

2008 Ice Event –
System Critique Report

February 11, 2009

National Grid USA Service Company

Emergency Planning

System Critique Report for December 11-12, 2008 Ice Event

Attached is the System Critique Report for the December 11-12, 2008 Ice Event and the system-wide restoration effort led by Electric Distribution Operations & Generation (EDO&G). This report focuses on tactical level performance during the 2008 Ice Event.

If you have any questions regarding the content of this report, please feel free to contact me at (508) 389-3179 or at Westborough extension 88-23179.

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Robert A. Kearns
Director, Emergency Planning

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System Critique Report

February 9, 2009

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1 EXECUTIVE SUMMARY

1.1 December 11-12, 2008 Ice Event

National Grid was impacted adversely by an ice storm that began on December 11, 2008. This storm included freezing air temperatures at ground level and moderate rainfall at higher elevations over an extended time period. The rainfall was associated with a strong, coastal storm that had formed earlier that day off the mid-Atlantic coast and then traveled slowly northeast into New England.

The ice storm began at around 4:00 p.m. on the evening of Thursday, December 11th and continued throughout the night to end in the late morning hours of Friday, December 12th. The storm brought significant ice accretions ranging mostly between one-quarter and one-inch thickness to portions of Massachusetts, New Hampshire, and New York. These accretions, though, were especially notable in central Massachusetts northwards and into southern New Hampshire, as well as westwards into Eastern New York, which experienced ice accretions on trees and structures well in excess of one-inch thickness.

Much of the damage from the ice occurred west and north of a diagonal line that stretched from Hartford, CT through Westborough, MA towards the North Shore of Massachusetts. A significant number of National Grid customers were without power at some time from Thursday, December 11th through Friday, December 19th. The Company’s proactive approach aided in limiting the Massachusetts restoration effort to eight days and the New Hampshire and New York efforts to seven days. System-wide customer outages peaked at 554,775 on December 12th at approximately 8:30 a.m. EST.

The table below details the regional and state customer outage peaks, during the 2008 Ice Event.

Region	State	Customer Interruption Peak	Total Customers Served	% Customers Interrupted @ Peak
New England				
	MA	293,754	1,257,476	23.36%
	NH	24,164	38,391	62.94%
	RI	7,848	473,457	1.66%
Sub-total		325,766	1,769,324	18.41%
New York	NY	229,009	1,588,846	14.41%
Sub-total		229,009	1,588,846	14.41%
System Totals		554,775	3,358,170	16.52%

The Company utilized 375 internal line crews, 423 foreign utility line crews, and 823 contractor crews over the course of the restoration. In addition, these resources were joined by 645 tree crews. Service restoration to all system customers, including single customers, was completed by the afternoon of Saturday, December 20th.

2 HIGHLIGHTS

2.1 Emergency Planning Activities

Storm conference e-mails and calls were initiated more than 36 hours before the storm's arrival to alert the Divisions and other functional areas of the forecast. Based on the anticipated damage and effect of the storm, local divisions conducted their own conference calls with all related departments to inform them of the impending storm and developed a plan which included staffing schedules for the storm rooms and field crews. Also, calls were made to supplemental employees trained in a variety of restoration assignments, for additional support, as well as to Construction Delivery to reserve additional outside line and forestry crews. In advance of the storm, the Incident Commander initiated the preemptive re-deployment of alliance contractor line crews from New York-Western Division and New York-Central Division into New York-Eastern Division to respond immediately as a "strike team", to damage in New York-Eastern or in Central and Western Massachusetts where ice accretions were forecasted to be the most significant. Also, the Incident Commander preemptively ordered the opening and staffing of the New York Regional Emergency Operations Center (EOC) in Syracuse, NY and the New England Regional EOC in Northborough, Massachusetts, as of 4:00am on December 12.

Transmission Line Services initiated deployment of both National Grid restoration crews and contractor line crews in NE and NY at approximately 3:00 a.m. At first light, damage assessment was initiated to determine and report the cause of line operations. In parallel with this, the Transmission Emergency Room (Henry Clay Boulevard, Syracuse) and the Transmission EOC (Westborough) were ordered to open and staff at that time. Information resulting from damage assessment surveys prompted the assignment of Transmission System repair crews throughout the restoration event.

