



STATE OF NEW JERSEY  
**BOARD OF PUBLIC UTILITIES**  
RICHARD MROZ, PRESIDENT

**SYNOPSIS OF  
HURRICANE IRENE AND SUPERSTORM SANDY  
BOARD ORDERS**

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**JANUARY 23, 2013, DOCKET No. EO11090543 (HURRICANE IRENE)  
MAY 29, 2013, DOCKET No. EO12111050 (SUPERSTORM SANDY)**

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## EXECUTIVE SUMMARY

In response to Hurricane Irene (“Irene”), the October 29, 2011 snowstorm, and Superstorm Sandy (“Sandy”), the New Jersey Board of Public Utilities (“Board” or “BPU”) ordered the Electric Distribution Companies (“EDCs”) to undertake over one hundred (100) actions provided in the following two (2) Board Orders:

1. *In the Matter of the Board’s Review of the Utilities’ Response to Hurricane Irene*, Docket No. EO11090543, January 23, 2013 (“Irene Order”), attached hereto as “Exhibit 1;” and
2. *In the Matter of the Board’s Review of the Utilities’ Response to Hurricane Sandy*, Docket No. EO12111050, May 29, 2013 (“Sandy Order”), attached hereto as “Exhibit 2.”

Both the Irene and Sandy Orders must be read together to fully understand the actions required of the EDCs before, during, and after an event that could result in widespread periods of service interruption. Specifically, following the aftermath of Irene, which made landfall on August 28, 2011, and the October 29, 2011 snowstorm, the Board initiated an investigation regarding the EDCs’ preparedness, communications, restoration, post-event actions, and underlying infrastructure issues prior to, during, and following both events. In the midst of the investigation, on October 29, 2012, Sandy made landfall near Atlantic City. The Board opted not to combine the Irene and Sandy investigations, and thus, the January 23, 2013 Irene Order provides no conclusions regarding the Utilities’ performance during Sandy. This omission was not a sign of approval, but instead, was a deliberate act by the Board to withhold comment until the Sandy investigation was complete. Following the Sandy investigation, the Board issued the May 29, 2013 Sandy Order which added eight (8) additional requirements to the approximate one hundred (100) previously provided in the Irene Order.

Therefore, the following synopsis provides an outline of the Board ordered requirements contained in both the Irene and Sandy Orders, and is organized pursuant to the five salient categories determined by the Board: 1) Preparedness Efforts; 2) Communications; 3) Restoration and Response; 4) Post Event; and 5) Underlying Infrastructure Issues.

## **SYNOPSIS OF IRENE AND SANDY ORDERS**

### **1. PREPAREDNESS EFFORTS**

#### **a. Organizational structure, roles and responsibilities**

- i. The EDCs shall use an Incident Command System (“ICS”) structure in their emergency organizations. (Exhibit 1, p.44)**
- ii. The EDCs shall update their E-Plans and Outage Management System (“OMS”) Manuals to reflect the use of an ICS structure in their emergency organizations. (Exhibit 1, p. 44)**
- iii. No individual may assume more than one role in the ICS during a Major Event. (Exhibit 1, p. 44)**
- iv. The EDCs shall submit to Staff a report detailing the ICS implementation or modifications. (Exhibit 1, p.44)**
- v. The EDCs shall establish an Emergency Management/Preparedness role as a stand-alone function within their organizational structures with the requisite authority to set and execute preparedness goals. (Exhibit 1, p.44)**
- vi. The EDCs shall provide Staff documentation of the implementation of the Emergency Management/Preparedness role, including, but not limited, to the date hired, resume, reporting relationship, and how the individual will be integrated into the company. (Exhibit 1, p. 44)**
- vii. The EDCs shall identify and train sufficient second role personnel to meet emergency staffing needs, pre-assign appropriate personnel and provide training in advance of a predicted Major Event. (Exhibit 1, p. 44)**
- viii. The EDCs shall provide documentation to Staff on the number of staff trained and the training schedule. (Exhibit 1, p. 44)**

#### **b. Planning**

- i. The EDCs shall update and submit to Staff their emergency plans to reflect the elevated response required for a large scale restoration event; ensure that the roles and responsibilities as defined in their emergency plans are followed in actual practice; provide for the annual review, updating and distribution of its emergency plans; and provide to Staff documentation of these changes. (Exhibit 1, p. 45)**
- ii. The EDCs shall revise, and submit to Staff, their emergency plans to manage the restoration of service to a minimum of 75% of their customers, and to include descriptions of emergency organization; emergency classifications; annual training and exercise program; on-going readiness initiatives; pre-event preparatory measures; procedures for mobilizing personnel, materials and equipment; communications procedures; process for acquiring external resources; process for acquiring internal support services; and linkages to corporate plans, if applicable. (Exhibit 1, p. 45)**

- iii. **ACE** shall modify its organizational charts to reflect position titles instead of names. (Exhibit 1, p. 44)
- iv. **JCP&L** shall include the Construction Restoration Lead's plan and any individually developed job aids or checklists in its emergency plan. (Exhibit 1, p. 44)

c. **Exercises/Drills**

- i. **The EDCs** shall develop and submit to Staff plans to implement an annual exercise in which their personnel will staff the County and Local Emergency Operations Centers (EOCs) in their service territories to create familiarity with the facilities, develop relationships with Emergency Management Officials and verify the functionality of all field equipment. (Exhibit 1, p. 45)
- ii. **The EDCs** shall include a target date for the first exercise in these implementation plans and notify Staff at least 30 days before each annual exercise is scheduled to take place. (Exhibit 1, p. 45)
- iii. **JCP&L** shall develop and submit to Staff policies for conducting an annual storm restoration exercise that will include participation of personnel from all functional units/departments that play a role in storm restoration and external agencies; conducting an internal annual storm restoration exercise with FirstEnergy focusing on roles and responsibilities; and developing a post exercise report and improvement plan following each exercise. (Exhibit 1, p. 45)
- iv. **PSE&G** shall develop and submit to Staff policies for conducting an annual storm restoration exercise that will include larger scale events in its annual exercises and will include personnel from all functional units/departments that play a role in storm restoration; and for developing a post exercise report and improvement plan following each exercise which includes an assessment of the roles of participants. (Exhibit 1, p. 45)
- v. **RECO** shall prepare and submit to Staff a procedure for developing a post exercise report and improvement plan following each exercise. (Exhibit 1, p. 45)

d. **Training**

- i. **The EDCs** shall develop a centralized repository of training records for all positions involved with storm restoration, and send notice to Staff upon completion. (Exhibit 1, p. 46)
- ii. **The EDCs** shall revise their training procedures to ensure that the training provided meets the requirements of the position within the storm restoration role, and provide the revised procedures to Staff. (Exhibit 1, p. 46)
- iii. **The EDCs** shall establish specific training requirements for all positions involved with storm restoration, and provide the training schedule to Staff. (Exhibit 1, p. 46)

- iv. **The EDCs** shall revise their training programs to include the training of personnel on cross-functional interdependencies within the storm restoration organization, and provide the revised procedures to Staff. (Exhibit 1, p. 46)
- v. **JCP&L** shall develop and submit to Staff a procedure to track on the job training participation. (Exhibit 1, p. 46)

e. **Weather Monitoring/Forecasting**

**PSE&G** shall revise its OMS Manual to include policies and procedures for the collection, analysis and dissemination of weather information, and provide Staff with the revised manual. (Exhibit 1, p. 46)

2. **COMMUNICATIONS**

a. **Pre-Event Communications**

- i. **The EDCs** shall submit to Staff standard pre-storm customer messaging revised to emphasize to customers to prepare for the possibility of long duration outages, and provide safety advice and sources of emergency preparedness information. (Exhibit 1, p. 46)
- ii. **The EDCs** shall submit to Staff revised procedures for maintaining logs of all media activity for use in its post event analysis. (Exhibit 1, p. 46)
- iii. **JCP&L** shall implement the recommendations contained in its Storm Restoration Communications Implementation Plan. (Exhibit 1, p. 47)
- iv. **JCP&L** shall launch its storm website and notify its customers of its activation two (2) days prior to an expected Major Event or immediately upon the arrival of an unexpected Major Event. (Exhibit 1, p. 47)
- v. **JCP&L** shall update its Interactive Voice Response (IVR) messages with storm warning and preparedness information two (2) days prior to an expected Major Event, or immediately upon the arrival of an unexpected Major Event. (Exhibit 1, p. 47)
- vi. **JCP&L** shall submit to Staff written procedures reflecting these changes and a copy of the finalized Storm Restoration Communications Implementation Plan. (Exhibit 1, p. 47)

b. **Customer Service/Call Center**

- i. **The EDCs** shall revise and submit to Staff their IVR and Voice Response Unit (VRU) messages to ensure they are in plain language that is easily understandable to the vast majority of its customers. (Exhibit 1, p. 47)
- ii. For Major Events, with anticipated outages of three (3) or more days, **the EDCs** Live Agent and IVR messages regarding Estimated Times of Restoration (ETR) shall contain information and resources to help customers plan their actions to deal with an extended outage. (Exhibit 1, p. 47)

- iii. **The EDCs** shall submit documentation to Staff demonstrating they have established call center performance standards for Average Speed of Answer (ASA) and Abandonment Rate (AR) during major outage events; adopted procedures to ensure call center staff meets ASA and AR standards during a major outage event; and developed IVR/VRU messages that contain helpful and accurate information and which will be updated at least daily during an extended outage. (Exhibit 1, p. 47)
- iv. **RECO** shall conduct a study that examines the adequacy of its resources and its affiliate's resources if a major event simultaneously affects both of their service territories; implement its process enhancements; and submit to staff the results of the resource adequacy study and documentation of implementation of process enhancements. (Exhibit 1, p. 47)

c. **External Communications**

- i. **The EDCs** shall hold daily conference calls with municipal officials of the affected municipalities both prior to and during a Major Event. Information on these calls shall be included in the Major Event Report. (Exhibit 1, p. 47)
- ii. **The EDCs** must provide municipal officials the following information within twenty-four (24) hours of a weather event, or other major event, on a daily basis:
  - A global ETR;
  - The total number of customers out of service in the service territory;
  - The number of substations out system wide;
  - The number of switching stations out system wide;
  - The impact of flooding; and
  - Any other information useful to government in forming a common operating picture and situational awareness. (Exhibit 2, p. 3)
- iii. **The EDCs** must provide municipal officials the following information within forty-eight (48) hours after a weather event or other major event:
  - The number of customers out of service in the municipality;
  - The number of circuits that provide service to the municipality, and the number of circuits that are damaged;
  - The number of tree cutting locations in the municipality;
  - The number of utility poles damages in the municipality;
  - The number of damage location on the circuits that provide service to the municipality;
  - The number of confirmed street closures due to wires down;
  - The number of circuits scheduled to be worked on that day that provide service to the municipality, with a note on the webpage

that the crews working on the circuits may actually be working in another municipality;

- The number of customers in the municipality to be restored per day until the restoration is complete based upon the individual ETRs; and
- A link so the customer can find their individual ETR. (Exhibit 2, p. 3)

**iv. The EDCs shall update their websites as follows, and notify Staff that the following changes have been implemented:**

- The primary focus of all messages shall be customer safety and ability to cope, especially prior to and at the start of Major Events.
- All communication channels at an EDC's disposal shall be mobilized as soon as potential Major Events are forecasted.
- Worst-case projections shall be issued from the outset of any Major Event to effectively portray a sense of urgency. (Exhibit 1, p. 48)

**v. The EDCs shall establish and maintain, for each municipality in their respective service territories, a separate webpage (“municipal webpage”) with the following information:**

- The approximate number of customers served. (Exhibit 1, pp. 48-49)
- A description of the electric system serving the municipality, including the name, number and general location of substations serving the municipality; the number and general description of the circuits serving the municipality; and data concerning utility poles, miles of distribution lines and other electric infrastructure. (Exhibit 1, pp. 48-49)
- A link to the EDCs’ description of storm safety and preparedness information and general restoration processes and procedures. (Exhibit 1, pp. 48-49)
- Information describing why customer calls and outage reporting are critical to the restoration process, a description of the damage assessment process, and any repair prioritization process used by the utility. (Exhibit 2, p. 2)
- A global ETR posted within twenty-four (24) hours. (Exhibit 2, p.2)
- An ETR for Individual Customers, developed by the EDCs, and made available as follows: within forty-eight (48) hours for outages projected to last up to seven (7) days, within seventy-two (72) hours for outages projected to last eight (8) to ten (10) days, and within ninety-six (96) hours for outages projected to last over ten (10) days. (Exhibit 2, p. 3)

- The status of restoration efforts, i.e. damage assessed, crew assigned, crew on-site, repairs complete, etc. (Exhibit 2, p. 3)
  - Information regarding, or links to, the method by which to report an outage. (Exhibit 2, p. 3)
  - The EDCs may also include information concerning the EDC and municipality tree trimming policies and procedures. (Exhibit 1, pp. 48-49)
- vi.** During outages, **the EDCs'** municipal webpage shall be updated with the following information as the information becomes available:
- Number and percentage of customers out of power.
  - Information about the time outages occurred and the cause of the outages
  - Damage assessment information
  - A description of the nature and timing of restoration efforts
  - The ETR. (Exhibit 1, p. 49)
- vii.** During outages, **the EDCs** shall establish and maintain county-by-county information as follows:
- Number of customers served.
  - Number of customers out of power.
  - Percentage of customers out of power.
  - Links to the municipal webpages. (Exhibit 1, p. 49)
- viii.** **The EDCs** shall develop and submit to Staff messaging scripts that provide easily understood and comprehensive advice to customers for planning their actions to deal with outages and staying safe. (Exhibit 1, p. 48)
- ix.** **The EDCs** shall develop and submit to Staff a plan for ensuring they have sufficient message writers and government affairs personnel in a Major Event. The plan shall include procedures to inform elected officials about the restoration process. (Exhibit 1, p. 48)
- x.** **The EDCs** shall modify their IVR so that multiple customer telephone numbers may be accepted. (Exhibit 1, p. 48)
- xi.** **The EDCs** shall provide additional methods for customers to report and check on the status of an individual outage using mobile devices via one of the following methods: SMS text messaging, through mobile app, and/or through another push or message notification. Participation in receiving such notification shall be available to customers on an opt-in basis. The information available shall include notice of the global ETR, customer specific ETR, and notification when the utility completed the repair which it believes will restore service to the customer. The EDCs may also use such technology to permit customers to confirm that service has been restored. (Exhibit 1, p. 48; Exhibit 2, p. 3)

- xii. **The EDCs** shall provide Staff with a web portal to view additional details related to outages, and provide a mechanism to automatically notify Staff via email or text message when certain outage thresholds are reached. (Exhibit 1, p. 48)
- xiii. **The EDCs** shall establish and maintain webpages describing storm safety and preparedness information, and general restoration processes and procedures. (Exhibit 1, p. 48)
- xiv. **The EDCs** shall submit to Staff documentation that they are using social media as part of their communications with the public during Major Events. (Exhibit 1, p. 49)
- xv. **The EDCs** shall submit to Staff documentation that they are allowing customers to report outages by telephone to their accounts via multiple phone numbers, and notifying customers of the availability of this service. (Exhibit 1, p. 49)
- xvi. **The EDCs** shall submit to Staff documentation that they have designated a company representative with direct responsibility for system operations and restoration to communicate directly with Staff. (Exhibit 1, p. 49)
- xvii. **The EDCs** shall submit a written report to Staff detailing the plans, including timetables for the specific technological advancements and upgrades to OMS and computerized support systems, workflow process and workforce changes for the technological upgrades necessary to capture and report damage and outage on a municipal basis. (Exhibit 2, p. 3)
- xviii. **JCP&L** shall develop and submit to Staff a plan showing sufficient media coverage staff to provide backup in the event of simultaneous or consecutive Major Events, how social media will be used to augment press releases, and a schedule that provides for more frequent and accurate updates throughout an event. (Exhibit 1, p. 47)
- xix. **JCP&L** shall develop and submit to Staff messaging scripts that provide customer-centric information, giving priority to advice about potential for “worst case” event impact, and clear and concise IVR callback scripts. (Exhibit 1, p. 48)
- xx. **PSE&G** shall identify and train sufficient second role personnel as backup representatives for staffing OEMs, and submit the names and positions of the employees to the Staff. (Exhibit 1, p. 49)
- xxi. **RECO** shall implement all of the improvements detailed in its revised restoration plan, and submit to Staff a list of the improvements implemented. (Exhibit 1, p. 48)
- xxii. **RECO** shall submit to Staff documentation demonstrating that it has sufficient space for its communications team. (Exhibit 1, p. 48)

**d. Internal Communications**

**The EDCs** shall develop and submit to Staff a procedure to log and keep samples of internal communications to assist in developing lessons learned. (Exhibit 1, p. 49)

### 3. RESTORATION AND RESPONSE

#### a. Activation

- i. **The EDCs** shall develop and submit to Staff a Storm Damage and Outage Prediction Model. This model may be computerized, but must provide for input of all factors required to estimate storm damage. (Exhibit 1, p. 50)
- ii. For each major storm, **the EDCs** shall incorporate the prediction model in the estimation of the resources needed to respond to the event. This information shall be submitted to Staff one (1) day prior to the storm's arrival. (Exhibit 1, p. 50)
- iii. **JCP&L** shall develop and submit to Staff criteria for the activation of its emergency response plan, including clearly defined procedures for all functions. In its submission to Staff, JCP&L shall analyze any risks associated with the plan, including any risks inherent in requiring the movement of personnel between affiliates in severe weather. JCP&L shall also propose a plan to manage these risks. (Exhibit 1, p. 50)
- iv. **PSE&G** shall develop and submit to Staff a plan to mobilize additional skilled personnel to support a major storm activation, including identifying by job title the employees that would be available to support the restoration efforts for a significant event. (Exhibit 1, p. 50)

#### b. Mutual Assistance

- i. **The EDCs** shall immediately request assistance upon determining a need to request additional human resources and/or equipment to prepare for, respond to, or recover from a Major Event. The EDCs shall, upon requesting this assistance, inform Board Emergency Management Staff of the time, type, and number of resources, and whether the resource request is satisfied. (Exhibit 1, p. 50)
- ii. **The EDCs** shall provide periodic organized updates to Staff, in a form and frequency directed by Staff, regarding both mutual assistance requests made by the EDC, and/or mutual assistance being provided to another EDC. (Exhibit 1, p. 50)
- iii. If, at any time, an EDC determines that a resource request will not be satisfied in a timely manner, **the EDC** shall take immediate and repeated action to expeditiously meet its resource requests, through any and all available means, including direct requests to contractors and/or other utilities outside the affiliated company and/or Regional Mutual Assistance Group ("RMAG") process. The EDC shall make a permanent record of its actions and include this information in the Major Events Report. The EDCs shall promptly and fully inform Board Emergency Management Staff, in a manner prescribed by Staff, of these actions. These reporting requirements shall apply to any and all requests for assistance to an affiliated company, through an RMAG process, and/or for contractor and/or utility resources outside an RMAG process. (Exhibit 1, pp. 50-51)

- iv. **The EDCs** shall develop and submit to Staff a plan to acquire additional line personnel in the event of a wide spread natural disaster that stresses the RMAG system. (Exhibit 1, p. 51)
- v. **ACE** shall submit to Staff a new section to its Plan to describe how mutual assistance crews will be allocated among affiliated companies (ACE, Delmarva, and Pepco) when simultaneous large-scale events occur in multiple service territories. (Exhibit 1, p. 51)
- vi. **JCP&L** shall submit to Staff documentation that FirstEnergy developed a process regarding the provision of mutual assistance to JCP&L during major events, including an appendix in FirstEnergy E-Plan addressing the following:
  - When FirstEnergy resources can leave the FirstEnergy affiliate companies to assist non-FirstEnergy companies;
  - Triggers that determine when and how many personnel can leave, along with a plan to replace these personnel if they are unable to return when needed; and
  - How FirstEnergy will manage at least two or three major simultaneous restoration events on its system, including how mutual assistance crews will be allocated between companies when simultaneous large-scale events occur in multiple service territories. (Exhibit 1, p. 51)
- vii. **PSE&G** shall, for all future events, report the number of personnel instead of crews when reporting the number of personnel, instead of crews, when reporting the number of personnel that assisted during weather events. (Exhibit 1, p. 51)
- viii. **PSE&G** shall revise the mutual assistance section in its OMS Manual to include a description of who is responsible for the following: estimating resource needs, participating in Regional Mutual Assistance Group (RMAG) conference calls, and making the decision to send or obtain mutual assistance. PSE&G shall participate in RMAG calls even when its mutual assistance needs are not being met by the RMAG. The specific location of the revision shall be noted when the revised OMS Manual is submitted. (Exhibit 1, p. 51)
- ix. **RECO** shall submit to Staff a new section to its Plan to describe how mutual assistance crews will be allocated among affiliated companies (ConEdison and Orange & Rockland) when simultaneous large-scale events occur in multiple service territories. (Exhibit 1, p. 51)

c. **Crew / Work Management / Workforce Levels**

- i. **The EDCs** shall submit to Staff a detailed staffing review that explains any decreases, in the last five (5) years, in headcount, and the impact on the company's ability to provide adequate resources for restoration purposes. (Exhibit 1, p. 52)

