken to establish and maintain NORMAL Conditions. Regular cycling between NORMAL and EMERGENCY Conditions should be avoided. Operations and Operations Planning should not intentionally position daily operations into EMERGENCY Conditions. Capacity deficiencies or the occurrences of multiple contingencies are some reasons why EMERGENCY Conditions might exist.

This Operating Procedure includes specific definitions and criteria for the two levels of reliability. Appendix A contains a flow chart that summarizes the methods and criteria contained in this document and provides an overview of its structure. Appendix B provides definitions of thermal capacity ratings for transmission facilities [NORMAL,

Long Time Emergency (LTE), Short Time Emergency (STE) and Drastic Action Limit (DAL)].

A. NORMAL CONDITIONS

The highest level of transmission reliability is achieved during non-stressed or NORMAL Conditions on the bulk power system. In general, this level of reliability is accomplished by satisfying NORMAL Criteria for a wide range of contingencies (NORMAL Contingencies) using a limited set of operator actions (NORMAL Actions). More specifically, for all stability related and Inter-Area thermal and voltage/reactive operations, all seven NORMAL Contingencies (in Section II.A.2.a-g) are applicable. For thermal and voltage/reactive operations within the New England Control Area that do not jeopardize the reliability of Areas outside New England, NORMAL Contingencies in Section II.A.2.f-g (loss of two circuits on a multiple circuit tower and loss of a single element with delayed clearing) and a permanent three-phase fault on a bus section described in Section II A.2.a. are not considered. This approach is consistent with the NPCC criteria philosophy that the basic criteria are not necessarily applicable in the portions of a member system where instability or overloads will not jeopardize the reliability of the bulk power system. The following sections describe these NORMAL Criteria, NORMAL Contingencies and NORMAL Actions.

1. Normal Criteria

- a) Generation and transmission service is scheduled to provide the New England Control Area load and operating reserve as prescribed in OP 8 while covering NORMAL Contingencies.
- b) Pre-contingency loadings of transmission facilities should not exceed NORMAL ratings. Allowances can be made for scheduled switching activities that are typically completed within 15 minutes in accordance with OP 3.
- c) NORMAL Contingencies should not cause, or result in, loadings beyond STE ratings. Flows between LTE and STE must be reduced to or below LTE as soon as possible and definitely within 15 minutes. If studies show that operators would not be able to reduce flows to or below LTE within 15 minutes, action should be taken (if possible) such that NORMAL Contingencies would not cause, or result in, loadings above LTE ratings.

Previously established/provided DAL ratings may be used but only if authorized by the Transmission Owner whose transmission facilities would be affected and flows between STE and DAL can be reduced to or below LTE immediately and definitely within 5 minutes.

- d) Without prior approval to operate to STE ratings, NORMAL Contingencies should not cause, or result in, loadings on New York ISO (NYISO)

transmission facilities, including NYISO-the New England Control Area tie lines, beyond LTE ratings.

Underground cable circuits may be post contingency loaded to STE ratings provided generation and/or phase angle regulation are available to reduce the loadings to LTE ratings within 15 minutes and provided no other NYISO facility is loaded beyond its LTE rating. The 1385 Norwalk Harbor-Northport 138 kV cable and the CONED-PSE&G tie lines, which are cable circuits, are not included in this exception.

- e) NORMAL Contingencies should not cause instability, unacceptably high or low voltage or voltage collapse.
- f) Any automatic reclosing and subsequent manual reclosing before adjusting generation should not cause instability of the transmission system.

2. Normal Contingencies

For all stability related and inter-Area operations, protection should be provided for ALL of the NORMAL Contingencies listed in a-g below.

For thermal and voltage/reactive operations within the New England Control Area, protection should be provided for the NORMAL Contingencies listed in a-e below with the exclusion of a permanent three-phase fault on a bus section (part of Section II.A.2.a.).

During typical conditions with all major transmission facilities in-service, NORMAL Contingencies f, g and a permanent three-phase fault on a bus section (part of Part of Section II.A.2.a.) should be covered in thermal and voltage/reactive operations if the occurrence of these contingencies could jeopardize the reliability of Areas outside of New England. (Appendix C lists stuck breaker contingencies and Appendix D lists double circuit tower line contingencies. Appendix G documents the procedure to be followed in determining if a stuck breaker contingency would have unacceptable Inter-Area impact. Appendix H provides a list of actions that may be utilized to reduce the cost of providing stuck breaker protection. Appendix I lists bus fault contingencies that can have unacceptable inter-Area impacts or cause single or multi-Generator instability).

During less frequent conditions when a major transmission facility is out-of-service NORMAL contingencies (f) and (g) need not be covered if the outage substantially reduces transfer limits based on NORMAL Contingencies f and g.

During less frequent conditions when a major transmission facility is out-of-service, a permanent three-phase fault on a bus section (part of Section II A.2.a.) should be covered for thermal and voltage/reactive operations if the occurrence of

this contingency could jeopardize the reliability of Areas outside of New England, and for single or multi-unit instability resulting from this contingency.

- a) A permanent three-phase fault on any Generator, transmission circuit, transformer or bus section with normal fault clearing.
- b) Loss of any element without a fault.
- c) A permanent phase to ground fault on a circuit breaker with normal fault clearing. (Normal fault clearing time for this condition may not always be high speed.)
- d) Simultaneous permanent loss of both poles of a direct current bipolar facility without an AC fault.
- e) The failure of a circuit breaker associated with an SPS to operate when required following: loss of any element without a fault; or a permanent phase to ground fault, with normal fault clearing, on any transmission circuit, transformer or bus section.
- f) Simultaneous permanent phase to ground faults on different phases of each of two adjacent transmission circuits on a multiple circuit tower, with normal fault clearing. If multiple circuit towers are used only for station entrance and exit purposes, and if they do not exceed five towers at each station, then this condition is an acceptable risk and, therefore, can be excluded. Other similar situations can be excluded on the basis of acceptable risk following appropriate Northeast Power Coordinating Council acceptance of each specific exclusion (Appendix D lists 345 kV multiple circuit towers in the New England Control Area).
- g) A permanent phase to ground fault on any transmission circuit, transformer, or bus section with delayed fault clearing. (Delayed fault clearing is consistent with correct operation of a breaker failure scheme and its associated breakers, or of a backup relay scheme with an intentional time delay.)

3. Normal Actions

The ISO and Local Control Centers will continuously assess system conditions and implement the NORMAL Actions described below to maintain or restore transmission reliability to NORMAL Conditions.

- a) Actions For Contingencies That Affect Small/Local Areas Within the New England Control Area

If a contingency will impact only a small/local area within the New England Control Area, the following NORMAL Actions should be implemented as required:

ISO initiated deviation from economic dispatch (notify appropriate Local Control Center)

- If the local area can be protected by deviation from economic dispatch, the ISO and Local Control Centers will provide such protection.

Transmission Owner waiver of contingency protection

- If a local area cannot be protected by deviation from economic dispatch, Transmission Owner may elect to waive contingency protection for the local area. When the local area involves two or more Transmission Owners, the appropriate Local Control Center will inform one of the involved Transmission Owners of the specific operating conditions. All coordination required with other impacted Transmission Owners to waive contingency protection for the local area is the responsibility of the Transmission Owner first contacted by the Local Control Center. All waivers granted under this provision must be communicated to the ISO electronically at the time that the waiver is granted.

When the local area involves more than one Local Control Center, one of the Local Control Centers will be designated to contact an involved Transmission Owner who will then follow the process outlined above.

b) Use of Special Protection Systems or the Preplanned Opening of Circuit Breakers.

(1) Where Possible, Arm Special Protection Systems.

(2) Manually set up tripping of Generator or Resources with pump storage capability. This preplanned option of opening circuit breakers is limited to situations where previously documented studies have demonstrated that such breaker openings reliably mitigate the specific existing operating conditions and do not result in the loss of single contingency protection for other contingencies/facilities.

c) Weather Sensitive Transmission Facility Ratings

There are times when actual ambient conditions (temperatures and wind) are significantly different from those used to establish standard seasonal ratings. During those times, the use of temporary ratings based on actual ambient conditions may be warranted. Depending on the ambient conditions, the temporary ratings may be higher or lower than the standard seasonal ratings. When such weather conditions exist and a transmission facility is limiting, The ISO, the appropriate Local Control Center or appropriate Transmission Owner will identify the need for a temporary transmission facility rating based

on actual weather conditions. In cases where the Transmission Owner has supplied pre-defined weather sensitive ratings, such ratings will be used by the ISO and the Local Control Center after the Local Control Center and/or Transmission Owner has gathered/established the actual weather conditions. If pre-defined weather sensitive ratings are not available, the involved Transmission Owner will be informed of the circumstances. That Transmission Owner may elect to provide the appropriate Local Control Center with temporary ratings along with any pertinent qualifications for their use. The Local Control Center will forward all temporary rating information electronically to the ISO. Such temporary ratings will then be used in operations for the time period specified by the Transmission Owner or until rescinded by the Transmission Owner.

d) Deviation from Economic Dispatch

Deviate from economic dispatch and schedule Resources to maintain NORMAL transmission reliability. The ISO or appropriate Local Control Center may implement M/LCC 2 to declare an abnormal conditions alert if necessary.

e) Switch Transmission Circuits

Open or close circuits to relieve transmission constraints. This action can only be implemented when authorized by the ISO and when previously documented studies have demonstrated that such circuit openings reliably relieve the specific existing conditions and do not result in the loss of protection for other contingencies/facilities.

f) OP 4 Actions 1 through 11

Implement selected actions from OP 4, Actions 1 through 11. These Actions utilize Generator maximum capabilities, Demand Response Loads, voluntary load curtailment of Market Participant's facilities, capacity/energy purchases, contracted customer generation and depletion of 30 minute reserve.

B. EMERGENCY CONDITIONS

The system is in an EMERGENCY Condition if NORMAL Criteria is violated. A lower level of reliability is permitted when operating under EMERGENCY Conditions provided that all appropriate NORMAL Actions have been initiated to restore NORMAL Criteria. This level of reliability meets EMERGENCY Criteria for a less stringent set of contingencies (EMERGENCY Contingencies) using EMERGENCY Actions. Exposure to reliability levels below EMERGENCY Conditions should not exist for more than 30 minutes.

1. Emergency Criteria

- a) Generation and transmission facilities are adequate to supply the New England Control Area load and at least minimum reserve requirements (10 minute requirements) as prescribed in OP 8 while covering only EMERGENCY Contingencies.
- b) Pre-contingency facility loadings may be between NORMAL and LTE if EMERGENCY Contingencies would not cause loadings beyond LTE ratings. Loadings should be returned to or below the NORMAL rating after the daily load cycle.
- c) EMERGENCY Contingencies should not cause loadings beyond STE ratings. Flows between LTE and STE must be reduced to or below LTE as soon as possible and definitely within 15 minutes. Automatic devices (SPS), switching to set up a facility to trip upon occurrence of a specific contingency or preplanned post-contingency operator responses are required if DAL ratings are used.
- d) EMERGENCY Contingencies should not cause instability, unacceptably high or low voltage or voltage collapse.
- e) Any automatic reclosing should not cause instability of the transmission system.

2. Emergency Contingencies

- a) A permanent three-phase fault on any Generator, transmission circuit, transformer or bus section, with normal fault clearing.
- b) The loss of any element without a fault.

3. Emergency Actions

EMERGENCY Actions should be taken to maintain or restore power system conditions to at least those prescribed for operations under EMERGENCY Conditions. In general, all appropriate and timely NORMAL Actions should be exhausted before taking EMERGENCY Actions. EMERGENCY Actions should

be taken before NORMAL Actions if the NORMAL Actions cannot be completed in time to relieve a thermal overload above LTE, prevent voltage collapse, or restore protection for EMERGENCY Contingencies within 30 minutes. Any unused long term NORMAL Actions should be taken to allow for the cancellation of EMERGENCY Actions.

a) Transmission Circuit Switching

In very well defined situations where it is clear that opening a transmission facility will alleviate a problem existing for a specific emergency situation, consideration will be given to opening such facility. This action, without pre-determined studies, documentation, and authority will only be initiated to prevent more severe EMERGENCY Action and must be reported immediately to the Transmission Owner.

b) OP 4 and OP 7

OP 4 and OP 7 EMERGENCY Actions include:

OP 4 - Action 12 and 13; 5% voltage reduction, requiring more/less than 10 minutes.

OP 4 - Action 14 and 15; customer generation not contractually available to ISO. Voluntary load curtailment by large industrial and commercial customers. Radio and TV appeals for voluntary load curtailment. Voluntary load curtailment by customers.

OP 4 - Action 16; Request New England state Governors to reinforce appeals for voluntary load curtailment.

OP 7; Load shedding.

The following sections provide more detail on when it would be appropriate to take EMERGENCY Actions.

c) Pre-Contingency Emergency Actions

EMERGENCY Actions may be needed to meet EMERGENCY Criteria even though a contingency has not occurred. Such pre-contingency EMERGENCY Actions will be taken when NORMAL Actions are exhausted or can not be completed in a timely manner and there would be insufficient time after an EMERGENCY Contingency to contain the impact to a small/local area. Pre-contingency EMERGENCY Actions are to be initiated when a potential EMERGENCY Contingency threatens large portions of the New England Control Area load or could possibly cause a split of the bulk power system due to post-contingency voltage collapse, rapid cascading thermal overloads or, system instability. Pre-contingency EMERGENCY Actions should also be

taken when a potential EMERGENCY Contingency poses the same threats to Areas outside of New England or jeopardizes the reliability of the Northeast Interconnection.

Shift operators are responsible to keep appropriate Supervisors at the ISO and Local Control Centers advised as to conditions that might necessitate management review of the need to implement EMERGENCY Actions on a pre-contingency basis.

Management at the ISO and at the Local Control Centers, to the extent that time permits, should consult with affected Transmission Owners when developing pre-contingency strategies.

d) Planned Immediate Post-Contingency Emergency Actions

If an EMERGENCY Contingency does not risk system stability but would result in low or gradually declining voltages or thermal loadings between STE and DAL, specific voltage reduction or load shedding plans should be established before the contingency for implementation immediately after the contingency. Post-contingency EMERGENCY Action should be established and coordinated with the Local Control Centers before the need for implementation arises. If automatic devices are being used, their actions should be completed in a matter of cycles or seconds after the contingency. Manual actions should be completed as soon as possible after the contingency (seconds if possible) but definitely within the one-two minutes required to prevent voltage collapse or cascading thermal overloads. Post-contingent circuit loadings between STE and DAL must be reduced below LTE immediately and definitely within five (5) minutes.

C. POST-CONTINGENCY OPERATION

If a contingency involves the loss of a transmission circuit(s), operators should attempt to reclose the circuit(s) within 5 minutes unless otherwise specified in specific policies and/or procedures. If reclosure is successful, the system should be back to its original state and normal operation should resume. If reclosure is unsuccessful or the contingency involved the loss of generation or load, operators should assess system conditions and perform appropriate NORMAL and EMERGENCY Actions to restore NORMAL and EMERGENCY Conditions. When possible, coverage for NORMAL Contingencies should be restored using NORMAL Actions.

Post-contingency Actions should meet the following time requirements:

- Rapidly declining critical transmission voltages should be stabilized as quickly as possible (within one-two minutes) using pre-determined EMERGENCY Actions, including voltage reduction and/or load shedding.

- Post-contingent transmission facility loadings between STE and DAL should be reduced below LTE immediately and definitely within 5 minutes using pre-defined EMERGENCY Actions including voltage reduction and/or load shedding plans.
- Post-contingent transmission facility loadings between LTE and STE ratings should be reduced below LTE as soon as possible and definitely within 15 minutes using appropriate NORMAL and/or EMERGENCY Actions.
- Coverage for EMERGENCY Contingencies should be restored within 30 minutes using appropriate NORMAL and/or EMERGENCY Actions.

III. TRANSMISSION SYSTEM ANALYSIS

A. SCOPE OF ANALYSIS

Transmission system analysis is required to:

- Identify significant contingencies and system conditions during which contingencies can adversely impact system operation and;
- Develop data, methods, operating guidelines and procedures which, when implemented, will provide reliable operation of the bulk power system per the criteria in this document.

Short term thermal analysis is performed on a continuous basis and coordinated with appropriate Local Control Centers and adjoining NPCC Areas. Long term thermal analysis is done on a seasonal, annual or as required basis and is coordinated with appropriate Transmission Owners, Local Control Centers, adjoining NPCC Areas and Task Forces.

Long term stability studies are reviewed with the Stability Task Force and appropriate Inter-Area study groups. Short-term stability analysis is coordinated with individual Transmission Owner representatives on the Stability Task Force.

Short-term voltage/reactive analysis is reviewed with appropriate Local Control Centers and NPCC Areas. Longer-term voltage/reactive analysis is reviewed with the Voltage Task Force and other appropriate Task Forces or Inter-Area study groups.

B. CLASSIFYING SYSTEM RESPONSES TO CONTINGENCIES

Contingencies fall into one of the following categories depending on their impact on system reliability:

1. Contingencies Critical to Areas External to New England

This type of contingency either involves the loss of an inter-Area transmission facility (thereby reducing inter-Area transfer capability) or has more severe

consequences on an external Area than the most severe contingency in the external Area. The possibility of thermal overloads, excessive voltage drops, or undamped oscillations on the interconnection should be considered when assessing the impact of these contingencies. These contingencies are critical to interconnected system reliability.

2. Contingencies Critical to Large Areas of the New England Control Area or Bulk Power Transfers within the New England Control Area

This type of contingency can threaten large areas within the New England Control Area in two ways. In one case, the contingency could split an area away from the bulk power transmission system due to cascading thermal overloads, voltage collapse or system instability. Further breakup would likely occur in the islanded area. The remaining bulk power system would be left with a substantial deficiency or excess of power. In the other case, the contingency could cause the loss of another critical transmission facility, thereby significantly reducing transfer capability on the bulk power system and seriously impairing the ability to serve customer load. These contingencies are critical to the New England Control Area transmission reliability.

3. Contingencies that Affect Small/Local Areas within the New England Control Area

This type of contingency affects only a relatively small area within the New England Control Area and does not impair reliability of the bulk power system. The ISO will provide contingency protection, if possible, by deviating from economic dispatch. Otherwise, the Transmission Owner (s) involved will be contacted through the appropriate Local Control Center. The Transmission Owner (s) may elect to grant a waiver of contingency coverage. Multiple Transmission Owner waivers of first contingency protection require one of the affected Transmission Owners to communicate and coordinate waiver action with all other affected Transmission Owners.

C. EXTREME CONTINGENCIES

Recognizing that the bulk power system can be subject to events that are more severe than NORMAL or EMERGENCY Contingencies, EXTREME Contingencies will be assessed to determine their effect on system performance. After due analysis and assessment of EXTREME Contingencies, Transmission Owners may utilize measures, where appropriate, to reduce the frequency of occurrence or to mitigate the circumstances that are indicated as a result of testing for such contingencies.

Appendix E lists the EXTREME Contingencies to be considered.

OP 19 REVISION HISTORY

Document History (This Document History documents action taken on the equivalent NEPOOL Procedure prior to the RTO Operations Date as well revisions made to the ISO New England Procedure subsequent to the RTO Operations Date.)

