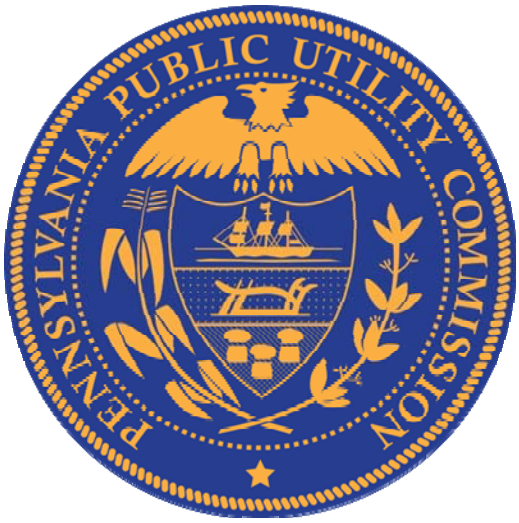

Summary Report of Outage Information Submitted by Electric Distribution Companies Affected by Hurricane Sandy October 29-31, 2012

Prepared By:
Bureau of Technical Utility Services
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TABLE OF CONTENTS

INTRODUCTION

Hurricane Sandy (Sandy) had a large impact on Pennsylvania and its electric distribution companies (EDCs) as well as most of the states in the Mid-Atlantic and New England. It was a complex weather system and possibly the largest storm in modern history, by area. Sandy brought tropical storm winds and heavy rain to the eastern third of Pennsylvania as well as high winds throughout the center of the state. Sandy began affecting southeastern Pennsylvania in the morning and early afternoon of October 29, 2012. The high winds and rain continued northwestward overnight. The wind and rain caused more than 1.26 million electric customer outages at the peak at approximately 4 a.m. October 30. Approximately 1.79 million Pennsylvania electric customers experienced an outage at some point as a result of Sandy. Over 8 million electric customers throughout the eastern seaboard were affected. Power outages caused other ancillary effects such as minor telephone outages and water outages in areas where water treatment plants lost power for multiple days. Most customers (90 percent of the peak) were restored by the evening of November 3 and all customers were restored by November 9. The affected electric utilities were Metropolitan Edison Co. (Met-Ed), PECO Energy Co. (PECO), Pennsylvania Electric Co. (Penelec), Pike County Light & Power (Pike), PPL Electric Utilities Corporation (PPL), UGI Utilities, Inc. - Electric Division (UGI), Wellsboro Electric Co. (Wellsboro), and West Penn Power Co (West Penn).

The number and duration of Sandy-related outages warranted a review of the EDCs' preparation and response by the PUC's Bureau of Technical Utility Services (TUS). The review is based on the utilities' reports required by Commission regulations, telephonic and email conversations with the EDCs throughout the restoration period, and information from subsequent meetings and communications with EDCs and other stakeholders. It also includes weather information about the both the forecasted and actual path and effects of Sandy on Pennsylvania.

Recommendations for further action by the Commission and EDCs are included.

EXECUTIVE SUMMARY

The dedication and service of all utility workers should be commended as they worked under very difficult circumstances during the response to Sandy. As with any storm response, it is important to review the response, looking at what went well and what can be improved. While landfall of hurricanes in the northeastern states is unusual, Sandy was not unexpected. The Commission, the Pennsylvania Emergency Management Agency (PEMA), and the EDCs were aware of the potential impacts at least a week before expected landfall. This review details the preparations and certain response actions of the utilities. In the following pages, we note key findings and recommend a course of action to address those findings. Industry best practices that would benefit other utilities facing other such challenges also are noted.