- ii. **The EDCs** shall develop and submit to Staff a common damage “glossary” for reporting damage to the BPU during and after events. (Exhibit 1, p. 52)
- iii. **The EDCs** shall develop a procedure to track crew locations throughout the restoration process and report this information to the BPU Staff as requested. In addition, if requested by Staff, the EDCs shall report crew locations at the municipal level. (Exhibit 1, p. 52)
- iv. **The EDCs** shall participate with other key stakeholders in a debris management initiative organized by the Reliability and Security Staff to establish a structured process to determine roadway access prioritization. (Exhibit 1, p. 52)
- v. **The EDCs** shall develop and conduct a customer education program regarding field restoration work processes, and submit to Staff a report detailing this program. (Exhibit 1, p. 52)
- vi. **JCP&L** shall ensure that the approved quarantine process of circuit restoration is integrated into the E-Plan and that appropriate personnel are trained. A report detailing the implementation of this recommendation shall be submitted to Staff. (Exhibit 1, p. 51)
- vii. **PSE&G** shall define the process of circuit-based restoration and the escalation process in its OMS Manual, and specifically identify the location of the relevant language when submitted the revised copy of the Manual to Staff. (Exhibit 1, p. 52)

**d. Damage Assessment**

- i. **The EDCs** shall submit to the Board for review and approval a plan for the implementation of technology solutions to enable more efficient reporting and/or processing of damage assessment information. (Exhibit 1, p. 52)
- ii. **JCP&L** shall develop and submit to Staff a rapid damage assessment process to be used during Major Events, which shall include a detailed description of the prioritization of areas to be assessed, the method for assigning personnel, the timeframe for personnel to report back with their findings, as well as any other information requested by Board Staff. (Exhibit 1, p. 52)
- iii. **JCP&L** shall ensure that it has sufficient trained personnel to conduct the damage assessment process in parallel with the hazard process. JCP&L shall submit to Staff the details of these programs. (Exhibit 1, p. 52)
- iv. **JCP&L** shall establish a dedicated planning function to analyze information coming in from the damage assessments. JCP&L shall submit to Staff details of this process. (Exhibit 1, p. 52)
- v. **PSE&G** shall develop and submit to Staff a deployment plan that effectively uses drivers and damage assessors to conduct damage assessment. (Exhibit 1, p. 52)

e. **Estimated Restoration Times (ETR)**

- i. **The EDCs** shall make available to customers a global ETR 24 hours after a major event outage. Beginning 48 hours after a major event outage, the EDCs shall make available to municipal officials daily updates concerning the number of customers out in their towns and the estimated number of customers that will be restored each day until restoration is completed. (Exhibit 1, p. 53)
- ii. **The EDCs** shall, at a minimum, give priority restoration to customers who have been identified to the companies as those with special needs as defined in N.J.A.C. 14:3-3A.4(d) once the EDCs have reached the lateral/branch circuit and/or individual customer point in the process, while still giving consideration to restoring large groups of customers. Communications to those identified as special needs customers will include, at a minimum, a pre-event call to warn of impending possible outages and an intra-event call to provide an ETR. The EDCs shall submit to Staff details of this procedure and documentation of its implementation. (Exhibit 1, p. 53)
- iii. **The EDCs** shall conduct and submit to Staff a study of the accuracy of their ETRs during Major Events during the last three (3) years. (Exhibit 1, p. 53)
- iv. **JCP&L** shall develop and submit to Staff a standardized process for the calculation of ETRs at multiple levels of granularity, which shall be documented in its E-plan. (Exhibit 1, p. 53)
- v. **JCP&L** shall centralize the responsibility for the ETR process into a single function, and submit details of this program to Staff. (Exhibit 1, p. 53)
- vi. **RECO** shall develop a process to ensure that its automatic ETR generation feature is turned off during Major Events. (Exhibit 1, p. 53)

f. **Command and Control**

- i. **The EDCs** shall ensure that there are a minimum of three personnel identified, trained and assigned to fill each leadership level position in its emergency / incident response / storm restoration organization. The EDCs shall submit to Staff a list of the leadership positions and three personnel identified for each position. (Exhibit 1, p. 54)
- ii. **JCP&L** shall develop and submit to Staff staffing contingency plans to deal with a Major Event during which FirstEnergy corporate support is limited. (Exhibit 1, p. 53)
- iii. **PSE&G** shall follow the ICS organizational model endorsed in its OMS Manual, and revise its OMS Manual to define a clear role for the executives in accordance with ICS principles. The revisions shall be included in the OMS manual, and provided to Staff in a separate report as well for easier identification. (Exhibit 1, p. 53)

**g. Responder Systems, Tools and Job Aids**

- i. The EDCs** shall implement a cell phone application that customers can use to report outages and receive system outage information. (Exhibit 1, p. 54)
- ii. JCP&L** shall implement the use of Mobile Data Terminals to relay data to and from the field. (Exhibit 1, p. 54)

**h. Logistics and Field Support**

- i. The EDCs** shall develop and submit to Staff ice and water provisioning plans for Major Events, which shall provide for specific implementation trigger points, geographic criteria for supply points and duration of supply distribution. The plans may include affiliations with existing retail establishments and distribution assistance to be provided by local, county and state emergency management officials. The EDCs shall engage media and other communications methods to advise customers of the availability and location of these items. (Exhibit 1, p. 54)
- ii. The EDCs** shall predetermine Staging Areas sufficient to support restoration from an outage equal to 75% of total customers including location specific layouts. The EDCs shall have any necessary contractual arrangements in place for the use of the predetermined Staging Areas to resolve issues such as liability, access, security and existing support services at the site prior to a Major Event. The EDCs shall submit to Staff a report detailing this program. (Exhibit 1, p. 54)
- iii. JCP&L and RECO** shall assume the responsibility for lodging for foreign contractors and submit an implementation plan to Staff. (Exhibit 1, p. 54)
- iv. PSE&G** shall develop, and submit to Staff documentation of a standard Staging Area resource complement to ensure that operations can be managed effectively if adverse weather conditions occur during an extended restoration. PSE&G shall update its OMS Manual to include a detailed Staging Area plan. (Exhibit 1, p. 54)

**i. Follow-Up Work**

- i. The EDCs** shall develop and submit a clearly defined section in their plans outlining the follow-up “temporary repairs” work processes and responsibilities, including post storm patrolling and inspection. (Exhibit 1, p. 54)
- ii. The EDCs** shall develop and submit to Staff a storm quality assessment process to track the locations of all temporary repairs and the date each temporary repair was made permanent. (Exhibit 1, p. 55)

#### 4. POST EVENT

##### a. Storm Restoration Process Metrics

The EDCs shall implement and submit to Staff documentation of a process by which, during a Major Event, EDCs shall report to Staff at least once per day (after the first 24 hours), or as requested, the estimated man-hours required to restore all remaining affected customers. (Exhibit 1, p. 55)

##### b. Benchmarking / External Analysis

The EDCs shall submit to Staff a list of Regional Mutual Assistance Groups (RMAG) and/or utilities they have agreements with to share restoration experiences. (Exhibit 1, p. 55)

##### c. Post Event Processes

- i. The EDCs shall implement a process by which, following a Major Event, they shall solicit input regarding their performance from affected external stakeholders, via letter, email, conference call, personal contact or by meeting, and document the feedback provided. This documented input shall be available for review by Staff upon request. (Exhibit 1, p. 55)
- ii. The EDCs shall implement the use of logs to track activities and document decisions by storm team leadership members, which shall be available for review by Staff upon request. (Exhibit 1, p. 55)
- iii. The EDCs shall each identify one responsible party, who will review all “lessons learned,” meet with the submitting departments, finalize action items, assign responsibility for the action items, track action item completion and report progress to leadership. The EDCs shall submit to Staff the name of the responsible party and the reporting structure he or she will use. (Exhibit 1, p. 55)
- iv. JCP&L shall implement, and submit to Staff documentation of, a process to ensure timely completion and final approval of process improvement items noted during post storm debriefings/“lessons learned.” (Exhibit 1, p. 55)
- v. PSE&G should develop and submit to Staff documentation of a process to perform “lessons learned” after each Major Event to find and reward innovative actions, understand training requirements, correct errors or omissions in its OMS Manual, foster a culture of continuous improvement, and establish a timeframe when these post event reviews will be completed. (Exhibit 1, p. 56)
- vi. RECO’s Emergency Management Department will review all “lessons learned,” track the required improvements, and ensure their final, appropriate and timely completion, report progress to leadership, and submit to Staff documentation demonstrating implementation. (Exhibit 1, p. 55)

## 5. UNDERLYING INFRASTRUCTURE ISSUES

### a. Substation Flooding

- i. **The EDCs** shall prepare formal reports after all instances of substation flooding to be submitted to Board Staff within 30 days of the incident. The EDCs shall detail the circumstances of the event, the overall impact to the substation and feeder circuits, the flood mitigation in place at the time of the event, and an assessment of the need for additional mitigation steps, including a cost-benefit analysis. (Exhibit 1, p. 56)
- ii. **The EDCs** shall develop and submit to Staff specific substation flooding preparedness plans which detail mitigation steps to be taken and monitoring prior to and during major storm events. (Exhibit 1, p. 56)
- iii. **The EDCs** shall prepare a report to be submitted to the Board that prioritizes the EDCs' proposed responses to various levels of potential flooding at each substation and switching station at risk of flooding (up to and including the levels of water encroachment that occurred in both Irene and Sandy). Alternative response levels to various levels of encroachment shall include, but not be limited to, hardening measures including (1) sandbagging, (2) raising certain facilities in the substation or switching station to higher levels, (3) constructing flood walls around the stations, (4) raising the level of the station and (5) moving the station to higher ground. Other response measures to be considered shall include the feasibility of adding redundancy to portions of the system, and the use of variations of so-called smart grid technologies that would provide greater flexibility to react to various flooding emergencies on the system. The Report shall include cost benefit analyses for each alternative considered taking into account the likelihood of each considered event, the effectiveness of each alternative considered and the cost of each measure. (Exhibit 1, pp. 56-57)
- iv. **The EDCs** shall submit to the Staff an analysis of the current 100 year flood plan data for their respective areas of operation, an evaluation of the need to design for higher flood elevation in future substation installations within flood zone areas or other vulnerable areas, and any recommendations regarding design improvements, including a cost-benefit analysis and a work plan. (Exhibit 1, p. 57)
- v. **The EDCs** shall coordinate with municipal and facility stakeholders (e.g., local or county drainage, dam and water facilities) whose infrastructure or operations can impact substations in vulnerable flood areas. These meetings shall be considered as a working group for the stakeholders to discuss past events, operational and logistical concerns, and communications. The minutes of each meeting shall be submitted to the Staff within 30 days after that meeting. (Exhibit 1, p. 57)
- vi. **PSE&G** shall complete its flood mitigation study and submit for Board consideration a proposal for implementation of the recommended

mitigation measures, which shall include a cost benefit analysis and a work plan. (Exhibit 1, p. 56)

**b. Vegetation Management**

- i. The EDCs and Staff** shall establish a work group to develop plans for a tracking system for distribution system outages related to trees and vegetation. This program shall track information such as the outage causation, proximity of the tree/vegetation to electrical facilities, last trimming cycle of the circuit that experienced the outage, location of tree/vegetation within or outside of the right-of-way (ROW) or easement, and any other pertinent factors, including storm event, local cutting, wind, etc. This tracking system shall be maintained by the respective EDCs and available to Staff upon request. (Exhibit 1, p. 57)
- ii. The EDCs** shall review their vegetation outage data and correlate this information into an analysis of their impacts to the system reliability. The EDCs shall prepare and submit to Staff an explanation of this analysis showing any perceived benefits or concerns with the impact of the programs to the health of the system. (Exhibit 1, p. 57)
- iii. JCP&L** shall develop and submit to Staff a plan to document its “institutional knowledge” of the vegetation impacts and mitigation on its systems with the goal of making this information available to all personnel during Major Events. (Exhibit 1, p. 57)
- iv. Staff** will continue its initial steps to evaluate the Vegetation Management recommendations contained in the January 23, 2013 Order to determine if further Board action is required. Staff will work with the appropriate stakeholders, which include the EDCs, local agencies and regulatory bodies, to initiate a detailed review of vegetation management rules for distribution lines. Staff will work to develop specific clearance requirements, mitigation of trees above, and species allowed within the easement. Staff will work to establish a process to address “danger trees”, i.e., those that are in imminent danger of negatively effecting power lines. (Exhibit 1, p. 57)

**c. Circuit Outages**

- i. The EDCs** currently managing or evaluating a Smart Grid running pilot program incorporating Distribution Automation within New Jersey or the PJM region, and each EDC that is in the process of developing or implementing any new Smart Grid - Distribution Automation pilots, shall submit to Staff a status report explaining the scope of work, objectives/goals, tasks, funding source including federal, state regional or energy organization, schedule and any other pertinent information. (Exhibit 1, p. 58)
- ii. Each EDC** shall file a Smart Grid – Distribution Automation Plan (“SG-DAP”) filing. The SG-DAP shall include the development and

implementation of feeder and substation automation as part of an overall Distribution Management System (“DMS”) and OMS. The SG-DAP shall include, but not be limited to, the following: Automatic Circuit Reclosures (“ACR”), automation sectionalizing and restoration (“ASR”), advanced voltage control, VARs control, network protection/monitoring/controls, remote terminal units, remote fault detection, smart relays, equipment health sensors, outage detection devices and smart meters. The SG-DAP filing shall include the timeframe for the development of each component and the overall plan, as well as the costs and benefits of each individual component and the entire plan to the EDC and the ratepayer. The SG-DAP shall be developed with the goal to implement a more resilient and “self-healing” distribution grid and with the objective to improve the distribution system reliability and optimize the distribution grid operation overall with a specific focus during and after a storm event such as Irene. (Exhibit 1, p. 58)

- iii. **The EDCs** and Staff will evaluate and implement changes, if appropriate, to the Major Event Report to standardize reporting information. (Exhibit 1, p. 58)
- iv. **Staff** shall continue its Outage Reporting and Reliability initiative to require increased outage reporting by EDCs to the Staff pursuant to N.J.A.C. 14:3-3.7 in order to gather and analyze circuit and equipment data to identify problem areas: locational, equipment or procedural. The goal will be to have these analyses done on a continual basis so the EDCs and Staff can more clearly focus efforts to improve the reliability. Additionally, Staff will evaluate the use of a consultant to review and determine the benefits of adopting and utilizing Distribution Automation strategies on New Jersey’s electric distribution systems. This review should include the EDCs’ current implementation of substation SCADA systems, protective relaying, use of dynamic recording devices, smart metering, automated circuit switching and closing, and other power quality and equipment monitoring technologies. Additionally, Staff and the consultant should review the results of the Distribution Automation pilot programs, currently in progress by several of the EDCs, to evaluate the realized benefits and potential constraints with such implementation. Cost benefit considerations as well as rate impacts associated with the implementation of Distribution Automation should also be reviewed. (Exhibit 1, p. 58)
- v. **The Division of Energy** will review and evaluate the SG-DAP filing to determine the benefits of adopting and utilizing Smart Grid – Distribution Automation strategies within New Jersey’s electric distribution systems. Additionally, Staff will review the results of the Distribution Automation pilot programs, currently in progress by several of the EDCs, to evaluate the realized benefits and potential constraints with such implementation. This review should include the EDCs’ current implementation of substation SCADA systems, protective relaying, use of dynamic recording devices, smart metering, automated circuit switching and closing, and

other power quality and equipment monitoring technologies. Staff will perform an independent cost and benefits review of each of the EDC's SG-DAP including cost and benefit considerations as well as the rate impacts associated with implementation. (Exhibit 1, pp. 58-59)



Agenda Date: 1/23/13  
Agenda Item: 6B

**STATE OF NEW JERSEY**  
**Board of Public Utilities**  
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RELIABILITY & SECURITY

IN THE MATTER OF THE BOARD'S REVIEW OF  
THE UTILITIES' RESPONSE TO HURRICANE IRENE

- ) ORDER ACCEPTING
- ) CONSULTANT'S REPORT
- ) AND ADDITIONAL STAFF
- ) RECOMMENDATIONS AND
- ) REQUIRING ELECTRIC
- ) UTILITIES TO IMPLEMENT
- ) RECOMMENDATIONS
- )
- ) DOCKET NO. EO11090543

**Parties of Record:**

**Stefanie A. Brand, Esq.**, Director, New Jersey Division of Rate Counsel  
**Ralph LaRossa**, Public Service Electric and Gas Co.  
**Donald Lynch**, Jersey Central Power and Light Co.  
**Vince Maione**, Atlantic City Electric Co.  
**William Longhi**, Rockland Electric Co

**BY THE BOARD:**

The New Jersey Board of Public Utilities (Board or BPU) initiated this matter to investigate the responses of Atlantic City Electric Company (ACE), Public Service Electric and Gas Company (PSE&G), Jersey Central Power & Light Company (JCP&L), and Rockland Electric Company (RECO) (collectively EDCs) to the electric outages caused by Hurricane Irene and the October 29, 2011 snowstorm. By this Order, the Board directs action following consideration of: (1) the report prepared by the Board's consultant, Emergency Preparedness Partnerships (EPP Report); (2) the recommendations provided in the EPP Report; (3) the recommendations provided by BPU Staff in the Hurricane Irene Electric Response Report, dated December 14, 2011 and adopted by the Board on December 15, 2011 (BPU 2011 Hurricane Irene Electric Response Report); and (4) stakeholder comments received by the Board at numerous public hearings and in response to the above reports.

During the Board's review of these events, Hurricane Sandy made landfall in the State of New Jersey on October 29, 2012, leaving massive destruction in its wake. Record storm surges and power outages resulted. The Board is conducting a separate review of that event and the utilities' preparations for and response to Hurricane Sandy. Additional recommendations will be

made once that review is completed. The widespread destruction caused by Hurricane Sandy and the resulting utility outages warrant a thorough review, which includes public hearings. As that process is still underway, the utilities' activities related to Hurricane Sandy are not included in this Order.

With the information currently available at this time, it is the Board's intention to have its Staff conduct a more detailed analysis of the utilities' communications both during and after Hurricane Sandy. It is clear that communications is an area where much improvement is still needed, as evidenced by the experiences of customers and elected officials as relayed to the Board thus far.

The Board has also directed its Staff to enlist the assistance of the Rutgers' Center for Energy, Economic & Environmental Policy (CEEPP) to further analyze specific areas that continue to raise concerns and impact restoration efforts. The areas identified thus far are: 1) infrastructure improvements, particularly substation protection and selective undergrounding of critical infrastructure; 2) expanding distributed generation; 3) evaluation of real capabilities and limitations of smart grid technologies; and 4) identify best practices concerning vegetation management. As the Board continues its review of the impact of Hurricane Sandy these and other issues will be evaluated, and the cost of any options being considered will be carefully explored as well.

## **BACKGROUND**

New Jersey experienced two unprecedented weather events in 2011. Though vastly different, both substantially affected New Jersey communities, residents and businesses, primarily due to prolonged power outages.

Hurricane Irene made landfall in New Jersey the morning of August 28, 2011.<sup>1</sup> This storm had been tracked for days and its arrival in New Jersey was anticipated based on numerous forecasts and the State's tracking of the storm. On August 25, 2011, Governor Christie declared a state of emergency and called for a complete evacuation of the shore areas within twenty-four hours. In Irene's aftermath, a federal disaster declaration was made for the entire state.

In the weeks and days prior to the arrival of Hurricane Irene, New Jersey experienced heavy rainfalls that saturated the ground and had rivers running high. The rainfall totaled between 6-12 inches, resulting in record-setting flooding which inundated many electric substations and brought down trees causing power outages, property damage and road closures throughout the State. Over 1.9 million electric customers lost power, and full restoration of electric service was not completed until 8 days later on September 5, 2011.

The BPU held six public hearings designed to receive input regarding the EDCs' preparations and restoration performance relative to Hurricane Irene. In addition, members of the public contacted the Board by letters, e-mails and phone calls.

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<sup>1</sup> Irene was forecasted to hit New Jersey as a Category 1 hurricane on August 28, 2011, and initial reports described the storm as Hurricane Irene. Subsequent analysis by the National Oceanic and Atmospheric Administration's ("NOAA") National Hurricane Center downgraded Irene to a tropical storm when it made landfall in New Jersey.

During Staff's investigation of the hurricane, an unexpected and powerful snowstorm struck New Jersey on October 29, 2011. The northern half of the state was severely impacted with some areas receiving record-breaking snow accumulations. The combination of heavy wet snow and trees mostly full of foliage caused extensive infrastructure damage from fallen trees and limbs. Only two months after Irene caused nearly 2 million outages, the snowstorm caused loss of electrical service to nearly 1 million of the state's 3.9 million electric customers for up to 9 days. Full restoration was not completed until November 7, 2011.

As a result of these two storms, tens of thousands of New Jersey residents were without electric power, some for extended periods of time, resulting in, among other things, the lack of air conditioning, heat, and water where wells were present. Entire communities were disrupted, and their emergency management capabilities were extended to the limit. Schools and businesses were closed, family routines disrupted and critical facilities activated emergency contingency plans.

Experience with these two storm events highlighted the fact that the EDCs' existing practices were not sufficient for such large-scale weather events. Board Staff continued its investigation and review of the comments received during the public hearings, together with additional information gathered from meetings and correspondence with local officials and citizens following the snowstorm.

In reviewing all comments received, the Board found that several issues were repeatedly mentioned, such as the EDCs' poor communications with local officials regarding estimated restoration times and efforts to make downed electrical wires safe. This lack of clear communication was particularly troublesome to local officials working to manage the storm's aftermath, as it hindered providing timely and accurate information to residents who were anxious to make decisions about shelter, sustenance, and property security.