Rev. No.	Date	Reason
Rev 1	07/22/98	
Rev 2	02/01/05	Updated to conform to RTO
Rev 3	02/03/06	Updated to clarify actions taken in OP 3 for scheduled switching activities that are typically completed within 15 minutes
Rev 4	04/13/07	Incorporated Appendix I for Bus Faults and made language clarifications

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1. REFERENCES

- 1.1. NPCC Basic Criteria for Design and Operation of Interconnected Power Systems
- 1.2. NPCC Emergency Operation Criteria
- 1.3. Capacity Rating Procedures - System Design Task Force
- 1.4. Master/Local Control Center Procedure No. 2 - Abnormal Conditions Alert (M/LCC 2)
- 1.5. ISO New England Operating Procedure No. 4 - Action During a Capacity Deficiency (OP 4)
- 1.6. ISO New England Operating Procedure No. 7 - Action In an Emergency (OP 7)
- 1.7. ISO New England Operating Procedure No. 8 - Operating Reserve and Regulation (OP 8)
- 1.8. ISO New England Transmission Operating Guides
- 1.9. ISO New England Operating Procedure No. 3 - Transmission Outage Scheduling (OP 3)

2. SCOPE

- 2.1. This Operating Procedure describes reliability criteria for the analysis and operation of the New England bulk power transmission system which includes the New England Control Center/REMVEC Local Control Center area. The provisions contained herein are derived directly from ISO-NE Operating Procedure 19 Transmission Operations and are intended to be in accordance with various Northeast Power Coordinating Council (NPCC) and other ISO-NE Operating Procedures. Prescribed operator actions are further detailed in several ISO New England Transmission Operating Guides.
- 2.2. ISO-NE and the New England Control Center/REMVEC System Operators are required to operate the New England transmission system (69 KV and above) in accordance with this procedure.
- 2.3. The New England transmission system is operated so that the most severe single contingency can be sustained without causing:
 - 2.3.1. Equipment damage due to thermal overload.
 - 2.3.2. Cascading thermal overloads.

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2.3.3. Excessively high or low voltage or voltage collapse.

2.3.4. Unit or area instability.

2.3.5. Undamped oscillations.

2.4. Any single contingency should not cause the loss of other critical facilities or portions of the bulk power system. Single contingencies within New England should not result in violation of neighboring Areas' operating reliability criteria.

2.5. Two levels of transmission reliability are prescribed in ISO-NE Operating Procedure 19 and define the condition of the bulk power system. During NORMAL (non-stressed) Conditions, a higher level of prescribed reliability is maintained. During stressed or EMERGENCY Conditions, a lower level of reliability is permitted to allow for increased operating flexibility and to minimize the impact on customers during power system emergencies.

2.6. Whenever possible, actions should be taken to establish and maintain NORMAL Conditions. Regular cycling between NORMAL and EMERGENCY Conditions should be avoided. Operations and Operations Planning should not intentionally position daily operations into EMERGENCY Conditions. Capacity deficiencies or the occurrences of multiple contingencies are some reasons why EMERGENCY Conditions might exist.

3. RESPONSIBILITIES

3.1. The New England Control Center/REMVEC Operators shall operate the National Grid/REMVEC Transmission System (69 KV and above) in accordance with ISO-NE Operating Procedure 19.

3.2. Appendix B "Thermal Capacity Ratings for Transmission Facilities" (which is taken directly from ISO-NE OP-19) defines the following ratings:

3.2.1. Normal Rating.

3.2.2. Long Term Emergency (LTE) Rating.

3.2.3. Short Term Emergency (STE) Rating.

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3.2.4. Drastic Action Limit (DAL) Rating.

3.2.5. Standard Summer and Winter Transmission Facility Ratings.

APPENDIX B

THERMAL CAPACITY RATINGS FOR TRANSMISSION FACILITIES

Normal Rating

Transmission facility loadings up to this rating can be experienced without incurring loss of life above design criteria.

The following Emergency ratings (LTE, STE and DAL) may involve loss of life or loss of tensile strength in excess of design criteria and should not be deliberately scheduled.

Long Time Emergency (LTE) Rating

This rating is intended to fit a daily load cycle (12 hours summer, 4 hours winter). A facility may operate up to this rating provided that its loading is returned to or below the Normal rating during off-peak hours.

Short Time Emergency (STE) Rating

This is a fifteen minute rating. If a facility operates at this rating for more than fifteen minutes, equipment will suffer thermal damage. Facility loadings above the LTE rating but at or below the STE rating must be reduced to or below the LTE rating within 15 minutes.

Drastic Action Limit (DAL)

This is an immediate action rating. If a facility operates at this rating for more than five minutes, equipment will suffer thermal damage. Facility loadings above the STE rating but at or below the DAL must be reduced to or below the LTE rating within 5 minutes.

Standard Summer and Winter Transmission Facility Ratings

Transmission facility ratings can be based on: over stressing terminal equipment such as wave traps, current transformers, etc. or heating of the line conductor (violating sag clearance requirements or annealing the conductor).

Summer ratings should be used from April 1 through October 31. Winter ratings should be used from November 1 through March 31.

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Revision History

Revision	Date	Reason
	06/01/05	New Procedure
1	12/28/05	National Grid Logo, Added Appendix B
2	05/31/07	Added Table of Contents and changed outline format
3	12/28/07	Yearly Review, Add references
4	04/17/08	Changed Approved by and removed authorized by.
5	11/18/08	Annual Review. Changed Approved by from Manager to Director.

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		Revision Number: 12 Revision Date: June, 3, 2008
Contact: ISO Manager, Operations		Approved by: M/LCC Heads
		Review Due Date: April 1, 2009

Master/Local Control Center Procedure No. 2

(M/LCC 2)

Abnormal Conditions Alert

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		Review Due Date: April 1, 2009

1. References

ISO New England Operating Procedure No. 2 - Maintenance of Communications, Computers, Metering, and Computer Support Equipment (OP 2)

ISO New England Operating Procedure No. 3 - Transmission Outage Scheduling (OP 3)

ISO New England Operating Procedure No. 4 - Action During a Capacity Deficiency (OP 4)

ISO New England Operating Procedure No. 5 – Generator and Dispatchable Asset Related Demand Maintenance and Outage Scheduling (OP 5)

ISO New England Operating Procedure No. 7 - Action in an Emergency (OP 7)

ISO New England Operating Procedure No. 9 – Scheduling and Dispatch of External Transactions (OP 9)

ISO New England Operating Procedure No. 13 – Standards for Voltage Reduction and Load Shedding Capability (OP 13)

Master/Local Control Center Procedure No. 8 - Coordination of Generator Voltage Regulator and Power System Stabilizer Outages (M/LCC 8)

ISO New England Manual for Market Operations Manual M-11

2. Purpose

This procedure, Master Local Control Center Procedure No. 2 (M/LCC 2) - Abnormal Conditions Alert, is used to alert power system operations, maintenance, construction and test personnel as well as Market Participants (MPs) when abnormal conditions affecting the reliability of the power system exist or are anticipated. Once notified of an M/LCC 2 Abnormal Conditions Alert, these entities are expected to take precautions so that routine maintenance, construction and test activities associated with generating stations, Dispatchable Asset Related Demands (DARDs), transmission lines, substations, dispatch computers, and communications equipment do not further jeopardize the reliability of the power system. If maintenance, construction and test activities could jeopardize the reliability of the power system, such activities shall be curtailed during the M/LCC 2 Abnormal Conditions Alert.

This procedure is also used to correct an existing or imminent Operating Reserve deficiency condition. When a M/LCC 2 Abnormal Conditions Alert is declared, ISO New England (ISO) can take actions to reduce External Transactions submitted in the Real Time Energy Market in order to mitigate an existing or imminent Operating Reserve deficiencies if no other conditions exist or are anticipated which affect the reliability of the New England-wide power system.

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		Revision Number: 12 Revision Date: June, 3, 2008
Contact: ISO Manager, Operations		Approved by: M/LCC Heads
		Review Due Date: April 1, 2009

3. Introduction

Established operating procedures provide an approval process for outages of Resources (OP 5), transmission maintenance (OP 3), and maintenance of dispatch computer and communications equipment (OP 2). Applications for work involving these areas shall be approved before maintenance and test activities are conducted which take equipment out-of-service or obviously impact the reliability of the power system. It is recognized that some maintenance, construction and test activities are routinely undertaken that do not require approval, when in the judgment of operations, construction and maintenance personnel, such activities have a negligible reliability impact. These activities include preventive maintenance, construction, preparatory work for outages, routine maintenance that can be accomplished with equipment on-line, equipment tests, etc.

However, if abnormal conditions exist or are anticipated and maintenance, construction and test activities, such as nuclear surveillance tests and/or preparatory work for future equipment outages which may trip a Resource and/or transmission facility, and degrade the reliability of the power system then these activities should not be conducted. If these activities cannot be curtailed, operations, maintenance, construction and test personnel shall take precautions to prevent the on-going work from posing further risk to the reliability of the power system. This procedure provides guidelines for M/LCC 2 Abnormal Conditions Alert notification and for actions to be taken to limit risk.

This procedure does not in any way affect the application of OP 2, OP 3, or OP 5. When an M/LCC 2 Alert notification occurs, the curtailment of work approved under those procedures is to be considered on an individual application basis, according to the provisions of those procedures.

Some abnormal conditions affect the reliability of the entire New England Control Area/Balancing Authority Area (CA/BA) or local reliability area. Some abnormal conditions may be limited to a single Local Control Center (LCC). Accordingly, provision is made in this procedure for separate ISO M/LCC 2 Abnormal Conditions Alert and LCC M/LCC 2 Alert notifications.

OP 9 provides for scheduling and dispatch of External Transactions. Some abnormal conditions may require actions to mitigate an existing or imminent Operating Reserve deficiency. This procedure also describes the guidelines for declaring an M/LCC 2 Abnormal Conditions Alert to mitigate an existing or imminent deficiency in Operating Reserve. This declaration allows the reduction of specific contracts to maintain a sufficient amount of Operating Reserve in New England.

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Contact: ISO Manager, Operations		Approved by: M/LCC Heads
		Review Due Date: April 1, 2009

4. Definition of Abnormal Conditions

The determination that abnormal conditions affecting the reliability of the power system exist or are anticipated is a decision to be made by the ISO Operations Shift Supervisor or the LCC System Operator. Abnormal conditions exist when the reliability of the New England CA/BA is degraded. Typical indicators of abnormal conditions are:

- Forecasted or actual deficiency of operating reserves requiring implementation of OP 4 or OP 7
- Low transmission voltages and/or low reactive reserves
- Inability to provide first contingency protection when undesirable post-contingency conditions might result; e.g., load shedding
- Solar Magnetic Disturbances
- Credible threats to power system reliability such as sabotage or approaching storms
- Operational staffing shortages impacting normal power system operations within New England
- Other conditions that may occur as determined by the ISO Operations Shift Supervisor or the LCC System Operator

5. Types of M/LCC 2 Abnormal Conditions Alert Notifications

For the purposes of this procedure, two types of notifications shall be issued:

ISO M/LCC 2 Abnormal Conditions Alert - This notice is issued when:

- Abnormal conditions exist or are anticipated which affect the reliability of the ISO CA/BA
- Abnormal conditions which affect the reliability of the power system exist or are anticipated within one LCC and these conditions could further degrade as a result of maintenance, construction and/or test activities and affect another LCC
- Abnormal conditions exist or are anticipated that require ISO to reduce External Transactions submitted in the Real Time Energy Market in order to mitigate an existing or imminent Operating Reserve deficiency.

LCC M/LCC 2 Abnormal Conditions Alert - This notice is issued when:

A LCC M/LCC 2 Abnormal Conditions Alert shall be issued when abnormal conditions which affect the reliability of the power system exist or are anticipated solely within one LCC and these conditions could not become further degraded by the consequences of maintenance, construction and/or test activities in another LCC

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		Review Due Date: April 1, 2009

6. Criteria for Maintenance, Construction and Test Activity Curtailment

When an M/LCC 2 Alert notification is issued, maintenance, construction and test activities shall be curtailed, if the following could occur:

- Reduction in reliability or output of a Resource
- Increased reliability exposure (decreased reliability) to the loss of a critical transmission facility
- Reduced staffing that restricts operability of generation and or transmission facilities
- Interruption of voice or data communications used for dispatching purposes
- Operation of the ISO, LCC, or MP SCADA computers become degraded or fail

If maintenance, construction and test activities cannot be curtailed, precautions shall be taken to prevent the activities from posing further risk to the power system.

7. Procedure

The following steps outline the responsibilities of ISO, the LCCs, Generator and DARD Designated Entities and Transmission Owner maintenance, construction and test personnel.

7.1 ISO New England M/LCC 2 Abnormal Conditions Alert

ISO Responsibilities:

Perform the following in accordance with SOP- RTMKTS.0120.0010 Implement Operations During Abnormal Conditions:

- Determine if an ISO M/LCC 2 Abnormal Conditions Alert shall be declared or cancelled
- Prepare a short statement, which identifies the abnormal condition, the area(s) affected, and the start or end time of the M/LCC 2 Alert
- Use the prepared statement to notify the LCCs, NYISO, TransEnergy, NBSO and internal ISO personnel that an ISO New England M/LCC 2 Abnormal Conditions Alert has been declared or canceled
- Use the Emergency Notification System (ENS) software to notify Generator and DARD Designated Entities that an M/LCC 2 Abnormal Conditions Alert has been declared or canceled
- Review and, as appropriate, curtail, cancel, postpone or reactivate maintenance, testing and construction activities curtailed during the M/LCC 2 Abnormal Conditions Alert

LCC Responsibilities:

- Receive notification from ISO that an ISO M/LCC 2 Abnormal Conditions Alert has been declared or canceled
- Notify dispatch centers, and other appropriate personnel which impact the New England Transmission system that an ISO M/LCC 2 Alert has been declared or canceled
- REMVEC shall make notifications as required by their internal operating procedures that an ISO M/LCC 2 Abnormal Conditions Alert has been declared or canceled
- CONVEX shall make notifications as required by their internal operating procedures that an ISO M/LCC 2 Abnormal Conditions Alert has been declared or canceled
- Review and, as appropriate, curtail or cancel maintenance, testing and construction work

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Contact: ISO Manager, Operations		Approved by: M/LCC Heads
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Generator and DARD Designated Entities, Maintenance, Construction and Test Personnel Responsibilities:

- Receive notification that an ISO M/LCC 2 Alert has been declared or canceled
- Take appropriate actions to curtail testing, construction and maintenance activities
- Ensure that automatic voltage regulators are in service (unless grandfathered per M/LCC -8)
- Ensure that Power System Stabilizer (PSS) devices are in service if required
- Resume normal maintenance, construction and test activities once ISO M/LCC 2 Alert has been canceled

MP Responsibilities (Applies only to those MPs listed in CONVEX and REMVEC internal procedures.

- Receive notification that an ISOM/LCC 2 Alert has been declared or canceled

7.2 Local Control Center M/LCC 2 Abnormal Conditions Alert

LCC Responsibilities:

- Determine if a LCC M/LCC 2 Alert must be declared or cancelled
- Prepare a short statement, which identifies the abnormal condition, the area(s) affected, and the start or end time of the LCC M/LCC 2 Alert
- Use the prepared statement to notify ISO, dispatch centers, and other appropriate personnel having the potential to impact critical elements of the New England Transmission System that a LCC M/LCC 2 Alert has been declared
- Request ISO use the ENS software in accordance with SOP- RTMKTS.0120.0010 Implement Operations During Abnormal Conditions to notify applicable Generator and DARD Designated Entities that an LCC M/LCC 2 Alert has been declared or canceled
- REMVEC (If REMVEC or NSTAR declares the LCC M/LCC 2 Alert) shall make notifications as required by their internal operating procedures that an LCC M/LCC 2 Abnormal Conditions Alert has been declared or canceled
- CONVEX (If CONVEX declares the LCC M/LCC 2 Alert) shall make notifications as required by their internal operating procedures that an LCC M/LCC 2 Abnormal Conditions Alert has been declared or canceled
- Review and as appropriate, cancel maintenance, testing and construction work

ISO Responsibilities:

- Receive notification that a LCC M/LCC 2 Alert has been declared or canceled.
- Use the prepared statement to notify the other LCCs, NYISO, TransEnergie, NBSO and internal ISO personnel in accordance with SOP- RTMKTS.0120.0010 - Implement Operations During Abnormal Conditions
- Use the ENS software in accordance with SOP- RTMKTS.0120.0010 - Implement Operations During Abnormal Conditions to notify applicable Generator and DARD Designated Entities that a LCC M/LCC 2 Alert has been declared or canceled

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Contact: ISO Manager, Operations		Approved by: M/LCC Heads
		Review Due Date: April 1, 2009

Generator and DARD Designated Entities, Maintenance, Construction and Test Personnel Responsibilities:

- Receive notification that an LCC M/LCC 2 Alert has been declared or canceled
- Take appropriate actions to curtail testing, construction and maintenance activities

MP Responsibilities (Applies only to those MPs listed in CONVEX and REMVEC internal procedures.

- Receive notification that a LCC M/LCC 2 Alert has been declared or canceled

8. Logging Requirements

ISO and each LCC shall record all M/LCC 2 Abnormal Conditions Alert notifications.

9. Revision History

Rev. No.	Date	Reason
0	04/06/88	
1	02/24/89	
2	02/21/90	
3	05/16/91	
4	08/25/97	
5	11/19/01	
6	09/01/04	Standardize procedure format and incorporate RTO language changes
7	04/20/06	Updated for annual review and clarified communications
8	05/30/06	Added additional activities that could impact the reliability of the system
9	10/01/06	Revised for Ancillary Services Market (ASM) Phase 2
10	10/18/07	Revised as part of annual review
11	12/14/07	Revised to reflect NSTAR as a LCC

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		Revision Number: 12 Revision Date: June, 3, 2008
Contact: ISO Manager, Operations		Approved by: M/LCC Heads
		Review Due Date: April 1, 2009

12	06/03/08	Annual Review by Procedure Owner. Revised to add M/LCC2 Abnormal Conditions Alert used when certain External Transactions are reduced to preclude Operating Reserve deficiency. Deleted any reference to NSTAR notification of MP to staff stations listed in Att. A Global changes to use current terminology and define acronyms for frequently used terms. Removed references to MPs manning substations during M/LCC 2. Referenced LCCs making notifications IAW their local operating procedures. Removed references to Attachment A.
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10. Attachments

None



Operating Procedures

ISO New England Operating Procedure No. 12

Voltage and Reactive Control

Effective Date: May 6, 2005

Revision No. 3

ISO New England Operating Procedure No. 12

VOLTAGE AND REACTIVE CONTROL

Effective Date: May 6, 2005

References:

1. ISO New England Transmission Operating Guides - All Voltage/Reactive Guides
2. ISO New England Operating Procedure No. 4 - Action During a Capacity Deficiency (OP 4)
3. ISO New England Operating Procedure No. 7 - Action in an Emergency (OP 7)
4. ISO New England Operating Procedure No. 14 - Technical Requirements for Generation, Dispatchable and Interruptible Load (OP 14)
5. ISO New England Operating Procedure No. 16 - Transmission System Data (OP 16)
6. ISO New England Operating Procedure No.19 - Transmission Operations (OP 19)
7. Master/ Local Control Center Procedure No. 9 - Operation of the Chester Static VAR Compensator (M/LCC 9)
8. NERC Standard VAR-001- Voltage and Reactive Control

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- A. Voltage/Reactive Documents in the ISO New England Transmission Operating Guides
- B. Voltage and Reactive Survey

I. INTRODUCTION

This procedure provides broad criteria, operating practices and responsibilities to help ensure that desired/reliable voltage and reactive conditions are maintained on the power system. It also includes general actions to control voltage/reactive conditions when deviations from normal occur or are needed to minimize adverse effects during abnormal conditions.

More specific criteria and actions may be required when the measures described in this procedure do not correct the abnormal voltage/reactive conditions. This information is contained in detailed voltage/reactive documents issued as part of the ISO New England Transmission Operating Guides. Whereas these guides are referenced several times throughout this procedure, Appendix A lists the documents and indicates the types of information they contain. To facilitate references to Appendix A, its column numbering and headings are consistent with the format and order of this procedure.

II. CRITERIA

A. VOLTAGE SCHEDULES AND LIMITS FOR GENERATORS AND KEY TRANSMISSION STATIONS

Major generating stations throughout the New England Control Area have specified voltage schedules, which should be maintained as closely as possible in system operations. They should also be used by operators and planners in off-line studies of the power system. During certain conditions at a generating station or on the power system, sustained deviations from voltage schedules may be required/unavoidable and minimum and maximum voltages have been established that can be sustained at generating stations during these infrequent conditions.