Key Findings

- The restoration for Sandy took approximately as long as that for Hurricane Irene (Irene) , but Sandy caused much more damage to EDC infrastructure,
- A majority of the affected EDCs successfully used social and traditional media to communicate with customers before and during Sandy and its aftermath.
- All EDCs communicated more effectively with elected officials, county emergency management, and local emergency management than they did during their response to Irene and other major storms in 2011.
- While EDC daily conference calls with elected officials, county emergency management, and local emergency management were generally well received, the EDCs have worked to address issues related to the process and facilitation of the calls.
- The PUC's daily conference calls with the Lieutenant Governor's Office, utility presidents and operational staff were informative and beneficial.
- The staffing of county 911 centers and/or emergency operations centers with EDC liaisons was a benefit and should be continued.
- Utilities that experienced longer-duration outages had some difficulty in managing the estimated times of restoration (ETRs) for customers and communicating effectively with local responders and elected officials in those areas.
- PPL, PECO, Pike and UGI experienced far fewer issues handling peak call volume during Sandy as compared to their performance during Irene and the October snow in 2011.

- The PUC received a much higher percentage of informal complaints related to inadequate ETRs and/or restoration information by Met-Ed than the other EDCs during Sandy.
- EDCs were able to bring in mutual aid and contractor assistance before the storm and during the restoration period. Many EDCs substantially increased their linemen work complements. Adequate staffing did not appear to be a problem.
- The Commission saw some improvement during Hurricane Sandy in the overall performance of the historically worst performing five percent of circuits, in terms of both outage duration and frequency.

Recommendations (It is noted where action was already taken and where continued follow up is recommended by TUS.)

- **Recommendation 1:** EDCs should continue to utilize social and traditional media outlets to communicate with customers before, during and after major storms. EDCs also should continue to enhance their web and mobile platforms, providing customers additional methods to report outages and learn outage status information.
    - In order to address response and communication issues experienced during Irene and Sandy, the EDCs formed a best practice working group with several subgroups tasked with addressing specific issues. The EDCs are sharing best practices regarding better utilizing social media and other new media platforms.
- **Recommendation 2:** EDCs should work together on a best practice for managing ETRs, especially during long-duration outages.
    - The EDC best practice working group is working on this issue.
- **Recommendation 3:** EDCs should continue to improve communications and restoration messaging with customers during long-duration outages, working to prevent inconsistencies and inaccuracies. TUS should specifically follow up with Met-Ed on its messaging issues during Sandy as well as Met-Ed's issues with embedded outages.
    - The EDC best practice working group is working on this issue and TUS will follow up with Met-Ed on its specific issues.
- **Recommendation 4:** EDCs should continue their cooperation and communication with county 911 centers and emergency management agencies (EMA). EDCs should continue to offer liaisons to counties during major outages and should meet with county 911 and EMA staff at least yearly to ensure contact information is up to date and review response expectations. EDCs should share best practices on this process as some have prior experience in this area.

- The EDC best practice working group is working on this issue.

- **Recommendation 5:** EDCs should continue to offer regional conference calls for state and local elected officials and local emergency managers. EDCs should begin the calls before expected major storms and should also ensure participants have the required call-in information prior to the storm's impact. EDCs should work together to share best practices on how to best structure and manage the regional conference calls.
  - The EDC best practice working group is working on this issue.
- **Recommendation 6:** EDCs should continue efforts to lower the number of busy out calls (calls receiving a busy signal or a message such as "all lines are busy, please call back") and abandoned calls for customers that call during storm events.
- **Recommendation 7:** TUS will continue to work with EDCs to reduce the duration and number of service outages attributable to the worst performing five percent of circuits and will work with EDCs to ensure circuits (where possible) do not remain on the worst performing five percent of circuits list for more than four consecutive quarters.

REVIEW

The following information highlights items that are germane to the discussion of the utilities' preparation and response to Sandy. Specific details provided by the EDCs to the PUC begin on page 31.