2.2 Incident Management

National Grid initiated its "Crisis Management Plan", calling together the company's Strategic Response Team (SRT) early on in the event which facilitated outstanding inter-organizational support throughout the event.

The New England - North Division strategically separated into three areas; New Hampshire, Merrimack Valley, and Central Massachusetts, soon after the storm impacted the region. Management teams were identified to oversee the restoration efforts in these areas. Additional resources, both line crews and tree trimming crews, were requested immediately when the extent of the damage became apparent. Also, additional damage assessors were deployed to the field to provide feedback on some of the hardest hit areas.

Initial damage survey reports, as well as the tabulation of customer outage magnitudes through National Grid's Outage Management System (PowerOn) prompted the Incident Commander to promptly secure a significant quantity of supplemental outside resources, via: 1) alliances with several contractors engaged in work with National Grid; 2) relationships with other non-alliance contractors; and 3) through a pre-established "EEI Mutual Assistance" process with numerous other utility companies.

Three daily conference calls (8am, 1pm and 8pm) were scheduled throughout the restoration event, with operations and all support organizations, enabling all teams to remain closely aligned and facilitating the prompt deployment of required logistics teams and the immediate correction of minor discrepancies throughout the entire event.

2.3 Effective Public Communication

National Grid made more than 490,000 automated outbound calls to customers whose service had been disrupted by the storm on the evening of December 12. These calls included safety messages and phone numbers to call to report outages or downed wires. Calls were also placed to a portion of the customers advising them of possible restoration dates, and during the later stages of restoration calls were placed to groups of customers recorded as having service restored to be certain that work had been accomplished.

Municipal Leader Calls (Muni-Calls) were effectively implemented each day throughout the restoration effort. These calls brought together representatives from municipalities and local emergency management personnel to receive overall and specific storm recovery status information. Calls were coordinated by Energy Solutions Services and information during the call was provided by the affected regions' EDO Vice President. Participants were provided an opportunity to ask questions. This provided an excellent venue for daily information sharing between National grid and the municipalities. For New England, this was the initial use of the Muni-Call process. Participants in both NY and NE gave positive feedback, related to these calls.

The Company conducted approximately 800 media interviews, during the seven days it took to complete the restoration. The media relations team proactively called newspapers and radio and television stations several times each day with updates on the restoration efforts. Interviews with line crews and company executives were set up for local media at staging areas, work sites and remote lunch stations. National Grid also participated in press conferences with individual communities, the Red Cross, New York State Governor David Patterson and Massachusetts Governor Deval Patrick all of which addressed the restoration efforts and updates on progress.

Representatives were provided to state and local Emergency Operation Centers to coordinate restoration with various responding government agencies, which enhanced communications and ultimately benefited the customers.

National Grid's Mobile Emergency Operations Center (MEOC) was dispatched to the hardest hit communities in northern and western Worcester County in Massachusetts. The MEOC was staffed by Energy Solution Services personnel to answer customer questions about the restoration effort. Newspaper ads urging customers to follow proper safety procedures during the outage were placed in daily newspapers covering areas with the largest number of outages.

When it was learned that customers in the Worcester, Mass. area had been approached by individuals identifying themselves as National Grid employees offering to restore their service for a fee, media relations immediately called major radio and TV stations and Associated Press asking that a warning to customers about potential fraud be aired.

2.4 Innovative Restoration Techniques

The company established a variety of staging sites to facilitate the needs of the supplemental crews. In many cases, staging sites were set up to strategically place materials near the most severely damaged areas. In other cases, staging sites were established for truck parking with busing services to allow for the more efficient transport of outside crew members to hotels located a distance from the work area. Still in other cases, major staging areas were established with truck parking, busing, and material deployment. Logistics plans were constantly revisited and staging sites adjusted, as crew deployment evolved in each area.