In addition to voltage schedules, minimum and maximum voltage limits at several key generating or transmission stations have been established to promote system reliability during adverse voltage/reactive conditions. These reliability concerns can be based on the security of the transmission system or station service supplies to nuclear generators. The key stations and associated voltage limits are detailed in the area Voltage Guides issued as part of the ISO New England Transmission Operating Guides (refer to Appendix A, column 1).

B. GENERATOR REACTIVE CAPABILITIES, COMMITMENTS AND REQUIRED REACTIVE RESERVES

Generator reactive capabilities available to regulate voltages should be employed in system operations and analyses. Data collection methods (see OP 14) have been designed such that these reactive capabilities should be fully available except for occasional times when unique temporary problems occur at a particular generating station.

To promote security of the transmission system during adverse voltage/reactive conditions, required unit commitments and levels of required reactive reserve for generators within certain areas of the New England Control Area and for the Chester SVC have been established. System conditions that warrant the prescribed unit commitments or reactive reserves have also been identified. Details are provided in the ISO New England Transmission Operating Guides (see Appendix A columns 2 and 3).

III. VOLTAGE/REACTIVE OPERATING PRACTICES

A. TRADITIONAL VOLTAGE/REACTIVE CONTROL

Besides the use of generator reactive capabilities, the proper dispatch of shunt capacitors/reactors combined with effective transformer voltage schedules or fixed tap settings are the most traditional means of achieving desired voltages and reactive conditions. Listings of switchable shunt devices installed to support the New England Transmission System (115 kV and above) and guides for switching them can be found in the area Voltage Guides (see Appendix A, column 4).

B. TRANSMISSION INTERFACE TRANSFER LIMITS TO AVOID LOW VOLTAGE

In some cases, custom software tools have been developed to calculate voltage based transfer limits for transmission interfaces. These limits ensure acceptable voltage response to contingencies. Appendix A column 5 notes the transmission operating guides that contain voltage based transfer limits for transmission interfaces.

C. CIRCUIT SWITCHING TO CONTROL HIGH VOLTAGE

In some areas, transmission circuit switching is a viable option for controlling high voltage/excessive charging conditions. Appendix A column 6 identifies the ISO New England Transmission Operating Guides that provide information for switching circuits in the Boston area to control high voltage.

D. LOAD MANAGEMENT FOR VOLTAGE/REACTIVE RELIABILITY

In severe cases of low voltage and/or inadequate reactive reserves, load management actions can be taken. Details on conditions when these actions can/should be used and how they should be implemented are provided in the Voltage Guides (as identified in Appendix A, column 7) and ISO New England Operating Procedures No. 4 and 7.

IV. RESPONSIBILITIES

This procedure is based on the principle that voltage control is best achieved when action is taken as close as possible to the affected area. Voltage schedules and other reactive conditions will be supervised by Station, Local Control Center and the ISO New England Operators, each being responsible for an ever expanding area of responsibility. Regardless of who's requesting or directing corrective measures, action must ultimately be taken by Station or Local Control Center Operators depending on who has "hands on" control of the reactive resources.

A. GENERATING AND TRANSMISSION STATIONS

Generating and transmission station operators are responsible for maintaining station service and other local voltage requirements and scheduled voltages at levels designated by individual Market Participants. Generating stations are also responsible for maintaining voltage schedules set for the high side of the generator step-up transformers by the Voltage Task Force. Normally, automatic voltage regulation works off the low side of the step-up transformer (generator terminals). Thus, in order to maintain a high side voltage schedule, manual intervention can be required to offset varying power flows through and voltage drops across the step-up transformer.

When unable to maintain scheduled station and local voltages with the means under their control, the generating or transmission station operators must notify their respective Local Control Center operator (and local dispatch authority if appropriate).

B. LOCAL CONTROL CENTERS

Local Control Centers are responsible for monitoring and supervising the following conditions within their territories:

- voltage schedules and limits,
- unit MVAR loadings, capabilities and reserves,
- shunt capacitor and reactor dispatches,
- transformer voltage schedules or fixed tap settings,
- synchronous condenser operation (requested via ISO New England by the Local Control Center unless in emergency conditions),
- MVAR flows between the AC system and HVDC facilities,
- Static VAR Compensator operation (must be coordinated with the ISO),
- line switching for voltage/reactive control (must be coordinated with the ISO and, if warranted, with other Local Control Centers),
- the Local Control Centers will notify/ coordinate the need for MW re-dispatch for MVAR requirements with the ISO. The Local Control Centers will not directly re-dispatch MW with generators unless it is an emergency,

- other predefined indicators of voltage/reactive security (e.g. a particular circuit flow, the status of specific units, area load level, etc.).

Local Control Centers are responsible for: 1) detecting and correcting deviations from normal scheduled voltage/reactive operations, 2) responding to notifications by generating or transmission station operators of difficulty in maintaining station or other local voltage or reactive schedules and, 3) responding to ISO requests to assist with inter-Local Control Center or inter-Area problems.

Local Control Centers are authorized to exercise the following actions to correct voltage/reactive difficulties within their territories:

- direct voltage schedules and levels of reactive output and reserve on generators, synchronous condensers and Static VAR Compensators,
- direct the use of shunt capacitors and reactors,
- direct the operation of LTC transformers.

When a Local Control Center is unable to correct a voltage/reactive problem using the above actions or the Local Control Center believes that the problem should be handled on a multi- Local Control Center or inter-Area basis, the Local Control Center will notify the ISO and request assistance.

Before exercising any of the following voltage/reactive control actions, Local Control Centers must notify the ISO and coordinate their implementations:

- line switching,
- load management.

C. ISO NEW ENGLAND

The ISO is responsible for the general monitoring and supervision of voltage/reactive conditions in the New England Control Area (115 KV and above). If in monitoring the system a problem is detected within a Local Control Center, the ISO will contact the Local Control Center and request action.

When a Local Control Center reports to the ISO that it is not possible to correct a problem at a station or Local Control Center level, the ISO will assume direct responsibility for alleviating the problem. The ISO is authorized to direct, through the appropriate Local Control Center (s), all actions listed in the above Local Control Center section B and in addition any MW re-dispatching.

The ISO is also responsible for monitoring and supervising voltage/reactive operations of inter-Area ties. Problems may be noticed by the ISO or appear in the form of requests from neighboring pools or companies for assistance. The ISO will inform the appropriate Local Control Center (s) of the nature of the problem specifying; the pool or company involved, the location of the undesirable voltage/reactive condition and, general conditions aggravating the difficulty. The ISO is authorized to work with/through the Local Control Centers and use all section B actions and MWh re-dispatching to eliminate the problem.

When abnormal voltage/reactive operating conditions materialize, the ISO may initiate a survey of key system parameters to better assess the nature and expanse of the conditions. Appendix B contains the survey forms that the ISO will use. The forms are broken down based on Local Control Center territories.

OP 12 REVISION HISTORY

Document History (This Document History documents action taken on the equivalent NEPOOL Procedure prior to the RTO Operations Date as well revisions made to the ISO New England Procedure subsequent to the RTO Operations Date.)

Rev. No.	Date	Reason
Rev 1	08/18/98	
Rev 2	02/01/05	Updated to conform to RTO terminology
Rev 3	05/06/05	Update References for NERC Version 0 Standards



Operating Procedures

ISO New England Operating Procedure No. 12

*Voltage and Reactive Control – Appendix A –
Voltage/Reactive Documents in the ISO New
England Transmission Operating Guides*

Effective Date: December 20, 2007
Revision No. 7

Voltage/Reactive Documents in the ISO New England Transmission Operating Guides

Voltage/Reactive Document	1	2	3	4	5	6	7
	Voltage Limits	Units Critical to Voltage Control	Required Reactive Reserves	Shunt Information	Interface Voltage Transfer Limits	Line Switching for High Voltage	Load Management Actions
Eastern Massachusetts and Rhode Island Low Voltage Guide	X		X	X			X
Northern New England Transmission Corridor-Low Voltage Guide	X	X		X			X
Northern New England Transmission Corridor - High Voltage Guide	X	X		X			X
Orrington Capacitor Bank Control Operating Guide	X			X			
Boston Import Area Operations Planning Guide and Operations Guide	X			X		X	X
Northern Vermont Interface (NVI) Limit Guide		X			X		
M/LCC 9 Operation of the Chester SVC	X	X	X	X			
M/LCC 1 Nuclear Plant Transmission Operations	X						
Southwest Connecticut Import Voltage/Reactive Import Limit Guide	X				X		
Connecticut Import Voltage/Reactive Import Limit Guide	X				X		
New England to New Brunswick Voltage/Reactive (V/R) Limit Calculator Guide	X	X	X	X			
Middletown Area Operating Guide	X	X		X			

OP 12 APPENDIX A REVISION HISTORY

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Rev 1	05/23/03	
Rev 2	08/05/03	
Rev 3	07/25/04	
Rev 4	11/09/04	
Rev 5	02/01/05	Updated to conform to RTO
Rev 6	09/07/06	Revised document references
Rev 7	12/20/07	Revised document references



Operating Procedures

ISO New England Operating Procedure No. 12

*Voltage and Reactive Control – Attachment B –
Voltage & Reactive Schedules and Surveys*

Effective Date: September 16, 2008
Revision No. 14

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CONVEX

CONVEX Voltage & Reactive Schedules & Surveys – Appendix B, Generators

Survey Date:	Survey Time:										Survey Load Period: Heavy/Light (circle one)					
	Voltage Schedules Heavy Load Period ¹					Voltage Schedules Light Load Period ²					MVARs In @ Min Manual Load ³		MVARs Out @ S-SCC ³		Survey Results	
	kV Sched	kV Max	kV Min	kV Sched	kV Max	kV Min	kV Sched	kV Max	kV Min	kV Sched	kV Max	MVARs	MVARs	Actual kV (Voltage)	MVARs	AVR Status (On/Off)
	117	121	110	117	121	110	117	121	110	121	80	-108				
AES THAMES																
ALTRESCO	119	121	109	119	121	109	119	121	109	121	105	-44				
BERKSHIRE POWER	117	121	108	117	121	108	117	121	105	121	140	-58				
BRIDGEPORT ENERGY	118	121	116	117	121	116	117	121	116	121	294	-94				
BRIDGEPORT HBR 2	118	121	116	117	121	116	117	121	116	121	102	0				
BRIDGEPORT HBR 3	118	121	116	117	121	116	117	121	116	121	260	-195				
BRIDGEPORT RESCO	118	121	116	117	121	116	117	121	116	121	30	-36				
CROSS SOUND CABLE	357	362	340	357	362	340	357	362	340	362	35*	-150*				
LAKE ROAD 1	357	362	340	357	362	340	357	362	340	362	195	-85				
LAKE ROAD 2	357	362	340	357	362	340	357	362	340	362	184	-85				
LAKE ROAD 3	357	362	340	357	362	340	357	362	340	362	180	-85				
MASS POWER	119	121	111	119	121	111	119	121	111	121	96	-29				
MIDDLETOWN 2	118	121	112	116	121	112	116	121	112	121	54	-28				
MIDDLETOWN 3	118	121	112	116	121	112	116	121	112	121	87	-40				
MIDDLETOWN 4	357	362	340	357	362	340	357	362	340	362	200	-100				
MILFORD 1	118	121	116	117	121	116	117	121	116	121	200	-57				
MILFORD 2	118	121	116	117	121	116	117	121	116	121	200	-58				
MILLSTONE 2	357	362	345	357	362	345	357	362	345	362	350	0				

CONVEX Voltage & Reactive Schedules & Surveys - Appendix B, Generators

Survey Date:	Survey Time:				Survey Load Period: Heavy/Light (circle one)				
	Voltage Schedules Heavy Load Period ¹		Voltage Schedules Light Load Period ²		MVARs Out @ S-SCC ³	MVARs In @ Min Manual Load ³	Survey Results		
	kV Sched	kV Max	kV Min	kV Max			Actual kV (Voltage)	MVARs	AVR Status (On/Off)
Legend									
<i>Sched = Schedule</i>									
<i>Max = Maximum</i>									
<i>Min = Minimum</i>									
<i>MVARs In = Gross Lagging</i>									
<i>MVARs Out = Gross Leading</i>									
Units									
STEVENSON 2	116	121	112	116	121	112	3.75	0	
STEVENSON 3	116	121	112	116	121	112	3.75	0	
STEVENSON 4	116	121	112	116	121	112	3.75	0	
STONY BROOK	358	362	335	351	362	335	166	-68	
WALLINGFORD ENERGY (1-5)	118	121	116	117	121	116	125	-50	
WEST SPRINGFIELD 1	117	121	108	117	121	105	27	-17	
WEST SPRINGFIELD 2	117	121	108	117	121	105	27	-14	
WEST SPRINGFIELD 3	117	121	108	117	121	105	50	-44	

Note: Units not listed will follow local voltage schedules in accordance with Local Control Center requirements or Interconnection Agreements.

**Zero Power -150 MVAR, Half Load 113/-113 MVAR, Three-quarter Load 95/-95, and Full Load 35 MVAR*

<i>CONVEX Voltage & Reactive Schedules & Surveys for Transmission, Capacitors</i>					
Survey Date:		Survey Time:		Survey Load Period: Heavy/Light (circle one)	
Substation Location		Available MVAR	Nominal Voltage	Actual kV (Voltage)	Closed/ Open
AGAWAM 11K; 12K		2 @ 50.4	115		
BERLIN 11K; 12K; 13K		3 @ 37.8	115		
BRANFORD 10K		1 @ 37.8	115		
CANTON 11K; 12K		2 @ 25.2	115		
DARIEN10K		1 @ 37.8	115		
EAST SHORE #1; #2		2 @ 42.0	115		
FRANKLIN DRIVE10K		1 @ 37.8	115		
FROST BRIDGE 11K; 12K; 13K		3 @ 50.4	115		
FROST BRIDGE 21K; 22K		2 @ 50.4	115		
GLENBROOK 11K; 12K		2 @ 36.0	115		
GLENBROOK 13K; 14K		2 @ 50.4	115		
GLENBROOK 21K; 22K		2 @ 36.0	115		
GLENBROOK 23k		1 @ 37.8	115		
GLENBROOK 24k		1 @ 50.4	115		
HADDAM 10K		1 @ 37.8	115		
MANCHESTER 11K; 12K; 13K		3 @ 50.4	115		
MANCHESTER 21K; 22K; 23K		3 @ 50.4	115		
MONTVILLE 11K; 12K		2 @ 50.4	115		
MYSTIC 21K; 22K		2 @ 25.2	115		
NORTH BLOOMFIELD 11K; 12K		2 @ 50.4	115		
NORTH BLOOMFIELD 20K		1 @ 50.4	115		
NORTH HAVEN		1 @ 42.0	115		
PLEASANT 11K; 12K		2 @ 14.4	115		
PLUMTREE 11K		1 @ 50.4	115		
PLUMTREE 12K		1 @ 37.8	115		
ROCKY RIVER 10K		1 @ 25.2	115		
SACKETT		1 @ 42.0	115		
SOUTHINGTON 11K; 12K; 13K		3 @ 50.4	115		
SOUTHINGTON 21K; 22K;23K		3 @ 50.4	115		
STONY HILL 10K		1 @ 25.2	115		

<i>CONVEX Voltage & Reactive Schedules & Surveys for Transmission, Capacitors</i>				
Survey Date:	Survey Time:	Survey Load Period: Heavy/Light (circle one)		
Substation Location	Available MVAR	Nominal Voltage	Actual kV (Voltage)	Closed/ Open
STONY HILL 21K; 22K	2 @ 37.8	115		
WATERSIDE 10K	1 @ 37.8	115		
WOODLAND 21K; 22K	2 @ 14.4	115		

<i>CONVEX Voltage & Reactive Schedules & Surveys for Transmission, Reactors</i>				
Survey Date:	Survey Time:	Survey Load Period: Heavy/Light (circle one)		
Substation Location	Available MVAR	Nominal Voltage	Actual Voltage (kV)	Closed/ Open
NORWALK JUNCTION F1; F2	2 @ -75 Fixed; -75 Variable	345		
PLUMTREE 345-F1	1 @ -75 Fixed; -75 Variable	345		

<i>CONVEX Voltage & Reactive Schedules & Surveys for Transmission, STATCOMs</i>				
Survey Date:	Survey Time:	Survey Load Period: Heavy/Light (circle one)		
Location	Available MVAR	Nominal Voltage	Actual Voltage (kV)	Closed/ Open
GLENBROOK STATCOM	+150 / -150	115		

CONVEX Voltage & Reactive Schedules & Surveys for Autotransformers with LTCs

Survey Date:	Survey Time:					Survey Load Period: Heavy/Light (circle one)		
	High Side kV/ Low Side kV	LTC Setting (Auto/Manual)	Scheduled Voltage (kV)	Max LTC Tap	Min LTC Tap	Voltage Control Bandwidt h (kV)	Surveyed Actual Voltage (kV)	Surveyed LTC Setting (Auto/Manual)
Legend <i>Sched = Schedule</i> <i>Max = Maximum</i> <i>Min = Minimum</i> <i>Auto = Automatic</i>								
Substation Name								
BARBOUR HILL	345/115	A	116			120-108		
BERKSHIRE	345/115	A	119			121-104		
CARD	345/115	A	115			121-109		
EAST SHORE	345/115	M	119			N/A		
FROST BRIDGE	345/115	A	118			121-110		
HADDAM 6X	345/115	A	118			121-109		
KILLINGLY 2G	345/115	A	117			119-112		
LUDLOW	345/115	A	119			121-111		
MANCHESTER	345/115	A	116			121-110		
MONTVILLE	345/115	A	117			121-110		
NORTH BLOOMFIELD	345/115	A	116			121-104		
NORWALK 9S	345/115	A	117			121-109		
PLUMTREE	345/115	A	116			121-112		
SOUTHINGTON BUS #1	345/115	A	118			120-110		
SOUTHINGTON BUS #2	345/115	A	118			120-110		

Maine

Survey Date:	Survey Time:	Maine Voltage & Reactive Schedules & Surveys – Appendix B, Generators										Survey Load Period: Heavy/Light (circle one)					
		Voltage Schedules Heavy Load Period ¹			Voltage Schedules Light Load Period ²			MVARs				Survey Results					
		kV Sched	kV Max	kV Min	kV Sched	kV Max	kV Min	MVARs Out @ S-SCC ³	MVARs In @ Min Manual Load ³	Actual kV (Voltage)	MVARs	AVR Status (On/Off)					
Units																	
AEI LIVERMORE	120	121	113	120	121	113	120	121	120	113	113	22.5	-17				
BUCKSPORT G4	120	121	113	120	121	113	120	121	120	113	113	115	-64				
HARRIS HYDRO G1	120	121	113	120	121	113	120	121	120	113	113	12	0				
HARRIS HYDRO G2	120	121	113	120	121	113	120	121	120	113	113	12	0				
HARRIS HYDRO G3	120	121	113	120	121	113	120	121	120	113	113	12	0				
MAINE INDEPENDENCE GT1	121	123	114	121	123	114	121	123	121	114	114	110	-90				
MAINE INDEPENDENCE GT2	121	123	114	121	123	114	121	123	121	114	114	110	-90				
MAINE INDEPENDENCE ST	121	123	114	121	123	114	121	123	121	114	114	118	-95				
RUMFORD POWER GT & ST	120	121	113	120	121	113	120	121	120	113	113	140	-90				
STRATTON ENERGY	122	124	113	122	124	113	122	124	122	113	113	13	0				
VERSO (ANDROSCOGGIN) AEC #1	120	121	113	120	121	113	120	121	120	113	113	33	-9				
VERSO (ANDROSCOGGIN) AEC #2	120	121	113	120	121	113	120	121	120	113	113	33	-10				
VERSO (ANDROSCOGGIN) AEC #3	120	121	113	120	121	113	120	121	120	113	113	32	-7				
WESTBROOK 1A	120	121	113	120	121	113	120	121	120	113	113	173	-135				
WESTBROOK 2B	120	121	113	120	121	113	120	121	120	113	113	173	-135				
WYMAN HYDRO 1	120	121	113	120	121	113	120	121	120	113	113	12	0				
WYMAN HYDRO 2	120	121	113	120	121	113	120	121	120	113	113	12	0				
WYMAN HYDRO 3	120	121	113	120	121	113	120	121	120	113	113	12	0				

Maine Voltage & Reactive Schedules & Surveys - Appendix B, Generators

Survey Date:	Survey Time:				Survey Load Period: Heavy/Light (circle one)			
	Voltage Schedules Heavy Load Period ¹		Voltage Schedules Light Load Period ²		MVARs Out @ S-SCC ³	MVARs In @ Min Manual Load ³	Survey Results	
	kV Sched	kV Max	kV Min	kV Sched			Actual kV (Voltage)	AVR Status (On/Off)
Legend								
Sched = Schedule								
Max = Maximum								
Min = Minimum								
MVARs In = Gross Lagging								
MVARs Out = Gross Leading								
Units								
YARMOUTH 1	120	121	113	120	18	-10		
YARMOUTH 2	120	121	113	120	18	-10		
YARMOUTH 3	120	121	113	120	41	-7		
YARMOUTH 4	355	362	349	355	213	-262		

Units not listed will follow local voltage schedules in accordance with Local Control Center requirements or Interconnection Agreements.