State Preparation

The Pennsylvania Emergency Management Agency (PEMA) recognized Sandy had the potential to be a serious threat to the Commonwealth and began issuing weather briefings from the National Weather Service (NWS) on October 24 State agencies were encouraged to be forward-leaning and begin to formulate staffing plans for the State Emergency Operations Center (SEOC). The weather briefings continued through October 25. When it became clear that Sandy would directly impact Pennsylvania, a weather conference call was held on October 26 where the NWS reported that Sandy was going to affect the eastern half of Pennsylvania with high winds and heavy rain. The main impact was forecast for October 29, lasting into the next day. The NWS also noted costal and tidal flooding was possible in southeastern Pennsylvania as the high winds could produce a storm surge. PEMA activated the SEOC to a Level II, which means Emergency Preparedness Liaison Officers (EPLOs) from various state agencies, including the PUC, were on duty. Certain key agencies such as the PUC reported at 8 p.m. October 28 with the remaining reporting at 8 a.m. October 29.

On October 28, the Governor's Office and PEMA held a special planning session with state agencies such as the PUC, Pennsylvania Department of Transportation (PennDOT), Pennsylvania State Police (PSP), Department of Military and Veteran's Affairs (DMVA), the Turnpike Commission (Turnpike), Department of Environmental Protection (DEP), Department of Public Welfare (DPW), Department of General Services (DGS), Department of Health (DOH), and the Red Cross.

Based on input from the NWS and state agencies, PEMA recommended that the Governor's Office issue an emergency declaration (issued October 26), enabling the use of state resources to aid Pennsylvania citizens and critical infrastructure. PEMA, through the SEOC and state agencies present, coordinated the state response efforts and resource requests. On November 2, PennDOT issued waivers for restrictions of commercial driver operations related to: transporting motor fuels, heating fuels and propane gas; operations necessary to respond to the

disaster emergency; transporting food, dairy products and pharmaceuticals to food distribution, retail and whole sale food establishments; and transporting and distributing agricultural feed. All of these efforts meant the state was well aware of and prepared for the impacts of Sandy.

PUC Preparation

The PUC's Emergency Preparedness Coordinator (EPC) is the Lead EPLO for the Commission and is responsible for staffing the SEOC with PUC EPLOs as required. The PUC has 11 staff members, including the EPC and Deputy EPC, who are qualified as EPLOs. The EPC also ensures communications regarding any regulated utility service interruptions or emergencies flow between the utilities, SEOC, and key PUC staff such as Commissioners and their staffs, bureau directors, managers and supervisors.

For Sandy, the EPC emailed all EDCs, as well as the large water/wastewater and telephone utilities, on October 24, requesting that they provide information from the NWS briefing and to ask what preparations were under way.[1] The email also asked the utilities to ensure that their contacts for county EMAs, 911 centers and critical/special needs customers were current and encouraged utilities to proactively contact those entities to go over response and restoration expectations.

On October 25, the EPC provided an update to the PUC EPLOs and created a staffing plan for a potential SEOC activation. The EPC also emailed the utilities the most recent NWS update that predicted a very high probability of impact for Pennsylvania. In that same email, the EPC provided the PUC EPLO contact information for the SEOC and asked utilities to ensure they had activated their communications plans as they related to the public, EMAs, and elected officials. The EPC also emailed all Commissioners and key PUC staff on October 25, about the potential impacts of Sandy and the need to prepare at a personal level. On October 26, the EPC notified the EDCs via email that the SEOC, including PUC staff, was being activated and shared the Governor's emergency declaration. Also, the EPC requested that utilities respond if they had any unmet needs that could be met by the state.

On October 27, the EPC asked all EDCs for the expected internal and external personnel resource, including linemen, forestry crews and assessors that were expected to be available to

[1] The PUC also includes the Pennsylvania Rural Electric Association in emails to jurisdictional utilities. While the PUC does not regulate PREA members, the PUC and PREA regularly exchange information during severe weather events and other incidents as necessary.

respond. Sandy was expected to mainly impact the areas served by Met-Ed, PECO, Pike, PPL, and UGI, but all EDCs were asked to provide information. The summary of the EDC information is found on page 59. The response shows that the EDCs had already planned on significantly increasing their staffing from both internal and external sources. The PUC provided the EDC preparation information to PEMA for an October 28, planning session.