Qualified personnel from across National Grid Lines of Business and all regions were deployed to repair and reinstall service wires brought down or damaged by falling trees and limbs. This includes Gas Distribution and Long Island T&D, whose efforts reduced the outage time to many National Grid customers who would have otherwise had to wait for "line crews" to complete primary system repairs, before beginning work on secondary and service damage.

Specific areas with extensive damage were de-centralized to the substation level where a commander had complete control of restoring the feeders supplied from an assigned substation. The commander had at his disposal overhead line crews, tree trimming crews and substation operators. In New York, EDO decentralized control and operations to 48 substations while in New England, a total of 30 substations were decentralized. This enabled the regional storm rooms to concentrate on other problem areas.

2.5 Unique Solutions to Specific Problems

Damage incurred on 4kv lines in some of the back yards, in the City of Worcester, created unique problems. Underground lines feed the backyards and rise on poles with overhead conductors. Overhead and Underground crews were sent as teams to identify and repair problems in the backyards. Also, qualified climbing crews from Transmission Line Services - Forestry Division were assigned to the backyard areas to take care of the related tree problems because of inaccessibility by trucks. Additionally, Substation Construction services provided crews to repair secondary services. This made the restoration effort more efficient and timely.

Feeders that had extensive damage, e.g., downed poles and wires, trees down, were assigned supplemental restoration crews. The strategic placement of additional resources on hardest hit feeders enabled the overall restoration process to proceed efficiently.

3 CRITIQUE MEETINGS & OBSERVATIONS

We continuously strive to identify better methods, systems, and processes to manage and respond to severe events. Following the restoration effort, regional storm critique meetings were conducted. Participants discussed activities and operations that went well. Additionally constructive feedback was received on five areas (i.e., systems, logistics, staffing, procedures, and communications) that require further refinement.

3.1 2008 Ice Event - Critique Meetings

Worcester, MA – January 6, 2009
North Andover, MA – January 7, 2009
Northborough, MA – January 16, 2009
Albany, NY – January 22, 2009
Transmission – January 30, 2009

3.2 Observations

3.2.1 Knowledge of, and Compliance with Procedures

National Grid's response to the 2008 Ice Event was aggressive, yet methodical. Restoration leaders, at the strategic, tactical and operational levels adhered very closely to prescribed Electric Emergency Procedures, across the system. Adhering to emergency procedures so closely, enabled the company to leverage both the training and skills of its extended workforce, as well as the lessons learned from many prior storms, which are embedded in the foundation of today's Electric Emergency Procedures.

Highlights:

- The company proactively mobilized regional EOCs ("E-Rooms") in NY and NE, based on the direction provided within the Electric Emergency Procedures (EEP's). Proactive staging of resources and system conference called expedited the overall response.
- Notifications to Regulators in NY, MA, RI and NH were performed in accordance with our established EEP's – both initially and throughout the duration of the restoration event. National Grid received kudos throughout the event for its proactive communication protocol.
- Established Municipal Leader Call (Muni-Call) procedures were followed in the affected New York regions. For the New England region, the Muni-Call procedures were recently developed and put into use. These procedures require filing with the regulatory agencies in NE.
- National Grid's Senior Executives mobilized the Strategic Response Team (SRT), in accordance with the Crisis Management Plan. The SRT is comprised of the company's senior-most executives and was instrumental in ensuring all organizations throughout the company maintained a keen focus on managing and supporting the restoration event

Refinement Opportunities:

- At times, redundant calls were made for mutual aid. As a result, it was determined that there is a need to establish one mutual aid coordinator and an appropriate implementation process.
- In the initial phase of staffing the System EOC a communication link was not immediately established with the Transmission EOC to provide status reports on Transmission system repairs. This issue was rectified by assigning a Transmission liaison to the Northborough EOC and by distributing an electronic update.
- The use of the Storm Emergency Assignment List (SEAL) was not consistently followed. As a result, certain qualified staff were identified and assigned to key positions outside of the SEAL process.

3.2.2 Innovations and Actions Implemented During the Ice Event

The innovation and determination of the National Grid team resulted in a variety of new or enhanced practices being implemented on the fly, to further improve the restoration process.