In addition, many of JCP&L's customers complained about the underlying condition of infrastructure, and vocalized concerns about the reliability of their electric service in general. The susceptibility of aerial infrastructure to tree damage was underscored by the massive number of wires and poles damaged by vegetation.

The vulnerability of substations to flooding across the state was also highlighted given the loss of power to tens of thousands of customers from inundation of substations. At public hearings held in areas that suffered extensive localized flooding, particularly in JCP&L and PSE&G territories, a common criticism was the siting of substations in flood plains.

On December 14, 2011, Staff presented to the Board the results of its initial investigation and analysis of key elements of the Storm Restoration Process used by the EDCs in response to Hurricane Irene, and to some extent, the October snowstorm. The Board issued an Order adopting the BPU 2011 Hurricane Irene Electric Response Report on December 15, 2011.

The BPU 2011 Hurricane Irene Electric Response Report was a preliminary report on major storm event planning and emergency response by the four regulated EDCs. The report created an action plan to implement readily available "lessons learned" from both storms.

The BPU 2011 Hurricane Irene Electric Response Report required immediate action by the EDCs to improve communications including the addition of staff during storm events to handle expected calls, the use of social media to inform affected customers, and having a scalable communications plan. These recommendations were designed to address some of the

problems identified during the public hearings and BPU Staff's review of the electric utilities' responses to the two storms.

Staff has been monitoring progress made by the EDCs to implement these and other actions recommended in the BPU 2011 Hurricane Irene Electric Response Report. In the first week of July 2012, a series of thunderstorms caused a major interruption to the customers of ACE, and there were a number of smaller thunderstorms that affected all of the EDCs in July 2012. Based on Staff's preliminary review of the EDCs' performance in these events, it appeared that communications between the EDCs and customers improved, including the use of conference calls with municipal officials. EDC websites provide better Estimated Times of Restoration (ETR) to affected customers and enhanced communications between Board Staff and the EDCs. However, more work remains to be done. Also, this area will be further scrutinized as the Board conducts its review of the utilities' activities related to Hurricane Sandy, and additional steps may be ordered by the Board once that review is completed.

In conjunction with the Board's acceptance of the report, the Board approved retention of a consultant to review areas that the report identified as warranting further investigation.

On October 13, 2011, the Board authorized Staff to seek the services of a consultant to review the EDCs' preparedness for and responses to Hurricane Irene, and make recommendations to improve service where needed. Staff worked with the Department of the Treasury, Division of Purchase and Property to issue a Request for Quotation that outlined in detail the scope of work for further investigation. On March 12, 2012, EPP was selected as the consultant to conduct the performance review for the Board. EPP reviewed numerous issues including, but not limited to, the following: EDC communications with customers, municipal and county officials and Office of Emergency Management (OEM) personnel; acquisition of supplemental crews; prioritization of service restoration; infrastructure issues affected by vegetation management and substation flooding; and, procedures to identify and prioritize service to special needs customers, such as those with health issues and well water dependent customers.

On August 9, 2012, EPP submitted to the Board its final report. The EPP Report, contained over 130 recommendations designed to enhance New Jersey's EDCs' responses to and recovery from major storm events.

The Board released the EPP Report on September 5, 2012, and opened a public comment period that lasted until September 20, 2012. A total of 13 comment letters/emails were received, including one from each of the EDCs, three from elected officials: Mayor Katie Cole of Pompton Lakes, Mayor George Harper of Sandyston and Councilman Austin Ashley of New Milford; the New Jersey League of Municipalities (League), and the New Jersey Division of Rate Counsel (Rate Counsel). Comments were also received from four members of the public: Clark Bussard; John Houck; Jim Moldow (who submitted two separate comments), and Juliette Thorsen.

The Board's Order in this matter is organized using the following five categories: 1) Preparedness Efforts; 2) Communications; 3) Restoration and Response; 4) Post Event; and 5) Underlying Infrastructure Issues.

Each category includes the relevant recommendations from the EPP Report (which are numbered and identified as global (G) and pertaining to all companies or identified as relating to one company), public comments and Staff responses to the comments, and BPU Staff recommendations. Some of the comments received were of a general nature, and they are

addressed below. Finally, the Board's findings and directives are at the end of the Order, also using the five categories listed above for purposes of clarity.

### **General Public Comments**

The League and Rate Counsel both thanked the Board for the opportunity to comment on the EPP Report. The League also stated that, "[r]ather than a one-size-fits-all approach, the unique needs of each municipality need to be recognized and respected." Rate Counsel requested "cost-effective and efficient implementation of [the] recommendations [to avoid] any undue expense that may be passed along to ratepayers."

Response: Staff thanks the commenters and agrees that each municipality in New Jersey is unique and that the costs of implementing the actions ordered by the Board should be considered.

While the EDCs provided specific comments noted below, they also made general comments. PSE&G agrees with EPP's global and PSE&G-specific recommendations, except where noted, and clarified statements in the EPP Report that the company believes are incorrect. ACE asked to recover, through rates, the cost of implementing any of EPP's recommendations. ACE and JCP&L asked the Board to be flexible as each EDC is different, and suggested creating working groups of the EDCs and Board Staff to develop a consensus on implementation of the global recommendations. RECO stated it supports the process of improving preparedness and that it will continue to address both the global recommendations and company specific recommendations. JCP&L expressed appreciation for the thoroughness of the EPP Report and thanked its customers for their patience during two events of unprecedented magnitude.

Response: Board Staff appreciates the comments received from the EDCs, and understands the need to recognize the differences among the EDCs. Board Staff recommends establishment of working groups in limited instances, as described below.

### **PREPAREDNESS EFFORTS**

The key elements of an effective preparedness program are the development of a response protocol, training all members of the organization in its use, and evaluation of performance through exercises. The following addresses issues found in the preparedness efforts of the EDCs.

### **ORGANIZATIONAL STRUCTURE, ROLES AND RESPONSIBILITIES**

The most effective and efficient process for restoration provides personnel, policies, procedures and equipment integrated into a common organizational structure designed to improve emergency response operations. The best model for this type of organization is the Incident Command System (ICS), which provides a standardized approach to managing the people (representing multiple organizations) and support systems required for events such as restoration of service. The ICS uses a common and therefore predictable process for coordination and collaboration of incident management but includes the flexibility needed to manage different types of events.

In addition to using ICS, emergency management is enhanced when those entrusted with this responsibility comprise a separate and distinct area within the utility and are given the appropriate authority to carry out this role.

18-JCP&L-1 JCP&L should reorganize the emergency organization to follow the ICS organization, principles and concepts. Update the E-Plan to reflect the changes.

18-JCP&L-2 JCP&L should develop an Emergency Management / Emergency Preparedness role as a stand-alone function within JCP&L with the requisite authority to ensure compliance with readiness related initiatives.

18-PSE&G-1 PSE&G should reorganize the emergency organization to follow the ICS organization, principles and concepts. Update the Outage Management System Manual to reflect the changes.

18-PSE&G-2 PSE&G should develop an Emergency Management / Emergency Preparedness role as a stand-alone function within PSE&G with the requisite authority to ensure compliance with readiness related initiatives.

18-PSE&G-3 PSE&G should develop a more robust second role process to identify staffing needs, pre-assign appropriate personnel and provide training in advance of a storm event.

### **Public Comment**

Mayor Katie Cole of Pompton Lakes commented that all EDC employees should be trained in some level of ICS.

Response: Board Staff thanks Mayor Cole for her comment and for participating in the stakeholder process. Not all EDC employees have a role in ICS. Staff agrees that all EDCs should implement an ICS structure into their emergency operations and identify the appropriate employees who have a role.

### **Staff Recommendations**

Staff recommends that JCP&L and PSE&G update their E-Plans and OMS Manuals to reflect the use of an ICS structure in their emergency organizations, and submit the updated documents to Staff.

Staff further recommends that JCP&L and PSE&G establish an Emergency Management/Preparedness role within their organizational structures, with the requisite authority to set and execute preparedness goals, and provide documentation to Staff including but not limited to the date hired, resume, reporting relationship and how the person selected for this role will be integrated into the company.

Staff recommends that PSE&G ensure it has enough identified and trained second role personnel to meet emergency staffing needs, and provide data supporting the number of staff trained and the training schedule to Staff.

All of these recommendations are to be completed within 120 days.

## **PLANNING**

Some major events, such as Hurricane Irene, allow time for preparations to be made while others, such as the October snowstorm, end up being worse or different than predicted. In either situation, appropriate planning is an integral part of the restoration process. The urgency that naturally becomes a part of this process can be overwhelming; however, proper planning can help keep the restoration efforts on a clear path.

The EDCs should plan for the worst-case scenario, continually update their planning efforts, no less than once a year, and use lessons learned to make improvements. All EDCs' plans should conform to minimum standards.

1-G-1 Each EDC should be required to have plans that conform to a standard of content to ensure that key areas of an effective emergency plan are described sufficiently in the plan. The plans should include the following descriptions: emergency organization; emergency classifications; annual training and exercise program; on-going readiness initiatives; pre-event preparatory measures; procedures for mobilizing personnel, materials and equipment; communications procedures; process for acquiring external resources; process for acquiring internal support services; and linkages to corporate plans, if applicable.

1-G-2 Each EDC's plan should be designed to manage a storm of such magnitude that a minimum of 75% of the customers will be out of service at some point during the planned restoration.

1-ACE-1 ACE should modify the organization charts (in the Incident Response Plan appendix) so that they show only position titles and not names. Maintain the organization charts with positions and employee names outside of the plan document where frequent updating is easier.

1-JCP&L-1 JCP&L should ensure that individually developed job aids and checklists are included in the E-Plan so that all E-Plan users can benefit from them. The company should also ensure that the Construction Restoration Lead's plan is included in the JCP&L E-Plan.

1-PSE&G-1 PSE&G's Outage Management System (OMS) Manual should be revised to reflect the specific level of effort needed to deal with a significant restoration event. The roles and responsibilities defined in the OMS Manual should be followed.

1-PSE&G-2 PSE&G should maintain contact names and phone numbers in a document separate from the OMS Manual where frequent updating is easier.

1-PSE&G-3 PSE&G's OMS Manual should be reviewed, updated, and distributed annually.

## **Public Comment**

ACE stated it agrees that the EDCs' storm plans should conform to minimum standards and already complies.

Regarding storm plans designed to manage 75% of customers out of service – JCP&L indicated that it has begun the process of implementation; ACE stated it agrees and has a scalable plan; and PSE&G agreed with the recommendation but said more clarity is needed and a working group should be convened.

Response: Board Staff thanks JCP&L, ACE and PSE&G for commenting on the above recommendations, where applicable, and for participating in the stakeholder process.

Staff will work with PSE&G to clarify any issues regarding its storm plan.

### **Staff Recommendations**

The EDCs' emergency plans shall contain descriptions of the procedures listed in 1-G-1. Additionally, the EDCs' plans shall be designed to manage the restoration of a minimum of 75% of their customers. The EDCs shall provide Staff with documentation of these changes within 180 days.

ACE shall modify its organizational charts to reflect position titles instead of names within 90 days.

JCP&L shall include the Construction Restoration Lead's plan and any individually developed job aids or checklists in its emergency plan within 90 days.

PSE&G shall update its OMS manual to reflect the elevated response required for a large scale restoration event and ensure that the roles and responsibilities as defined in the OMS Manual are followed in actual practice. Additionally, PSE&G shall review, update and distribute its OMS Manual annually. PSE&G shall provide documentation of these changes to Staff within 120 days.

### **EXERCISES / DRILLS**

The regular use of exercises and drills provide the utilities with tools to test the plans and systems in place to deal with major events, then use the lessons learned from these activities to make improvements. Exercises and drills help keep the roles and responsibilities fresh in participants' minds, and serve to regularly engage second role employees whose main focus is elsewhere in the utility.

2-ACE-1 ACE should continue its current exercise and drill program.

2-JCP&L-1 JCP&L should conduct an annual exercise. This exercise should include participation of personnel from all functions / departments with a restoration role, as well as external agency partners, in order to test the limits of the restoration plan and systems. Outside agencies such as BPU, Offices of Emergency Management (OEMs), and County leaders should be invited to participate and observe the exercise.

2-JCP&L-2 JCP&L should participate in FirstEnergy corporate-wide exercises to ensure that roles and responsibilities are clearly understood.

2-JCP&L-3 JCP&L should prepare a written post exercise report, providing a summary of the exercise, objectives, who participated, what occurred, and recommendations for improvement.

2-PSE&G-1 PSE&G should continue to conduct an annual exercise and enhance its annual exercise to deal with much larger scale events. Participation in this exercise should be expanded to include personnel from all functions / departments with a restoration role in order to test the limits of the restoration plan and systems. Lessons learned from real events should be incorporated in the exercise. Outside agencies such as BPU, OEMs, and County leaders should be invited to participate and observe the exercise.

2-PSE&G-2 PSE&G's post exercise report should be expanded to include the role of the participants as well as recommendations for improvement.

2-RE-1 RECO should prepare a written post exercise report, providing a summary of the exercise, objectives, who participated, what occurred, and recommendations for improvement.

**Public Comment:**

ACE agreed with the recommendation to show titles in the Organizational Charts of its Incident Response Plan.

JCP&L stated that EPP did not recognize the annual exercise it conducted on May 21, 2012, and the company is in the process of modifying the exercise.

Response: Board Staff thanks ACE and JCP&L for commenting and for participating in the stakeholder process.

**Staff Recommendations**

The EDCs shall perform an annual exercise in which their personnel will staff the County and Local Emergency Operations Centers (EOCs) in their service territories with the goal of creating familiarity with the facilities, developing relationships with Emergency Management Officials and verifying the functionality of all field equipment. Board Staff recommends that the EDCs provide their plan for implementation within 120 days and include a target date for the first exercise.

JCP&L shall develop a policy of conducting an annual storm restoration exercise that will include participation of personnel from all functional units/departments that play a role in storm restoration and external agencies. In addition, JCP&L shall conduct internal annual exercises with FirstEnergy focusing on roles and responsibilities and develop a post exercise report and improvement plan following each exercise. JCP&L shall provide Staff with a copy of the policies implementing these recommendations within 120 days.

PSE&G shall include larger scale events in its annual exercises and include personnel from all functional units/ departments that play a role in storm restoration. PSE&G shall include the role of participants in its post exercise report and an improvement plan. PSE&G shall provide Staff with a copy of the policies/processes implementing these recommendations within 120 days.

At the conclusion of each exercise, RECO shall prepare a written report and improvement plan based upon the findings from the exercise. The written procedure to implement this recommendation shall be provided to Staff within 30 days.

## **TRAINING**

Training is another tool used to sharpen the skills and awareness of everyone involved in the restoration process, and is particularly important for those whose day-to-day responsibilities do not involve restoration. Employees need to understand their individual roles and responsibilities to help ensure a coordinated and efficient restoration process.

3-ACE-1 ACE should develop training requirements (curriculum, frequency, initial, refresher, etc.) for all positions, not just technical or system training, within the storm restoration organization.

3-ACE-2 ACE's training should be developed and conducted in accordance with the requirements of the position.

3-ACE-3 ACE should develop a centralized repository for training records to ensure compliance with the training requirements of each position.

3-JCP&L-1 JCP&L should revamp its training program to include opportunities to train personnel on the interdependencies between functional areas and storm roles. This should be accomplished during exercises and drills.

3-JCP&L-2 JCP&L should develop training requirements (curriculum, frequency, initial, refresher, etc.) for all positions (not just technical or system training) within the storm restoration organization.

3-JCP&L-3 JCP&L should track on-the-job training participation.

3-PSE&G-1 PSE&G should ensure readiness of personnel with a storm restoration role by expanding its training program to include opportunities to train personnel on the interdependencies between functional areas and storm roles. This could be accomplished during exercises and drills.

3-PSE&G-2 PSE&G should develop training requirements (curriculum, frequency, initial, refresher, etc.) for all positions (not just technical or system training) within the storm restoration organization.

3-PSE&G-3 PSE&G should develop a centralized repository for training records to ensure compliance with the training requirements of each position.

3-PSE&G-4 PSE&G should ensure that, when applicable, second role personnel attend refresher training prior to a pending event.

3-RE-1 RECO should revamp its training program to include opportunities to train staff on the interdependencies between functional areas and storm roles. This could be accomplished during exercises and drills.

3-RE-2 RECO should develop a centralized repository for training records to ensure compliance with the training requirements of each position.

3-RE-3 RECO should ensure that, when applicable, second role staff attend refresher training prior to a pending event.

### **Public Comment**

ACE stated it conceptually agrees with the recommendation about developing training requirements, but submits that the recommendation is not applicable to all staff positions. Therefore, ACE would like BPU Staff to provide more detail. ACE also agreed with the recommendation to centralize training records.

JCP&L stated it is revising and enhancing its training to show the interdependencies of storm roles and the overall storm process and expanding training to include additional roles and employees.

Response: Board Staff thanks ACE and JCP&L for commenting, and suggests that training is necessary for every employee involved in the storm restoration organization. Staff's recommendation is limited to personnel with a storm restoration role.

### **Staff Recommendations**

ACE, JCP&L and PSE&G shall establish specific training requirements for all positions involved with storm restoration and provide the training schedule to Staff within 180 days.

ACE, PSE&G and RECO shall develop a centralized repository of training records for all positions involved with storm restoration within 90 days and provide Staff with written notification of the completion of this recommendation.

JCP&L, PSE&G and RECO shall include in their training programs the training of personnel on cross-functional interdependencies within its storm restoration organization and provide documentation of the completion of this recommendation within 180 days.

PSE&G and RECO shall update their procedures to ensure that refresher training is provided to second role staff prior to a predicted major event storm. The revised procedures shall be provided to Staff within 90 days.

ACE shall revise its training procedures to ensure that the training provided meets the requirements of the position within the storm restoration role and provide the revised procedures to Staff within 120 days.

JCP&L shall develop a procedure to track on the job training participation, and provide Staff with a copy of the procedure within 90 days.

### **WEATHER MONITORING / FORECASTING**

Weather forecasting is critical to preparing for major storm events. If the EDCs are aware, in advance, of the severity and path of a storm, preparations can be made regarding first decisions, including the need for mutual assistance. Although there have been and continue to be significant advances in meteorological technology, weather prediction is an art and not an exact science. Therefore, each EDC should utilize multiple means to forecast and monitor approaching weather systems.

5-PSE&G-2 PSE&G should add a section describing the weather monitoring, analysis and dissemination process in the OMS Manual.

### **Staff Recommendations**

PSE&G shall include in its OMS Manual the policies and procedures for the collection, analysis and dissemination of weather information, and provide Staff with the updated procedures within 120 days.

## **COMMUNICATIONS**

Clear and consistent messaging to the public and local officials before and after a storm is crucial to help in planning for the possibility of outages of a long duration. Additionally, providing regular restoration progress reports to the public drives better decision-making and reduces the stresses caused by uncertainty. The following addresses issues found in the communications processes of the EDCs.

### **PRE-EVENT COMMUNICATIONS**

Pre-event communications between EDCs and customers not only provide customers with knowledge regarding the storm, but may also allow adequate time for customers to prepare. Such preparation may involve life-saving measures such as evacuating potentially dangerous areas. Not all customers have access to, or are comfortable with, every means of communication. Therefore, pre-event communication must occur in various media including, but not limited to, print, television, radio, Internet and social media.

8-G-1 Each EDC's pre-storm communication primary messages should emphasize the "worst case" severity of potential damage, customer safety advice, and resources to allow both its employees and customers enough time to prepare.

8-JCP&L-1 JCP&L should continue to implement and build upon the recommendations of the improved Storm Restoration Communications Implementation Plan, developed in conjunction with the BPU Staff.

8-JCP&L-2 JCP&L should launch its storm website as soon as significant threats are declared, and notify customers that the website is activated.

8-JCP&L-3 JCP&L should determine the proactive role for Interactive Voice Response (IVR) messages as soon as significant threats are determined.

8-PSE&G-1 PSE&G should keep basic high-level logs of all media contacts to assist with lessons learned and post event analysis.

### **Public Comment**

JCP&L commented that after Hurricane Irene and during the October snowstorm, it provided customers with Estimated Times of Restoration (ETR) and preparedness information through numerous venues, and that recommendation 8-G-1 should be part of the ETR working group process.

RECO did not specifically comment about pre-storm activities but did explain how it has expanded its use of “newer technologies” such as different forms of social media.

ACE also agreed with the recommendation on pre-storm communication, noting that it already provides this type of information to customers.

Concerning the recommendations specific to JCP&L, the company states it has been working with Staff regarding an enhanced Storm Restoration Communications Implementation Plan, an enhanced website has already been launched, and improved IVR messages are being used.

Response: Staff believes that alerting the public early about the potential for long duration outages and providing timely information about preparedness steps is crucial so the public can make informed decisions and no working group is needed in this instance.

### **Staff Recommendations**

The EDCs shall update their pre-storm customer messaging to emphasize that customers should prepare for the possibility of long duration outages, and provide safety advice and sources of emergency preparedness information. The EDCs will provide a copy of this pre-storm messaging to Staff within 90 days.