PUC EPLOs reported to the SEOC at 8 p.m. on October 28, and continued a presence there until 1 p.m. on November 4. PUC EPLOs worked two 12-hour shifts each day. After November 4, the EPC continued providing updates at 7 a.m. and 7 p.m. daily with the final report provided at 7 a.m. on November 8. The PUC Chairman and Vice Chairman also instituted daily conference calls with utility presidents and operational directors beginning on October 28, and continuing until November 6. The calls took place at 9 p.m. and focused on sharing outage information and restoration status. Utilities also noted any unmet needs or obstacles to restoration the state could address. The Lieutenant Governor's Office as well as DEP and PEMA participated in some of the calls. Participating utilities included EDCs and water, gas and telephone utilities in the affected areas. These conference calls were a continuation of an initiative started during the response to Irene.

During the SEOC activation, the PUC EPLOs monitored and reported on utility service interruptions while addressing any critical customer outages that were brought to their attention, such as hospitals and water treatment plants. Fortunately, no large-scale water service interruptions occurred due to power loss. However, there were some small-scale and localized water service interruptions as well as customer well systems without adequate backup power. Some localized landline telephone outages occurred due to commercial power loss at remote sites, but there were no significant outages. Telephone utilities addressed those local concerns with small generators. Natural gas customers did not experience a significant loss of service as the flooding was far less than expected, especially in the greater Philadelphia area where flooding from a storm surge and tidal forces was a possibility.

Utility Preparation

The details for each EDC's preparation are found beginning on page 33. Below are highlights of the steps taken by each EDC before Sandy impacted Pennsylvania.

- **Met-Ed**
  - Met-Ed began holding conference calls on October 24, to plan for the response and to request additional personnel. Met-Ed proactively contacted the EMAs in the areas expected to be affected and provided company liaisons to those EMAs during the response to Sandy. Met-Ed also began proactive outreach to special needs customers, local EMAs, and state and local elected officials via phone, email and reverse IVR (Interactive Voice Response) on October 25.
- **PECO**
  - PECO began storm preparations on October 24, and opened their Emergency Operations Center (EOC) on October 25. Mutual aid assistance began arriving on October 28. PECO began communications to critical care customers, elected and regulatory officials, media, and customers in general on October 26 via phone, email, Internet and in-person briefings as well as media interviews.
- **Penelec**
  - Penelec began holding conference calls on October 24, to plan for the response and to request additional personnel. Penelec also began proactive outreach to special needs customers, local EMAs, state and local elected officials via phone, email and reverse IVR on October 26.
- **Pike**
  - Pike began preparations and conference calls through its parent, Orange & Rockland Utilities (O&R), on October 25. Mutual aid and contractor assistance was in place on October 28. Pike contacted critical care customers and emergency management officials beginning on October 26. Pike, through O&R, conducted daily conference calls with elected officials, local and county emergency managers and highway managers beginning on October 26.
- **PPL**
  - PPL began mutual assistance conference calls on October 24, and staffed its EOC on October 25. PPL created Incident Command Teams to manage localized restoration activities on October 26. PPL called over 1 million customers on October 28 to alert them to the possibility of extended service outages due to Sandy. PPL began calling County EMAs on October 28, and provided daily

email updates to EMA staff, and local, state, and federal elected officials beginning on October 25.

- **UGI**
  - UGI held internal conference calls and mutual aid conference calls on October 24, and UGI requested mutual aid personnel on October 25. Mutual aid crews arrived on October 29. UGI began customer notifications on October 26, and emailed notifications to special needs customers.
- **Wellsboro**
  - Wellsboro began mutual aid calls on October 24, and began staging crews on October 26 and 27. Wellsboro exchanged emergency contact information with the Tioga County EMA as well as began issuing press releases twice daily beginning on October 28.
- **West Penn Power**
  - West Penn began holding conference calls on October 24, to plan for the response. West Penn deployed resources to other FirstEnergy companies in Pennsylvania based on the forecast. West Penn also began proactive outreach to special needs customers, local EMAs, state and local elected officials via phone, email and reverse IVR on October 26.