Highlights:

- Due to the magnitude of the event, additional staffing was requested for certain key positions (I.e. Damage Assessors). Division leadership identified additional employees with appropriate qualifications and provided training, on the fly. These employees successfully supplemented the original employees through the remainder of the event.
- A process that formally prioritizes the restoration of schools was introduced during the ice event. This is a very critical objective to demonstrate to municipalities that National Grid manages the restoration of customers in an orderly manner. This item will be proceduralized within all regional storm plans.
- New York has historically used the Personal Red Tag PRT process effectively, throughout the entire region. In New England the PRT process was implemented for the first time and as the restoration proceeded, New England expanded the use of PRT practices down to the station level.
- Several staging areas were established based on immediate needs determined by outage locations. One of these staging areas was established in the Northborough parking lot which required conversion, with no prior planning. The establishment of this staging area was essential to providing logistics support to over 200 mutual aid workers.

Refinement Opportunities:

- When the scale of the crew management effort grew, logistics (hotel, meal, etc.) functions should have been centralized to the E-Rooms. Divisions retained and managed this process, locally. Resourcefulness and ownership was admirable, but the EEPs require centralizing these items in a large scale event.

3.2.3 Differences between Regions

The scale of National Grid's service territory can introduce opportunities that can be leveraged, to improve overall performance. During the 2008 Ice Event, company leaders leveraged our scale to a great extent.

Highlights:

- Although the impact of the 2008 Ice Event was wide spread, several National Grid Divisions experienced minimal damage. Resources from NY-W, NY-C, NE-S, and Long Island all converged on the affected areas, to assist in expediting restoration.

Refinement Opportunities:

- Staging sites were implemented for truck parking and busing in New England, but not in New York. In hindsight, implementing crew staging sites in New York may have eased the logistical burden associated with managing their mutual aid crews.

3.2.4 Best Practices Employed

The diverse history and composition of National Grid provides opportunities to share and leverage internal best practices. Several internal best practices were employed and expanded, during the event.

Highlights:

- The use of the meter group and the addition of gas personnel to handle 911 calls and service repairs is an excellent practice that permits qualified Linemen and Troublemakers to focus on restoring primary mainlines immediately. This allowed a large number of customers to be restored very promptly.
- Teaming up Transmission Line Services, Substation Construction Services and Climbing Tree Crews to tackle rear property damage (especially in Worcester, MA) proved to be a highly effective practice.
- The sharing of vehicles and specialty equipment was an excellent practice that allowed these items to be made available to those who needed them.
- The rapid deployment of Environmental Engineers and their assignment to staging sites was instrumental in managing hundreds of spills, without a single Notice of Violation from regulatory agencies.

Refinement Opportunities:

N/A

4 ACTION ITEMS

4.1 Improvement Opportunities

Each of the storm critique meetings that were held identified “Improvement Opportunities” at the tactical level, which require further investigation and evaluation. In each case, many critique participants provided solutions related to a procedure, process or system that needs refinement and improvement. “Improvement Opportunities”, when implemented and personnel are trained, will enhance the company’s operation and our effectiveness in response to storms, both large and small.

Improvement Opportunities are classified under five major subject areas:

1. Staffing/Training
2. Procedures
3. Logistics
4. Communications

5. Information Systems

Attachment A itemizes the “Improvement Opportunities” identified.

4.2 Best Practices

The storm critiques identified numerous actions, practices and procedures utilized by all or part of the organization, which delivered very positive results. These internal “Best Practices” may present opportunities to be leveraged and expanded to improve the company’s overall storm response even further. “Best Practice Opportunities” are also classified under the major categories, identified in 4.1, above.

Attachment B itemizes the “Best Practice Opportunities” identified.

5 ACKNOWLEDGEMENTS

Emergency Planning respectfully thanks all employees involved in the storm and subsequent critiques for their assistance and contributions. We especially wish to thank the leadership teams of NY-E and NE-N and Transmission. This System Critique Report integrates the collective observations, at the tactical level, documented during critique meetings conducted in Albany, Worcester, North Andover, Northborough and Westborough.