JCP&L shall implement the recommendations contained in its Storm Restoration Communications Implementation Plan, and provide Board Staff with a finalized copy. JCP&L shall launch its storm website and notify its customers of its activation 2 days prior to an expected major event storm or immediately upon the arrival of an unexpected major event storm. In addition, JCP&L shall update its IVR messages with storm warning and preparedness information 2 days prior to an expected major event storm or immediately upon the arrival of an unexpected major event storm. JCP&L shall provide Staff with written procedures reflecting these changes, and the finalized copy of the Storm Restoration Communications Implementation Plan, within 120 days.

PSE&G shall keep logs of all media activity for use in its post event analysis, and provide Staff with the updated procedures concerning post event analysis within 90 days.

### **CUSTOMER SERVICE/ CALL CENTER**

Even with advances in communication technologies, the utility call center is still the most utilized tool for communications with customers during a major outage event. Customers need accurate information regarding how long the disruption will last so that they can plan accordingly. In instances where extended outages may lead to conditions that could potentially be life threatening, the ability to receive accurate information becomes critical. Call center technology enables a blend of methods to provide information to customers and to collect valuable outage information from customers. Therefore, call center staffing must be carefully monitored to assure staffing levels are appropriate for call volumes during all phases of the restoration process to ensure reasonable Average Speed of Answer standards are met.

22-G-1 Each EDC should set reasonable call center performance standards for Average Speed of Answer (ASA) and Abandonment Rate (AR) during major outage events.

22-G-2 Each EDC should manage call center staff to meet its performance standards throughout the outage event, including the critical end of restoration period.

22-G-3 Each EDC should develop Interactive Voice Response (IVR) / Voice Response Unit (VRU) messages to provide customers with as much immediate help and advice as is possible (that is accurate) during each point of the storm and restoration and regularly update that information.

22-ACE-1 ACE should review its messaging to ensure that it is understandable to customers and does not slip into jargon such as global or complete restoration.

22-JCPL-1 In large-scale outage restoration events, IVR and Live Agent ETR messages should be based on worst case estimates to encourage customers to take steps necessary to care for their households' welfare.

22-JCPL-2 IVR messages should include guidance to customers to help them find tips and resources for coping with extended outages (e.g. informational websites, support agency phone numbers, etc.).

22-PSE&G-1 PSE&G should manage staffing levels to reach call center outage performance standards, and a lessons-learned effort needs to occur after every major event.

22-RE-1 RECO should continue implementing the process enhancements currently in progress and ensure that the enhancements will support the call center standards developed for major outages.

22-RE-2 RECO should examine the potential issue related to the planned use of its affiliate's resources if simultaneous large-scale events occur in both service territories.

### **Public Comment**

Ms. Thorsen commented that employees of RECO working in the call center had no idea why her power was out or if any RECO crews were working to fix it. She stated that in some cases this resulted in flooding to homes that rely on well water. Specifically, Ms. Thorsen noted that she relied on the incorrect information provided by RECO regarding restoration times, and opened her faucets to prevent the pipes from freezing. Upon returning to her home, it was flooded because the restoration time was inaccurate, and the power was restored while all of her faucets were on for extended periods of time.

JCP&L requested that the Board designate a working group regarding the recommendation concerning call center performance standards. ACE indicated it agrees with the recommendation, the one regarding managing call center staff to meet the performance standards, and is already complying. ACE indicated it agrees that IVR messages need to provide customers with accurate and clear advice.

JCP&L commented that a working group should be convened to discuss messaging based on worst case scenarios and guidance as to how customers can cope with extended outages, but that it has begun a process to provide this type of information on its website.

RECO stated it reviewed the company's responses to the storms in 2011 to understand where process improvements were needed. Of particular concern was the coordination of resources with Con Edison and Orange and Rockland. Enhancements were made as a result of the lessons learned.

Response: Board Staff believes that implementation of the Staff recommendations below will enhance the ability of RECO to relay accurate information about outage status to its customers affected by a power outage. In large outage events, this information may not be available at the onset of the outages. Staff does not believe a working group is necessary and appreciates the comments received.

### **Staff Recommendations**

The EDCs shall provide documentation to Staff demonstrating that within 180 days they have: 1) established call center performance standards for Average Speed of Answer (ASA) and Abandonment Rate (AR) during major outage events and manage call center staff to meet these standards during an event; and 2) developed Interactive Voice Response (IVR) / Voice Response Unit (VRU) messages that contain helpful and accurate information. These messages are to be updated at least daily during an extended outage.

ACE should revise its IVR and VRU messages to ensure they are in plain language that is easily understandable to the vast majority of its customers. The text of these new messages shall be provided to Staff within 90 days.

For Major Events where outages of three days or more are anticipated, JCP&L should ensure its Live Agent and IVR messages regarding ETRs are based on the long duration outages, and contain informational resources that would help customers cope with an extended outage. JCP&L shall implement this change within 30 days.

RECO shall conduct a study, and provide a copy to Staff within 180 days, that examines the adequacy of its resources and its affiliate's resources if a major event simultaneously affects both of their service territories. RECO should also continue to implement its process enhancements and submit documentation after implementation is complete.

### **EXTERNAL COMMUNICATIONS**

External communications is a key component of a restoration plan. Advance communications provide customers with information on preparedness, predicted durations of outages and what to expect from the restoration process. The EDCs' ability to provide timely and accurate restoration information at the level of detail needed to make decisions on a myriad of issues including personal safety, shelter, sustenance and emergency operations is vitally important. With the availability of multiple forms of media, the external communication process no longer happens strictly during office hours: updates are expected on a frequent basis. Well-designed external communications, when properly implemented with sufficient staff, can help to minimize call center phone traffic improving the customer call center experience and flow of information to and from the customer. The communications aspect of a storm restoration event is crucial, and should be treated as such by the EDCs. Without an effective external communications program that is scalable and able to expand during major outage events, other positive aspects of the restoration can be overlooked. Therefore, well-designed external communications must occur in all mediums with customers, media, local officials and employees.

After Hurricane Irene exited the State of New Jersey, the Board held a series of six public hearings with at least one hearing conducted in each electric utility's service territory. During these hearings, residents and public officials testified about how the storm and the EDCs' capabilities to communicate accurate information affected their lives, property, businesses and

local governments' ability to provide information and services to residents. An EDC's ability to provide timely and accurate information is vitally important.

23-G-1 Each EDC should review its customer communications and outage website to reflect the following concepts:

- Customer safety and ability to cope should be the primary focus of all messages, especially in the beginning of major events.
- All communications channels at an EDC's disposal should be mobilized as soon as potential major outage events are forecasted.
- Worst-case projections should be issued from the outset of any major event to effectively portray a sense of urgency.

Outage websites should be optimized to show:

- Number of customers out of power by county and municipality (not by zip code).
- Number of customers served by county and municipality.
- Percentage of customers out of power by county and municipality.
- Total number of outage locations (work locations) by municipality.
- Time outage reported.
- Crew en route or on scene working per outage location.
- Cause of outage per outage location.
- Estimated Time of Restoration per outage location.
- Directive information about alternative shelter resources, community support, online telephone validation, and secondary language options.
- Outage websites should include graphics and video to help depict safety and preparedness messages.
- Provide a web portal for BPU Staff to view additional details related to the outages.
- Provide a mechanism to automatically notify BPU Staff via e-mail or text message when certain outage thresholds are reached.

23-G-2 Each EDC should consider designating second role employees to fill the role of crew spokesperson. A crew spokesperson travels with a block of crews and is able to explain the restoration process in general and the work at hand in particular, while the line crews make the repairs. This position can increase crew productivity, increase customer safety, answer customers' specific questions and educate the public.

23-G-3 Each EDC should provide additional methods to report and check on the status of an individual outage. This could include an option on the website, through a mobile version of the website via a Smart Phone, or through text messaging.

23-G-4 Each EDC IVR, if not currently done, should have the ability to accept multiple customer telephone numbers, including a cell phone number.

23-ACE-1 ACE should review its messaging construction to ensure that advice to customers for coping with outages and staying safe are comprehensive, easy to understand, and given the highest priority.

23-ACE-2 ACE should review its staffing plan with regard to message writers and Government Affairs personnel to ensure enough personnel to fill these roles in a major event.

23-JCP&L-1 JCP&L should enhance media coverage staff to provide deeper backup in the event of simultaneous or consecutive major events within the FirstEnergy system. In major events, augment local media staff quickly to meet the demands of this media market.

23-JCP&L-2 JCP&L should make key messages customer-centric, giving priority to advice about potential for "worst case" event impact and helpful advice.

23-JCP&L-3 JCP&L should provide more frequent and accurate updates throughout an event to meet the demands of 24 hour information cycle and the demanding media market. Utilize social media, augment press releases with additional media advisories, promote human interest stories and reach out proactively to the media.

23-JCP&L-4 JCP&L needs to eliminate IVR callback confusion with the follow-up call regarding confirmation of restoration. The messaging should be designed to be clear and concise.

23-PSE&G-1 PSE&G should review its second role process and designate, train, equip and drill backup representatives for staffing the OEM. If the quality of information flowing (at all times) from PSE&G through the OEM to municipalities and its political leaders is consistent then some politicians will use the appropriate channels to obtain information.

23-PSE&G-2 PSE&G, in coordination with the County OEM, should develop and execute a plan to inform politicians / elected officials about the restoration process and other information that flows through the OEM.

23-RE-1 RECO should implement the improvements in its revised restoration plan.

23-RE-2 RECO should assure that ample space for the communications team's efforts is available during restoration efforts.

### **Public Comment**

ACE, JCP&L, Mayor Katie Cole of Pompton Lakes, Councilman Austin Ashley of New Milford and Ms. Thorsen commented regarding External Communications.

Councilman Ashley remarked that notwithstanding the importance of maintaining regular communication between the EDCs and municipalities, it still is difficult to set up a meeting with PSE&G. Mayor Cole stated that receiving accurate information during storms is a major problem and suggests that each OEM Coordinator should be assigned a direct contact at the electric company. Additionally, Ms. Thorsen complained about receiving incorrect information from RECO regarding restoration of her electric service.

ACE agreed with the recommendation concerning customer communications and an outage website but would like to discuss its implementation with the other EDCs and Board Staff to discuss the most efficient and cost-effective way to implement its intent. JCP&L explained the numerous ways it is implementing the recommendations related to customer communication

and an outage website with the exception of a web portal for Staff, a mechanism to automatically notify Staff, and information directing customers to support services. JCP&L commented that these three components require additional clarification and suggested a working group be convened.

ACE questioned the need for second role employees to fill the role of crew spokespersons and JCP&L strongly objected, noting cost and potential public safety concerns.

ACE agrees that additional methods for checking and reporting outages should be available and noted that while it has implemented a smart phone application, the Board should let the EDCs determine the appropriate methods.

JCP&L commented that its internal IVR already recognizes two numbers, including cell numbers. Customers can also enter in any number for restoration callbacks. Plans are also underway to upgrade the system.

ACE agreed that its messaging needs to be clear and that adequate staff assigned as message writers and government affairs personnel.

JCP&L commented that it believes EPP "mischaracterized" its communications. It indicated that following Irene, FirstEnergy provided back-up communications staff and media advisories are being sent more frequently and social media being used. Additional messaging about storm preparedness is being refined and call-back messages revised.

RECO commented that it contracted with a third party vendor to handle calls during emergencies, 24/7 and a new IVR is in place, that will report ETR and allow customers to report outages in real time.

**Staff Response:** It is clear from the public comments received and the EPP Report that communication was a major issue during these events. While Staff recognizes the valid comments made by the EDCs, Staff believes the need to ensure the public and elected officials have access, through a variety of channels, to information regarding restoration efforts overrides the EDCs' concerns.

### **Staff Recommendations**

The EDCs shall update their websites within 120 days to include the following:

- A web portal for BPU Staff to view additional details related to outages and provide a mechanism to automatically notify Staff via email or text message when certain outage thresholds are reached;
- The primary focus of all messages shall be customer safety and ability to cope, especially prior to and at the start of Major Events;
- All communications channels at an EDC's disposal shall be mobilized as soon as potential Major Events are forecasted;
- Worst-case projections shall be issued from the outset of any Major Event to effectively portray a sense of urgency;
- Establish and maintain webpages describing storm safety and preparedness information, and general restoration processes and procedures;

- The EDCs should establish and maintain, for each municipality in their respective service territories, a separate webpage with the following information:
  - The approximate number of customer served;
  - A description of the electric system serving the municipality, including the name, number and general location of substations serving the municipality; the number and a general description of the circuits serving the municipality; and data concerning utility poles, miles of distribution lines and other electric infrastructure;
  - A link to the EDCs' description of storm safety and preparedness information and general restoration processes and procedures.

The EDCs may also include information concerning the EDC and municipality tree trimming policies and procedures.

- During outages, each municipality's webpage shall be updated with the following information as the information becomes available:
  - Number and percentage of customers out of power;
  - Information about the time outages occurred and the cause of the outages;
  - Damage assessment information;
  - A description of the nature and timing of restoration efforts; and
  - Estimated Time of Restoration (ETR).
- During outages, the EDCs shall establish and maintain county-by-county information as follows:
  - Number of customers served;
  - Number of customers out of power;
  - Percentage of customers out of power;
  - Links to municipality webpages specified above.

Staff further recommends that, within 120 days, all EDCs shall provide their IVR with the ability to accept multiple customer telephone numbers and provide additional methods to report and check on the status of an individual outage using mobile devices.

ACE shall submit messaging scripts that provide easily understood and comprehensive advice to customers for coping with outages and staying safe and provide a plan for ensuring it has sufficient message writers and government affairs personnel in a major event. Documentation of completion of these tasks is to be provided to Staff within 90 days.

JCP&L shall within 120 days, provide a plan showing sufficient media coverage staff to provide backup in the event of simultaneous or consecutive major events, how social media will be used to augment press releases, and a schedule that provides for more frequent and accurate updates throughout an event.

JCP&L is also to provide to Staff, within 90 days, messaging scripts that provide customer-centric information, giving priority to advice about potential for "worst case" event impact, clear and concise IVR callback scripts.

PSE&G shall ensure it has enough identified and trained second role personnel as backup representatives for staffing OEMs, and submit the names and positions of the employees to the Staff within 180 days.

PSE&G shall submit a plan to Staff within 90 days regarding how elected officials will be informed about the restoration process.

RECO shall within 90 days implement all of the improvements detailed in its revised restoration plan and submit to the Board Staff a list of the improvements implemented.

RECO shall provide documentation to Board Staff within 90 days demonstrating that it has sufficient space for its communications team.

The EDCs shall hold daily conference calls with municipal officials of the affected municipalities if it is expected that the major event outage is going to last longer than 3 days, and include this information in the Major Event Report.

The EDCs shall within 180 days: 1) demonstrate how they are using social media as part of their communications with the public; 2) allow customers to report outages by telephone to their accounts via multiple phone numbers, and notify customers of the availability of this service; and 3) designate a company representative with direct responsibility for system operations and restoration to communicate directly with Staff.

The relevant EDCs are to provide documentation to Staff demonstrating the implementation of the above noted recommendations within the specified timeframes.

### **INTERNAL COMMUNICATIONS**

Effective internal communications has many moving parts during a restoration event. Advance communication with employees allows them to make appropriate plans for their families, while constant reminders of work safety rules increases worker safety, which is always paramount. During restoration efforts crews are the de-facto "face" of the utility and play an important role in the utility's public relations effort. Regular updating of employees and contractors on restoration progress helps to prevent rumors, while recognition of efforts "above and beyond the call" will promote storm team morale. Because crew personnel become unofficial spokespersons of the utility, an effective internal communication process is vital to the success of the external communications effort.

24-G-1 Each EDC should develop messaging specifically for foreign crews to recognize their voluntary service and build relationships to support future restorations.

24-ACE-1 ACE should keep logs and samples of internal communications to assist in lessons learned and as tools for future preparedness.

### **Public Comment:**

ACE agreed that messaging recognizing foreign crews is important, and JCP&L indicated it already employs various means to recognize their assistance. ACE also agreed that it should keep logs and samples of internal communications.

Response: Staff thanks ACE and JCP&L for their current and future efforts to recognize foreign crews.

### **Staff Recommendations**

The EDCs shall within 90 days submit to Staff the messages that were developed to recognize foreign crews for their service.

ACE shall develop a procedure to log and keep samples of internal communications to assist in developing lessons learned. ACE shall submit a copy of this procedure within 90 days.

## **RESTORATION AND RESPONSE**

The storm restoration process requires the strategic coordination of people and resources to efficiently restore power. The ability to quickly assess damage, acquire the resources to make repairs, and use these resources effectively are essential to restore power as efficiently as possible. The following addresses issues found in the response and restoration processes of the EDCs.

### **ACTIVATION**

As activation of restoration resources is, at best, a judgment call, simply relying on institutional knowledge is not sufficient. Each EDC must follow the specific activation criteria provided in its emergency response plan combined with outage prediction models. Such models must be capable of predicting the expected level of damage when combined with knowledge regarding the intensity of the storm.

6-G-1 Each EDC should develop an outage prediction model to anticipate the level of expected damage based upon a predicted storm intensity and path. Using this projected damage information, an estimate of the resources needed to respond should be developed for each of the storm restoration roles. Once an event is predicted, this information can be used to guide mobilization decisions.

6-JCP&L-1 JCP&L should develop an activation criteria and procedure for all functions as a clearly defined process in its emergency response plan.

6-JCP&L-2 JCP&L should evaluate the risks inherent in their plan which requires large movements of personnel between affiliates in different states. These risks include severe weather that would restrict or prohibit travel, and large numbers of personnel traveling in the same vehicle or mode of transportation.

6-PSE&G-1 PSE&G should describe the process to mobilize supplemental skilled personnel to support major storm activation, and identify what employees would be available to support the restoration efforts for a significant event.

### **Public Comment**

Regarding an outage prediction model, ACE wants more detail, particularly regarding the timing and costs to implement such a software program, and JCP&L wants to establish a working group concerning this recommendation. JCP&L stated that earlier attempts to develop an

outage prediction model proved very complex, but the company is currently attempting to develop a less complicated model that would result in faster implementation. JCP&L noted that it is in the process of updating its E-Plan, and will take into consideration activation criteria and procedures and the use of local contractors when appropriate.

Response: The Staff recommendations below provide sufficient detail to allow for implementation of the outage prediction model. In addition, Staff will be available to discuss implementation of the outage prediction model.

### **Staff Recommendations**

Each EDC shall within 180 days develop and submit a storm damage and outage prediction model. This model may be computerized or non-computerized, but must provide for input of all factors required to estimate storm damage. For each major storm, each EDC shall incorporate the prediction model in the estimation of the resources needed to respond to the event.

JCP&L shall within 90 days develop and submit criteria for activation of its emergency response plan including clearly defined processes for all functions. JCP&L is also to provide within 90 days an analysis of the risks inherent in its plan that require large movements of personnel between affiliates, possibly in severe weather. The plan will also indicate how these risks will be managed.

PSE&G shall within 90 days develop and submit a plan to mobilize additional skilled personnel to support a major storm activation, including identifying by job title what employees would be available to support the restoration efforts for a significant event.

### **MUTUAL ASSISTANCE**

An EDC typically staffs its internal line personnel based upon the capital and maintenance needs required to operate the EDC's infrastructure. This workforce can respond to small to medium weather impacts. For large restoration events, EDCs rely upon Regional Mutual Assistance Groups and line contractor companies to supplement their workforce. Activating these two outside entities involves a significant expense to the host EDC.

9-G-1 Each EDC should develop a plan to mitigate the impact of a severe shortage of line personnel in the event of a widespread natural disaster. This could include use of non-electric utility personnel who are not involved in the restoration efforts (i.e. water, gas, telecom, etc.) to perform support tasks that can free up line personnel to deal with job duties that only they are qualified to perform.

9-G-2 Each EDC should provide periodic, more organized updates to the BPU Staff regarding both mutual assistance requests made by the EDC, or mutual assistance being provided to another EDC. The frequency and type of information required will be developed by BPU Staff.

9-ACE-1 ACE should add a section to its Plan to describe how mutual assistance crews will be allocated among affiliated companies (ACE, Delmarva, and Pepco) when simultaneous large-scale events occur in multiple service territories.

9-JCP&L-1 JCP&L should have FirstEnergy develop an appendix in its E-Plan to provide guidance on when FirstEnergy resources can leave the FirstEnergy affiliate companies

to mutually assist non-FirstEnergy companies. This appendix should describe triggers that determine when and how many personnel can leave, along with a plan to replace these personnel if they are unable to return to FirstEnergy as rapidly as they may be needed by a FirstEnergy affiliate company.

9-JCP&L-2 JCP&L should have FirstEnergy develop a plan to manage at least two or three major simultaneous restoration events on its system at the same time.

9-JCP&L-3 JCP&L should have FirstEnergy add a section to its E-Plan to describe how mutual assistance crews will be allocated between companies when simultaneous large-scale events occur in multiple service territories.

9-PSE&G-1 PSE&G should review and add more detail to the mutual assistance section in the OMS Manual. At a minimum, this should include a description of who is responsible for: estimating resource needs, participating in Regional Mutual Assistance Group (RMAG) conference calls, making the decision to send or obtain mutual assistance.

9-PSE&G-2 PSE&G should participate in RMAG calls even when its mutual assistance needs are not being met by the RMAG.

9-PSE&G-3 PSE&G should utilize the term personnel instead of crews in order to more accurately portray the number of personnel that assisted during weather events.

9-RE-1 RECO should add a section to its Plan to describe how mutual assistance crews will be allocated among affiliated companies (ConEdison and Orange & Rockland) when simultaneous large-scale events occur in multiple service territories.