Hurricane Sandy Impacts

As illustrated on page 71, the wind and rain impacts of Sandy were substantial. No major flooding was experienced, although significant flash flooding and ponding of water did occur in southeastern Pennsylvania. Tropical storm winds (greater than 39 mph sustained winds and gusts of 73 mph or higher) were felt for several hours in the eastern two-thirds of Pennsylvania from the early afternoon on October 29, to the afternoon of October 30. The high winds delayed restoration for several hours as utility crews could not work on overhead lines safely. Overall, the actual impacts of Sandy were as predicted by the NWS and the NWS National Hurricane Center. The effects of the storm could have been much worse had the storm surge affecting the Delaware and Susquehanna rivers been greater, or been to the extent it was on the New Jersey and Long Island coasts.

Utility Restoration Response

Below are summaries of each EDC's response and observations of PUC staff based on the utilities' reports and telephonic and email conversations with the EDCs throughout the restoration period. It also includes information from subsequent meetings and communications with EDCs and other stakeholders. More information may be found in the subsequent sections "Key Information Reported on the Report of Outage Form" and "Summary of Requested Additional Information." The summaries reference information that is contained in those sections.

- **Met-Ed**
  - Restoration Efforts
    - After 72 hours, Met-Ed restored approximately 68 percent of customers from the peak amount of outages at 8 a.m. October 30. Met-Ed restored approximately 84 percent of customers from the peak by 8 p.m. November 3.
    - Met-Ed did not have full restoration until November 8, which was approximately 10 days after the initial storm-related outage. 54 percent of Met-Ed customers experienced sustained outages as a result of Sandy.
    - As compared to similar storms (see page 33) from historical events, Met-Ed ranked Sandy as first in terms of number and duration of outages. Met-Ed was fully restored in nine days during Irene in 2011, with 46.7 percent of customers experiencing a sustained outage.
    - Met-Ed had 2,473 outage cases with 2,422 of those lasting more than six hours in Sandy as compared to 2,766 outage cases in Irene with 1,935 lasting more than six hours.
    - As can be seen on page 32, Met-Ed sustained significantly more physical damage to its infrastructure from Sandy than from Irene.
    - Met-Ed deployed liaisons to the County EMAs in its service territory that were most affected by Sandy. During the response to Sandy, Met-Ed also initiated daily conference calls for local, county and state elected officials and emergency managers.

- Media Use
  - Met-Ed used social media (Twitter, text messages, website) in addition to traditional media resources to provide information and restoration messaging before and during Sandy.
  - Met-Ed's Twitter followers increased from 565 to 2,165 between October 28 and November 8. Met-Ed posted 170 messages on its Twitter account during that time. Met-Ed does not use Facebook at this time.
  - Met-Ed's outage website provides a graphical map showing the number of current outages as well as summary data tables that show outages by county and by town/municipality. State and county emergency managers indicated they find the FirstEnergy outage website valuable during large storm events and also for everyday use. FirstEnergy's outage site had over 129,000 unique visitors and 400,000 views between October 28 and November 8.
- Call Center Performance and Restoration Messaging
  - Met-Ed suspended its automated restoration messaging for the entire company at 6 a. m. October 29. Automated ETRs were back in non-Sandy areas beginning on November 2 and in all areas by November 8. Met-Ed began issuing global and area ETRs on October 29, which included both the IVR and outage website. Met-Ed does not provide customer-specific ETRs during storm events.
  - Met-Ed's percentage of outage calls not answered/abandoned and calls that received a busy out were consistent with the other EDCs. However, as can be seen on page 44, as compared to the other affected EDCs, a much higher percentage of informal complaints related to inadequate restoration estimates and/or restoration information were filed with the PUC for Met-Ed than for the other affected EDCs.
- Personnel Resource Management
  - As seen on page 58, Met-Ed expected about 380 linemen to be available at the start of the storm. As seen on page 53, through contractors and mutual aid, Met-Ed increased its total linemen complement to a peak of approximately 1,064. This is almost five times its normal complement of approximately 224 linemen.