ATTACHMENT A

Improvement Opportunities for December 11-12, 2008 Ice Event Storm Critiques				
No.	Issue/Opportunity	Recommended Action	Assigned Responsibility	Schedule
Subject Area: <u>Staffing / Training</u>				
1.	Need additional Clearance & Control qualified employees - management ranks were depleted in the divisions during this event. It was necessary to recruit people who previously worked in Field Ops (were C&C qualified) in addition to individuals such as line supervisors to perform this task.	Develop a procedure in the EEP pertaining to mobilizing the FAST team. Also, revise SEAL system for C&C qualified retiree resources (in conjunction with #2, below).	Emergency Planning (EP)	
2.	Due to the magnitude of the event, the number of personnel assigned to certain restoration roles was inadequate. Filling the roles was done on an ad-hoc basis.	<p>Revise SEAL assignments, so resources with appropriate qualifications and skills sets are in place for all positions delineated in the EEPs.</p> <p>Establish rigor around callout of SEALs for "alternate" roles – must be cleared from primary role before considering for alternate roles</p> <p>Establish a formal program to retain retirees for restoration assignments and manage in SEAL.</p> <p>Establish new Training programs. For example:</p> <ul style="list-style-type: none"> • UG and O&M personnel trained to cut and clear and restore services. • Train additional RoD staff to support Forestry Supervision • Develop Operations Coordinator position at established staging site(s) to liaison between Foreign Crew supervision and EOC. • X-LoB for wires down • Forestry – RoD • Work Coordinators – PORD • Wires Down hazards of step potential <p>Identify the need for new positions</p> <ul style="list-style-type: none"> • Items identified but not assigned (i.e. Division staging site coordinator, Logistics Coordinator, assigned to the Transmission Storm Rm.). 	<p>EP</p> <p>EP</p> <p>EP and Human Resources (HR)</p> <p>EP, Training, Process & Systems</p> <p>Operations and EP</p>	

Bold = Leader

**National Grid USA Service Company
Emergency Planning Storm Critique No. SYS-EP-081211**

No.	Issue/Opportunity	Recommended Action	Assigned Responsibility	Schedule
Subject Area: <u>Staffing / Training</u>				
3.	During restoration a number of issues occurred related to financial matters (i.e., need for PO's, procurement, storm accounting numbers). Overall, we need to improve the storm accounting process.	Establish ICS protocol which includes clear responsibility for a storm cost tracking/control organization including a <u>Storm Comptroller</u> position.	EP and Finance	
4.	Division communications coordinators and ESS staff to were not consistently available to Corporate Affairs (Media) when field interview requests become numerous.	Reinforce existing roles and procedure for communication support.	EP , Operations and Media	
5.	The storm highlighted the need for consistency in command structure, roles and responsibilities and terminology. Some confusion occurred between ICS and existing EEP's.	Re-write the EEPs using ICS format and conduct Incident Command System (ICS) training for personnel that perform work at the Tactical and Operational Levels.	EP	
6.	Gas and Shared Service personnel were used in ad-hoc assignments.	Establish clear roles and develop X-LOB Line of Business (LoB) training for personnel that may be mobilized during major storms.	EP to lead an X-LoB team	
7.	Crew information was missing or untimely making it difficult to get data in to ROD or out to the division.	Proceduralize and reinforce training of personnel supplying supplemental (outside) crews to complete & submit crew transfer sheets accurately and timely.	EP and Construction Delivery	
8.	The tracking of capital assets installed during the storm was inconsistent.	Develop a new SEAL position dedicated to overseeing the record-keeping process for all capital asset replacements conducted during major storms.	Network Strategy and EP	
Subject Area: <u>Procedures</u>				
9.	Inconsistent implementation of the National Grid damage assessment process delayed restoration or resulted in the out dated assessment processes being followed	Establish a single Damage Assessment Process for use across all of National Grid	EP and Operations	
10.	The scale of the overall crew management effort, logistics (hotel, meal, etc) expanded rapidly. These functions remained de-centralized and required a greater total effort.	Define and communicate trigger point for decentralizing logistics functions in a large scale event. Revise EEPs/LSEP, accordingly.	Operations , SS – Logistics and EP	