### **Public Comment**

ACE indicated it conceptually agrees that the EDCs need to implement a plan to deal with the impact of severe shortages of line personnel and it already uses contract laborers. JCP&L would like the Board to designate a working group regarding this recommendation.

ACE "conceptually agrees" that the EDCs should provide Staff with more frequent updates of mutual assistance requests but would like more detail concerning its requirements and JCP&L wants a working group to discuss implementation of this recommendation. ACE also agreed to provide more information about the allocation of mutual assistance crews among its affiliates.

JCP&L indicated that its E-Plan will be revised to reflect the enhanced capabilities of FirstEnergy to manage multiple events simultaneously.

PSE&G commented that it will participate in all RMAG calls, but will also pursue other opportunities for mutual aid agreements.

RECO stated that it reviewed the use of mutual assistance crews after the 2011 storms, and as a result developed a number of enhancements.

Response: The Staff recommendations below clarify the requirements. Staff believes that the implementation of these recommendations is necessary to ensure that adequate mutual aid is acquired during Major Events.

## **Staff Recommendations**

The EDCs shall within 120 days develop and submit a plan to acquire additional line personnel in the event of a wide-spread natural disaster that stresses the RMAG system.

The EDCs shall for all future events provide periodic, more organized updates to the BPU Staff regarding both mutual assistance requests made by the EDC, or mutual assistance being provided to another EDC. The frequency and type of information required will be developed by BPU Staff. In addition when an EDC determines a need to request additional human resources and/or equipment to prepare for, respond to or recover from a weather event or other situations with the potential to cause large scale outages, the EDC shall make the request and inform Board Emergency Management Staff, of the time, type and number of resources, and whether the resource request is satisfied. This shall apply to any requests for assistance to an affiliated company, through an RMAG process, or for contractor or utility resources outside an RMAG process. If an EDC determines that a resource request will not be satisfied in a timely manner, it shall take immediate and repeated action to expeditiously meet its resource requests, through any means, including direct requests to contractors or other utilities outside the affiliated company or RMAG process, and make permanent record of its actions. The EDC shall ensure that Board Emergency Management Staff is kept promptly and fully informed of these actions as they occur in a manner prescribed by the Staff.

ACE shall within 90 days submit a new section to its Plan to describe how mutual assistance crews will be allocated among affiliated companies (ACE, Delmarva, and Pepco) when simultaneous large-scale events occur in multiple service territories.

JCP&L shall within 120 days provide to Staff documentation demonstrating that FirstEnergy has developed a process regarding the provision of mutual aid to JCP&L during major events including an appendix in its E-Plan addressing the following: when FirstEnergy resources can leave the FirstEnergy affiliate companies to assist non-FirstEnergy companies; triggers that determine when and how many personnel can leave, along with a plan to replace these personnel if they are unable to return when needed; and how FirstEnergy will manage at least two or three major simultaneous restoration events on its system including how mutual assistance crews will be allocated between companies when simultaneous large-scale events occur in multiple service territories.

PSE&G shall within 120 days revise and submit the mutual assistance section in its OMS Manual to include a description of who is responsible for the following: estimating resource needs, participating in Regional Mutual Assistance Group (RMAG) conference calls, and making the decision to send or obtain mutual assistance. PSE&G shall participate in RMAG calls even when its mutual assistance needs are not being met by the RMAG.

PSE&G shall for all future events report the number of personnel instead of crews when reporting the number of personnel that assisted during weather events.

RECO shall within 90 days submit a revised section to its Plan to describe how mutual assistance crews will be allocated among affiliated companies (ConEdison and Orange & Rockland) when simultaneous large-scale events occur in multiple service territories.

## **CREW / WORK MANAGEMENT / WORKFORCE LEVELS**

Effective storm restoration requires large-scale coordination among field resources, customer service personnel, logistics personnel, administration personnel and supervisory personnel. Effective storm restoration requires a great deal of advance organization, established policies and procedures and in-depth training. Crew location is an important factor in the work management process. Efficient crew deployment and tracking minimizes travel time.

16-G-1 EDCs should develop a common damage "glossary" for reporting damage to the BPU during and after events.

16-G-2 Each EDC shall be able to report crew locations to the BPU Staff at the level of detail requested by Board Staff. This could include use of a web portal.

16-G-3 Each EDC should be able to report crew locations at the municipal level for other stakeholder audiences.

16-G-4 Each EDC should participate in a debris management / road opening initiative organized by the Reliability and Security Staff in conjunction with other key stakeholders. This initiative can establish a process to provide more structure to the determination of roadway access prioritization, and provide for input and enlistment of local Departments of Public Works in the debris management and roadway access process.

16-G-5 Each EDC should develop and conduct improved customer education regarding field restoration work processes.

16-G-6 BPU should review the annual reliability report filings for each EDC to determine if staffing level trends have some correlation to reliability.

16-ACE-1 ACE should provide a detailed staffing review that explains the decreases in headcount and any technology, assignment shifts or other offsetting changes.

16-JCP&L-1 JCP&L should conform to a system such as the ICS, and develop a Planning Team to reduce some of the duties currently performed by the Operations personnel. An individual should not assume more than one role in the ICS during an event.

16-JCP&L-2 JCP&L should ensure that the approved Quarantine process of circuit restoration is integrated into the E-Plan and that appropriate personnel are trained.

16-PSE&G-1 PSE&G should define the process of circuit based restoration in its OMS Manual.

16-PSE&G-2 PSE&G should define the escalation process in its OMS Manual.

### **Public Comment**

Mayor Katie Cole commented concerning utility restoration crews being idle for extended periods. John Houck commented about reduced ACE staffing levels. ACE "conceptually agreed" that a common damage glossary should be developed and JCP&L requested that the

Board consider the implementation of a working group regarding this recommendation.

ACE was concerned about making crew location information public during restoration events, and suggested that the EDCs jointly discuss this recommendation with Board Staff to determine the most efficient way to implement its intent. JCP&L expressed concern that providing this information to the public may result in crew safety issues and cause confusion. It suggested that a working group be assembled.

ACE commented that it already works with county Office of Emergency Management (OEM) personnel on debris management issues and believes the responsibility for debris management and road openings resides with the county OEMs. JCP&L states its crews should be focused on restoration as opposed to road-clearing.

ACE "conceptually agreed" that an improved customer education process regarding field restoration would be helpful, and suggested that consistent messaging should be developed with all the EDCs and Board Staff.

JCP&L commented that after Irene and prior to the October snowstorm, it increased its use of various mediums to inform the public about restoration efforts. The company noted its E-Plan has been updated and includes an enhanced quarantine process.

ACE indicated it will provide any information requested on staffing level trends and staffing details.

Response: The Staff recommendations below provide for the tracking of work crews in order to ensure effective crew management throughout the restoration process. The Staff recommendations below are specific enough to provide the EDCs with sufficient detail for implementation. A detailed staffing review for ACE is being recommended.

### **Staff Recommendations**

The EDCs shall develop and submit within 180 days a common damage "glossary" for reporting damage to the BPU during and after events.

The EDCs shall within 180 days be able to track crew locations throughout the restoration process and be able to report crew location information to the BPU Staff as requested. In addition, if requested by Staff, the EDCs shall report crew locations at the municipal level.

The EDCs shall participate in a debris management initiative organized by the Reliability and Security Staff in conjunction with other key stakeholders to establish a process to provide more structure as to how to determine roadway access prioritization.

The EDCs shall develop and conduct a customer education program regarding field restoration work processes, and provide a report detailing this program within 180 days.

ACE shall within 180 days submit a detailed staffing review that explains the decreases in headcount and the impact on the company's ability to provide adequate resources for restoration purposes.

JCP&L shall within 180 days conform to the ICS so that an individual shall not assume more than one role in the ICS during an event, and develop a planning team to reduce some of the

duties currently performed by the operations personnel. A report detailing the implementation of this recommendation shall be submitted within 90 days.

JCP&L shall ensure that the approved quarantine process of circuit restoration is integrated into the E-Plan and that appropriate personnel are trained. A report detailing the implementation of this recommendation shall be submitted within 120 days.

PSE&G shall define the process of circuit-based restoration and the escalation process in its OMS Manual. A copy of the relevant sections of the OMS manual detailing the implementation of this recommendation shall be submitted within 180 days.

### **DAMAGE ASSESSMENT**

Before crews can be assigned to repair damage, an EDC needs to understand the scope of damage in order to plan effectively. This assessment must take place rapidly and within hours of a major storm impacting the EDC's service territory. Restoration planning necessitates an accurate identification of the work-load, materials required, and the type of personnel required to perform the repairs.

13-G-1 Each EDC should develop technology solutions that will enable more efficient reporting and/or processing of damage assessment information. This could include a smart phone app concept or providing mobile data terminals for those who don't have them already.

13-JCP&L-1 JCP&L should develop a rapid damage assessment process to be used during major events. This process should describe the prioritization of areas to be assessed, how personnel will be assigned and the timeframe (4 to 6 hours) that they have to report back with their findings.

13-JCP&L-2 JCP&L should ensure that it has enough trained personnel to conduct the damage assessment process in parallel with the hazard process. This could include contract damage assessors, second role personnel or other alternative staffing methods. The quantity of personnel needed to support these processes should be identified using information from the outage prediction model.

13-JCP&L-3 JCP&L should establish a dedicated planning function to analyze information coming in from damage assessment.

13-PSE&G-1 PSE&G should use a less experienced person who could perform the role of damage assessment driver, instead of doubling up damage assessors at night or in dangerous conditions.

### **Public Comment**

ACE noted that it "conceptually agrees" that the EDCs need to develop new technology solutions regarding damage assessment, and it is already using mobile data terminals and has people dedicated to entering damage information into OMS. JCP&L indicated that it has a comprehensive damage assessment process but is implementing greater efficiencies, including a process for more timely review and analysis of damage assessment information. JCP&L noted that damage assessment is conducted along with the hazard process and adjusted, depending on the particulars of the event. The Company also stated that it is evaluating the use

of retirees as damage assessors and has begun to deploy mobile data terminals and will explore other technologies. PSE&G commented that based upon safety concerns, it disagrees with the recommendation that it should use a person less experienced in damage assessment to perform the role of driver.

Response: Staff thanks the EDCs for their comments but disagrees that there is a safety concern regarding the use of someone other than damage assessor as a driver, as long as that person is an experienced driver. Further, safety would be enhanced by a driver focusing on the road, especially when conditions are likely to be hazardous.

### **Staff Recommendations**

EDCs shall implement technology solutions that will enable more efficient reporting and/or processing of damage assessment information. The EDCs shall within 365 days submit a report detailing the solutions implemented.

JCP&L shall within 120 days develop and submit details of a rapid damage assessment process to be used during major events, including prioritization of areas to be assessed, how personnel will be assigned and the timeframe to report back with their findings.

JCP&L shall ensure that it has sufficient trained personnel to conduct the damage assessment process in parallel with the hazard process, and within 180 days submit the details of this program.

JCP&L shall establish a dedicated planning function to analyze information coming in from the damage assessments, and within 180 days submit details of this process.

PSE&G shall develop a deployment plan that effectively uses drivers and damage assessors to conduct damage assessment and submit this plan to Staff within 90 days.

### **ESTIMATED RESTORATION TIMES**

Once a storm has passed, the first thing customers want to know is when power will be restored. Providing a fast, detailed, and realistic Estimated Time of Restoration (ETR) is the best way an EDC can serve its customers' needs in this regard.

15-G-1 Each EDC should establish a Global ETR within 24 hours of the end of the event.

15-G-2 The EDCs, working with Staff, should establish a schedule of when more granular levels of ETRs should be expected based upon the magnitude and severity of the event.

15-G-3 Each EDC should conduct a study of the accuracy of its ETRs during "Major Events" during the last three years.

15-JCP&L-1 JCP&L should develop a standardized process for the calculation of ETRs at multiple levels of granularity, and document this process in the E-Plan.

15-JCP&L-2 JCP&L should centralize the responsibility for the ETR process into a single function.

15-RE-1 RECO should continue its ETR enhancement project.

15-RE-2 RECO should develop a process to ensure that the automatic ETR generation feature is turned off during a major event.

### **Public Comment**

ACE commented that it was conceptually in favor of these recommendations, and wanted more detail concerning their implementation.

Response: The Staff recommendations below provide additional detail concerning implementation.

### **Staff Recommendations**

The EDCs shall, within 120 days, be able to provide the following Estimated Times of Restoration. Within 24 hours after a major event outage, make available to customers a global ETR. Beginning 48 hours after a major event outage, the EDCs will make available to municipal officials daily updates concerning the number of customers out in their towns and the estimated number of customers that will be restored each day until restoration is completed.

Each EDC shall, within 180 days, conduct and submit a study of the accuracy of its ETRs during major events during the last three years.

JCP&L shall, within 90 days, develop and submit a standardized process for the calculation of ETRs at multiple levels of granularity, and document this process in its E-plan.

JCP&L shall centralize the responsibility for the ETR process into a single function and submit details of this program within 90 days.

RECO shall, within 30 days, develop a process to ensure that its automatic ETR generation feature is turned off during a major event.

The EDCs shall, at a minimum, give priority restoration to customers who have been identified to the companies as those with special needs as defined in N.J.A.C. 14:3-3A.4(d) once the EDCs have reached the lateral/branch circuit and/or individual customer point in the process, while still giving consideration to restoring large groups of customers. Communications to those identified as special needs customers will include, at a minimum, a pre-event call to warn of impending possible outages, and an intra-event call to provide an ETR. The EDCs shall implement this recommendation within 120 days and provide documentation to Staff regarding implementation within this same time frame.

### **COMMAND AND CONTROL**

The Incident Command System (ICS) provides an organizational structure for emergency incidents. An EDC can better manage the restoration process when it is clear who is in charge and a strong command and control structure is in place.

7-G-1 Each EDC should ensure that there are a minimum of three personnel identified, trained and assigned to fill each leadership level position in its emergency / incident response / storm restoration organization.

7-JCP&L-1 JCP&L should develop staffing contingency plans to deal with a storm event where FirstEnergy corporate support is limited.

7-PSE&G-1 PSE&G should follow the ICS organizational model endorsed in the OMS Manual.

7-PSE&G-2 PSE&G should revamp its OMS Manual and define a clear role for the executives separate from the Incident Commander and in accordance with ICS principles.

### **Public Comment**

Mayor Katie Cole of Pompton Lakes commented that all EDC employees should be trained on some level of ICS.

Regarding 7-G-1, JCP&L noted that this recommendation should also include the clarification that, "the availability of FE's extensive storm management resources for key storm team positions in a standardized storm management process satisfies this global recommendation." Furthermore, ACE believes this recommendation is "excessive," and suggested that a discussion should ensue between Board Staff and the EDCs to find an advantageous way to achieve this recommendation.

PSE&G does not agree with 7-PSE&G-2; however, PSE&G does not provide any explanation as to why.

Response: Staff recommendations below provide for the use of ICS by the EDCs. Providing a minimum of three personnel available for each leadership position is necessary in order to ensure proper restoration in the event of an extended duration outage event.

### **Staff Recommendations**

The EDCs shall ensure that there are a minimum of three personnel identified, trained and assigned to fill each leadership level position in its emergency / incident response / storm restoration organization. The EDCs shall implement this recommendation within 365 days, and submit a list of the leadership positions and three personnel identified for each position.

JCP&L shall develop and submit within 120 days staffing contingency plans to deal with a storm event where FirstEnergy corporate support is limited.

PSE&G shall follow the ICS organizational model endorsed in its OMS Manual, and revise its OMS Manual to define a clear role for the executives in accordance with ICS principles. PSE&G shall submit a report documenting this implementation within 120 days.

### **RESPONDER SYSTEMS, TOOLS AND JOB AIDS**

The EDCs use Outage Management Systems (OMS) to receive, record, map, display and report outage conditions. However, OMS are only as accurate as the data inputted into them.

14-G-1 Each EDC should evaluate a cell phone app so that customers can report outages and receive system outage information.

14-G-2 Each EDC should identify ways to efficiently and decisively track and report crew (internal, contractor and mutual aid) locations during restoration events.

14-JCP&L-1 JCP&L should implement the use of Mobile Data Terminals to relay data to and from the field quickly and efficiently.

### **Public Comment**

ACE and JCP&L either conceptually agreed with the recommendations and/or wanted additional information concerning their implementation or a working group, and JCP&L noted that it is in the process of implementing mobile data terminals. ACE indicated that it already has applications available for customer download. However, ACE, again, expressed concerns about making the information provided in 14-G-2 public during restoration efforts.

Response: The use of more and different technologies is important as the collection of outage data helps provide vital information needed for the restoration process. Up-to-date information is then used to ensure appropriate crew deployment. Providing both customers and those in the field with the means to send and receive data related to outages will improve the restoration process.

### **Staff Recommendations**

The EDCs shall within 365 days implement an application for mobile devices so that customers can report outages and receive system outage information.

JCP&L shall within 180 days implement the use of Mobile Data Terminals to relay data to and from the field.

### **LOGISTICS AND FIELD SUPPORT**

Logistic includes staging areas, food and lodging, materials management, fleet management and fueling and employee support. Logistics drives the entire restoration process. Ineffective or poor logistics can hamper the restoration process. Detailed plans and checklists, established staging areas, advance contracts with service providers and an adequate number of logistics personnel are all elements of a successful logistics program.

19-G-1 Each EDC should predetermine Staging Areas sufficient to support restoration from an outage equal to 75% of total customers. This should include location specific layouts.

19-G-2 Each EDC should, if needed, have contractual arrangements in place for the use of the predetermined Staging Areas to resolve issues such as liability, access, security and existing support services at the site before an outage occurs.

19-JCP&L-1 JCP&L should assume the responsibility for lodging for foreign contractors. Centralizing this responsibility along with its efforts for mutual aid crew lodging will eliminate competition for potential scarce lodging.

19-PSE&G-1 PSE&G should develop a standard Staging Area resource complement to ensure that operations can be managed effectively if adverse weather conditions occur during an extended restoration. The resource complement could include rental of office trailers, the use of cell or satellite phones and data communications capabilities.

19-PSE&G-2 PSE&G should update the OMS Manual to include a detailed Staging Area plan.

19-RE-1 RECO should assume the responsibility for lodging for foreign contractors. Centralizing this responsibility along with its efforts for foreign crew lodging will eliminate competition for potential scarce lodging.

### **Public Comment**

ACE indicated it "conceptually agrees" that predetermined staging areas that support restoration efforts with 75% of customers out need to be in place and ready to become operational. JCP&L stated it already as several predetermined and alternative staging areas meeting the criteria set forth by EPP.

Response: Staff thanks ACE and JCP&L for their comments and the information provided.

### **Staff Recommendations**

The EDCs shall predetermine Staging Areas sufficient to support restoration from an outage equal to 75% of total customers including location specific layouts. If needed, the EDCs shall have contractual arrangements in place for the use of the predetermined Staging Areas to resolve issues such as liability, access, security and existing support services at the site before an outage occurs. The EDCs shall submit a report detailing this program within 180 days. JCP&L and RECO within 180 days shall assume the responsibility for lodging for foreign contractors and provide an implementation plan to Staff.

PSE&G, within 180 days, shall develop and submit documentation providing for a standard Staging Area resource complement to ensure that operations can be managed effectively if adverse weather conditions occur during an extended restoration, and update its OMS Manual to include a detailed Staging Area plan.

The EDCs within 90 days shall develop and submit ice and water provisioning plans for major outages. The plans shall provide for specific implementation trigger points, geographic criteria for supply points, and duration of supply distribution. The plans may include affiliations with existing retail establishments and distribution assistance to be provided by local, county and state emergency management officials. The plans shall also include a description of how the EDCs will engage media and other communications methods for advising customers of the availability and location of these items.

### **SAFETY**

Restoration is, of course, a key priority when outages occur. However the restoration process must be conducted in a manner that is safe for those involved and the public in general. Downed wires, flooding, rain, snow and high winds made restoration extremely challenging

during these storms. Roads were closed or, in many instances travel conditions were dangerous, further compounding the difficulties faced by crews.

The EPP Report and Staff concluded that the EDCs followed their existing safety practices, and ensured safety briefings were conducted, safety related materials were distributed, and daily safety messages about then current conditions were provided. As a result, there were no safety related incidents in either storm. Accordingly, each EDC should continue its current safety practices.

### **Public Comment**

ACE indicated that it "conceptually agrees" that the EDCs should continue following existing safety practices.

Response: Staff thanks ACE for its comment.

### **FOLLOW-UP WORK**

In the interest of restoring customers as quickly as possible during a storm event, temporary repairs are sometimes made with the knowledge that permanent repairs will be made at a later date. EDCs need to have processes and procedures in place to track temporary fixes, inspect and evaluate the work done, and expedite permanent repairs.

17-G-1 Each EDC should have a clearly defined section in its plans outlining the follow-up "temporary repairs" work process and responsibilities including post storm patrolling and inspection.

17-G-2 Each EDC should develop a storm quality assessment process to track the locations of all temporary repairs and the date the temporary repair was made permanent.

### **Public Comment**

ACE noted it "conceptually agrees" with the two recommendations above.

Response: Staff thanks ACE for its comment.

### **Staff Recommendations**

The EDCs shall, within 120 days, develop and submit a clearly defined section in their plans outlining the follow-up "temporary repairs" work process and responsibilities including post storm patrolling and inspection.