Maine Voltage & Reactive Schedules & Surveys for Transmission, Capacitors

Survey Date:		Survey Time:		Survey Load Period: Heavy/Light (circle one)	
Substation Location		Available MVAR	Nominal Voltage	Actual kV (Voltage)	Closed/ Open
CROWLEYS KC2		1 @ 50	115		
GULF ISLAND KC1		1 @ 30	115		
KEENE RD		1 @ 15	115		
KIMBALL ROAD KC1; KC2		2 @ 30	115		
MAQUIRE ROAD		1 @ 30	115		
MASON KC2; KC3		2 @ 50	115		
MAXCY'S KC1; KC2		2 @ 50	115		
ORRINGTON KC1; KC2; KC3		3 @ 67	115		
SANFORD KC1		1 @ 30.6	115		
SOUTH GORHAM KC1; KC2		2 @ 50	115		
SUROWIEC KC1; KC2; KC3		3 @ 50	115		

Maine Voltage & Reactive Schedules & Surveys for Transmission, Reactors				
Survey Date:	Survey Time:	Survey Load Period: Heavy/Light (circle one)		
Substation Location	Available MVAR	Nominal Voltage	Actual Voltage (kV)	Closed/ Open
ORRINGTON KR1; KR2	2 @ - 40	115		
SUROWIEC KR1; KR2	2 @ -40	115		

Maine Static VAR Compensator				
Survey Date:	Survey Time:	Survey Load Period: Heavy/Light (circle one)		
Substation Location	Available MVAR	Nominal Voltage	Actual Voltage (kV)	Closed/ Open
CHESTER SVC	442 / -125	345		

Maine Voltage & Reactive Schedules & Surveys for Autotransformers with LTCs											
Survey Date:		Survey Time:								Survey Load Period: Heavy/Light (circle one)	
Legend <i>Sched = Schedule</i> <i>Max = Maximum</i> <i>Min = Minimum</i> <i>Auto = Automatic</i>	High Side kV/ Low Side kV	LTC Setting (Auto/Manual)	Scheduled Voltage (kV)	Max LTC Tap	Min LTC Tap	Voltage Control Bandwidth (kV)	Survey Results		Surveyed LTC Setting (Auto/Manual)		
							Surveyed Actual Voltage (kV)				
Substation Name											
MASON T9	345/115	A	119	16	-16	118-120					
MAXCY'S T3	345/115	A	119	16	-16	118-120					
ORRINGTON T1	345/115	A*	121**	16	-16	120-122					
ORRINGTON T2	345/115	A*	121**	16	-16	120-122					
SOUTH GORHAM T1	345/115	A***	119	16	-16	118-120					
SUROWIEC T1	345/115	A	119	16	-16	118-120					

* - These transformers LTCs run in manual when MIS is online.

** - When being operated in manual the Orrington scheduled voltage is ~1kV less than Graham bus voltage.

*** - This transformer LTC is run in manual when WEC is online.

New Hampshire

New Hampshire Voltage & Reactive Schedules & Surveys – Appendix B, Generators

Survey Date: Legend <i>Sched = Schedule</i> <i>Max = Maximum</i> <i>Min = Minimum</i> <i>MVARs In = Gross Lagging</i> <i>MVARs Out = Gross Leading</i> Units	Survey Time:						Survey Load Period: Heavy/Light (circle one)					
	Voltage Schedules Heavy Load Period ¹			Voltage Schedules Light Load Period ²			MVARs Out @ S-SCC ³		MVARs In @ Min Manual Load ³		Survey Results	
	kV Sched	kV Max	kV Min	kV Sched	kV Max	kV Min	MVARs	MVARs	Actual kV (Voltage)	MVARs	AVR Status (On/Off)	
AES GRANITE RIDGE ST 1*	119	121	109	119	121	109	161	-101				
MERRIMACK 1	119	121	109	119	121	109	49	-25				
MERRIMACK 2	119	121	109	119	121	109	125	-80				
NEWINGTON	357	362	339	357	362	339	188	-70				
CONED NEWINGTON ENERGY 1	357	362	339	357	362	339	105	-90				
CONED NEWINGTON ENERGY 2	357	362	339	357	362	339	105	-90				
CONED NEWINGTON ENERGY 3	357	362	339	357	362	339	120	-90				
SCHILLER 4	119	121	109	119	121	109	25	-22				
SCHILLER 5	119	121	109	119	121	109	30	-12				
SCHILLER 6	119	121	109	119	121	109	25	-24				
SEABROOK	357	362	345	357	362	345	462	-60				

Note: Units not listed will follow local voltage schedules in accordance with Local Control Center requirements or Interconnection Agreements.

*Granite units CT1 & CT2 are located in the REMVEC Section

<i>New Hampshire Voltage & Reactive Schedules & Surveys for Transmission, Capacitors</i>					
Survey Date:		Survey Time:		Survey Load Period: Heavy/Light (circle one)	
Substation Location		Available MVAR	Nominal Voltage	Actual kV (Voltage)	Closed/ Open
BEEBE J1153; J1164; J1165		3 @ 13.3	115		
CHESTNUT HILL J1156; J1157		2 @ 12.2	115		
CHESTNUT HILL J1158		1 @ 24.4	115		
MADBURY J1162; J1163		2 @ 24.4	115		
MERRIMACK J1151; 1152		2 @ 36.6	115		
OCEAN RD. J1154; J1155		2 @ 24.4	115		
THREE RIVERS J1159		1 @ 12.2	115		
THREE RIVERS J1160; J1161		2 @ 24.4	115		
WHITE LAKE J1166		1 @ 13.3	115		
WHITE LAKE J1167		1 @ 6.6	115		

<i>New Hampshire Voltage & Reactive Schedules & Surveys for Transmission, Reactors</i>				
Survey Date:	Survey Time:	Survey Load Period: Heavy/Light (circle one)		
Substation Location	Available MVAR	Nominal Voltage	Actual Voltage (kV)	Closed/ Open
SCOBIE POND R31; R32	2 @ -40.0	115		

<i>New Hampshire Voltage & Reactive Schedules & Surveys for Autotransformers with LTCs</i>									
Survey Date:		Survey Time:				Survey Load Period: Heavy/Light (circle one)			
Legend <i>Sched = Schedule</i> <i>Max = Maximum</i> <i>Min = Minimum</i> <i>Auto = Automatic</i>	Substation Name	High Side kV/ Low Side kV	LTC Setting (Auto/Manual)	Scheduled Voltage (kV)	Max LTC Tap	Min LTC Tap	Voltage Control Bandwidth (kV)	Survey Results	
								Surveyed Actual Voltage (kV)	Surveyed LTC Setting (Auto/Manual)
	DEERFIELD TB14	345/115	A	119.0	33	1	121-113.7		
	SCOBIE TB30	345/115	A	119.0	33	1	121-113.7		
	SCOBIE TB90	345/115	A	119.0	16	-16	121-113.7		
	SCOBIE TB120	345/115	A	119.0	16	-16	121-113.7		
	MERRIMACK A253	230/115	M	119.0	16	-16	120.5–117.5		
	LITTLETON TB41	230/115	A	119	33	1	119.7–188.2		

NSTAR

NSTAR Voltage & Reactive Schedules & Surveys - Appendix B, Generators

Survey Date:	Survey Time:										Survey Load Period: Heavy/Light (circle one)				
	Voltage Schedules Heavy Load Period ¹					Voltage Schedules Light Load Period ²					MVARs In @ Min Manual Load ³		Survey Results		AVR Status (On/Off)
	kV Sched	kV Max	kV Min	kV Sched	kV Max	kV Min	MVARs Out @ S-SCC ³	Actual kV (Voltage)	MVARs						
	Units														
ANP BLACKSTONE 1	358	362	335	356	362	335	356	362	335	335	160	-95			
ANP BLACKSTONE 2	358	362	335	356	362	335	356	362	335	335	161	-95			
CANAL 1	358	362	327	355	362	327	355	362	327	327	250	-100			
CANAL 2	358	362	327	355	362	327	355	362	327	327	100	-100			
DARTMOUTH POWER	115	121	109	115	121	109	115	121	109	109	39.2	-12.5			
FORE RIVER GT 1	118	121	110	116	121	110	116	121	110	110	160	-153			
FORE RIVER GT 2	118	121	110	116	121	110	116	121	110	110	160	-153			
FORE RIVER ST 1	118	121	110	116	121	110	116	121	110	110	160	-160			
KENDALL G4	119	121	110	117	121	110	117	121	110	110	125	-95			
MEDWAY J1	238	241	219	235	241	219	235	241	219	219	20	-10			
MEDWAY J2	238	241	219	235	241	219	235	241	219	219	20	-10			
MEDWAY J3	115	121	109	115	121	109	115	121	109	109	20	-20			
MYSTIC 7	358	362	335	356	362	335	356	362	335	335	316	-175			
MYSTIC 8 GT1	358	362	335	356	362	335	356	362	335	335	160	-153			
MYSTIC 8 GT2	358	362	335	356	362	335	356	362	335	335	160	-153			
MYSTIC 8 ST	358	362	335	356	362	335	356	362	335	335	160	-160			
MYSTIC 9 GT1	119	121	109	117	121	109	117	121	109	109	160	-153			
MYSTIC 9 GT2	119	121	109	117	121	109	117	121	109	109	160	-153			

NSTAR Voltage & Reactive Schedules & Surveys - Appendix B, Generators

Survey Date: Legend <i>Sched = Schedule</i> <i>Max = Maximum</i> <i>Min = Minimum</i> <i>MVARs In = Gross Lagging</i> <i>MVARs Out = Gross Leading</i> Units	Survey Time:				Survey Load Period: Heavy/Light (circle one)					
	Voltage Schedules Heavy Load Period ¹		Voltage Schedules Light Load Period ²		MVARs Out @ S-SCC ³	MVARs In @ Min Manual Load ³	Survey Results			
	kV Sched	kV Max	kV Min	kV Max			Actual kV (Voltage)	MVARs	AVR Status (On/Off)	
MYSTIC 9 ST	119	121	109	117	121	109	160	-160		
NEA BELLINGHAM (1-3)	358	362	328	356	362	328	87	-45		
PILGRIM	358	362	342	356	362	342	335	-100		
POTTER 2	118	121	110	116	121	110	53	-23		
SEMASS G1	116	121	109	118	121	109	15	-5		
SEMASS G2	116	121	109	118	121	109	10	-2		

Units not listed will follow local voltage schedules in accordance with Local Control Center requirements or Interconnection Agreements.

<i>NSTAR Voltage & Reactive Schedules & Surveys for Transmission, Capacitors</i>				
Survey Date:	Survey Time:	Survey Load Period: Heavy/Light (circle one)		
Substation Location	Available MVAR	Nominal Voltage	Actual kV (Voltage)	Closed/ Open
BAKER STREET #1; #2	2 @ 53.6	115		
BARNSTABLE	1 @ 35.3	115		
DOVER	1 @ 53.6	115		
FALMOUTH TAP	1 @ 35.3	115		
FRAMINGHAM	1 @ 53.6	115		
HARWICH	1 @ 21.2	115		
HYANNIS JCT.	1 @ 39	115		
K-STREET 1; 2	2 @ 53.6	115		
LEXINGTON	1 @ 53.6	115		
MASHPEE	1 @ 35.3	115		
MYSTIC	1 @ 53.6	115		
ORLEANS	1 @ 13.5	115		
SUDBURY	1 @ 49.5	115		
WING LANE STATION	1 @ 35.3	115		

<i>NSTAR Voltage & Reactive Schedules & Surveys for Transmission, Reactors</i>				
Survey Date:	Survey Time:	Survey Load Period: Heavy/Light (circle one)		
Substation Location	Available MVAR	Nominal Voltage	Actual Voltage (kV)	Closed/ Open
K-STREET	1 @ -80	115		
K-STREET	2 @ -70 Fixed; -90 Variable	345		
LEXINGTON	1 @ -70 Fixed; -90 Variable	345		
MYSTIC	1 @ -80	115		
NORTH CAMBRIDGE	2 @ -80	115		
NORTH CAMBRIDGE	1 @ -70 Fixed; -90 Variable	345		
STOUGHTON	4 @ -70 Fixed; -90 Variable	345		
WOBURN	3 @ -80	115		

NSTAR Voltage & Reactive Schedules & Surveys for Autotransformers with LTCs

Survey Date:		Survey Time:					Survey Load Period: Heavy/Light (circle one)		
Legend <i>Sched = Schedule</i> <i>Max = Maximum</i> <i>Min = Minimum</i> <i>Auto = Automatic</i>	High Side kV/ Low Side kV	LTC Setting (Auto/Manual)	Scheduled Voltage (kV)	Max LTC Tap	Min LTC Tap	Voltage Control Bandwidth (kV)	Survey Results		
							Surveyed Actual Voltage (kV)	Surveyed LTC Setting (Auto/Manual)	
Substation Name									
KINGSTON 345A; 345B	345/115	M	119	10	-10	126.6-103.4			
WOBURN 345	345/115	M	118	33	1	126.45-103.96			

REMVEC

Survey Date:		Survey Time:										Survey Load Period: Heavy/Light (circle one)				
		Voltage Schedules Heavy Load Period ¹					Voltage Schedules Light Load Period ²					Survey Results				
		kV Sched	kV Max	kV Min	kV Sched	kV Max	kV Min	MVARs Out @ S-SCC ³	MVARs In @ Min Manual Load ³	Actual kV (Voltage)	MVARs				AVR Status (On/Off)	
Units																
AES GRANITE RIDGE CT1*		238	241	219	230	241	219	219	230	241	219	161	-145			
AES GRANITE RIDGE CT2*		238	241	219	230	241	219	219	230	241	219	161	-145			
ANP BELLINGHAM 1		358	362	335	356	362	335	335	356	362	335	142	-78			
ANP BELLINGHAM 2		358	362	335	356	362	335	335	356	362	335	142	-78			
BEAR SWAMP 1 GEN		240	241	219	225	241	219	219	225	241	219	84	-90			
BEAR SWAMP 1 PUMP		240	241	219	225	241	219	219	225	241	219	120	0			
BEAR SWAMP 2 GEN		240	241	219	225	241	219	219	225	241	219	100	-160			
BEAR SWAMP 2 PUMP		240	241	219	225	241	219	219	225	241	219	120	0			
BRAYTON 1		118	121	110	116	121	110	110	116	121	110	115	-96			
BRAYTON 2		118	121	110	116	121	110	110	116	121	110	118	-42			
BRAYTON 3		358	362	335	355	362	335	335	355	362	335	260	-290			
BRAYTON 4		358	362	328	355	362	328	328	355	362	328	230	-210			
CLEARY CC		118	121	110	116	121	110	110	116	121	110	83.4	-54.5			
COMERFORD		240	241	219	225	241	219	219	225	241	219	76	-9.4			
DIGHTON POWER 1		118	121	110	116	121	110	110	116	121	110	105	-22.6			
FPL RISE GT 1		119	121	110	117	121	110	110	117	121	110	50	-70			
FPL RISE GT 2		119	121	110	117	121	110	110	117	121	110	50	-70			
FPL RISE ST 1		119	121	110	117	121	110	110	117	121	110	76	-70			

REMVEC Voltage & Reactive Schedules & Surveys – Appendix B, Generators

Survey Date:	Survey Time:				Survey Load Period: Heavy/Light (circle one)					
	Voltage Schedules Heavy Load Period ¹		Voltage Schedules Light Load Period ²		MVARs Out @ S-SCC ³	MVARs In @ Min Manual Load ³	Survey Results			
	kV Sched	kV Max	kV Min	kV Sched			Actual kV (Voltage)	MVARs	AVR Status (On/Off)	
Legend Sched = Schedule Max = Maximum Min = Minimum MVARs In = Gross Lagging MVARs Out = Gross Leading										
Units										
MANCHESTER ST 9/9A	119	121	110	117	121	110	104	-62		
MANCHESTER ST 10/10A	119	121	110	117	121	110	105	-49		
MANCHESTER ST 11/11A	119	121	110	117	121	110	101	-46		
MILFORD POWER (1-2)	118	121	110	117	121	110	119	-139		
MILLENIUM GT & ST	117	121	112	115	121	110	155	-90		
MOORE (1-4)	240	241	219	225	241	219	74	-71		
OCEAN STATE 1 (GT1/GT2/ST1)	358	362	335	356	362	335	119.4	-98		
OCEAN STATE 2 (GT3/GT4/ST2)	358	362	335	356	362	335	135	-103		
SALEM HARBOR 1	119	121	109	117	121	109	28	-39		
SALEM HARBOR 2	119	121	109	117	121	109	37.5	-29		
SALEM HARBOR 3	119	121	109	117	121	109	67	-60		
SALEM HARBOR 4	119	121	109	117	121	109	275	-210		
SOMERSET 6	118	121	110	116	121	110	86	0		
TIVERTON (GT, ST)	118	121	109	116	121	109	180	-50		

Units not listed will follow local voltage schedules in accordance with Local Control Center requirements or Interconnection Agreements.