Bold = Leader

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Emergency Planning Storm Critique No. SYS-EP-081211**

No.	Issue/Opportunity	Recommended Action	Assigned Responsibility	Schedule
Subject Area: <u>Procedures</u>				
11.	Dispatch & Control did not have complete knowledge of “de-centralized” circuits.	Reinforce clearance and control procedures – and the process to ensure the storm room identifies “de-centralized” circuits.	Dispatch & Control	
12.	Forestry crews were often overlooked as requiring the same logistic support as line crews.	Establish clear logistical procedures and train the appropriate resource to ensure Forestry resources are included	EP and SS - Logistics	
13.	Staging site operations procedures were not followed initially – division needs to assign operations personnel to ensure effective and efficient operation of the site.	Reinforce staging site procedures in LSEP and provide refresher training to key staff <ul style="list-style-type: none"> • Site coordinator • Operations coordinator 	Operations, SS – Logistics and EP	
14.	Foreign crew safety orientations were difficult to conduct due to the number of locations. Staging sites were preferable but not always practical. Safety information pamphlets contain dated information.	Establish safety orientation process for foreign crews at non-staging site locations (e.g. Hotels) and revise/re-print safety pamphlets	Safety	
15.	Some discrepancies occurred over who was contacting Critical Care customers. There were changes in the respective EEP that indicate specific personnel responsible for making contact with Critical Care Customers.	Review the Critical Care Customer communication EEP for accuracy.	Customer Contact Center	
16.	Damaged Sub-Transmission equipment was engineered “on-the-fly”.	Establish a procedure and role assignment for engineering repairs to damaged sub-transmission equipment during major events.	Network Strategy	

Bold = Leader

**National Grid USA Service Company
Emergency Planning Storm Critique No. SYS-EP-081211**

No.	Issue/Opportunity	Recommended Action	Assigned Responsibility	Schedule
Subject Area: <u>Procedures</u>				
17.	Coordination for transmission system helicopter patrols needs to be improved.	Develop a transmission system aerial patrol program that includes: <ul style="list-style-type: none"> • Trained personnel that are familiarized with the ROW • Coordination w/vendors for pre-storm protocols 	Transmission and EP	
18.	At times there were redundant calls placed to the same agency for mutual aid. Also support from downstate (Long Island) was acquired from multiple department contacts rather than by utilizing the established resource coordinator.	Centralize process to ensure a well coordinated effort to acquire restoration resources from both internal and external organizations. This should include a tactical level Mutual Aid Coordinator and an appropriate regional/centralized implementation process within the EEP.	EP , Construction Delivery and Operations	
19.	NY and NE Transmission forms are inconsistent	Develop consistent format to be used by all locations reporting transmission information. This needs to be part of the EEP	Transmission	
Subject Area: <u>Logistics</u>				
20.	Staging Area activation decision was not fully realized at the start of the restoration effort. At that time a large contingent of Foreign Crews were already assigned, in addition, certain logistic items were decided on an ad-hoc basis creating delivery inconsistency and confusion.	Develop a decision matrix with action triggers for activating staging sites, establishing lodging, material drop sites and other support services (fuel, hotel, laundry, etc.) and level of support services from Base Logistics.	Operations , SS - Logistics	
21.	RoD did not contain the correct hotel listings – old information- making it more difficult for the field to assign crews to hotels in RoD	Establish within the RoD procedure a specific periodic review cycle of lodging data.	SS - Logistics	
22.	Storm kits did not always contain the right materials due to standard changes. The process to stock/refill emergency Conex boxes was not efficient.	Re-evaluate storm kits and bulk staging materials for required content. Enhance the Conex box stock and refill process.	Operations , SS - Material Mgmt	
23.	Some storm kits were being dropped off at hotel sites with no one there to receive or be responsible for them.	Establish a process early on in events to drop materials at National Grid approved locations with clear field ownership defined.	SS – Logistics Operations and ESS	