The EDCs, within 120 days, shall develop and submit a storm quality assessment process to track the locations of all temporary repairs and the date the temporary repair was made permanent.

## **POST EVENT**

Immediately after an event, a detailed internal evaluation of performance is the best way to find deficiencies in plans and develop "Lessons Learned" to improve processes for the next event.

An objective review of restoration performance after each event can establish a baseline metric from which it can be determined if performance goals are being met. The following addresses issues found in the post event processes of the EDCs.

### **STORM RESTORATION PROCESS METRICS**

Storm restorations can be measured in many ways both internally and externally. However, comparing storm severity based solely on the number of customers out of service is not appropriate since other factors such as service territory terrain and customer location factor into the restoration. There should be a common reference point as to what constitutes a successful storm restoration.

20-G-1 In addition to an ETR, the EDCs should jointly develop, and then consistently report, the estimated crew hours (or man hours) of restoration work required to restore all known or estimated customers out of service for a major storm. This value can be developed from the EDCs' OMS, SCADA and other information sources after the initial damage assessment has been performed (within the first 24 hours after a storm). In essence, this becomes a severity index to compare a storm's impact on a consistent basis.

### **Public Comment**

ACE questioned the relevance of the information that would be submitted to the Board if this recommendation were implemented. ACE submits that the EDCs and Board Staff jointly discuss this recommendation. JCP&L also commented that this recommendation be discussed by a working group.

Response: Board Staff believes that the implementation of this recommendation will provide a clear picture of the magnitude of the restoration effort. While it may be appropriate to discuss this recommendation to insure that all the EDCs report the same information in a consistent manner, the underlying recommendation is sound.

### **Staff Recommendations**

During a major event, EDCs shall report to Staff at least once per day (after the first 24 hours), or as requested, the estimated man-hours required to restore all remaining affected customers. The EDCs shall have 90 days from the effective date of this Order to implement this process and provide Staff with documentation to demonstrate the implementation.

### **BENCHMARKING / EXTERNAL ANALYSIS**

EDCs should look to their peers within the electric industry and outside consultants to garner the best restoration practices and incorporate them into their plans and procedures.

25-G-1 Each EDC should develop a process to analyze and transfer restoration experiences from other utilities where appropriate. An organized process to communicate with other utilities beyond New Jersey that have experienced a major restoration can provide important insights.

### **Public Comment:**

ACE "conceptually agrees" with this recommendation and noted that utility best practices are now shared.

Response: Staff thanks ACE for its comment.

### **Staff Recommendations**

The EDCs shall, within 90 days, submit to Board Staff a list of Regional Mutual Assistance Groups and/or utilities they have agreements with to share restoration experiences.

### **POST EVENT PROCESSES**

A storm debriefing or after-action report provides valuable input to identify necessary plans, process and procedure changes. Response activities improve when recommendations are incorporated into plans and procedures following an event.

4-G-1 Each EDC should solicit input regarding performance from external stakeholders for any event that requires a Major Event Report.

4-JCP&L-1 JCP&L should implement the use of logs to track activities and decisions by storm team members.

4-JCP&L-2 JCP&L should establish a process to ensure timely completion and final approval of process improvement items noted during post storm debriefings / lessons learned.

4-JCP&L-3 JCP&L should identify one responsible party who will review all lessons learned, meet with the submitting department, finalize action items, and assign responsibility for the action items, track action item completion and report progress to leadership.

4-PSE&G-1 PSE&G should perform a lessons learned after each major storm to find and reward innovative actions, understand training requirements, correct errors or omissions in the Plan, foster a culture of continuous improvement, and establish a timeframe when these post event reviews will be completed.

4-PSE&G-2 PSE&G should identify one responsible party who will review all lessons learned, meet with the submitting department, finalize action items, and assign responsibility for the action items, track action item completion and report progress to leadership.

4-RE-1 RECO should implement the use of logs to track activities and decisions by storm team members.

4-RE-2 RECO's Emergency Management Department should review all the lessons learned, meet with the submitting department, finalize action items, assign responsibility for the action items, track action item completion and report progress to leadership.

## **Public Comment**

ACE noted that it “conceptually agrees” that input from external stakeholders is important and is already seeking such input concerning Major Events. JCP&L commented with respect to recommendation 4-JCP&L-1 that while it is in the process of implementing logs to track activities and decisions by storm team leadership, the Board should not interpret the recommendation as extending beyond significant or material ICS leadership decisions related to the storm restoration process. JCP&L noted that care should be taken to avoid creating administratively burdensome requirements.

Response: Board Staff thanks ACE and JCP&L for their comments, and agrees with JCP&L's clarification.

## **Staff Recommendations**

After a Major Event, the EDCs shall solicit input regarding their performance from affected external stakeholders via letter, email, conference call, personal contact or by group meetings, and document the feedback provided. This documented input shall be available for review by Board Staff upon request. This process shall be implemented within 90 days.

JCP&L and RECO should, within 90 days, implement the use of logs to track activities and decisions by storm team leadership members. These logs shall be available for review by Staff upon request.

JCP&L and PSE&G should each identify one responsible party, who will review all lessons learned, meet with the submitting departments, finalize action items, and assign responsibility for the action items, track action item completion and report progress to leadership. JCP&L and PSE&G shall submit documentation to Staff within 120 days identifying the responsible party and the reporting structure of that person.

RECO's Emergency Management Department will review all lessons learned, track the required improvements, and ensure their final, appropriate and timely completion, and report progress to leadership. RECO shall implement this recommendation within 120 days and provide documentation demonstrating implementation.

JCP&L should establish a process to ensure timely completion and final approval of process improvement items noted during post storm debriefings / lessons learned. This process should be implemented and submitted to Staff within 120 days.

PSE&G should develop a process to perform a lessons learned after each major storm to find and reward innovative actions, understand training requirements, correct errors or omissions in the Plan, foster a culture of continuous improvement, and establish a timeframe when these post event reviews will be completed. This process is to be included in PSE&G's revised Plan and submitted to Staff within 120 days.

## **UNDERLYING INFRASTRUCTURE ISSUES**

The state of an EDC's underlying infrastructure has a significant effect on its susceptibility to extended duration outages following a storm. It can also cause more frequent day-to-day outages which undermines the public perception that the system is reliable. The following addresses issues found in the operations and maintenance of the EDCs' infrastructure.

## **SUBSTATION FLOODING**

Substations are critical components in any power distribution network. The severe river flooding which occurred during Hurricane Irene's record rainfall resulted in significant water intrusion at 15 substations in New Jersey, resulting in widespread power outages affecting thousands of customers. Restoring service following such interruptions is a very complex, time consuming and costly process. Accordingly, each EDC should make efforts to prevent or curtail future substation flooding.

10-G-1 Each EDC should prepare formal reports after instances of substation flooding to assist in analyzing long term trends and impacts.

10-G-2 Each EDC should consider higher flood levels for future substation design and upgrades to existing substations in floodplains as current 100-year Flood Zone elevations may be too conservative as demonstrated by Hurricane Irene.

10-G-3 Each EDC should determine the potential impact of upstream dams and reservoirs, and, if appropriate, establish contact and share information with operators before a potential flooding event.

10-G-4 Each EDC should educate municipalities responsible for maintaining drainage management systems about the potential impact on substations if debris is not cleared before and during storm events.

10-G-5 Each EDC should work with the BPU to review, analyze, and evaluate the current preparedness plans for substations during storm events. In light of the actual incidents of flooding during Irene, EDCs, working with the BPU, must develop and implement better mitigation plans.

10-PSE&G-1 PSE&G should complete the flood mitigation validation and implement appropriate recommendations from its consultant's report to mitigate substation flooding.

### **Public Comment:**

Councilman Ashley called for the relocation of substations which are subject to flooding, and Mr. Moldow suggested, as an alternative to relocation, the implementation of flood mitigation measures at substations that are susceptible to flood water and/or have a history of flooding incidents.

With respect to 10-G-3, JCP&L stated that it is currently conducting a watershed review of the seven substations that flooded during Hurricane Irene but does not support this recommendation because, "it proposes actions that, while logical and well-meaning, concern matters and persons or entities that appear not subject to the Board's jurisdiction nor within the control of the EDCs," and that, "this process could be a long-term undertaking, that it is without clear cost implications and may require close collaboration between the EDCs, the Board and possibly other applicable governmental agencies." Additionally, ACE requested that any additional activities before a potential flood not be imposed if such activities would interfere with higher priority activities.

With respect to 10-G-5, ACE requested more detail regarding the review, analysis and evaluation that would be required, and JCP&L indicated it has begun reviewing its preparedness plans but this recommendation should be part of a working group process.

Response: Staff is cognizant of the severe impact on restoration efforts caused by substation flooding and the necessity to take appropriate measures to prevent flooding. By better understanding all the components that can contribute to flooding of substations, as well as working in partnership with other sectors of the community to minimize behaviors that may result in increased flooding, substations will be less vulnerable. Staff recommends measures to address these concerns.

**Staff Recommendations:**

Staff recommends that the EDCs initiate a reporting process to the Board on all future instances of substation flooding. The reports should be submitted within 30 days of the flooding, and include the circumstances of the event, the overall impact to the substation and feeder circuits, the flood mitigation in place at the time of the event, and any need for additional mitigation steps.

The EDCs should evaluate the current 100 year flood plan data within their respective areas of operation and evaluate the need to design for higher flood elevation on future substation installations within flood zone areas or other areas the EDCs determine may be vulnerable. The EDCs shall provide the Staff with their analysis and intentions regarding this design consideration within 180 days.

The EDCs shall coordinate with municipal and facility stakeholders, e.g., local or county drainage, dam and water facilities, whose infrastructure or operations can affect the substation in vulnerable flood areas. These meetings should be considered as a working group for the stakeholders to discuss past events, operational and logistical concerns, and communications and should be initiated within 180 days. The minutes of each meeting should be submitted to the Staff within 30 days after that meeting.

The EDCs should prepare a report, to be submitted to the Board within 120 days of the date of the Board Order in this proceeding that prioritizes the EDCs' proposed responses to various levels of potential flooding at each substation and switching station at risk of flooding (up to and including the levels of water encroachment that occurred in both Hurricane Irene and Superstorm Sandy). The EDCs should incorporate new data derived from the updated FEMA flood maps in this report and analysis and they should back up projected flooding potential data using NJDEP available resources.

Alternative responses to various level of encroachment shall include, but not be limited to hardening measures including: (1) sandbagging; (2) raising certain facilities in the substation or switching station to higher levels; (3) constructing flood walls around the stations; (4) raising the level of the station; and (5) moving the station to higher ground.

Other response measures to be considered should include: (1) the feasibility of adding redundancy to portions of the system; and (2) the use of various so-called smart grid technologies that would provide greater flexibility to react to different flooding emergencies on the system.

The Report should include cost benefit analyses for each alternative presented, taking into account the likelihood of each considered event, the effectiveness of each alternative and the cost of each measure.

The EDCs shall develop specific substation flooding preparedness plans which detail mitigation steps to be taken and monitoring prior to and during major storm events. The plan should outline the EDCs' general approach and then specific actions for sensitive facilities. These plans should be submitted to the Staff within 120 days.

PSE&G should complete the flood mitigation validation and implement appropriate recommendations from its consultant's report. PSE&G shall submit a letter to Staff about the planned work resulting from this analysis. Both the analysis and letter shall be completed and submitted within 90 days.

Staff shall be charged to review and evaluate the event based substation flood incident reports, as required above, and work with the EDCs to review effectiveness of the current substation flood mitigation and develop policies, if necessary, with the EDCs to prepare for future events.

## **VEGETATION MANAGEMENT**

Damage from downed trees and fallen limbs is a major cause of electric service interruptions. In fact, the vast majority of service interruptions following the two storms were directly attributable to this issue. The magnitude of tree-related damage to New Jersey's electric distribution utilities, and the difficulties the EDCs experienced in executing a coordinated recovery effort, revealed that vegetation management is not an activity that the EDCs can address alone. An effective vegetation management program requires close cooperation between the EDCs, municipalities, property owners, environmental groups and local planning and shade tree commissions.

11-G-1 Each EDC should develop a program to track tree related outages at a more granular level. This could include the type of tree problem (inside the Right of Way (ROW) or outside the ROW); failure mode (tree falls, tree limb); health of the tree (live, dead, or diseased); how far the tree was from the power lines; species of the tree and other appropriate categories.

11-G-2 BPU Staff should implement a review to evaluate the present vegetation management standards with the goal of establishing a more aggressive tree vegetation management standard for electrical distribution systems, similar to the guidelines previously established for the transmission systems. The National Electric Safety Code (NESC) standards that New Jersey adopted for the regulations do not specifically address vegetation clearance around power distribution lines. As such, this initiative should establish clearly defined parameters on clearance and expectations. It should focus initially on high consequence feeder lines, which can cause large outages when impacted. Staff should also evaluate the usefulness of switching to a shorter tree trimming cycle.

11-G-3 Each EDC should use outage analysis and reliability statistics over multiple years to evaluate the effectiveness of its vegetation management program.

11-JCP&L-1 JCP&L should develop and institute a vegetation management pre-event, activation, and demobilization checklist to document institutional knowledge.

### **Public Comment:**

Prompton Lakes Mayor Cole and New Milford Councilman Ashley recommended proactive coordination and cooperation with, and training of, local shade tree commissions, as well as creation of grants for local governments to plant appropriate trees. Councilman Ashley stated that trimming or eliminating trees under and near electric facilities create negative visual impacts and discriminates against residents wanting to plant vegetation near electric facilities. Mr. Bussard and Ms. Thorsen noted the importance of regular tree trimming.

Three of the four EDCs commented on EPP recommendation 11-G-1. JCP&L stated that its current data collection system is "effective enough," did not have room for improvement, and that additional data collection requirements would "require major system changes, may be a source of delay in the restoration process, and would not appreciably add value to the restoration or vegetation management processes." ACE stated that it currently tracks several categories of tree-related outages during non-storm periods and that "implementation of this recommendation could be very onerous and counterproductive to the restoration effort." PSE&G requested more clarity and asked that a working group be formed to address this recommendation.

With respect to 11-G-2, JCP&L stated that the Board's existing vegetation management regulations were the result of an extensive collaborative process and asked for input from the public and shade tree commissions to ensure a balancing of interests before the Board adopts more aggressive trimming cycles. ACE is interested in working with Staff and the other EDCs concerning the implementation of this recommendation.

ACE noted it already analyzes outage and reliability statistics over multiple years to determine the effectiveness of vegetation management and JCP&L stated it is reviewing how its existing reliability data can be used to evaluate vegetation management. JCP&L suggested a working group be convened. JCP&L further commented that FirstEnergy is developing a standardized storm response process which will, among other things, capture institutional knowledge.

Response: The comments from the constituents and the EDCs are well noted. Several of the Staff recommendations below will require input and cooperation from all stakeholders involved in the vegetation management processes. Additionally, Staff has already taken the initial steps in addressing the rules relating to distribution system vegetation management, and plans to continue this process.

### **Staff Recommendations:**

Staff recommends that the EDCs develop a tracking system for distribution system outages related to trees and vegetation, if one does not already exist within the respective company. This new, or existing, program should track information such as how the outage occurred, proximity of the tree/vegetation to electrical facilities, last trimming cycle of the circuit that experienced the outage, location of tree/vegetation within or outside of the right of way (ROW) or easement, and pertinent factors (such as: storm event, local cutting, wind, etc.). This tracking will be maintained by the respective EDCs and be available to Staff upon request. The EDCs will also review their vegetation outage data and correlate this information into an analysis of their impacts on system reliability. The EDCs shall prepare a written explanation of this analysis showing the perceived benefits, or detriment if applicable, that their respective programs have

on the system health. The EDCs should work with Staff and develop plans for implementing these recommendations. A working group shall be established within 60 days.

JCP&L shall create a method to document its “institutional knowledge” of the vegetation impacts and mitigation on its systems with the goal of making this information available to all personnel during major events. A plan to implement this recommendation shall be submitted to Staff within 180 days.

Staff will continue its initial steps to evaluate the Vegetation Management recommendations contained in this Order to determine if further Board action is required. Staff will work with the appropriate stakeholders, which include the EDCs, local agencies and regulatory bodies, to initiate a detailed review of vegetation management rules for distribution lines. Staff will work to develop specific clearance requirements, mitigation of trees above, not just around distribution lines, and species allowed within the easement, as well as establishing a process to address “danger trees”, i.e., those that are in imminent danger of negatively affecting power lines.

### **CIRCUIT OUTAGES**

Electric circuits are a critical component in the delivery of power to customers. Interruption of a single circuit can cause upwards of 3,000 – 4,000 customers to be deprived of service. While networks are typically engineered for interconnectivity to provide customers with more than one source of power, the design and durability of any circuit, along with its switching components can have a very significant impact on the circuit’s reliability during a severe weather event.

12-G-1 Each EDC should work with the BPU to evaluate the potential benefits of utilizing Distribution Automation initiatives as a way to protect the integrity of the system and improve customer reliability. It is understood that several of the New Jersey EDCs have implemented pilot programs on such initiatives. The EDCs should complete these pilot programs and the results should be fully reviewed for benefits to the system and customers, along with any practical, operational hurdles that need to be addressed.

12-G-2 The BPU Staff should standardize the Major Event Report so that all EDCs report information using the same categories and definitions.

12-G-3 The BPU Staff should review the reliability goals to determine if an adjustment is required.

### **Public Comment:**

Some of the EDCs indicated that they have implemented and/or are evaluating Distribution Automation<sup>2</sup> initiatives within their regions or under corporate supervision. There was support for the standardization of the Major Event Reports, and a request for EDC inclusion in the development process. At least one EDC cautioned that the systems within each EDC are unique and have differences that should be considered while reviewing reliability goals.

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<sup>2</sup> Distribution Automation refers to the updating of electrical systems with equipment and technologies to allow automated, pre-programmed, self-correcting and/or remote operation of the electrical distribution systems. Smart Grid is one type of concept.

Response: Staff recognizes that several of the EDCs have been investigating and testing Distribution Automation and recommends that those efforts continue. Staff is fully aware that Distribution Automation may differ with each EDC because of differences in service territories and systems, and that these differences are also important to keep in mind as the Major Event Reports are standardized. Staff believes that the recommendations listed below address the comments and concerns raised by the EDCs.

**Staff Recommendations:**

Staff recommends that each EDC that is currently managing or evaluating a Smart Grid pilot program incorporating Distribution Automation within New Jersey or within the PJM region under their corporate direction shall file a report of the results and a status report with the Board detailing the scope of work, objectives/goals, tasks, schedule, funding source including federal, state, regional or energy organization and any other pertinent information. Staff recommends that each EDC that is in the process of developing and implementing any new Smart Grid pilots that incorporate Distribution Automation within New Jersey or the PJM region under their corporate direction shall file a report of the results and a status report with the Board detailing the scope of work, objectives/goals, tasks, schedule, funding source including federal, state, regional or energy organization and any other pertinent information. These status reports as applicable shall be submitted within 30 days.

Division of Energy Staff shall continue its Outage Reporting and Reliability initiative to require increased outage reporting by EDCs to the Staff pursuant to N.J.A.C. 14:3-3.7 to gather and analyze circuit and equipment data to identify problem areas: locational, equipment or procedural. The goal will be to have these analyses conducted on a continual basis so the EDCs and Staff can more clearly focus efforts to improve the reliability.

Staff recommends that each EDC shall file a Smart Grid - Distribution Automation Plan (SG-DAP) filing. The Smart Grid- Distribution Automation Plan shall include the development and implementation of feeder and substation automation as part of an overall Distribution Management System (DMS) and Outage Management System (OMS). The SG-DAP shall, including but not be limited to the following: Automatic circuit reclosures (ACR), automation sectionalizing and restoration (ASR), advanced voltage control, voltage amp resistance (VARs) control, network protection/monitoring/controls, remote terminal units, remote fault detection, smart relays, equipment health sensors, outage detection devices and smart meters. The Smart Grid – Distribution Automation Plan filing shall include the timeframe for the development of each component and the overall plan, as well as the costs and benefits of each individual component and the entire plan to the EDC and the ratepayer. The Smart Grid – Distribution Automation Plan shall be developed with the goal to implement a more resilient and “self-healing” distribution grid and with the objective to improve the distribution system reliability and optimize the distribution grid operation overall with a specific focus during and after storm events such as Hurricane Irene. The Smart Grid –Distribution Automation Plan shall be filed within 90 days.

Additionally, the Division of Energy will review and evaluate the Smart Grid – Distribution Automation Plan filing to determine the benefits of adopting and utilizing Smart Grid - Distribution Automation strategies within New Jersey’s electric distribution systems. Additionally, Staff will review the results of the Distribution Automation pilot programs, currently in progress by several of the EDCs, to evaluate the realized benefits and potential constraints with such implementation. This review should include the EDCs’ current implementation of

substation SCADA systems, protective relaying, use of dynamic recording devices, smart metering, automated circuit switching and closing, and other power quality and equipment monitoring technologies. Staff will perform an independent cost and benefits review of each EDC's Smart Grid - Distribution Automation Plan, including cost and benefit considerations as well as rate impacts associated with the implementation of the EDC Smart Grid - Distribution Automation.

Staff will evaluate and implement changes, if appropriate, to the Major Event Report to standardize reporting information. The EDCs will be included in this process and development. This recommendation should start with 90 days.