* The Granite Ridge ST unit is located in New Hampshire Section

REMVEC Voltage & Reactive Schedules & Surveys for Transmission, Capacitors				
Survey Date:	Survey Time:	Survey Load Period: Heavy/Light (circle one)		
Substation Location	Available MVAR	Nominal Voltage	Actual kV (Voltage)	Closed/ Open
COMERFORD C11; C12; C13	3 @ 31.5	230		
COMERFORD C21; C22; C23; C24	4 @ 31.5	230		
COMERFORD C15; C16	2 @ 63	230		
COMERFORD F11; F12	2 @ 63	230		
COMERFORD F21; F22	2 @ 63	230		
FRANKLIN SQUARE	1 @ 63	115		
KENT COUNTY	1 @ 63	115		
MANCHESTER ST.	1 @ 63	115		
MILBURY	2 @ 63	115		
NORTHBORO RD.	1 @ 54	115		
NORTHBORO RD.	2 @ 36	69		
PRATTS JCT	1 @ 63	115		
SALEM HARBOR	1 @ 63	115		
SANDY POND C11; C21	2 @ 93	345		
SANDY POND C12; C22	2 @ 186	345		
SANDY POND F11; F21	2 @ 175	345		
SANDY POND F12; F22	2 @ 85	345		
SANDY POND F13; F23	2 @ 178	345		
TEWKSBURY C1; C2	2 @ 63	115		

<i>REMVEC Voltage & Reactive Schedules & Surveys for Transmission, Reactors</i>					
Survey Date:		Survey Time:		Survey Load Period: Heavy/Light (circle one)	
Substation Location		Available MVAR	Nominal Voltage	Actual Voltage (kV)	Closed/ Open
COMERFORD		8 @ -19.8	13.8		
SANDY POND		3 @ -160	345		

REMVEC Voltage & Reactive Schedules & Surveys for Autotransformers with LTCs

Survey Date:		Survey Time:					Survey Load Period: Heavy/Light (circle one)		
Legend <i>Sched = Schedule</i> <i>Max = Maximum</i> <i>Min = Minimum</i> <i>Auto = Automatic</i>	Substation Name	High Side kV/ Low Side kV	LTC Setting (Auto/ Manual)	Scheduled Voltage (kV)	Max LTC Tap	Min LTC Tap	Survey Results		
							Voltage Control Bandwidth (kV)	Surveyed Actual Voltage (kV)	Surveyed LTC Setting (Auto/ Manual)

VELCO

VELCO Voltage & Reactive Schedules & Surveys – Appendix B, Generators

Survey Date:	Survey Time:				Survey Load Period: Heavy/Light (circle one)					
	Voltage Schedules Heavy Load Period ¹		Voltage Schedules Light Load Period ²		MVARs In @ Manual Load ³		MVARs Out @ S-SCC ³		Survey Results	
	kV Sched	kV Max	kV Min	kV Sched	kV Max	kV Min	MVARs	MVARs	Actual kV (Voltage)	AVR Status (On/Off)
Legend <i>Sched = Schedule</i> <i>Max = Maximum</i> <i>Min = Minimum</i> <i>MVARs In = Gross Lagging</i> <i>MVARs Out = Gross Leading</i>	117.0	118.5	115.0	117.0	118.5	115.0	4 @ 25	4 @ -12.5		
Units	358	362	342	354	362	342	150	-100		
GRANITE SYNC COND										
VERMONT YANKEE										

Units not listed will follow local voltage schedules in accordance with Local Control Center requirements or Interconnection Agreements.

<i>VELCO Voltage & Reactive Schedules & Surveys for Transmission, Capacitors</i>				
Survey Date:	Survey Time:	Survey Load Period: Heavy/Light (circle one)		
Substation Location	Available MVAR	Nominal Voltage	Actual kV (Voltage)	Closed/ Open
BERLIN	1 @ 24.8	115		
COOLIDGE # 1; # 2	2 @ 25	115		
ESSEX #1	1 @ 24.3	115		
ESSEX #2; #3; #4; #5; #6	5 @ 24.8	115		
GEORGIA	1 @ 24.8	115		
HARTFORD C40	1 @ 25.0	115		
HIGHGATE	6 @ 20 2 @ 10	115		
GRANITE	4 @ 25	115		
MIDDLEBURY	1 @ 22.9	115		
NORTH RUTLAND	1 @ 24.8	115		
SANDBAR	1 @ 24.8	115		
VERMONT YANKEE	1 @ 30 2 @ 15	115		
WILLISTON	1 @ 24.8	115		

<i>VELCO Voltage & Reactive Schedules & Surveys for Transmission, Reactors</i>				
Survey Date:	Survey Time:	Survey Load Period: Heavy/Light (circle one)		
Substation Location	Available MVAR	Nominal Voltage	Actual Voltage (kV)	Closed/ Open
NEW HAVEN	1 @ -60	345		

<i>VELCO STATCOMS</i>				
Survey Date:	Survey Time:	Survey Load Period: Heavy/Light (circle one)		
Substation Location	Available MVAR	Nominal Voltage	Actual Voltage (kV)	Closed/ Open
ESSEX STATCOM	+85/ -65	115		

VELCO Voltage & Reactive Schedules & Surveys for Autotransformers with LTCs									
Survey Date:		Survey Time:				Survey Load Period: Heavy/Light (circle one)			
Legend <i>Sched = Schedule</i> <i>Max = Maximum</i> <i>Min = Minimum</i> <i>Auto = Automatic</i>	High Side kV/ Low Side kV	LTC Setting (Auto/Manual)	Scheduled Voltage (kV)	Max LTC Tap	Min LTC Tap	Voltage Control Bandwidth (kV)	Survey Results		
							Surveyed Actual Voltage (kV)	Surveyed LTC Setting (Auto/Manual)	
Substation Name									
COOLIDGE XF	345/115	A	117	33	1	N/A			
GRANITE T1	230/115	A	234	16	-16	237-230			
GRANITE T2	230/115	A	234	16	-16	237-230			
WEST RUTLAND (1) *	345/115	A	116.4	16	-16	118.7-114.1			
WEST RUTLAND (2) *	345/115	A	116.4	16	-16	118.7-114.1			
NEW HAVEN (1) *	345/115		116.4	16	-16	118.7-114.1			
NEW HAVEN (2) *	345/115		116.4	16	-16	118.7-114.1			

*New Haven and West Rutland transformers operated in tandem

OP 12 Appendix B Revision History

Document History (This Document History documents action taken on the equivalent NEPOOL Procedure prior to the RTO Operations Date as well revisions made to the ISO New England Procedure subsequent to the RTO Operations Date.)

Rev. No.	Date	Reason
Rev 1	05/23/03	
Rev 2	08/05/03	
Rev 3	07/25/04	
Rev 4	11/09/04	
Rev 5	02/01/05	Updated to conform to RTO terminology
Rev 6	05/06/05	Update for initiation of VELCO Local Control Center
Rev 7	06/02/05	Update information resulting from VTF review
Rev 8	09/07/06	Updated information resulting from VTF review
Rev 9	10/26/06	Corrected MVAR value for Rumford
Rev 10	09/17/07	Updated information resulting from ISO Operations Support Services review
Rev 11	03/04/08	Revised for NSTAR LCC status
Rev 12	05/22/08	Completely reformatted to allow better use and ease making future revisions. Updated information resulting from VTF review.
Rev 13	06/26/08	Updated information resulting from VTF review.
Rev 14	09/16/08	Updated information resulting from VTF review and new test results.

Endnotes

¹ Heavy 07:00-22:00 hours Monday through Saturday except Holidays.

² Light all other hours.

³ Data from NX-12D, pt. 19 (MVAR lagging), pt. 15 (MVAR leading) of the Normal Reactive Capability portion of the table/curve.

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1. REFERENCES

- 1.1. ISO New England Transmission Operating Guides - All Voltage/Reactive Guides
- 1.2. ISO New England Operating Procedure No. 4 - Action During a Capacity Deficiency (OP 4)
- 1.3. ISO New England Operating Procedure No. 7 - Action in an Emergency (OP 7)
- 1.4. ISO New England Operating Procedure No. 14 - Technical Requirements for Generation, Dispatchable and Interruptible Load (OP 14)
- 1.5. ISO New England Operating Procedure No. 16 - Transmission System Data (OP 16)
- 1.6. ISO New England Operating Procedure No. 19 - Transmission Operations (OP 19)
- 1.7. Master/ Local Control Center Procedure No. 9 - Operation of the Chester Static VAR Compensator (M/LCC 9)
- 1.8. NERC Standard VAR-001- Voltage and Reactive Control

2. SCOPE

- 2.1. This procedure provides broad criteria, operating practices and responsibilities to help ensure that desired/reliable voltage and reactive conditions are maintained on the power system. It also includes general actions to control voltage/reactive conditions when deviations from normal occur or are needed to minimize adverse effects during abnormal conditions.
- 2.2. More specific criteria and actions may be required when the measures described in this procedure do not correct the abnormal voltage/reactive conditions. This information is contained in detailed voltage/reactive operating guides and includes the following documents:
 - 2.2.1. Eastern Massachusetts and Rhode Island Low Voltage Guide.
 - 2.2.2. Boston Import Area Operations Planning Guide and Operations Guide.

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3. CRITERIA

3.1. VOLTAGE SCHEDULES AND LIMITS FOR GENERATORS AND KEY TRANSMISSION FACILITIES

3.1.1. Major generating stations throughout the New England Control Center/REMVEC area have specified voltage schedules (See ISO-NE OP-12, Voltage and Reactive Control Appendix B), which should be maintained as closely as possible in system operations. They should also be used by operators and planners in off-line studies of the power system. During certain conditions at a generating station or on the power system, sustained deviations from voltage schedules may be required/unavoidable and minimum and maximum voltages have been established that can be sustained at generating stations during these infrequent conditions.

3.1.2. In addition to voltage schedules, minimum and maximum voltage limits at several key generating or transmission stations have been established to promote system reliability during adverse voltage/reactive conditions. These reliability concerns can be based on the security of the transmission system or station service supplies to nuclear generators.

3.2. GENERATOR REACTIVE CAPABILITIES, COMMITMENTS AND REQUIRED REACTIVE RESERVES

3.2.1. Generator reactive capabilities available to regulate voltages should be employed in system operations and analyses. To promote security of the transmission system during adverse voltage/reactive conditions, required unit commitments and levels of required reactive reserve for generators within certain areas of the New England Control Center/REMVEC area have been established. System conditions that warrant the prescribed unit commitments or reactive reserves have also been identified and are provided in area operating guides.

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4. VOLTAGE/REACTIVE OPERATING PRACTICES

- 4.1. Besides the use of generator reactive capabilities, the proper dispatch of shunt capacitors/reactors combined with effective transformer voltage schedules or fixed tap settings are the most traditional means of achieving desired voltages and reactive conditions. Listings of shunt devices installed to support the New England Control Center/REMVEC transmission system (115 kV and above) can be found in ISO-NE OP-12, Voltage and Reactive Control Appendix B.
- 4.2. In severe cases of low voltage and/or inadequate reactive reserves, load management actions can be taken. Details on conditions when these actions can/should be used and how they should be implemented are provided in the Voltage Guides and ISO-NE and the New England Control Center/REMVEC Operating Procedures No. 4 and 7.

5. RESPONSIBILITIES

- 5.1. This procedure is based on the principle that voltage control is best achieved when action is taken as close as possible to the affected area. Voltage schedules and other reactive conditions will be supervised by Station, the New England Control Center/REMVEC Security Operators and ISO System Operators, each being responsible for an ever expanding area of responsibility. Regardless of which entity is requesting or directing corrective measures, action must ultimately be taken by the New England Control Center/REMVEC Security Operators depending on who has "hands on" control of the reactive resources.

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5.2. GENERATING AND TRANSMISSION STATIONS

5.2.1. Generating and transmission station operators are responsible for maintaining station service and other local voltage requirements and scheduled voltages at levels designated by individual Participants. Generating stations are also responsible for maintaining voltage schedules set for the high side of the generator step-up transformers by the appropriate ISO-NE committee. Normally, automatic voltage regulation works off the low side of the step-up transformer (generator terminals). Thus, in order to maintain a high side voltage schedule, manual intervention can be required to offset varying power flows through and voltage drops across the step-up transformer.

5.2.2. When unable to maintain scheduled station and local voltages with the means under their control, the generating stations must notify the New England Control Center/REMVEC.

5.3. NEW ENGLAND CONTROL CENTER/REMVEC

The New England Control Center/REMVEC Security Operators are responsible for monitoring and supervising the following conditions:

5.3.1. Voltage schedules and limits.

5.3.2. Unit MVAR loadings, capabilities and reserves.

5.3.3. Shunt capacitor and reactor dispatches.

5.3.4. Transformer voltage schedules or fixed tap settings.

5.3.5. MVAR flows between the AC system and HVDC facilities.

5.3.6. Line switching for voltage/reactive control (must be coordinated with the ISO and, if warranted, with other Local Control Centers).

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- 5.3.7.** The New England Control Center/REMVEC Security Operators will notify/ coordinate the need for MW re-dispatch for MVAR requirements with ISO-NE. The New England Control Center/REMVEC Security Operators will not directly re-dispatch MW with generators unless it is an emergency.
- 5.3.8.** Other predefined indicators of voltage/reactive security i.e. a particular circuit flow, the status of specific units, area load levels, etc.
- 5.4.** Additionally, the New England Control Center/REMVEC Security Operators are responsible for:
- 5.4.1.** Detecting and correcting deviations from normal scheduled voltage/reactive operations.
 - 5.4.2.** Responding to notifications by generating or transmission station operators of difficulty in maintaining station or other local voltage or reactive schedules.
 - 5.4.3.** Responding to ISO requests to assist with inter-Local Control Center or inter-Area problems.
- 5.5.** The New England Control Center/REMVEC Security Operators are authorized to exercise the following actions to correct undesired voltage/reactive conditions:
- 5.5.1.** Direct voltage schedules and levels of reactive output and reserve on generators, and Static VAR Compensators.
 - 5.5.2.** Direct the use of shunt capacitors and reactors.
 - 5.5.3.** Direct the operation of LTC transformers.
 - 5.5.4.** Line switching (requires notification and coordination with ISO-NE **prior** to implementation).
 - 5.5.5.** Load management (requires notification and coordination with ISO-NE **prior** to implementation).
- 5.6.** If the New England Control Center/REMVEC Security Operator is unable to

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correct a voltage/reactive problem using the above actions or the System Operator believes that the problem should be handled on a multi-Local Control Center or inter-Area basis, the New England Control Center/REMVEC Security Operator will notify ISO-NE and request assistance.

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Revision History

Revision	Date	Reason
	06/01/05	New Procedure
1	10/29/05	Updated Woburn reactor capabilities
2	12/28/05	National Grid Logo, Updated Appendix A & B
3	05/30/07	Added Table of Contents and changed outline format
4	06/11/07	Removed Appendix B and referenced ISO-NE OP-12 App B
5	12/28/07	Yearly review, added references
6	04/17/08	Changed Approved by and removed authorized by.
7	11/18/08	Annual Review. Changed Approved by from Manager to Director.

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Approved by:

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DATE

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From: Customer Service Communications
Sent: Thursday, December 11, 2008 4:27 PM
To: Horan, Timothy F.; Accounts Processing Northboro Supervisors; Barker, Tom; Beattie, Cathy A.; Billing Analysis & System Support; Billing Project Management & Services; Brian Sullivan; Camasso, Mark A.; Cameron, Daniel A.; Cardoza, Anthony; Cavaliere, Frank; Corrington, Wilbur; Customer Contact Support; Customer Policy & Satisfaction; Dean, Dick; DeBergalis, Deborah A.; Denny, Virginia; Di Chiara, Rocco; Doherty, Maura P.; Donahue, Thomas D.; Dyas, Bruce; Enis, Paul J.; Fitzpatrick, Jill M.; Freeman, Edward J.; Gallagher, Jean; Gaul, Gail; Gilberti, Kim M.; Griffiths, Juliana C.; Grzymiski, Robin; Guerin, Michael; Haynes, Douglas H.; Jack Andrews; Jennifer Stanek; Joan Jerz; Karee Hagan; Kelly, Kevin; Kiley, Lisa M.; Kydd, Matt; Laura, Donna Marie; Luongo, Carmine C.; Martin, Jeff (USNY - Syracuse - Dir Billing & Systems); Masiello, Anna W.; Mazzola, Barbara; Morin, Jeffrey I.; Northboro Billing & Systems; Northboro Collections; Northboro CSC Communications Ctr; Podhaski, Michelle; Quatrino, Courtney ; Raphael, Marie D.; Rice, Adam; ROBINS, David J; Shaw, Kerrie; Shea, Kathleen P.; Sousa, Karen; Stanton, Rene; Sullivan, Brian; Tibbets, Gary W.; Wagner, Douglas E.; Wheeler, Robin M. (USNY, CMS Syracuse); Yameen, George; Accounts Processing Northboro Reps; Accounts Processing Syracuse Supervisors; Andrews, Jack ; Atwood, Amy T.; Barker, Darren; Barker, Laura; Barrett, Amanda; Bianchetti, Alberto; Brady, Stephen F.; Burns, Kerry P.; Christensen, Lynette A.; Concemi, Nancy; Cummings, Claire D.; Hayes, Julie A.; Hill, Kathleen P.; Hills, Lisa; Jamison, Steve; Marion, Richard J.; McCulley, John M.; Overdyk, Theresa M.; Powers, John T.; Scallon, Leo; Seifert, Todd; Sierotnik, John J.; Stanton, Renee; STANTON, ROBIN; Stella, Patrick; Systems Consolidation Team; US COLL-Admin & Consumer Advocacy; US COLL-Management; Weber, Patrick; Accounts Processing Syracuse Reps; Amy Jenkins ; Customer Contact Employee Development; John Segina; NE Gas Team; Purce, Terri; Rhode Island Contact Center-All; US COLL-Mainstream; Afanador, Corinda; Amon, Terry; Cheslawski, Melissa I.; Clark, Misty; Coyne, Kevin; Denning, Amy; Dreyer, Ann; Govoni, Kevin; Harris, Nicole; Hermanowski, Ellen; Howard, Robert L.; Jackson, Pamela; Kazmierczak, Karen; Lavallee, Sherry; Macey, Georgia N.; Norwood, Jeffrey; Rocha, Elizabeth; Sarji, Gladys; Starr, Christopher; Tatro, Bonnie; Vakoc, Amy J.; Andrews, RuthAnn E.; Burke, Linda B.; Canavan, Amy L.; Colbert, Scott D.; Cotton, Randall D.; Dillon, Patrick D.; Earle, Robert; Frye, Larry S.; Gentile, David A.; Halstead, Darla; Kaye, Evelyn M.; Kuhles, Kristen J.; Lamb, Kim M.; Levison, Elizabeth A.; Murray, Catherine H.; Norton, Jodie M.; Reid, Belinda A.; Roby, Matthew S.; Skelly, Kimberly I.; Smith, Jesse C.; Tidd, Stephanie M.; Cummins, Natasha; Schechter, Wayne

Subject: Storm - Personal Safety Message

Customer Contact Support

Communications

Target Audience: Northboro, Syracuse, Niagara Falls Contact Centers, RI Gas Reps kr

As we prepare for the rain/ice storm, we wanted to take a moment to remind everyone of how important it is to pay close attention to your safety. Be sure to use care when exiting and entering the building, as sidewalks, parking lots, and roads will be slippery. The Facilities personnel will be applying sand and salt to help avoid slips and falls. Here are some helpful tips for winter walking and driving:

Safety Tips for Winter Walking

- Wear slip-resistant footwear and carry dress shoes to your office
- Take small steps and walk slowly
- Keep both hands free for balance
- When getting out of your car, swing your legs around and place both feet on the pavement first

Safety Tips for Winter Driving

- Before you leave your driveway, scrape the ice and snow from headlights, brake lights and every window, including the exterior rear view mirrors, not just a small patch on the windshield. Remove the snow from the roof too... it could slide over the windshield and block your view.
- Don't use a cellular phone when driving on ice or snow. Even if you have a hands-free model, you need to concentrate on driving, not on a telephone conversation.
- Anticipate cars coming from side streets and put extra distance between your vehicle and the one in front of you.
- Keep a light touch on the brakes. Even with anti-lock braking systems (ABS), you should apply light pressure to avoid locking the brakes and causing a skid.

Thank you all for continuing to make safety a priority. We care about you and want you to be safe.