Bold = Leader

**National Grid USA Service Company
Emergency Planning Storm Critique No. SYS-EP-081211**

No.	Issue/Opportunity	Recommended Action	Assigned Responsibility	Schedule
Subject Area: <u>Logistics</u>				
24.	Major events require expanding security operations – this did not occur initially.	Ensure Security is included on storm calls, for information sharing. Issues: advanced notice to coordinate with security contractors and PD's to create a 24/7 security force presence at key company facilities and staging sites.	EP and Security	
25.	Storm card use became problematic with many employees exceeding their limits early on in the event or having to hundreds of thousands of dollars on their cards with no DOA oversight	Establish a procurement process that can set up direct billing with vendors. Storm cards quickly reached and exceeded limits causing employees to use personal credit cards.	SS – Logistics Finance and EP	
26.	Many vehicles were not identified as part of National Grids restoration effort leading to alleged scams to enter presences under false pretenses	Purchase magnetic signs or wash off decals for all rental vehicles. Transportation indicated that there were more surveyors than available company vehicles.	Transportation and EP	
27.	Box lunches for field crews were managed in multiple ways and were at time problematic and provided inconsistent quality.	Standardize the process for providing lunches to crews, when a large contingent of crews is present.	SS - Logistics	
Subject Area: <u>Communication</u>				
28.	Improve pre-arrival communication with Mutual Aid providers	Establish a procedure to communicate in advance, with Mutual Aid providers, for such items as: safety representatives, additional support staff, specialty equipment (i.e., track units with operators), material handlers, appropriate PPE, company safety requirements -- and also to better coordinate arrival time and location.	Construction Delivery	
29.	Unable to contact some critical care customers	Develop a policy on outreach to critical customers with cable-telephone service. Cable-telephone service will not operate during a power outage.	Customer Contact center	
30.	National Grid received many calls from customers or our field workers wishing to install generators and asking our requirements	Develop generator safety brochure for customers who intend to install generators	Network Strategy	

Bold = Leader

**National Grid USA Service Company
Emergency Planning Storm Critique No. SYS-EP-081211**

No.	Issue/Opportunity	Recommended Action	Assigned Responsibility	Schedule
Subject Area: <u>Communication</u>				
31.	IS issues arose at staging sites and smaller facilities that were used to support the storm.	Reinforce the communication process between operations and IS, so that appropriate IS services are available in locations designated for supplemental use, in a major storm. Also ensure system performance issues are communicated promptly and consistently, during storms	EP, IS, Operations, and Transmission	
32.	Need options for backup communication, in the event land lines and cell sites are interrupted.	Rollout Iridium satellite system to the fixed sites (EOCs, Storm Boards) and to storm leaders. Train all users and develop a periodic testing procedure.	EP, SS – Logistics, Operations and Transmission	
Subject Area: <u>Information Systems</u>				
33.	Telephone contact lists for use in the System Emergency Operations Centers (EOCs) were outdated and were contained in multiple documents.	Implement an automated emergency telephone contact system (with access security) based on existing corporate systems (PeopleSoft, Phone Directory, etc.) to rapidly obtain work, mobile and home phone contact numbers for employees – for use during storms and other emergencies.	IS, HR and EP	
34.	<p>Intermittent system problems with PowerOn and RoD, as well as user familiarity issues:</p> <ul style="list-style-type: none"> • IS personnel needed to reset the PowerOn server several times; • PowerOn logic was confusing and would re-report cleared outages as “active”; • PORD mapping server at times was unavailable; • RoD – system response and data processing performance was extremely slow; • RoD was requested to process one hotel room per (2-person) crew, but in some cases, assigned one room per person. Staff reverted to a manual tracking system. 	Conduct an end-to-end review of PowerOn and RoD, to correct system problems. Also provide supplemental training, as required.	Process & Systems, IS, Operations and EP	