- Met-Ed did not release any of its personnel to assist other utilities during the restoration period.

- Worst Performing Circuit Performance In Sandy Compared to 2011[2]
  - As can be seen on page 57, of the 58 worst performing circuits that were identified in the 2011 report, 46 of those circuits experienced an outage during Sandy. There were 461 outages on those circuits, with 214 being of a duration greater than 72 hours. In 2011, the comparable worst performing circuits experienced 1,026 outages with 500 being of a duration greater than 72 hours.
  - In a comparison of the outages of a duration greater than 72 hours, there were 12 circuits that experienced a higher number of outages in Sandy than 2011. Eleven of those circuits were in the Easton and Stroudsburg Districts.

- Other Issues
  - Met-Ed ran into communication and restoration issues in its upper Bucks County territory – specifically the Tinicum area. However, there were other communities in Bucks, Monroe and Northampton counties that experienced the same issues. It appears that some customers who were affected by the original storm sometime around October 29 or 30 were on circuits that were placed back in service during the following week, but had embedded outages that may have been entered as new outages when they were called in by customers during the week of November 5. Met-Ed did not appear to be aware of this situation. The PUC was alerted by the Lieutenant Governor's Office the morning of November 8. The Commission notified Met-Ed and the remaining customers, regardless of the start time of their outage, were restored by the afternoon of November 8.

- **PECO**
  - Restoration Efforts
    - After 72 hours, PECO restored approximately 76 percent of customers from the peak amount of outages on October 30 at 8 a.m. PECO restored approximately 91 percent of customers from the peak by 8 p.m. on November 3.

[2] See page 57 for the specific data that was requested related to worst performing circuits.

- PECO did not have full restoration until November 7 which was approximately nine days after the initial storm-related outage. 54 percent of PECO customers experienced sustained outages as a result of Sandy.
- As compared to similar historical storms (see page 32), PECO ranked Sandy first in terms of the number and duration of outages. PECO was fully restored in seven days during Irene in 2011 and 30 percent of customers experienced a sustained outage in Irene. PECO had 4,540 outage cases with 4,674 of those lasting more than six hours in Sandy as compared to 2,113 outage cases in Irene lasting more than six hours.[3]
- As can be seen on page 32, PECO sustained more damage during to its infrastructure in Sandy than in Irene.
- PECO deployed liaisons to the county 911 service centers in its service territory that were most affected by Sandy. During the response to Sandy, PECO also initiated daily conference calls for local, county and state elected officials and emergency managers.

o Media Use

- PECO utilized traditional media (TV, radio, newspaper) and its outage web page to disseminate information and restoration messaging before and during Sandy. PECO also utilized a mobile application for users that accessed the PECO outage website with their smartphones. PECO did not use social media such as Twitter or Facebook during that time.
- PECO's outage website provides a small map with graphic indicators showing the outages in its six-county service territory. The map does not offer any more detail. The outage site does offer a summary section showing the number of current outages and the number of customers in each county. However, the current outages are presented in distinct blocks such as: Scattered; 5,000 to10,000 outages; 10,001 to 20,000 outages, etc. up to a block of >50,000 outages. Every county in the PECO service territory, with the exception of York, has well over 50,000 customers, meaning this function has limited value. The summary section does offer the ability to click on the county to view outages by townships. While being more useful, the map still shows the outages in

[3] Due to embedded outages, the number of outage cases over six hours was larger than the overall number of outage cases.

distinct blocks. The blocks are smaller in the number of outages they cover, which is an improvement over the main outage map.