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From: Customer Service Communications
Sent: Thursday, December 11, 2008 5:07 PM
To: Accounts Processing Northboro Supervisors; Barker, Tom; Beattie, Cathy A.; Billing Analysis & System Support; Billing Project Management & Services; Brian Sullivan; Camasso, Mark A.; Cameron, Daniel A.; Cardoza, Anthony; Cavaliere, Frank; Corrington, Wilbur; Customer Contact Support; Customer Policy & Satisfaction; Dean, Dick; DeBergalis, Deborah A.; Denny, Virginia; Di Chiara, Rocco; Doherty, Maura P.; Donahue, Thomas D.; Dyas, Bruce; Enis, Paul J.; Fitzpatrick, Jill M.; Freeman, Edward J.; Gallagher, Jean; Gaul, Gail; Gilberti, Kim M.; Griffiths, Juliana C.; Grzymiski, Robin; Guerin, Michael; Haynes, Douglas H.; Jack Andrews; Jennifer Stanek; Joan Jerz; Karee Hagan; Kelly, Kevin; Kiley, Lisa M.; Kydd, Matt; Laura, Donna Marie; Luongo, Carmine C.; Martin, Jeff (USNY - Syracuse - Dir Billing & Systems); Masiello, Anna W.; Mazzola, Barbara; Morin, Jeffrey I.; Northboro Billing & Systems; Northboro Collections; Northboro CSC Communications Ctr; Podhaski, Michelle; Quatrino, Courtney; Raphael, Marie D.; Rice, Adam; ROBINS, David J; Shaw, Kerrie; Shea, Kathleen P.; Sousa, Karen; Stanton, Rene; Sullivan, Brian; Tibbets, Gary W.; Wagner, Douglas E.; Wheeler, Robin M. (USNY, CMS Syracuse); Yameen, George; Accounts Processing Northboro Reps; Accounts Processing Syracuse Supervisors; Andrews, Jack; Atwood, Amy T.; Barker, Darren; Barker, Laura; Barrett, Amanda; Bianchetti, Alberto; Brady, Stephen F.; Burns, Kerry P.; Christensen, Lynette A.; Concemi, Nancy; Cummings, Claire D.; Hayes, Julie A.; Hill, Kathleen P.; Hills, Lisa; Jamison, Steve; Marion, Richard J.; McCulley, John M.; Overdyk, Theresa M.; Powers, John T.; Scallon, Leo; Seifert, Todd; Sierotnik, John J.; Stanton, Renee; STANTON, ROBIN; Stella, Patrick; Systems Consolidation Team; US COLL-Admin & Consumer Advocacy; US COLL-Management; Weber, Patrick; US COLL-Mainstream; Accounts Processing Syracuse Reps
Subject: Correction: Impending Rain/Ice Storm - Water Issues with Meters and Related Electrical Equipment

Customer Contact Support Communications

Target Audience: Northborough, Syracuse, Niagara Falls Contact Centers kr

Correction: Please see the correction below in red.

It is anticipated that the impending storm will bring heavy rain, heavy ice, and strong winds beginning this evening and lasting until tomorrow afternoon. This combination may cause various water issues with meters and related electrical equipment. Please remember the following procedures when handling such calls:

Water in the Meter

Issue a Change Meter order

Wet Meter Socket or Service Panel

These items are customer-owned. Please explain that the customer needs to contact a licensed electrician to repair, but we will go to the customer's home to ensure safety, as this is a potential safety and/or fire hazard.

- **Issue an Electric Outage order (in the Power/Condition field, please select 'Lights') to disconnect the service.**

- **Advise customer that someone needs to be home when the service call is made. If no one is home and a problem is detected, the Field Service Representative or a line crew may disconnect the service at the weatherhead.**
- **A door knob card will be left at the premise advising the customer of the actions that were taken if no contact was made**

Request to Disconnect Power

If you receive a call from a customer or police/fire personnel requesting the power be shut off at an address, issue an Electric Outage order (in the Power/Condition field, please select 'Lights') to disconnect the service.

Note: An inspection is required before the service can be reconnected.

If you receive calls for emergency disconnects or reconnects after inspections, it is important to follow to the procedure below to ensure we respond to our customers' needs in a timely and efficient manner.

- Access the customer's account & review Contacts.

For disconnection of service:

- Ask inspector pertinent questions to gather information.
 - What is the cause for emergency disconnect?
 - Are we to disconnect power at pole only?
 - Was or will the meter need to be removed?
 - Is the service underground or overhead?

Process an Electric Outage order (in the Power/Condition field, please select 'Lights') and include the following comments:

"Disconnect power/meter per [wire inspector's Name& ID# and state the nature of the emergency, e.g., fire, flood etc.] "

Confirm that the call back number is valid on the Electric Outage order:

- In the comments section, add the wire inspector's name, badge #, and call back number.
- Note Contacts with information.

For reconnection of service:

Process an Electric Outage order (in the Power/Condition field, please select 'Lights') and include the following comments:

"Reconnect power/meter per wire inspector's Name& ID#"

Confirm that the call back number is valid on the Electric Outage order.

- In the comments section, add the wire inspector's name, badge #, and call back number.
- Note Contacts with information.

From: Customer Service Communications
Sent: Friday, December 12, 2008 1:15 PM
To: Northboro CSC Communications Ctr; Northboro CSC Team Leaders; Accounts Processing Northboro Reps; Accounts Processing Northboro Supervisors; Rhode Island Contact Center-All
Subject: Storm Update - Northboro Contact Center Emergency Resource Center Activated

The Northboro Customer Service Resource Center has been activated and the following four teams are available to answer questions and/or requests during the storm emergency.

Food & Lodging

Coordinate food and lodging accommodations for Northboro personnel
Phone: 508-357-4580, Ext 54580
Email: NBRO CS Food & Lodging

Time Keeping & Staffing

Coordinate appropriate staffing of Northboro Contact Center Reps
Phone: 508-357-4583, Ext 54583
Email: NBRO CS Time Keeping & Staffing

Employee Requests

Coordinate requests from Northboro employees for personal stocked supplies
Phone: 508-357-4581, Ext 54581
Email: NBRO CS Employee Requests

Communications

Develop and distribute internal communications for the Northboro Contact Center and update emergency related information on appropriate websites
Phone: 508-357-4582, Ext 54582
Email: NBRO CS Communications

From: Customer Service Communications
Sent: Friday, December 12, 2008 2:38 PM
To: Northboro CSC Communications Ctr; Northboro CSC Team Leaders; Accounts Processing Northboro Reps; Accounts Processing Northboro Supervisors; Rhode Island Contact Center-All
Subject: Storm Update: New England Shelter Information

With restoration efforts continuing throughout the weekend, customers may begin calling requesting shelter information.

Please convey the following:

In Massachusetts:

- Customers should contact their local non-emergency Fire and Police agencies.

In New Hampshire:

- Residents can dial "211" for an updated list of shelter information

From: NBRO CS Communications
Sent: Saturday, December 13, 2008 9:21 AM
To: Northboro CSC Communications Ctr; Northboro CSC Team Leaders; Accounts Processing Northboro Reps; Accounts Processing Northboro Supervisors; Rhode Island Contact Center-All
Subject: Storm Update: Northboro On-Hold Safety Messages

Though weather conditions have cleared, storm damage remains.

While crews continue to work on power restoration and customers resume their normal day-to-day activities, it is important to keep safety in the forefront of our minds.

To that end, we are activating the following on-hold, safety messages as a reminder to customers:

As crews work to restore power, National Grid reminds customers about the following important information regarding safety during power outages:

- *Never touch fallen power lines or anything in contact with fallen wires such as a car, fence or tree.*
- *Disconnect sensitive appliances such as VCRs, DVDs, televisions, computers, and microwave ovens to avoid potential power surge damage when electricity is restored.*
- *Turn off any electrical equipment or appliances that were on when power went off, but leave one light on so you will know when power is restored.*
- *Keep refrigerator and freezer doors shut. Food will stay six to nine hours in a refrigerator without spoiling. Frozen foods will keep about 24 hours.*
- *If you choose to use a portable generator during a power outage you must make sure the main circuit breaker in your electric service panel box is in the OFF position or, in older electric service panel boxes, that the main fuse block is removed. This is necessary to prevent your generator's electricity from going back into the power lines in the street and potentially endangering the lives of line crews and other emergency workers. Generator exhaust contains deadly carbon monoxide – never run an electric generator inside your house.*

Please refer to these safety tips as needed when speaking with customers on the phone.

From: NBRO CS Communications
Sent: Saturday, December 13, 2008 4:15 PM
To: Northboro CSC Communications Ctr; Northboro CSC Team Leaders; Accounts Processing Northboro Reps; Accounts Processing Northboro Supervisors; Rhode Island Contact Center-All
Subject: Storm Update: New England - Providing Customers with Estimated Restoration Times

Attachments: Snap1.bmp



Snap1.bmp (644 KB)

Estimated restoration times are in the process of being populated in PowerOn.

While understanding our customers are anxious for information regarding when their power will be restored, it is important for us to set realistic expectations for them.

When providing customers with restoration time information, please reinforce that it is an 'estimate.' Field situations will be re-assessed daily to determine if restoration information needs to be revised.

We continue to make progress in restoring customers every hour, every day.

Please note, if you receive a call indicating wiring or equipment for which the customer is responsible sustained significant damage or has been pulled away from the building:

- Process an Electric Outage order to have the service de-energized and include the following comments: "Disconnect power/meter per [requestors name] and state the reason for the order"
- Communicate to the customer they need to contact a licensed electrician to repair the damage
- Advise the customer that in order for National Grid to restore power to the property, the customer will need to have the work inspected by a municipal wiring inspector

Attached image shows who is responsible for electrical system equipment. Please reference this information when speaking with customers.

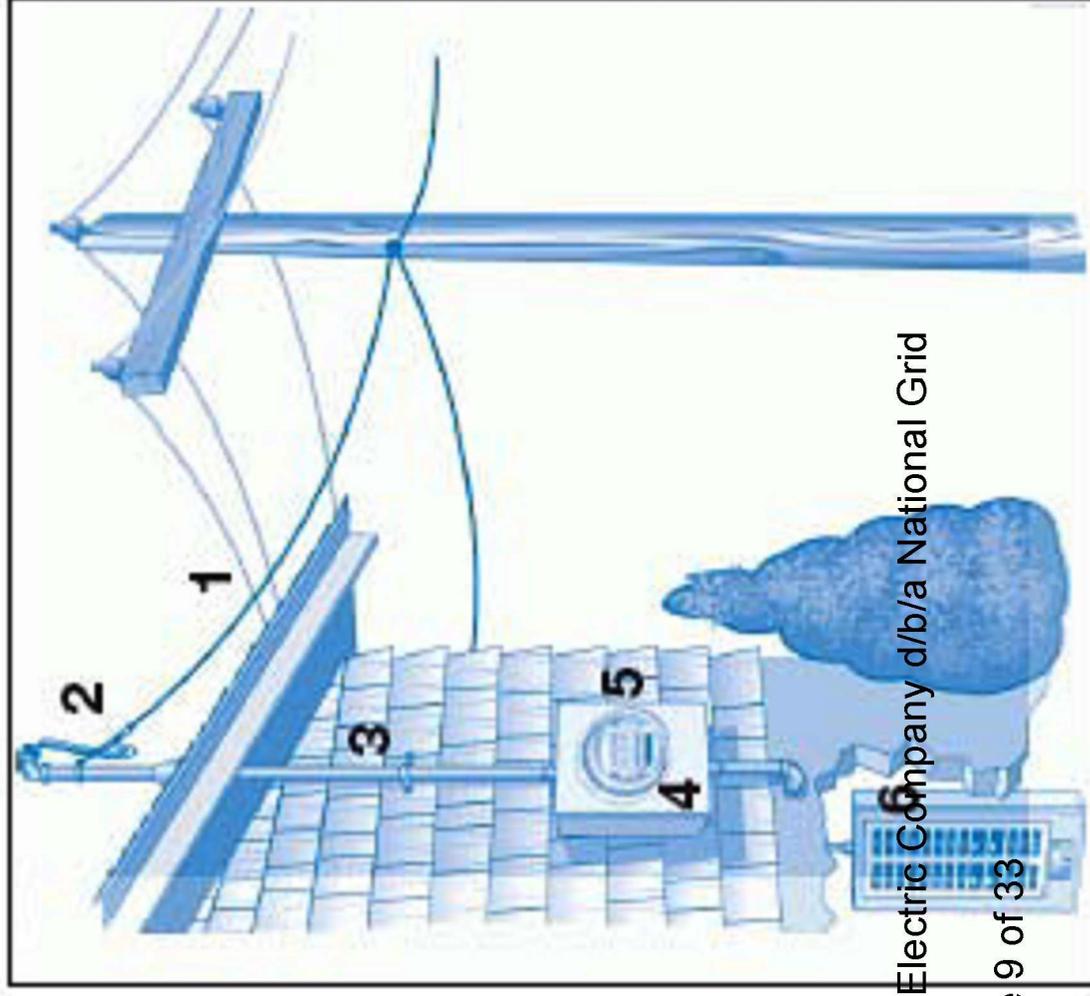
Your Responsibilities

Repairing Electrical Systems

We will repair overhead electrical lines that run from the utility pole to your residence (see #1 on diagram below). We will also maintain the electric meter (see #5), whether it's attached to the building on the outside or inside.

You must make repairs to other parts of your electrical system, including:

- Weatherhead and Insulator (see #2) at the point where electric lines connect to your residence.
- Service Entrance Cable (see #3) is the wire that runs from the weatherhead to the electric meter and from the electric meter to the service panel in your home.
- Meter Box (see #4) on which your electric meter is mounted.
- Main Service Panel (see #6) which includes the fuse boxes and/or circuit breakers for the electric service in your home.



Massachusetts Electric Company d/b/a National Grid
DPU 09-01-B
Exhibit 23-Page 9 of 33

From: Customer Service Communications
Sent: Saturday, December 13, 2008 5:32 PM
To: 'mkydd@ccsusa.com'; 'rdean@ccsusa.com'; 'jgallagher@ccsusa.com';
'acardoza@ccsusa.com'; 'cbyrne@ccsusa.com'; 'blocke@ccsusa.com';
'bmazzola@ccsusa.com'; 'rgrzymiski@ccsusa.com'
Cc: Concemi, Nancy
Subject: Storm Update: New England - Providing Customers with Estimated Restoration Times

Attachments: Snap1.bmp



Snap1.bmp (644 KB)

Estimated restoration times are in the process of being populated in PowerOn.

While understanding our customers are anxious for information regarding when their power will be restored, it is important for us to set realistic expectations for them.

When providing customers with restoration time information, please reinforce that it is an 'estimate.' Field situations will be re-assessed daily to determine if restoration information needs to be revised.

We continue to make progress in restoring customers every hour, every day.

Please note, if you receive a call indicating wiring or equipment for which the customer is responsible sustained significant damage or has been pulled away from the building:

- Process an Electric Outage order to have the service de-energized and include the following comments: "Disconnect power/meter per [requestors name] and state the reason for the order"
- Communicate to the customer they need to contact a licensed electrician to repair the damage
- Advise the customer that in order for National Grid to restore power to the property, the customer will need to have the work inspected by a municipal wiring inspector

Attached image shows who is responsible for electrical system equipment. Please reference this information when speaking with customers.

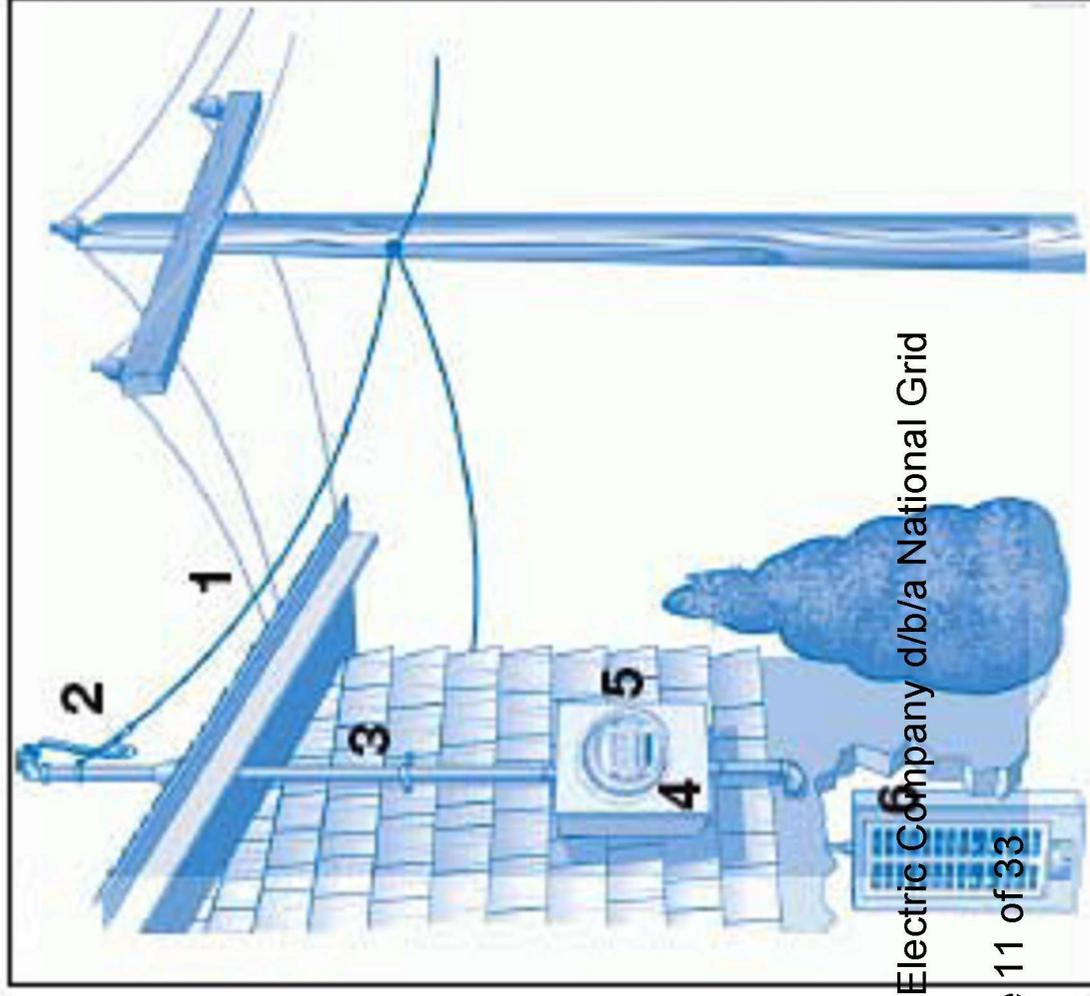
Your Responsibilities

Repairing Electrical Systems

We will repair overhead electrical lines that run from the utility pole to your residence (see #1 on diagram below). We will also maintain the electric meter (see #5), whether it's attached to the building on the outside or inside.

You must make repairs to other parts of your electrical system, including:

- Weatherhead and Insulator (see #2) at the point where electric lines connect to your residence.
- Service Entrance Cable (see #3) is the wire that runs from the weatherhead to the electric meter and from the electric meter to the service panel in your home.
- Meter Box (see #4) on which your electric meter is mounted.
- Main Service Panel (see #6) which includes the fuse boxes and/or circuit breakers for the electric service in your home.