Bold = Leader

**National Grid USA Service Company
Emergency Planning Storm Critique No. SYS-EP-081211**

No.	Issue/Opportunity	Recommended Action	Assigned Responsibility	Schedule
Subject Area: <u>Information Systems</u>				
35.	During the event geographical outage maps were developed manually and were very useful however it was also very time consuming	Develop automated reporting (regional, divisional, and municipal outages, customers, and percent of base, etc.) from PowerOn.	Network Strategy, Dispatch & Control, IS and EP	

Bold = Leader

ATTACHMENT B

Best Practice Opportunities Based on the December 11-12, 2008 Ice Event Storm Critiques				
No.	Best Practice	Recommended Action	Assigned Responsibility	Schedule
Subject Area: <u>Staffing and Training</u>				
1.	<p>Use of resources in non-traditional roles:</p> <ul style="list-style-type: none"> UG and O&M crews assigned to WD group to cut and clear or put up services; Meter Services and Gas Distribution personnel handled 911 calls and service repairs; <p>Excellent practice that permits Linemen and Troublemens to focus on restoring primary mainlines immediately.</p> <p>This allowed a large number of customers to be restored promptly.</p>	Expand and proceduralized across all areas.	EP to lead an X-LoB team	
2.	<p>Dedicated teams were assembled to focus on:</p> <ul style="list-style-type: none"> Removing primary from vehicles; Restoring service to nursing homes & schools. <p>“Strike Team” approach was very effective.</p>	Develop procedure to establish the use of “strike teams” in the EEP. Work with government agencies to determine critical priorities very early on in a storm.	Operations, ESS and EP	
Subject Area: <u>Procedures</u>				
3.	The appointment of a sub-transmission liaison in the division and a point-person in the ERCC fostered very effective communication related to the restoration of the sub-transmission system.	Formalize as part of EEP	Operations and EP	

Bold = Leader

**National Grid USA Service Company
Emergency Planning Storm Critique No. SYS-EP-081211**

No.	Best Practice	Recommended Action	Assigned Responsibility	Schedule
Subject Area: <u>Logistics</u>				
4.	Local storerooms overstocked early in the storm to ensure materials did not run out.	Reinforce the value of maintaining 3-day emergency stock levels, as per present policy.	Operations, Material Mgmt and EP	
5.	Arrangements were made with vendors to maintain stock of certain items for storm purposes – Graybar will stock 100 storm kits for us. Lesson Learned from previous storm is now a best practice.	Formalize as part of Logistics Support Emergency Plan (LSEP)	SS – Logistics	
6.	Storm kits were delivered to hotels, where contract crews were lodged, the night before the storm hit.	Formalize as part of Logistics Support Emergency Plan (LSEP). <ul style="list-style-type: none"> • Pending negotiation with hotel management. 	SS – Logistics	
7.	Making arrangements in advance for restaurants to serve crews worked well. Additionally, having hotels serve crews food for night meals and issue boxed lunches was very effective.	Formalize as part of LSEP.	SS – Logistics	
Subject Area: <u>Communications</u>				
8.	External communication was very effective during the storm, including Media, the use of “Muni-Calls” and outbound calls to municipalities with > 50 customers out; and through early outreach by ESS to the impacted areas’ Emergency Management Offices (EMO’s). In New England the Muni-Call process was used for the first time and proved to be effective.	Formalize and file procedure for conducting ESS-managed municipal calls with appropriate regulatory agencies in New England.	ESS and EP	

Bold = Leader

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No.	Best Practice	Recommended Action	Assigned Responsibility	Schedule
Subject Area: <u>Communications</u>				
9.	The use of outbound "Blast Calls" was effective in identifying remaining individual customers out of service.	Formalize in the EEP - the use of "Blast Calls" to assist in identifying single customer outages.	Dispatch & Control, Customer Contact center and EP	
10.	Daily safety calls and meetings were conducted to communicate safety messages to internal and external crews. Safety representatives also conducted midday calls with contractor safety representatives. This practice significantly contributed to achieving a remarkably low accident/incident level throughout the storm.	Formalize in the EEP	EP and Safety	

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