- PECO's outage map had over 342,000 unique visitors and 501,000 views between October 28 and November 8.

- Call Center Performance and Restoration Messaging
  - PECO suspended its automated restoration messaging for the entire company at 9 p.m. October 29. Automated ETRs were back in for all customers beginning at 7:48 p.m. November 8. PECO began issuing global and area ETRs October 29, which included both the IVR and outage website. PECO began providing ETRs to individual customers beginning after 4 p.m. October 31.
  - PECO's percentage of outage calls not answered/abandoned and calls that received a busy out were about with the same as the other EDCs. As can be seen on page 44, PECO's percentages were an improvement over its performance in Irene.
- Personnel Resource Management
  - As seen on page 58, PECO expected about 1,295 linemen and other outage response personnel to be available at the start of the storm. As seen on page 53, through contractors and mutual aid, PECO increased its total linemen complement to a peak of approximately 2,523. This is over five times its normal complement of approximately 440 linemen.
  - PECO did not release any of its personnel to assist other utilities during the restoration period.
- Worst Performing Circuit Performance In Sandy Compared to 2011[4]
  - As can be seen on page 57, 58 of the 72 worst performing circuits that were identified in the 2011 report experienced an outage as a result of Sandy. There were 236 outages on those circuits, with 83 of those being of a duration greater than 72 hours. In 2011, the comparable worst performing circuits experienced 163 outages with 13 of those being of a duration greater than 72 hours.
  - In 2011, the comparable worst performing circuits experienced 13 outages of a duration greater than 72 hours on eight circuits. In Sandy, there were 83 outages of a duration greater than 72 hours on 20 circuits.

[4] See page 57 for the specific data that was requested related to worst performing circuits.

Of the 83 outages in Sandy, 41 were in Bucks County on 14 of the 20 circuits.

- **Penelec**
  - Restoration Efforts
    - After 72 hours, Penelec restored almost 100 percent of customers from the peak amount of outages, experienced at 8 a.m. October 30.
    - Penelec had full restoration at 3 p.m. November 3, which was approximately five days after the initial storm-related outage. 16 percent of Penelec customers experienced sustained outages as a result of Sandy.
    - As compared to similar historical storms (see page 32), Penelec ranked Sandy third in terms of duration. Irene was ranked first in duration. Penelec was fully restored in nine days during Irene in 2011, with approximately 9 percent of customers experienced a sustained outage. Penelec had 1,006 outage cases with 814 of those lasting more than six hours in Sandy as compared to 738 outage cases in Irene with 336 lasting more than six hours.
    - As can be seen on page 32, Penelec sustained more physical damage during to its infrastructure in Sandy than in Irene.
    - Penelec deployed liaisons to the County EMAs in its service territory that were most affected by Sandy. During the response to Sandy, Penelec also initiated daily conference calls for local, county and state elected officials and emergency managers.
  - Media Use
    - Penelec utilized social media (Twitter, text messages, website) in addition to traditional media resources to provide information and restoration messaging before and during Sandy.
    - Penelec's Twitter followers increased from 317 to 393 between October 28 and November 8. Penelec posted 55 messages on its Twitter account during that time. Penelec does not use Facebook at this time.
    - Penelec's outage website provides a graphical map showing the number of current outages as well as summary data tables that show outages by county and by town/municipality. State and county emergency managers have indicated they find the FirstEnergy outage website valuable during large storm events and for everyday use. FirstEnergy's outage site had

over 129,000 unique visitors and 400,000 views between October 28 and November 8.