### **DISCUSSION AND FINDINGS**

The Board is cognizant that major events which may significantly impact utility systems can occur at any time, with or without notice. While the considerable forces of nature cannot be stopped, ensuring that the electric utilities are as prepared as possible when such events do occur will help in dealing with the aftermath of those events.

The Board recognizes the tremendous affect that Hurricane Sandy had and will continue to have on the State. It is not our intention to address the impact of Hurricane Sandy in this Order; we will do so separately, after a thorough review has been conducted. Public hearings are currently being held, and there is still much work to be done related to that natural disaster.

However, the Board believes it is important for the utilities to begin implementing the actions ordered herein. After its review of Hurricane Sandy, the Board anticipates ordering additional actions or updating some of the actions ordered here. Even at this early stage of its review, it is clear that communications continues to be an issue, and that improvement must take place.

Through a thorough review of the electric distribution companies' preparedness for and response to both Hurricane Irene and the October snowstorm, the Board intends to use the lessons learned to put improvements in place for the future. The Board is aware that even after the EDCs implement all the measures ordered herein, outages of multiple days are still possible. However, by being better prepared for major events and providing more accurate and timely communications about restoration efforts, the EDCs will provide customers with the tools needed to deal with events of this magnitude.

After careful review of the Emergency Preparedness Partnership's report entitled "Performance Review of EDCs in 2011 Major Storms" dated August 9, 2012, the Board **HEREBY ACKNOWLEDGES RECEIPT** of the EPP Report.

The Board has taken into consideration the findings and recommendations contained in the EPP Report, the Staff's 2011 BPU Hurricane Irene Electric Response Report, and the input received from the public. The actions ordered of the EDCs below are intended to improve the electric distribution companies' preparedness for and response to Major Events.

The Board **HEREBY FINDS** that the actions detailed in this Order are necessary to ensure continued provision of safe, proper and adequate service, to help mitigate future outages, and to

help develop more effective communication among the EDCs, municipal officials, customers and the Board during extreme weather events.<sup>3</sup>

The Board **HEREBY ORDERS** the EDCs to take the following actions within the time frames specified, noting the deadlines are from the effective date of this Order:

### **PREPAREDNESS EFFORTS**

BPU-1) No later than June 2013, all EDCs shall conduct the first annual training exercise designed to simulate response to an outage affecting 75 percent of their customers. The EDCs shall provide Staff with 30 days advance notice of the time and place of each exercise.

### **ORGANIZATIONAL STRUCTURE, ROLES AND RESPONSIBILITIES**

Within 120 days:

BPU-2) The EDCs shall use an ICS structure in their emergency organizations. The EDCs shall update their E-Plans and OMS Manuals to reflect the use of an Incident Command System (ICS) structure in their emergency organizations. No individual shall assume more than one role in the ICS during a Major Event. The EDCs shall submit to Staff a report detailing the ICS implementation or modifications.

BPU-3) The EDCs shall establish an Emergency Management/Preparedness role as a stand-alone function within their organizational structures with the requisite authority to set and execute preparedness goals. The EDCs shall provide to Staff documentation of the implementation of the Emergency Management/Preparedness role, including, but not limited, to the date hired, resume, reporting relationship, and how the individual will be integrated into the company.

BPU-4) The EDCs shall identify and train sufficient second role personnel to meet emergency staffing needs, pre-assign appropriate personnel and provide training in advance of a predicted Major Event. The EDCs shall provide documentation to Staff on the number of staff trained and the training schedule.

### **PLANNING**

Within 90 days:

BPU-ACE-1) ACE shall modify its organizational charts to reflect position titles instead of names.

BPU-JCP&L-1) JCP&L shall include the Construction Restoration Lead's plan and any individually developed job aids or checklists in its emergency plan.

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<sup>3</sup> The EDCs shall provide all notices, submissions, and other communications required by this Order in writing.

Within 120 days:

BPU-5) The EDCs shall update and submit to Staff their emergency plans to reflect the elevated response required for a large scale restoration event; ensure that the roles and responsibilities as defined in their emergency plans are followed in actual practice; provide for the annual review, updating and distribution of its emergency plans; and provide to Staff documentation of these changes.

Within 180 days:

BPU-6) All EDCs shall revise, and submit to Staff, their emergency plans to manage the restoration of service to a minimum of 75% of their customers, and include descriptions of emergency organization; emergency classifications; annual training and exercise program; on-going readiness initiatives; pre-event preparatory measures; procedures for mobilizing personnel, materials and equipment; communications procedures; process for acquiring external resources; process for acquiring internal support services; and linkages to corporate plans, if applicable.

### **EXERCISES / DRILLS**

Within 30 days:

BPU-RECO-1) RECO shall prepare and submit to Staff a procedure for developing a post exercise report and improvement plan following each exercise.

Within 120 days:

BPU-7) The EDCs shall develop and submit to Staff plans to implement an annual exercise in which their personnel will staff the County and Local Emergency Operations Centers (EOCs) in their service territories with the goal of creating familiarity with the facilities, developing relationships with Emergency Management Officials and verifying the functionality of all field equipment. The EDCs shall include a target date for the first exercise in these implementation plans and notify Staff at least 30 days before each annual exercise is scheduled to take place.

BPU-JCP&L-2) JCP&L shall develop and submit to Staff policies for conducting an annual storm restoration exercise that will include participation of personnel from all functional units/departments that play a role in storm restoration and external agencies; conducting an internal annual storm restoration exercise with FirstEnergy focusing on roles and responsibilities; and developing a post exercise report and improvement plan following each exercise.

BPU-PSE&G-1) PSE&G shall develop and submit to Staff policies for conducting an annual storm restoration exercise that will include larger scale events in its annual exercises and will include personnel from all functional units/ departments that play a role in storm restoration; and for developing a post exercise report and improvement plan following each exercise which includes an assessment of the roles of participants.

## **TRAINING**

Within 90 days:

BPU-8) The EDCs shall develop a centralized repository of training records for all positions involved with storm restoration and send notice to Staff upon completion.

BPU-JCP&L -3) JCP&L shall develop and submit to Staff a procedure to track on the job training participation.

Within 120 days:

BPU-9) The EDCs shall revise their training procedures to ensure that the training provided meets the requirements of the position within the storm restoration role, and provide the revised procedures to Staff.

Within 180 days:

BPU-10) The EDCs shall establish specific training requirements for all positions involved with storm restoration and provide the training schedule to Staff.

BPU-11) The EDCs shall revise their training programs to include the training of personnel on cross-functional interdependencies within the storm restoration organization and provide the revised procedures to Staff.

## **WEATHER MONITORING / FORECASTING**

Within 120 days:

BPU-PSE&G-2) PSE&G shall revise its OMS Manual to include policies and procedures for the collection, analysis and dissemination of weather information, and provide Staff with the revised manual.

## **COMMUNICATIONS**

The EDCs shall provide, as detailed in the section below, clear, timely and accurate pre and post event information through a variety of methods to assist customers, government officials, emergency management officials and mutual aid crews in preparing for and dealing with the aftermath of major events

### **PRE-EVENT COMMUNICATIONS**

Within 90 days:

BPU-12) The EDCs shall submit to Staff standard pre-storm customer messaging revised to emphasize to customers to prepare for the possibility of long duration outages, and provide safety advice and sources of emergency preparedness information.

BPU-13) The EDCs shall submit to Staff revised procedures for maintaining logs of all media activity for use in its post event analysis.

Within 120 days:

BPU-JCP&L-4) JCP&L shall implement the recommendations contained in its Storm Restoration Communications Implementation Plan. JCP&L shall launch its storm website and notify its customers of its activation two (2) days prior to an expected major event storm or immediately upon the arrival of an unexpected major event storm. JCP&L shall update its Interactive Voice Response (IVR) messages with storm warning and preparedness information two (2) days prior to an expected major event storm or immediately upon the arrival of an unexpected major event storm. JCP&L shall submit to Staff written procedures reflecting these changes and a copy of the finalized Storm Restoration Communications Implementation Plan.

### **CUSTOMER SERVICE/CALL CENTER**

Within 90 days:

BPU-14) The EDCs shall revise and submit to Staff their IVR and Voice Response Unit (VRU) messages to ensure they are in plain language that is easily understandable to the vast majority of their customers. For Major Events, with anticipated outages of three (3) or more days, the EDCs Live Agent and IVR messages regarding Estimated Times of Restoration (ETR) shall contain information and resources to help customers plan their actions to deal with an extended outage.

Within 180 days:

BPU-15) The EDCs shall submit documentation to Staff demonstrating that they have established call center performance standards for Average Speed of Answer (ASA) and Abandonment Rate (AR) during major outage events; adopted procedures to ensure call center staff meets ASA and AR standards during a major outage event; and developed IVR/VRU messages that contain helpful and accurate information and which will be updated at least daily during an extended outage.

BPU-RECO-2) RECO shall conduct a study that examines the adequacy of its resources and its affiliates' resources if a major event simultaneously affects both of their service territories; implement its process enhancements; and submit to Staff the results of the resource adequacy study and documentation of implementation of process enhancements.

### **EXTERNAL COMMUNICATIONS**

As of the effective date of this order:

BPU-16) Prior to and during a Major Event the EDCs shall hold daily conference calls with municipal officials of the affected municipalities. Information on these calls shall be included in the Major Event Report.

Within 30 days:

BPU-JCP&L-5) JCP&L shall develop and submit to Staff a plan showing sufficient media coverage staff to provide backup in the event of simultaneous or consecutive major events, how social media will be used to augment press releases, and a schedule that provides for more frequent and accurate updates throughout an event.

**BPU-JCP&L-6)** JCP&L shall develop and submit to Staff messaging scripts that provide customer-centric information, giving priority to advice about potential for “worst case” event impact, and clear and concise IVR callback scripts.

Within 90 days:

**BPU-17)** The EDCs shall develop and submit to Staff messaging scripts that provide easily understood and comprehensive advice to customers for planning their actions to deal with outages and for staying safe.

**BPU-18)** The EDCs shall develop and submit to Staff a plan for ensuring they have sufficient message writers and government affairs personnel in a Major Event. The plan shall include procedures to inform elected officials about the restoration process.

**BPU-RECO-3)** RECO shall implement all of the improvements detailed in its revised restoration plan and submit to Staff a list of the improvements implemented.

**BPU-RECO-4)** RECO shall submit to Staff documentation demonstrating that it has sufficient space for its communications team.

Within 120 days:

**BPU-19)** The EDCs shall modify their IVR so that multiple customer telephone numbers may be accepted.

**BPU-20)** The EDCs shall provide additional methods for customers to report and check on the status of an individual outage using mobile devices.

**BPU-21)** The EDCs shall provide Staff with a web portal to view additional details related to outages and provide a mechanism to automatically notify Staff via email or text message when certain outage thresholds are reached.

**BPU-22)** The EDCs shall update their websites as follows, and notify Staff that the following changes have been implemented:

- The primary focus of all messages shall be customer safety and ability to cope, especially prior to and at the start of Major Events.
- All communications channels at an EDC’s disposal shall be mobilized as soon as potential Major Events are forecasted.
- Worst-case projections shall be issued from the outset of any Major Event to effectively portray a sense of urgency.

**BPU-23)** The EDCs shall establish and maintain webpages describing storm safety and preparedness information, and general restoration processes and procedures.

**BPU-24)** The EDCs shall establish and maintain, for each municipality in their respective service territories, a separate webpage with the following information:

- The approximate number of customer served;

- A description of the electric system serving the municipality, including the name, number and general location of substations serving the municipality; the number and a general description of the circuits serving the municipality; and data concerning utility poles, miles of distribution lines and other electric infrastructure;
- A link to the EDCs' description of storm safety and preparedness information and general restoration processes and procedures.

The EDCs may also include information concerning the EDC and municipality tree trimming policies and procedures.

BPU-25) During outages, each municipality's webpage shall be updated with the following information as the information becomes available:

- Number and percentage of customers out of power;
- Information about the time outages occurred and the cause of the outages;
- Damage assessment information;
- A description of the nature and timing of restoration efforts; and
- Estimated Time of Restoration (ETR).

BPU-26) During outages, the EDCs shall establish and maintain county-by-county information as follows:

- Number of customers served;
- Number of customers out of power;
- Percentage of customers out of power;
- Links to municipality webpages as ordered in BPU-24.

Within 180 days:

BPU-27) The EDCs shall submit to Staff documentation that they are using social media as part of their communications with the public during Major Events.

BPU-28) The EDCs shall submit to Staff documentation that they are allowing customers to report outages by telephone to their accounts via multiple phone numbers, and notifying customers of the availability of this service.

BPU-29) The EDCs shall submit to Staff documentation that they have designated a company representative with direct responsibility for system operations and restoration to communicate directly with Staff.

BPU-PSE&G-3) PSE&G shall identify and train sufficient second role personnel as backup representatives for staffing OEMs and submit the names and positions of the employees to the Staff.

### **INTERNAL COMMUNICATIONS**

Within 90 days:

BPU-30) The EDCs shall develop and submit to Staff a procedure to log and keep samples of internal communications to assist in developing lessons learned.

## **RESTORATION AND RESPONSE**

As set forth in more detail below, the EDCs shall establish better processes by which to obtain mutual assistance, particularly when a large-scale event affecting multiple utilities occurs, and to better track crews and give them tools to provide data while in the field.

### **ACTIVATION**

Within 90 days:

BPU-JCP&L-7) JCP&L shall develop and submit to Staff criteria for the activation of its emergency response plan, including clearly defined procedures for all functions. In its submission to Staff, JCP&L shall analyze any risks associated with the plan, including any risks inherent in requiring the movement of personnel between affiliates in severe weather. JCP&L shall also propose a plan to manage these risks.

BPU-PSE&G-4) PSE&G shall develop and submit to Staff a plan to mobilize additional skilled personnel to support a major storm activation, including identifying by job title the employees that would be available to support the restoration efforts for a significant event.

Within 180 days:

BPU-31) The EDCs shall develop and submit to Staff a Storm Damage and Outage Prediction Model. This model may be computerized, but must provide for input of all factors required to estimate storm damage. For each major storm, the EDCs shall incorporate the prediction model in the estimation of the resources needed to respond to the event. This information shall be submitted to Staff 1 day prior to a predicted storm's arrival.

### **MUTUAL ASSISTANCE**

As of the effective date of this Order:

BPU-32) The EDCs shall immediately request assistance upon determining a need to request additional human resources and/or equipment to prepare for, respond to or recover from a Major Event. The EDCs shall, upon requesting this assistance, inform Board Emergency Management Staff, of the time, type and number of resources, and whether the resource request is satisfied.

BPU-33) The EDCs shall provide periodic organized updates to Staff, in a form and frequency directed by Staff, regarding both mutual assistance requests made by the EDC, and/or mutual assistance being provided to another EDC.

BPU-34) If, at any time, an EDC determines that a resource request will not be satisfied in a timely manner, the EDC shall take immediate and repeated action to expeditiously meet its resource requests, through any and all available means, including direct requests to contractors and/or other utilities outside the affiliated company and/or RMAG process. The EDC shall make a permanent record of its actions and include this information in the Major Events Report. The EDCs shall promptly and fully inform Board Emergency Management Staff, in a manner prescribed by Staff, of these actions.

These reporting requirements shall apply to any and all requests for assistance to an affiliated company, through an RMAG process, and/or for contractor and/or utility resources outside an RMAG process.

Within 90 days:

BPU-ACE-2) ACE shall submit to Staff a new section to its Plan to describe how mutual assistance crews will be allocated among affiliated companies (ACE, Delmarva, and Pepco) when simultaneous large-scale events occur in multiple service territories.

BPU-RECO-5) RECO shall submit to Staff a new section to its Plan to describe how mutual assistance crews will be allocated among affiliated companies (ConEdison and Orange & Rockland) when simultaneous large-scale events occur in multiple service territories.

BPU-PSE&G-5) PSE&G shall, as of the date of this Order, for all future events report the number of personnel, instead of crews, when reporting the number of personnel that assisted during weather events.

Within 120 days:

BPU-35) The EDCs shall develop and submit to Staff a plan to acquire additional line personnel in the event of a wide-spread natural disaster that stresses the RMAG system.

BPU-JCP&L-8) JCP&L shall submit to Staff documentation that FirstEnergy has developed a process regarding the provision of mutual assistance to JCP&L during major events, including an appendix in FirstEnergy E-Plan addressing the following:

- when FirstEnergy resources can leave the FirstEnergy affiliate companies to assist non-FirstEnergy companies;
- triggers that determine when and how many personnel can leave, along with a plan to replace these personnel if they are unable to return when needed; and
- how FirstEnergy will manage at least two or three major simultaneous restoration events on its system, including how mutual assistance crews will be allocated between companies when simultaneous large-scale events occur in multiple service territories.

BPU-PSE&G-6) PSE&G shall revise the mutual assistance section in its OMS Manual to include a description of who is responsible for the following: estimating resource needs, participating in Regional Mutual Assistance Group (RMAG) conference calls, and making the decision to send or obtain mutual assistance. PSE&G shall participate in RMAG calls even when its mutual assistance needs are not being met by the RMAG. The specific location of the revision shall be noted when the revised OMS Manual is submitted.

### **CREW / WORK MANAGEMENT / WORKFORCE LEVELS**

Within 120 days:

BPU-JCP&L-9) JCP&L shall ensure that the approved quarantine process of circuit restoration is integrated into the E-Plan and that appropriate personnel are trained. A report detailing the implementation of this recommendation shall be submitted to Staff.

BPU-PSE&G-7) PSE&G shall define the process of circuit-based restoration and the escalation process in its OMS Manual and specifically identify the location of the relevant language when submitting the revised copy of the Manual to Staff.

Within 180 days:

BPU-36) The EDCs shall submit to Staff a detailed staffing review that explains any decreases, in the last 5 years, in headcount and the impact on the company's ability to provide adequate resources for restoration purposes.

BPU-37) The EDCs shall develop and submit to Staff a common damage "glossary" for reporting damage to the BPU during and after events.

BPU-38) The EDCs shall develop a procedure to track crew locations throughout the restoration process and report this information to the BPU Staff as requested. In addition, if requested by Staff, the EDCs shall report crew locations at the municipal level.

BPU-39) The EDCs shall participate with other key stakeholders in a debris management initiative organized by the Reliability and Security Staff to establish a structured process to determine roadway access prioritization.

BPU-40) The EDCs shall each develop and conduct a customer education program regarding field restoration work processes, and submit to Staff a report detailing this program.

### **DAMAGE ASSESSMENT**

Within 90 days:

BPU-PSE&G-8) PSE&G shall develop and submit to Staff a deployment plan that effectively uses drivers and damage assessors to conduct damage assessment.

Within 120 days:

BPU-JCP&L-10) JCP&L shall develop and submit to Staff a rapid damage assessment process to be used during Major Events, which shall include a detailed description of the prioritization of areas to be assessed, the method for assigning personnel, the timeframe for personnel to report back with their findings, as well as any other information requested by Board Staff.

Within 180 days:

BPU-JCP&L-11) JCP&L shall ensure that it has sufficient trained personnel to conduct the damage assessment process in parallel with the hazard process. JCP&L shall submit to Staff the details of these programs.

BPU-JCP&L-12) JCP&L shall establish a dedicated planning function to analyze information coming in from the damage assessments. JCP&L shall submit to Staff details of this process.

BPU-41) The EDCs shall submit to the Board for review and approval a plan for the implementation of technology solutions to enable more efficient reporting and/or processing of damage assessment information.

## **ESTIMATED RESTORATION TIMES (ETR)**

Within 30 days:

BPU-RECO-6) RECO shall develop a process to ensure that its automatic ETR generation feature is turned off during Major Events.

Within 90 days:

BPU-JCP&L-13) JCP&L shall develop and submit to Staff a standardized process for the calculation of ETRs at multiple levels of granularity, which shall be documented in its E-plan.

BPU-JCP&L-14) JCP&L shall centralize the responsibility for the ETR process into a single function and submit details of this program to Staff.

Within 120 days:

BPU-42) The EDCs shall make available to customers a global ETR 24 hours after a major event outage. Beginning 48 hours after a major event outage, the EDCs shall make available to municipal officials daily updates concerning the number of customers out in their towns and the estimated number of customers that will be restored each day until restoration is completed.

BPU-43) The EDCs shall, at a minimum, give priority restoration to customers who have been identified to the companies as those with special needs as defined in N.J.A.C. 14:3-3A.4(d) once the EDCs have reached the lateral/branch circuit and/or individual customer point in the process, while still giving consideration to restoring large groups of customers. Communications to those identified as special needs customers will include, at a minimum, a pre-event call to warn of impending possible outages and an intra-event call to provide an ETR. The EDCs shall submit to Staff details of this procedure and documentation of its implementation.

Within 180 days:

BPU-44) Each EDC shall conduct and submit to Staff a study of the accuracy of its ETRs during Major Events during the last three years.

## **COMMAND AND CONTROL**

Within 120 days:

BPU-JCP&L-15) JCP&L shall develop and submit to Staff staffing contingency plans to deal with a Major Event during which FirstEnergy corporate support is limited.

BPU-PSE&G-9) PSE&G shall follow the ICS organizational model endorsed in its OMS Manual, revise its OMS Manual to define a clear role for the executives in accordance with ICS principles. The revisions shall be included in the OMS manual, and provided to Staff in a separate report as well for easier identification.

Within 365 days:

BPU-45) The EDCs shall ensure that there are a minimum of three personnel identified, trained and assigned to fill each leadership level position in its emergency / incident response / storm restoration organization. The EDCs shall submit to Staff a list of the leadership positions and three personnel identified for each position.