Massachusetts Electric Company d/b/a National Grid
DPU 09-01-B
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Address http://poweb/portis_ne/CustomersOutByLocality.aspx?ComplexArea=-999 Go Links SnagIt

Geo Area Id	Geo Area Name	Number Of Customers Served	Number Of Customers Out Of Service	Percent Of Customers Out Of Service	Customer Calls	Estimated Restoration Date/Time
0282	ABINGTON	7,014	1	0.01 %	1	12/13/2008 18:30
0746	ACWORTH	163	15	9.20 %	6	
0518	ADAMS	4,655	12	0.26 %	3	12/15/2008 20:00
0744	ALSTEAD	843	96	11.39 %	18	
0065	AMESBURY	7,747	3,929	50.72 %	447	12/14/2008 18:00
0043	ANDOVER	13,413	2,036	15.18 %	488	12/15/2008 18:00
0301	ATHOL	5,625	4,919	87.45 %	279	12/15/2008 20:00
0271	ATTLEBORO	19,214	24	0.12 %	10	12/13/2008 20:45
0149	AUBURN	7,553	4,685	62.03 %	654	12/15/2008 20:00
0343	AYER	3,638	709	19.49 %	112	
0331	BARRE	2,384	2,384	100.00 %	156	12/15/2008 20:00
0622	BARRINGTON	6,732	1	0.01 %	1	12/13/2008 18:45
0183	BERLIN	1,236	377	30.50 %	105	12/13/2008 22:00
0081	BEVERLY	18,270	84	0.46 %	10	12/13/2008 18:30
0025	BILLERICA	16,010	1,371	8.56 %	294	12/15/2008 18:00
0182	BOLTON	1,823	947	51.95 %	216	12/15/2008 20:00
0045	BOXFORD	3,001	229	7.63 %	99	
0289	BRIDGEWATER	9,092	1	0.01 %	1	12/13/2008 15:00
0281	BROCKTON	37,169	47	0.13 %	20	12/13/2008 21:15
0441	BROOKFIELD	1,649	268	16.25 %	14	
0754	CANAAN	1,229	14	1.14 %	9	
0501	CHARLEMONT	791	123	15.55 %	41	12/15/2008 20:00
0745	CHARLESTOWN	1,388	35	2.52 %	11	
0376	CHARLTON	5,366	3,928	73.20 %	479	12/15/2008 20:00
0023	CHELMSFORD	15,380	5,650	36.74 %	951	12/15/2008 18:00
0512	CHESHIRE	1,639	69	4.21 %	35	12/16/2008 20:00
0351	CLINTON	6,755	3,553	52.60 %	285	12/15/2008 20:00
0612	COVENTRY	15,109	1	0.01 %	1	12/13/2008 15:30

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0351	CLINTON	6,755	3,553	52.60 %	285	12/15/2008 20:00
0612	COVENTRY	15,109	1	0.01 %	1	12/13/2008 15:30
0702	DERRY	114	114	100.00 %	14	
0022	DRACUT	12,554	5,055	40.27 %	730	12/14/2008 18:00
0383	DUDLEY	4,788	4	0.08 %	4	
0362	DUNSTABLE	1,187	555	46.76 %	59	
0287	EAST BRIDGEWATER	5,374	1	0.02 %	1	12/13/2008 14:15
0442	EAST BROOKFIELD	1,085	59	5.54 %	28	
0609	EAST GREENWICH	5,836	7	0.12 %	2	12/13/2008 14:00
0603	EAST PROVIDENCE	21,944	1	0.00 %	1	12/13/2008 19:00
0753	ENFIELD	2,280	34	1.49 %	11	
0305	ERVING	411	91	22.14 %	16	12/15/2008 20:00
0514	FLORIDA	410	409	99.76 %	72	12/14/2008 20:00
0132	FOXBOROUGH	7,415	8	0.11 %	5	12/13/2008 17:00
0321	GARDNER	9,739	9,743	100.04 %	659	12/14/2008 20:00
0091	GLOUCESTER	16,001	1	0.01 %	1	
0542	GOSHEN	628	295	46.97 %	28	12/15/2008 12:00
0148	GRAFTON	7,825	100	1.28 %	56	
0515	HANCOCK	708	155	21.89 %	10	12/15/2008 12:00
0755	HANOVER	3,403	63	1.85 %	38	
0422	HARDWICK	1,386	16	1.15 %	3	12/15/2008 20:00
0353	HARVARD	2,219	1,918	86.44 %	464	12/14/2008 20:00
0061	HAVERHILL	26,825	5,564	20.74 %	1,025	12/15/2008 18:00
0502	HAWLEY	208	200	96.15 %	32	12/16/2008 20:00
0503	HEATH	583	467	80.10 %	72	12/16/2008 20:00
0374	HOLLAND	1,458	1	0.07 %	1	
0323	HUBBARDSTON	1,854	1,854	100.00 %	308	12/15/2008 20:00
0352	LANCASTER	2,899	2,476	85.41 %	348	12/15/2008 20:00
0041	LAWRENCE	26,917	1,722	6.40 %	250	12/15/2008 18:00
0751	LEBANON	7,537	42	0.56 %	30	

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0352	LANCASTER	2,899	2,476	85.41 %	348	12/15/2008 20:00
0041	LAWRENCE	26,917	1,722	6.40 %	250	12/15/2008 18:00
0751	LEBANON	7,537	42	0.56 %	30	
0192	LEICESTER	4,522	2,696	59.62 %	387	12/15/2008 20:00
0581	LENOX	3,024	1	0.03 %	1	12/14/2008 23:00
0341	LEOMINSTER	18,671	5,803	31.08 %	712	12/14/2008 20:00
0021	LOWELL	40,941	7,563	18.47 %	975	12/14/2008 18:00
0181	MARLBOROUGH	18,066	326	1.80 %	113	12/13/2008 22:00
0042	METHUEN	19,518	5,799	29.71 %	961	12/15/2008 18:00
0147	MILLBURY	6,002	851	14.18 %	177	
0517	MONROE	86	7	8.14 %	3	12/14/2008 20:00
0412	MONSON	3,746	1	0.03 %	1	
0574	MONTEREY	909	148	16.28 %	26	12/14/2008 23:23
0335	NEW BRAintree	435	429	98.62 %	24	12/15/2008 20:00
0576	NEW MARLBORO	1,143	15	1.31 %	8	12/14/2008 23:00
0308	NEW SALEM	500	344	68.80 %	100	12/14/2008 20:00
0063	NEWBURY	3,262	133	4.08 %	9	
0062	NEWBURYPORT	9,454	376	3.98 %	62	
0511	NORTH ADAMS	7,088	14	0.20 %	2	12/14/2008 20:00
0044	NORTH ANDOVER	11,862	2,535	21.37 %	206	12/14/2008 18:00
0443	NORTH BROOKFIELD	2,228	1,798	80.70 %	194	12/15/2008 20:00
0541	NORTHAMPTON	14,223	4	0.03 %	3	12/14/2008 22:00
0184	NORTHBOROUGH	5,965	411	6.89 %	125	12/13/2008 22:00
0272	NORTON	7,320	20	0.27 %	17	12/13/2008 14:00
0334	OAKHAM	938	938	100.00 %	28	12/15/2008 20:00
0303	ORANGE	3,973	2,118	53.31 %	204	12/15/2008 20:00
0382	OXFORD	6,095	1,229	20.16 %	189	12/15/2008 20:00
0704	PELHAM	5,087	4,488	88.22 %	683	12/15/2008 18:00
0361	PEPPERELL	4,685	2,556	54.56 %	539	12/14/2008 20:00
0332	PETERSHAM	631	631	100.00 %	95	12/15/2008 20:00

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0382	OXFORD	6,095	1,229	20.16 %	189	12/15/2008 20:00
0704	PELHAM	5,087	4,488	88.22 %	683	12/15/2008 18:00
0361	PEPPERELL	4,685	2,556	54.56 %	539	12/14/2008 20:00
0332	PETERSHAM	631	631	100.00 %	95	12/15/2008 20:00
0324	PHILLIPSTON	899	899	100.00 %	144	12/14/2008 20:00
0759	PLAINFIELD	550	21	3.82 %	14	
0123	RANDOLPH	12,320	1	0.01 %	1	12/13/2008 14:00
0273	REHOBOTH	4,820	4	0.08 %	4	12/13/2008 21:30
0504	ROWE	245	130	53.06 %	40	12/15/2008 20:00
0302	ROYALSTON	684	555	81.14 %	112	12/15/2008 20:00
0333	RUTLAND	3,224	3,225	100.03 %	389	12/15/2008 20:00
0701	SALEM	13,769	6,260	45.46 %	830	12/14/2008 18:00
0066	SALISBURY	4,887	469	9.60 %	110	12/14/2008 18:00
0274	SEEKONK	6,242	4	0.06 %	4	12/13/2008 14:00
0342	SHIRLEY	2,675	1,637	61.20 %	324	12/15/2008 20:00
0307	SHUTESBURY	861	861	100.00 %	149	12/15/2008 20:00
0185	SOUTHBOROUGH	3,982	18	0.45 %	10	12/13/2008 22:00
0371	SOUTHBRIDGE	7,984	1	0.01 %	1	
0431	SPENCER	5,701	1,204	21.12 %	175	12/14/2008 20:00
0136	STOUGHTON	11,896	582	4.89 %	54	12/13/2008 20:00
0375	STURBRIDGE	4,626	71	1.53 %	41	12/14/2008 20:00
0749	SURRY	28	28	100.00 %	7	12/12/2008 16:00
0145	SUTTON	3,844	496	12.90 %	94	
0024	TEWKSBURY	11,850	1,816	15.32 %	410	
0027	TYNGSBOROUGH	4,742	2,586	54.53 %	462	12/14/2008 18:00
0153	UPTON	2,990	1	0.03 %	1	12/13/2008 14:00
0372	WALES	986	1	0.10 %	1	
0741	WALPOLE	1,650	215	13.03 %	58	12/12/2008 16:00
0413	WARREN	2,329	168	7.21 %	17	
0304	WARWICK	422	422	100.00 %	69	12/15/2008 20:00

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0375	STURBRIDGE	4,626	71	1.53 %	41	12/14/2008 20:00
0749	SURRY	28	28	100.00 %	7	12/12/2008 16:00
0145	SUTTON	3,844	496	12.90 %	95	
0024	TEWKSBURY	11,850	1,816	15.32 %	410	
0027	TYNGSBOROUGH	4,742	2,587	54.56 %	464	12/14/2008 18:00
0153	UPTON	2,990	1	0.03 %	1	12/13/2008 14:00
0372	WALES	986	1	0.10 %	1	
0741	WALPOLE	1,650	215	13.03 %	58	12/12/2008 16:00
0413	WARREN	2,329	168	7.21 %	17	
0605	WARWICK	40,617	1	0.00 %	1	12/13/2008 14:00
0304	WARWICK	422	422	100.00 %	70	12/15/2008 20:00
0381	WEBSTER	8,703	1	0.01 %	1	
0306	WENDELL	472	399	84.53 %	65	12/15/2008 20:00
0444	WEST BROOKFIELD	1,862	201	10.79 %	17	12/14/2008 20:00
0639	WEST GREENWICH	2,648	3	0.11 %	3	12/13/2008 19:30
0064	WEST NEWBURY	1,677	99	5.90 %	35	
0579	WEST STOCKBRIDGE	975	11	1.13 %	3	12/14/2008 23:00
0186	WESTBOROUGH	7,873	43	0.55 %	30	12/13/2008 22:00
0026	WESTFORD	8,803	5,612	63.75 %	997	12/15/2008 18:00
0322	WESTMINSTER	3,212	3,078	95.83 %	454	12/14/2008 20:00
0543	WILLIAMSBURG	1,416	4	0.28 %	2	
0311	WINCHENDON	4,298	1,397	32.50 %	175	12/14/2008 20:00
0703	WINDHAM	1,065	1,062	99.72 %	121	
0191	WORCESTER	74,632	21,457	28.75 %	3,206	12/15/2008 20:00
0134	WRENTHAM	4,596	1	0.02 %	1	12/13/2008 14:00
		860,511	162,778	18.92 %	23,522	12/16/2008 20:00

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From: NBRO CS Stormroom
Sent: Sunday, December 14, 2008 9:56 AM
To: Northboro CSC Communications Ctr; Northboro CSC Team Leaders; Accounts Processing Northboro Reps; Accounts Processing Northboro Supervisors; Robbins, Charles; Reyes, Miriam; Kaufman, Eric; Labrecque, Holly; Bourgeois, Marilyn; Morancey, Maureen; Lyon, Jo-Ann; Pope, Julette; Mack, Troy; Valerio, Marielis; Duffy, Jane; Londono, Stella; Conboy, Patrick J.
Subject: Great Job

We want to thank all of you for all of your hard work and willingness to assist us and our customers during this emergency. You have exemplified tremendous teamwork and your efforts are greatly appreciated.

We are all working very long hours to assist our customers and are tired. Please keep in mind that many customers have been without power for four days now. It is especially important to continue to be empathetic to our customers and assure them that we are doing everything that we can to restore their power as quickly and safely as possible.

As crews work to restore power, be certain to remind customers about the following important information regarding safety during power outages:

- Never touch fallen power lines or anything in contact with fallen wires such as a car, fence or tree.
- Disconnect sensitive appliances such as VCRs, DVDs, televisions, computers, and microwave ovens to avoid potential power surge damage when electricity is restored.
- Turn off any electrical equipment or appliances that were on when power went off, but leave one light on so you will know when power is restored.
- Keep refrigerator and freezer doors shut. Food will stay six to nine hours in a refrigerator without spoiling. Frozen foods will keep about 2-4 hours.
- If you choose to use a portable generator during a power outage you must make sure the main circuit breaker in your electric service panel box is in the OFF position or, in older electric service panel boxes, that the main fuse block is removed. This is necessary to prevent your generator's electricity from going back into the power lines in the street and potentially endangering the lives of line crews and other emergency workers. Generator exhaust contains deadly carbon monoxide – never run an electric generator inside your house.

From: NBRO CS Communications
Sent: Sunday, December 14, 2008 11:56 AM
To: Northboro CSC Communications Ctr; Northboro CSC Team Leaders; Accounts Processing Northboro Reps; Accounts Processing Northboro Supervisors; Robbins, Charles; Reyes, Miriam; Kaufman, Eric; Labrecque, Holly; Bourgeois, Marilyn; Morancey, Maureen; Lyon, Jo-Ann; Pope, Julette; Mack, Troy; Valerio, Marielis; Duffy, Jane; Londono, Stella; Conboy, Patrick J.; Moran, Rita A.
Subject: Upfront Messaging- Communication
Importance: High

Below is the recorded upfront message and a list of the towns and current ETRS.

*"Due to the storm which caused significant wide spread damage, our crews are working & will continue to work as safely & quickly as possible until all customers have been restored.
Estimation times for (list town) are (provide time)
These estimated are based on the latest information available. Some towns may be restored earlier than the estimated times provided or later if repair work is more difficult than previously anticipated. We thank you for your patience."*

Granite State:

Sunday Evening

Salem

Monday Evening

Pelham

No ETR

Alstead

Derry

Enfield

Hanover

Walpole

Windam Surry

Merrimack Valley

Sunday Evening

Amesbury

Dracut

Lowell

North Andover

Salisbury

Tewksbury

Tyngsborough

Monday Evening

Andover

Billerica

Chelmsford

Haverhill

Lawrence

Methuen

Westford

No ETR

Boxford

Newbury

Newburyport

West Newbury

Central Mass Area Message: General message about our commitment to restoring service as safely and quickly as possible. No specific ETRs or towns are mentioned as there are too many affected to list

South Shore

No ETR

Brockton

South East

Sunday Evening

Attelboro

Northboro

Marlboro

Western

Monday Evening

Goshen

Tuesday Afternoon

Charlemont

Hancock

Florida

Tuesday Evening

Cheshire

Hawley

Heath

Rowe

From: NBRO CS Communications
Sent: Sunday, December 14, 2008 4:43 PM
To: Northboro CSC Communications Ctr; Northboro CSC Team Leaders; Accounts Processing Northboro Reps; Accounts Processing Northboro Supervisors; Robbins, Charles; Reyes, Miriam; Kaufman, Eric; Labrecque, Holly; Bourgeois, Marilyn; Morancey, Maureen; Lyon, Jo-Ann; Pope, Julette; Mack, Troy; Valerio, Marielis; Duffy, Jane; Londono, Stella
Subject: Field Work Information
Importance: High

Important: Due to ongoing service restoration efforts, please do not schedule any field related orders until Thursday, December 18.

All electric meter reading within NE will be estimated for Monday and Tuesday. The scheduled meter reading cycles are 12 & 13. In addition some routes from Friday (cycle 11), and portions of unfinished routes from Thursday (cycle 10) will also be estimated.

Since CSS does not automatically produce read requests; absolutely **no** orders for reads should be generated.

From: Customer Service Communications
Sent: Sunday, December 14, 2008 6:30 PM
To: Accounts Processing Northboro Supervisors; Barker, Tom; Beattie, Cathy A.; Billing Analysis & System Support; Billing Project Management & Services; Brian Sullivan; Camasso, Mark A.; Cameron, Daniel A.; Cardoza, Anthony; Cavaliere, Frank; Corrington, Wilbur; Customer Contact Support; Customer Policy & Satisfaction; Dean, Dick; DeBergalis, Deborah A.; Denny, Virginia; Di Chiara, Rocco; Doherty, Maura P.; Donahue, Thomas D.; Dyas, Bruce; Enis, Paul J.; Fitzpatrick, Jill M.; Freeman, Edward J.; Gallagher, Jean; Gaul, Gail; Gilberti, Kim M.; Griffiths, Juliana C.; Grzymiski, Robin; Guerin, Michael; Haynes, Douglas H.; Jack Andrews; Jennifer Stanek; Joan Jerz; Karee Hagan; Kelly, Kevin; Kiley, Lisa M.; Kydd, Matt; Laura, Donna Marie; Luongo, Carmine C.; Martin, Jeff (USNY - Syracuse - Dir Billing & Systems); Masiello, Anna W.; Mazzola, Barbara; Morin, Jeffrey I.; Northboro Billing & Systems; Northboro Collections; Northboro CSC Communications Ctr; Podhaski, Michelle; Quatrino, Courtney ; Raphael, Marie D.; Rice, Adam; ROBINS, David J; Shaw, Kerrie; Shea, Kathleen P.; Sousa, Karen; Stanton, Rene; Sullivan, Brian; Tibbets, Gary W.; Wagner, Douglas E.; Wheeler, Robin M. (USNY, CMS Syracuse); Yameen, George; Accounts Processing Northboro Reps; Accounts Processing Syracuse Supervisors; Andrews, Jack ; Atwood, Amy T.; Barker, Darren; Barker, Laura; Barrett, Amanda; Bianchetti, Alberto; Brady, Stephen F.; Burns, Kerry P.; Christensen, Lynette A.; Concemi, Nancy; Cummings, Claire D.; Hayes, Julie A.; Hill, Kathleen P.; Hills, Lisa; Jamison, Steve; Marion, Richard J.; McCulley, John M.; Overdyk, Theresa M.; Powers, John T.; Scallon, Leo; Seifert, Todd; Sierotnik, John J.; Stanton, Renee; STANTON, ROBIN; Stella, Patrick; Systems Consolidation Team; US COLL-Admin & Consumer Advocacy; US COLL-Management; Weber, Patrick; US COLL-Mainstream; Accounts Processing Syracuse Reps
Subject: National Grid Contributes \$225,000 to American Red Cross
Attachments: nr121408_rc.pdf

Customer Contact Support
Communications

Target Audience: Northboro, Syracuse, Niagara Falls Contact Centers & Accounts Processing kr

National Grid is donating \$225,000 to the American Red Cross to support the organization's relief efforts in the areas devastated by the ice storm that began late Thursday evening. Approximately 550,000 National Grid customers in New England and Eastern New York initially lost power as a result of the storm, which ripped through the Northeastern U.S., leaving a swath of destruction from ice-laden trees and power lines in its wake.

The press release from Corporate Communications is attached above.

From: NBRO CS Communications
Sent: Sunday, December 14, 2008 6:45 PM
To: Northboro CSC Communications Ctr; Northboro CSC Team Leaders; Accounts Processing Northboro Reps; Accounts Processing Northboro Supervisors; Robbins, Charles; Reyes, Miriam; Kaufman, Eric; Labrecque, Holly; Bourgeois, Marilyn; Morancey, Maureen; Lyon, Jo-Ann; Pope, Julette; Mack, Troy; Valerio, Marielis; Duffy, Jane; Londono, Stella; Conboy, Patrick J.; Moran, Rita A.
Subject: Storm Update

December 14, 2008 - STORM UPDATE - (4:00 PM - Sunday)

As of 4 p.m., National Grid has restored power to approximately 205,000 homes and businesses in New England that lost service as a result of the ice storm that struck on Thursday and Friday. The storm initially affected more than 325,000 homes and businesses in the region. The affected area in National Grid's service territory stretches from the New York/Massachusetts border in the west, through central Massachusetts, northward through the Merrimack Valley and into New Hampshire.

The company continues to return service to customers hourly. Along side roads and in rural areas the devastation is extensive. Restoration work in these areas will continue into Tuesday and Wednesday. Restoration in more isolated and devastated areas will take longer.