### **RESPONDER SYSTEMS, TOOLS AND JOB AIDS**

Within 180 days:

BPU-JCP&L-16) JCP&L shall implement the use of Mobile Data Terminals to relay data to and from the field.

Within 365 days:

BPU-46) The EDCs shall implement a cell phone application that customers can use to report outages and receive system outage information.

### **LOGISTICS AND FIELD SUPPORT**

Within 90 days:

BPU-47) The EDCs shall develop and submit to Staff ice and water provisioning plans for Major Events, which shall provide for specific implementation trigger points, geographic criteria for supply points, and duration of supply distribution. The plans may include affiliations with existing retail establishments and distribution assistance to be provided by local, county and state emergency management officials. The EDCs shall provide Staff with a copy of the plan adopted to engage media and other communications methods to advise customers of the availability and location of these items.

Within 180 days:

BPU-48) The EDCs shall predetermine Staging Areas sufficient to support restoration from an outage equal to 75% of total customers including location specific layouts. The EDCs shall have any necessary contractual arrangements in place for the use of the predetermined Staging Areas to resolve issues such as liability, access, security and existing support services at the site prior to a Major Event. The EDCs shall submit to Staff a report detailing this program.

BPU-JCP&L-17 and RECO-7) JCP&L and RECO shall assume the responsibility for lodging for foreign contractors and submit an implementation plan to Staff.

BPU-PSE&G-10) PSE&G shall develop, and submit to Staff documentation of a standard Staging Area resource complement to ensure that operations can be managed effectively if adverse weather conditions occur during an extended restoration. PSE&G shall update its OMS Manual to include a detailed Staging Area plan.

### **FOLLOW-UP WORK**

Within 120 days:

BPU-49) The EDCs shall develop and submit a clearly defined section in their plans outlining the follow-up "temporary repairs" work processes and responsibilities, including post storm patrolling and inspection.

BPU-50) The EDCs shall develop and submit to Staff a storm quality assessment process to track the locations of all temporary repairs and the date each temporary repair was made permanent.

### **POST EVENT**

The EDCs shall, as specified below, track and use the “lessons learned” from each Major Event to make improvements and seek input from external stakeholders, who can provide valuable information toward this effort.

### **STORM RESTORATION PROCESS METRICS**

Within 90 days:

BPU-51) The EDCs shall implement and submit to Staff documentation of a process by which, during a Major Event, EDCs shall report to Staff at least once per day (after the first 24 hours), or as requested, the estimated man-hours required to restore all remaining affected customers.

### **BENCHMARKING / EXTERNAL ANALYSIS**

Within 90 days:

BPU-52) The EDCs shall submit to Staff a list of Regional Mutual Assistance Groups (RMAG) and/or utilities they have agreements with to share restoration experiences.

### **POST EVENT PROCESSES**

Within 90 days:

BPU-53) The EDCs shall implement a process by which, following a Major Event, they shall solicit input regarding their performance from affected external stakeholders, via letter, email, conference call, personal contact or by meeting, and document the feedback provided. This documented input shall be available for review by Staff upon request.

BPU-54) The EDCs shall implement the use of logs to track activities and document decisions by storm team leadership members, which shall be available for review by Staff upon request.

Within 120 days:

BPU-55) The EDCs shall each identify one responsible party, who will review all ‘lessons learned,’ meet with the submitting departments, finalize action items, and assign responsibility for the action items, track action item completion and report progress to leadership. The EDCs shall submit to Staff the name of the responsible party and the reporting structure he or she will use.

BPU-JCP&L-18) JCP&L shall implement, and submit to Staff documentation of, a process to ensure timely completion and final approval of process improvement items noted during post storm debriefings / ‘lessons learned.’

BPU-RECO-8) RECO's Emergency Management Department will review all 'lessons learned,' track the required improvements, and ensure their final, appropriate and timely completion, report progress to leadership, and submit to Staff documentation demonstrating implementation.

BPU-PSE&G-11) PSE&G should develop and submit to Staff documentation of a process to perform 'lessons learned' after each Major Event to find and reward innovative actions, understand training requirements, correct errors or omissions in its OMS Manual, foster a culture of continuous improvement, and establish a timeframe when these post event reviews will be completed.

### **UNDERLYING INFRASTRUCTURE ISSUES**

The EDCs shall, as set forth in more detail below, carefully examine their infrastructure and use data available to determine how substations can be better protected from flooding, how vegetation management is impacting electric systems, and how Distribution Automation can be incorporated to improve reliability.

#### **SUBSTATION FLOODING**

As of the effective date of this Order:

BPU-56) The EDCs shall prepare formal reports after all instances of substation flooding to be submitted to Board Staff within 30 days of the incident. The EDCs shall detail the circumstances of the event, the overall impact to the substation and feeder circuits, the flood mitigation in place at the time of the event, and an assessment of the need for additional mitigation steps, including a cost-benefit analysis.

Within 90 days:

BPU-PSE&G-12) PSE&G shall complete its flood mitigation study and submit for Board consideration a proposal for implementation of the recommended mitigation measures, which shall include a cost benefit analysis and a work plan.

Within 120 days:

BPU-57) The EDCs shall develop and submit to Staff specific substation flooding preparedness plans which detail mitigation steps to be taken and monitoring prior to and during major storm events.

BPU-58) The EDCs shall prepare a report, to be submitted to the Board that prioritizes the EDCs' proposed responses to various levels of potential flooding at each substation and switching station at risk of flooding (up to and including the levels of water encroachment that occurred in both Hurricane Irene and Superstorm Sandy).

Alternative response levels to various levels of encroachment shall include, but not be limited to hardening measures including (1) sandbagging (2) raising certain facilities in the substation or switching station to higher levels, (3) constructing flood walls around the stations, (4) raising the level of the station and (5) moving the station to higher ground. Other response measures to be considered shall include: (1) the feasibility of adding redundancy to portions of the system; and (2) the use of variations of so-called smart grid technologies that would provide greater flexibility to react to various flooding emergencies on the system. The Report shall include cost benefit

analyses for each alternative considered taking into account the likelihood of each considered event, the effectiveness of each alternative considered and the cost of each measure.

Within 180 days:

BPU-59) The EDCs shall submit to the Staff an analysis of the current 100 year flood plan data for their respective areas of operation, an evaluation of the need to design for higher flood elevation in future substation installations within flood zone areas or other vulnerable areas, and any other recommendations regarding design improvements, including a cost-benefit analysis and a work plan.

BPU-60) The EDCs shall coordinate with municipal and facility stakeholders (e.g., local or county drainage, dam and water facilities) whose infrastructure or operations can impact substations in vulnerable flood areas. These meetings shall be considered as working groups for the stakeholders to discuss past events, operational and logistical concerns, and communications. The minutes of each meeting shall be submitted to the Staff within 30 days after that meeting.

### **VEGETATION MANAGEMENT**

Within 60 days:

BPU-61) The EDCs and Staff shall establish a work group to develop plans for a tracking system for distribution system outages related to trees and vegetation. This program shall track information such as the outage causation, proximity of the tree/vegetation to electrical facilities, last trimming cycle of the circuit that experienced the outage, location of tree/vegetation within or outside of the right-of-way (ROW) or easement, and any other pertinent factors, including storm event, local cutting, wind, etc. This tracking system shall be maintained by the respective EDC and be available to Staff upon request.

BPU-62) The EDCs shall review their vegetation outage data and correlate this information into an analysis of their impacts to the system reliability. The EDCs shall prepare and submit to Staff an explanation of this analysis showing any perceived benefits or concerns with the impact of the programs to the health of the system.

Within 180 days:

BPU-JCP&L-19) JCP&L shall develop and submit to Staff a plan to document its "institutional knowledge" of the vegetation impacts and mitigation on its systems with the goal of making this information available to all personnel during Major Events.

Staff will continue its initial steps to evaluate the Vegetation Management recommendations contained in this Order to determine if further Board action is required. Staff will work with the appropriate stakeholders, which include the EDCs, local agencies and regulatory bodies, to initiate a detailed review of vegetation management rules for distribution lines. Staff will work to develop specific clearance requirements, mitigation of trees above, not just around distribution lines, and species allowed within the easement. Staff will work to establish a process to address "danger trees", i.e., those that are in imminent danger of affecting power lines.

## **CIRCUIT OUTAGES**

Within 30 days:

BPU-63) Each EDC currently managing or evaluating a Smart Grid pilot program incorporating Distribution Automation within New Jersey or the PJM region and each EDC that is in the process of developing and implementing any new Smart Grid- Distribution Automation pilots shall submit to Staff a status report explaining the scope of work, objectives/goals, tasks, funding source including federal, state, regional or energy organization, schedule and any other pertinent information.

BPU-64) The EDCs and Staff will evaluate and implement changes, if appropriate, to the Major Event Report to standardize reporting information.

Staff shall continue its Outage Reporting and Reliability initiative to require increased outage reporting by EDCs to the Staff pursuant to N.J.A.C. 14:3-3.7, to gather and analyze circuit and equipment data to identify problem areas: locational, equipment or procedural. The goal will be to have these analyses done on a continual basis so the EDCs and Staff can more clearly focus efforts to improve reliability. Additionally, Staff will evaluate the use of a consultant to assist in the review and determine the benefits of adopting and utilizing Distribution Automation strategies on New Jersey's electric distribution systems. This review should include the EDCs' current implementation of substation SCADA systems, protective relaying, use of dynamic recording devices, smart metering, automated circuit switching and closing, and other power quality and equipment monitoring technologies. Additionally, Staff and the consultant should review the results of the Distribution Automation pilot programs, currently in progress by several of the EDCs, to evaluate the realized benefits and potential constraints with such implementation. Cost benefit considerations as well as rate impacts associated with the implementation of Distribution Automation should also be reviewed.

Within 90 days

BPU-65) Each EDC shall file a Smart Grid - Distribution Automation Plan (SG-DAP) filing. The Smart Grid- Distribution Automation Plan shall include the development and implementation of feeder and substation automation as part of an overall Distribution Management System (DMS) and Outage Management System (OMS). The SG-DAP shall, including but not be limited to the following: Automatic circuit reclosures (ACR), automation sectionalizing and restoration (ASR), advanced voltage control, VARs control, network protection/monitoring/controls, remote terminal units, remote fault detection, smart relays, equipment health sensors, outage detection devices and smart meters. The Smart Grid – Distribution Automation Plan Filing shall include the timeframe for the development of each component and the overall plan, as well as the costs and benefits of each individual component and the entire plan to the EDC and the ratepayer. The Smart Grid – Distribution Automation shall be developed with the goal to implement a more resilient and “self-healing” distribution grid and with the objective to improve the distribution system reliability and optimize the distribution grid operation overall with a specific focus during and after a storm events such as Irene.

The Division of Energy will review and evaluate the Smart Grid – Distribution Automation Plan filing to determine the benefits of adopting and utilizing Smart Grid - Distribution Automation strategies within New Jersey's electric distribution systems. Additionally, Staff will review the results of the Distribution Automation pilot programs, currently in progress by several of the

EDCs, to evaluate the realized benefits and potential constraints with such implementation. This review should include the EDCs' current implementation of substation SCADA systems, protective relaying, use of dynamic recording devices, smart metering, automated circuit switching and closing, and other power quality and equipment monitoring technologies. Staff will perform an independent cost and benefits review of each of the EDC's Smart Grid - Distribution Automation Plan including Cost and benefit considerations as well as rate impacts associated with the implementation of the EDC Smart Grid - Distribution Automation will be reviewed.

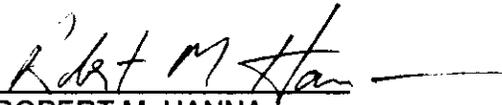
When providing the information as directed in this Order, the EDCs shall identify the numbered Board Ordered action to which the response pertains. Actions pertaining to all EDCs are listed as BPU- followed by the number. Those pertaining to a specific EDC include the name of the EDC as well.

To the extent any information that is required to be submitted pursuant to this Order is claimed to be confidential, proprietary or raises a security concern, it should be submitted pursuant to the Board's regulations at N.J.A.C. 14:1-12.1 -12.18.

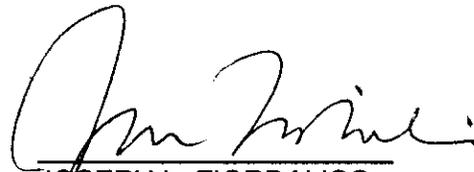
The effective date of this order is February 1, 2013.

DATED: 1/23/13

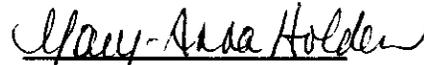
BOARD OF PUBLIC UTILITIES  
BY:

  
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PRESIDENT

  
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COMMISSIONER

  
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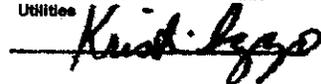
  
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KRISTI IZZO  
SECRETARY

I HEREBY CERTIFY that the within document is a true copy of the original in the files of the Board of Public Utilities



IN THE MATTER OF THE BOARD'S REVIEW OF THE UTILITIES'  
RESPONSE TO HURRICANE IRENE

DOCKET NO. EO11090543

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Agenda Date: 5/29/13  
Agenda Item: 6B

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RELIABILITY & SECURITY

IN THE MATTER OF THE BOARD'S REVIEW OF )  
THE UTILITIES' RESPONSE TO HURRICANE SANDY ) ORDER REQUIRING  
) ) ELECTRIC UTILITIES TO  
) ) IMPLEMENT  
) ) RECOMMENDATIONS  
) )  
) DOCKET NO. EO12111050

**Parties of Record:**

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**Ralph LaRossa**, Public Service Electric & Gas Co.  
**James Fakult**, Jersey Central Power & Light Co.  
**Vince Maione**, Atlantic City Electric Co.  
**William Longhi**, Rockland Electric Co.

**BY THE BOARD:**

The New Jersey Board of Public Utilities (Board or BPU) initiated this matter to investigate the adequacy of communications provided during Hurricane Sandy by Atlantic City Electric Company (ACE), Public Service Electric and Gas Company (PSE&G), Jersey Central Power & Light Company (JCP&L), and Rockland Electric Company (RECO) (collectively EDCs). By this Order, the Board directs action following further consideration of the Board's prior Order dated January 23, 2013 In the Matter of the Board's Review of the Utilities' Response to Hurricane Irene, Docket EO11090543. The Board will continue to review EDC responses to Major Events and may issue additional Orders to address communication, preparedness and response issues. Major Events include extreme weather events and other expected periods of extended service interruption.

**BACKGROUND**

As a result of Hurricane Sandy, over 2.9 million electric customers lost power. Entire communities were disrupted, and their emergency management capabilities were extended to the limit. Critical facilities activated emergency contingency plans, schools and businesses were

closed, family routines disrupted and government operations were severely impacted. Following this storm, the BPU held three public hearings designed to receive input regarding the EDCs' preparations and restoration performance relative to Hurricane Sandy. In addition, members of the public contacted the Board by letters, e-mails and phone calls. In reviewing all comments received, the Board found that there were repeated remarks regarding the EDCs' poor communications with local officials concerning estimated restoration times. This lack of clear communication was particularly troublesome to local officials working to manage the storm's aftermath, as it hindered providing timely and accurate information to residents who were anxious to make decisions about shelter, sustenance, and property security.

In its January 23, 2013 Order, the Board directed the EDCs to implement extensive recommendations regarding how they prepare and respond to major outage events such as Hurricane Sandy.

It is clear that communications is an area where improvement between the EDCs and government officials and the public is still needed. Board Staff convened a number of meetings with EDC representatives to develop additional communications recommendations beyond those spelled out in the Board's January 23, 2013 Order. In addition, Staff met individually with the EDCs to review in detail their outage restoration processes.

### **DISCUSSION AND FINDINGS**

An EDC's communications with its customers, the public and governmental officials is especially critical during major service interruptions. Clear and consistent messaging to the public and local officials before and after a storm is crucial to help in planning for the possibility of long duration outages. Additionally, providing regular restoration progress reports to the public drives better decision-making and reduces the stresses caused by uncertainty. With the availability of the Internet, mobile communications and social media, the external communication process is no longer restricted to office hours; frequent updates are expected. In addition, utilities must educate the public on the importance to the restoration process of customers reporting outages to assist the utilities in providing accurate restoration estimates.

The Board **HEREBY FINDS** that the following New Requirements are necessary to ensure continued provision of safe, proper and adequate service to help develop more effective communication among the EDCs, municipal officials, customers and the Board during extreme weather events and other expected periods of extended service interruption.

1. EDC Municipal web pages (created pursuant to BPU-24 on page 48-49 of the Board's January 23, 2013 Order) shall include (or link to) information describing why customer calls and outage reporting are critical to the restoration process, a description of the damage assessment process and any repair prioritization process used by the utility.
2. EDC Municipal web pages (created pursuant to BPU-24 on page 48-49 of the Board's January 23, 2013 Order) shall include (or link to) an Estimated Time of Restoration (ETR), including, posting a global ETR within 24 hours and an individual ETR within the time period specified in item 3 below. When determining how to post ETRs, the EDCs should consider any appropriate security concerns.

3. ETR for Individual Customers shall be developed by the EDCs and made available as follows; within 48 hours for outages projected to last up to 7 days, within 72 hours for outages projected to last 8 to 10 days and within 96 hours for outages projected to last over 10 days
4. Individual customers shall be able to obtain their ETR and the status of restoration efforts (e.g. damage assessed, crew assigned, crew on-site, repair complete) from the EDC Municipal web pages on the EDC's website. Additionally, this page shall include (or link to) a method to permit the customer to report an outage.
5. Within 24 hours after a weather event or other major event has exited the service territory, an EDC shall provide the following information to municipal officials, including daily updates: a Global ETR, the total number of customers out of service in the service territory, system wide number of substations out, system wide number of switching stations out, system wide number of circuits out, impact of flooding, and any other information useful to government in forming a common operating picture and situational awareness.
6. Within 48 hours after a weather event or other major event has exited the service territory, EDCs shall make available to municipal officials; the number of customers out of service in the municipality, the number of circuits that provide service to the municipality and are damaged, the number of tree cutting locations in the municipality, the number of utility poles damaged in the municipality, the number of damage locations on the circuits that provide service to the municipality, the number of confirmed street closures due to wires down, the number of circuits scheduled to be worked on that day that provide service to the municipality, with a note on the webpage that the crews working on the circuits may actually be working in another municipality, the number of customers in the municipality to be restored per day until the restoration is complete based upon the individual ETRs and a link so the customer can find their individual ETR. (for outages lasting over 7 days this info would be provided based upon the schedule above)
7. In addition to the information posted on EDC Municipal web pages, EDCs shall make information regarding the status of an outage available to customers via at least one of the following methods: SMS text messaging, through mobile app and/or through another push or messaging notification. Participation in receiving such notifications shall be available to customers on an opt-in basis. Information available shall include: notice of the global ETR, customer specific ETR, and notification when the utility has completed the repair which it believes will restore service to that customer. EDCs may also use such technology to permit customers to confirm that service has been restored.
8. EDCs shall submit a written report to Board Staff detailing the plans, including timetables for the specific technological advancements and upgrades to OMS and computerized support systems, workflow process and workforce changes for the technological upgrades necessary to capture and report damage and outages on a municipal basis.

Any information described above that is available to municipal officials, shall also be made available to applicable County, and State officials, including Emergency Management officials and Board Staff.

The Board has taken into consideration the findings and recommendations contained in the January 23, 2013 Board Order and the input received from the public. The actions ordered of the EDCs above are intended to improve the EDCs' communications relating to Major Events.

The Board **HEREBY FINDS** that the requirements detailed in this Order are necessary to ensure continued provision of safe, proper and adequate service, to help mitigate future outages, and to help develop more effective communication among the EDCs, municipal officials, customers and the Board during Major Events, including extreme weather events and other expected periods of extended service interruption.

The Board **HEREBY ORDERS** the EDCs to implement requirements 1- 8 within the time frames specified below.

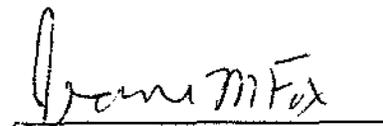
Requirements 2-7 shall be completed within one year. Requirement 1 shall be completed within 30 days and Requirement 8 shall be completed within 60 days, noting the deadlines are from the effective date of this Order.

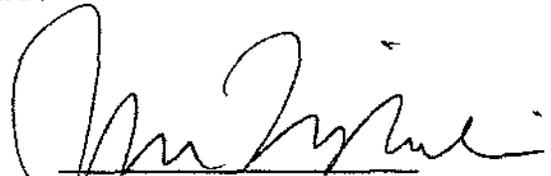
The effective date of this order is June 10, 2013.

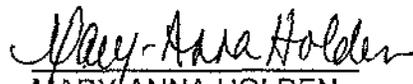
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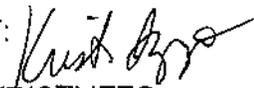
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BY:

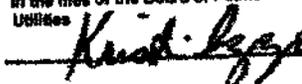
  
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ATTEST:   
KRISTI IZZO  
SECRETARY

I HEREBY CERTIFY that the within document is a true copy of the original in the files of the Board of Public Utilities  


IN THE MATTER OF THE BOARD'S REVIEW OF THE UTILITIES'  
RESPONSE TO HURRICANE SANDY

DOCKET NO. EO12111050

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