Massachusetts:

- Approximately 111,000 customers remain without power

New Hampshire:

- Approximately 8,500 customers remain without power

Resources:

- 900 line and tree crews have been mobilized
- An additional 1,300 employees performing support functions behind the scenes. National Grid crews working in New England also have been joined by utility and contractor crews from Michigan, Ohio, Pennsylvania, Maryland, Illinois, North Carolina, Tennessee and Virginia.

PLEASE REMIND CUSTOMERS OF THESE IMPORTANT SAFETY MESSAGES:

Two deaths associated with the improper ventilating of generators have been reported. Please remind customers that generators

MUST be properly ventilated.

· If you choose to use a portable generator during a power outage you must make sure the main circuit breaker in your electric service panel box is in the

OFF position or, in older electric service panel boxes, that the main fuse block is removed. This is necessary to prevent your generator's electricity from going back into the power lines in the street and potentially endangering the lives of line crews and other emergency workers. Generator exhaust contains deadly carbon monoxide – **never** run an electric generator inside your house.

- Never touch fallen power lines or anything in contact with fallen wires such as a car, fence or tree.
- Assume any lines that are down are live electric lines and call 911 immediately.

From: NBRO CS Communications
Sent: Monday, December 15, 2008 10:39 AM
To: Northboro CSC Communications Ctr; Northboro CSC Team Leaders; Accounts Processing Northboro Reps; Accounts Processing Northboro Supervisors; Rhode Island Contact Center-All
Subject: New England Storm Update - Outbound called placed to customer with scheduled non-emergency orders

An outbound call was placed to customers who had non-outage related service orders scheduled for today.

Due to the storm emergency, outage restoration will take priority.

Below is the recorded message impacted customers will hear:

"We apologize that your service order will need to be rescheduled. While we continue to have emergency personnel in all regions most of our technicians are continuing to work around the clock to restore power in the New England region as a result of the ice storm. To reschedule your order, contact us at 1-800-322-3223 after Thursday, December 18th, and one of our customer service representatives will be happy to assist you.

We apologize for this inconvenience and thank you for your patience and understanding."

Please note, **Connect orders will be completed as scheduled.**

From: NBRO CS Communications
Sent: Tuesday, December 16, 2008 5:15 PM
To: Northboro CSC Communications Ctr; Northboro CSC Team Leaders; Accounts Processing Northboro Reps; Bourgeois, Marilyn; Duffy, Jane; Kaufman, Eric; Londono, Stella; Lyon, Jo-Ann; Mack, Troy; Morancey, Maureen; Pope, Julette; Power, Brenda; Reyes, Miriam; Robbins, Charles; Valerio, Marielis; Accounts Processing Northboro Supervisors; Legg, David J; Maddox, Regina; Bell, Susan D.; Corbosiero, Jodi; Vaclavik, Joanne M.; Blood, Andrea D.; Thompson, Annette (US-MA Cust Svc); Kellogg, Nancy; Edstrom, Kimberly; Kunst, Kenneth J.; Smart, Susanne K.; O'Neil, Jane D.; Daley, Grace P.
Subject: Thank You!

We wanted to take some time to thank all of you for your hard work and support to us and our customers during this monumental storm. We are so proud of all of you and the teamwork that you've continuously shown. We realize that working long hours and more days is an interruption to your life and time away from your families.

We can't say enough how much that we appreciate all that you're doing and the sacrifices that you're making.

Thank you,

Nancy

From: NBRO CS Communications
Sent: Wednesday, December 17, 2008 11:19 AM
To: Northboro CSC Communications Ctr; Northboro CSC Team Leaders; Accounts Processing Northboro Reps; Bourgeois, Marilyn; Duffy, Jane; Kaufman, Eric; Londono, Stella; Lyon, Jo-Ann; Mack, Troy; Morancey, Maureen; Pope, Julette; Power, Brenda; Reyes, Miriam; Robbins, Charles; Valerio, Marielis; Accounts Processing Northboro Supervisors
Subject: Storm Update - Northborough...Driving Safely and Fatigue

We are now into Day-6 of the storm restoration efforts. Everyone continues doing a tremendous job assisting our customers. Thank You.

Please be mindful that extended hours can bring with it fatigue. Remember, your safety is our number one priority.

We urge you to exercise caution when driving, especially during inclement weather.

If you feel like you are too tired to drive, please see Betty, Bonnie or Karen.

From: NBRO CS Communications
Sent: Wednesday, December 17, 2008 4:44 PM
To: Northboro CSC Communications Ctr; Northboro CSC Team Leaders; Accounts Processing Northboro Reps; Bourgeois, Marilyn; Duffy, Jane; Kaufman, Eric; Londono, Stella; Lyon, Jo-Ann; Mack, Troy; Morancey, Maureen; Pope, Julette; Power, Brenda; Reyes, Miriam; Robbins, Charles; Valerio, Marielis; Accounts Processing Northboro Supervisors
Subject: Storm Update - Single Customer Outages

Currently, we have identified approximately two thousand **individual** customers without service. Many of these customers have service wires or meter sockets that have separated from their homes. As we continue to restore larger outages, additional damaged individual services may be discovered.

We are implementing a specialized team **immediately** to focus on individual services:

- A team of people has been going home to home to determine whether or not a National Grid crew can repair the customer's service. This work will continue until each service is inspected by National Grid.
- If a National Grid crew can repair the service, the order will be dispatched to a crew and the service will be repaired.
- If the repair cannot take place until a licensed electrician repairs the customer's wiring, the customer will be made aware of their individual situation either face to face or we will leave a door card instructing the customer of what they need to do.
- After the customer has an electrician repair their service, they are required to have the work inspected by the Town/City Wiring Inspector.

When the Town/City Wiring Inspector calls to clear the work:

- Send an Electric Outage order with the **Power Condition, "No Lights"**, if the area is without power
- Put the following comments of the Electric Outage order, "Service line damage and electrical work completed. OK to reconnect per Name of Inspector & ID Number."
- Please note: the **Power Condition would be "Lights"**, if the rest of the area has been restored and the only thing preventing this customer from having power is the service line being pulled off of the house.

This phase of work is now underway and is expected to continue through the day tomorrow and Friday, if necessary.

From: NBRO CS Communications
Sent: Wednesday, December 17, 2008 5:42 PM
To: Northboro CSC Communications Ctr; Northboro CSC Team Leaders; Accounts Processing Northboro Reps; Bourgeois, Marilyn; Duffy, Jane; Kaufman, Eric; Londono, Stella; Lyon, Jo-Ann; Mack, Troy; Morancey, Maureen; Pope, Julette; Power, Brenda; Reyes, Miriam; Robbins, Charles; Valerio, Marielis; Accounts Processing Northboro Supervisors
Subject: Storm Update: Purpose of Outbound Calls is to Identify Customers Still Without Power

When crews restore service to a feeder, this should restore power to all customers served by that feeder, provided there is no other damage to the customer's individual service wires and/or meter sockets.

As feeders are repaired, the company is making outbound calls to affected customers as a way to identify those customers that still may be without power. If you receive a call from a customer who received such an outbound call, and still have no power, please issue an 'Electric Outage' order.

Field personnel will then be able to assess the individual impacted account to determine what the customer needs to have power restored.

From: NBRO CS Communications
Sent: Friday, December 19, 2008 9:00 AM
To: 'mkydd@ccsusa.com'; 'rdean@ccsusa.com'; 'jgallagher@ccsusa.com'; 'acardoza@ccsusa.com'; 'cbyrne@ccsusa.com'; 'blocke@ccsusa.com'; 'bmazzola@ccsusa.com'; 'rgrzynski@ccsusa.com'
Cc: Concemi, Nancy; Tatro, Bonnie; Rocha, Elizabeth; Kazmierczak, Karen; Iacono, Lori; Rivera, Kimberly; NBRO CS Communications
Subject: Effective 9:00 am on Friday, December 19th - Outages and ETRs

Below is a list of updated cities/towns still experiencing power outages and the **estimated** restoration times.

Updated information will be provided to you throughout the day.

Effective 9:00 am on Friday, December 19

<u>Geo Area Id</u>	<u>Geo Area Name</u>	<u>Number Of Customers Served</u>	<u>Number Of Customers Out Of Service</u>	<u>Percent Of Customers Out Of Service</u>	<u>Customer Calls</u>	<u>Estimated Restoration Date/Time</u>
0065	AMESBURY	7,750	1	0.01 %	1	12/19/2008 08:00
0043	ANDOVER	13,414	4	0.03 %	3	12/19/2008 17:00
0301	ATHOL	5,628	21	0.37 %	21	12/19/2008 23:30
0149	AUBURN	7,557	16	0.21 %	7	12/19/2008 09:00
0343	AYER	3,637	23	0.63 %	12	12/19/2008 17:00
0331	BARRE	2,385	46	1.93 %	40	12/19/2008 09:00
0183	BERLIN	1,236	9	0.73 %	7	
0025	BILLERICA	16,011	2	0.01 %	2	12/19/2008 17:00
0182	BOLTON	1,824	12	0.66 %	8	12/19/2008 10:00
0045	BOXFORD	3,003	1	0.03 %	1	12/19/2008 17:00
0376	CHARLTON	5,370	143	2.66 %	40	12/20/2008 20:00
0023	CHELMSFORD	15,382	19	0.12 %	19	12/19/2008 17:00
0351	CLINTON	6,758	1	0.01 %	1	12/19/2008 09:00
0022	DRACUT	12,557	2	0.02 %	2	12/19/2008 17:00
0383	DUDLEY	4,794	34	0.71 %	22	12/19/2008 09:00
0362	DUNSTABLE	1,187	1	0.08 %	1	12/19/2008 09:00
0442	EAST BROOKFIELD	1,065	2	0.19 %	2	12/19/2008 10:00
0305	ERVING	412	1	0.24 %	1	12/19/2008 23:30
0262	FALL RIVER	42,878	1	0.00 %	1	12/19/2008 11:30
0321	GARDNER	9,744	125	1.28 %	49	12/19/2008 20:00
0148	GRAFTON	7,824	13	0.17 %	13	12/19/2008 09:00
0422	HARDWICK	1,390	1	0.07 %	1	
0353	HARVARD	2,219	12	0.54 %	11	

0061	HAVERHILL	26,855	7	0.03 %	7	12/19/2008 17:00
0502	HAWLEY	208	1	0.48 %	1	12/19/2008 12:59
0503	HEATH	583	31	5.32 %	1	12/19/2008 20:15
0323	HUBBARDSTON	1,854	438	23.62 %	105	12/19/2008 23:00
0352	LANCASTER	2,899	12	0.41 %	12	12/19/2008 23:30
0041	LAWRENCE	26,959	2	0.01 %	2	12/19/2008 17:00
0192	LEICESTER	4,523	838	18.53 %	283	12/19/2008 16:00
0341	LEOMINSTER	18,682	102	0.55 %	46	12/19/2008 23:30
0021	LOWELL	40,973	15	0.04 %	15	12/19/2008 17:00
0042	METHUEN	19,521	12	0.06 %	6	12/19/2008 17:00
0147	MILLBURY	6,009	44	0.73 %	33	12/19/2008 10:00
0335	NEW BRAINTREE	435	4	0.92 %	2	
0308	NEW SALEM	499	36	7.21 %	10	12/19/2008 23:30
0063	NEWBURY	3,262	1	0.03 %	1	12/19/2008 17:00
0044	NORTH ANDOVER	11,864	2	0.02 %	2	12/19/2008 17:00
0443	NORTH BROOKFIELD	2,232	12	0.54 %	9	12/19/2008 16:00
0334	OAKHAM	938	174	18.55 %	25	12/19/2008 23:30
0303	ORANGE	3,972	38	0.96 %	36	12/19/2008 23:30
0382	OXFORD	6,103	73	1.20 %	23	12/20/2008 20:00
0361	PEPPERELL	4,689	44	0.94 %	28	12/19/2008 09:00
0332	PETERSHAM	631	41	6.50 %	35	12/19/2008 09:00
0324	PHILLIPSTON	899	56	6.23 %	34	12/19/2008 23:30
0302	ROYALSTON	684	54	7.89 %	20	
0333	RUTLAND	3,225	236	7.32 %	97	12/19/2008 23:30
0342	SHIRLEY	2,675	41	1.53 %	16	12/19/2008 23:30
0307	SHUTESBURY	861	211	24.51 %	17	
0371	SOUTHBRIDGE	7,998	1	0.01 %	1	
0431	SPENCER	5,703	133	2.33 %	49	12/19/2008 20:00
0375	STURBRIDGE	4,630	5	0.11 %	5	12/19/2008 12:00
0145	SUTTON	3,842	38	0.99 %	35	12/19/2008 09:00
0024	TEWKSBURY	11,851	1	0.01 %	1	12/19/2008 17:00
0027	TYNGSBOROUGH	4,742	5	0.11 %	5	12/19/2008 17:00
0413	WARREN	2,327	1	0.04 %	0	
0304	WARWICK	422	59	13.98 %	28	12/19/2008 23:30
0605	WARWICK	40,638	2	0.00 %	2	12/19/2008 10:45
0381	WEBSTER	8,713	1	0.01 %	1	
0306	WENDELL	472	16	3.39 %	15	12/19/2008 21:00
0444	WEST BROOKFIELD	1,861	2	0.11 %	2	
0064	WEST NEWBURY	1,678	1	0.06 %	1	12/19/2008 17:00
0026	WESTFORD	8,803	4	0.05 %	4	12/19/2008 17:00

0322	WESTMINSTER	3,210	339	10.56 %	122	12/19/2008 23:00
0311	WINCHENDON	4,299	88	2.05 %	61	12/19/2008 20:00
0191	WORCESTER	74,659	1,459	1.95 %	681	12/19/2008 23:30
-	-	551,908	5,170	0.94 %	2,144	12/20/2008 20:00

From: NBRO CS Communications
Sent: Friday, December 19, 2008 12:04 PM
To: 'mkydd@ccsusa.com'; 'rdean@ccsusa.com'; 'jgallagher@ccsusa.com'; 'acardoza@ccsusa.com'; 'cbyrne@ccsusa.com'; 'blocke@ccsusa.com'; 'bmazzola@ccsusa.com'; 'rgrzynski@ccsusa.com'
Cc: Concemi, Nancy; Tatro, Bonnie; Rocha, Elizabeth; Kazmierczak, Karen; Iacono, Lori; Rivera, Kimberly; NBRO CS Communications
Subject: Effective 12:00 pm on Friday, December 19th - Outages and ETRs

Below is a list of updated cities/towns still experiencing power outages and the **estimated** restoration times.

Updated information will be provided to you throughout the day.

Effective 12:00 pm on Friday, December 19

<u>Geo Area Id</u>	<u>Geo Area Name</u>	<u>Number Of Customers Served</u>	<u>Number Of Customers Out Of Service</u>	<u>Percent Of Customers Out Of Service</u>	<u>Customer Calls</u>	<u>Estimated Restoration Date/Time</u>
0282	ABINGTON	7,016	8	0.11 %	2	12/19/2008 14:00
0043	ANDOVER	13,414	4	0.03 %	3	12/19/2008 17:00
0301	ATHOL	5,628	21	0.37 %	21	12/20/2008 23:45
0149	AUBURN	7,557	17	0.22 %	8	12/20/2008 23:45
0343	AYER	3,637	34	0.93 %	10	12/19/2008 23:45
0331	BARRE	2,385	46	1.93 %	40	12/20/2008 01:00
0183	BERLIN	1,236	3	0.24 %	4	
0182	BOLTON	1,824	8	0.44 %	6	12/19/2008 23:45
0045	BOXFORD	3,003	1	0.03 %	1	12/19/2008 17:00
0376	CHARLTON	5,370	50	0.93 %	27	12/19/2008 23:45
0023	CHELMSFORD	15,382	422	2.74 %	121	12/19/2008 17:00
0351	CLINTON	6,758	1	0.01 %	1	12/19/2008 23:45
0383	DUDLEY	4,794	31	0.65 %	19	12/20/2008 01:00
0362	DUNSTABLE	1,187	2	0.17 %	2	12/19/2008 23:45
0442	EAST BROOKFIELD	1,065	7	0.66 %	4	12/20/2008 01:00
0305	ERVING	412	1	0.24 %	1	12/20/2008 23:45
0131	FRANKLIN	12,577	23	0.18 %	5	12/19/2008 13:45
0321	GARDNER	9,744	140	1.44 %	49	12/20/2008 23:45
0091	GLOUCESTER	16,016	1	0.01 %	1	12/19/2008 13:30
0148	GRAFTON	7,824	15	0.19 %	9	12/20/2008 01:00
0422	HARDWICK	1,390	1	0.07 %	1	
0353	HARVARD	2,219	15	0.68 %	15	12/19/2008 23:45
0061	HVERHILL	26,855	6	0.02 %	6	12/19/2008 17:00

0502	HAWLEY	208	1	0.48 %	1	12/19/2008 23:00
0503	HEATH	583	29	4.97 %	1	12/19/2008 20:15
0323	HUBBARDSTON	1,854	176	9.49 %	88	12/20/2008 23:45
0352	LANCASTER	2,899	7	0.24 %	7	12/19/2008 23:45
0041	LAWRENCE	26,959	2	0.01 %	2	12/19/2008 17:00
0192	LEICESTER	4,523	403	8.91 %	113	12/20/2008 23:45
0341	LEOMINSTER	18,682	90	0.48 %	41	12/19/2008 23:45
0021	LOWELL	40,973	8	0.02 %	8	12/19/2008 17:00
0181	MARLBOROUGH	18,083	1	0.01 %	1	12/19/2008 14:15
0042	METHUEN	19,521	14	0.07 %	8	12/19/2008 17:00
0147	MILLBURY	6,009	24	0.40 %	24	12/20/2008 23:45
0335	NEW BRAINTREE	435	4	0.92 %	4	
0308	NEW SALEM	499	2	0.40 %	2	12/20/2008 23:45
0443	NORTH BROOKFIELD	2,232	7	0.31 %	4	12/19/2008 23:45
0334	OAKHAM	938	122	13.01 %	16	12/19/2008 23:45
0303	ORANGE	3,972	26	0.65 %	25	12/20/2008 23:45
0382	OXFORD	6,103	6	0.10 %	4	12/19/2008 23:45
0704	PELHAM	5,089	1	0.02 %	1	
0361	PEPPERELL	4,689	37	0.79 %	26	12/20/2008 01:00
0332	PETERSHAM	631	33	5.23 %	26	12/20/2008 23:45
0324	PHILLIPSTON	899	32	3.56 %	28	12/20/2008 23:45
0302	ROYALSTON	684	83	12.13 %	25	12/20/2008 23:45
0333	RUTLAND	3,225	183	5.67 %	87	12/20/2008 23:45
0701	SALEM	13,764	4	0.03 %	4	
0342	SHIRLEY	2,675	41	1.53 %	16	12/19/2008 23:45
0307	SHUTESBURY	861	13	1.51 %	7	12/20/2008 23:45
0431	SPENCER	5,703	85	1.49 %	36	12/20/2008 23:45
0375	STURBRIDGE	4,630	7	0.15 %	7	12/20/2008 01:00
0145	SUTTON	3,842	34	0.88 %	32	12/20/2008 23:45
0413	WARREN	2,327	2	0.09 %	1	
0304	WARWICK	422	59	13.98 %	29	12/20/2008 23:45
0381	WEBSTER	8,713	1	0.01 %	1	
0306	WENDELL	472	16	3.39 %	15	12/20/2008 23:45
0444	WEST BROOKFIELD	1,861	2	0.11 %	2	12/19/2008 23:45
0026	WESTFORD	8,803	1	0.01 %	1	
0322	WESTMINSTER	3,210	213	6.64 %	80	12/20/2008 23:45
0311	WINCHENDON	4,299	91	2.12 %	64	12/19/2008 23:45
0703	WINDHAM	1,066	1	0.09 %	1	
0191	WORCESTER	74,659	1,245	1.67 %	532	12/20/2008 23:45
-	-	464,290	3,963	0.85 %	1,726	12/20/2008 23:45