- Call Center Performance and Restoration Messaging
  - Penelec suspended its automated restoration messaging for most districts at 3:25 p.m. on October 29. The last two districts' automated messaging was turned off at 5:39 p.m. that day. Automated ETRs were turned back on at 11:35 p.m. November 2. Penelec began issuing global ETRs on October 26 and area ETRs on October 31, which included both the IVR and outage website. Penelec does not provide customer-specific ETRs during storm events.
  - Penelec's percentages of outage calls not answered/abandoned and calls that received a busy out were slightly higher than with the other EDCs. However, there were not a significant number of informal complaints or inquiries filed with the Commission regarding restoration information.
- Personnel Resource Management
  - As seen on page 58, Penelec expected about 385 linemen to be available at the start of the storm. As seen on page 54, through contractors and mutual aid, Penelec increased its total linemen complement to a peak of approximately 457. This is approximately 33 percent higher than its normal complement of approximately 342 linemen.
  - Penelec sent approximately 50 linemen to Met-Ed and 10 linemen to Cleveland Electric Illuminating on November 2, along with several hazard responders.
- Worst Performing Circuit Performance In Sandy Compared to 2011[5]
  - As can be seen on page 57, 17 of the 30 worst performing circuits that were identified in the 2011 experienced an outage during Sandy. There were 61 outages on those circuits, with two of those being of a duration greater than 72 hours. In 2011, the comparable worst performing circuits experienced 101 outages, with 16 of those being of a duration greater than 72 hours.

[5] See page 57 for the specific data that was requested related to worst performing circuits.

- **Pike**
  - Restoration Efforts
    - After 72 hours, Pike restored approximately 80 percent of customers from the peak amount of outages at 8 a.m. October 30. Pike restored approximately 89 percent of customers from the peak by 8 p.m. November 30.
    - Pike did not have full restoration until November 9, which was approximately 11 days after the initial storm-related outage. 100 percent of Pike customers experienced sustained outages as a result of Sandy.
    - As compared to similar historical storms (see page 32), Pike ranked Sandy as being first in terms of both the number and duration of outages. Pike was fully restored in 6.5 days during Irene in 2011, with 97 percent of customers experiencing a sustained outage. Pike had six outage cases, with all of those lasting more than six hours in Sandy, as compared to nine hours during Irene.
    - As can be seen on page 32, Pike sustained significantly more physical damage during to its infrastructure in Sandy than in Irene.
    - Pike communicates directly with the local emergency responders and County EMAs in its service territory during storm events. During the response to Sandy, Pike, through O&R, also initiated daily conference calls for local, county and state elected officials and emergency managers.
  - Media Use
    - Pike utilized social media (Twitter, Facebook, YouTube, text messages, website) in addition to traditional media resources to provide information and restoration messaging before and during Sandy.
    - O&R's (Pike does not have its own account, but its information appears in the O&R account) Twitter followers increased from 120 to 1,552 between October 28 and November 8. The number of "likes" on O&R's Facebook page increased from 900 to 2,450 in that same time period.
    - O&R's outage website provides a graphical map with symbols indicating the current level of outages as well as summary data tables that show outages by county as well as by town/municipality. The O&R site had its peak traffic on November 1, with 75,331 visits and over 302,000

pages viewed. The mobile version of the website saw its peak on October 30, with 32,883 visits.

- Call Center Performance and Restoration Messaging
  - Pike suspended its automated restoration messaging at 8:53 a.m. October 29. Restoration messaging concerning the entire service territory began at 12 p.m. November 1. Restoration messages regarding particular regions began at 10 p.m. November 2.
  - O&R's (Pike does not have its own call center) percentage of outage calls not answered/abandoned and calls that received a busy out were lower than the average of the other EDCs. No informal complaints related to inadequate restoration estimates and/or restoration information were filed against Pike.
- Personnel Resource Management
  - As seen on page 58, O&R as a whole expected about 437 linemen to be available at the start of the storm. During restoration, Pike supplemented its usual complement of nine linemen with three mutual aid linemen, although there may have been additional mutual aid from O&R that worked in Pike's territory on some of the days, but returned to their base in New Jersey or New York.
  - Pike did not release any of its personnel to assist other utilities during the restoration period.
- Worst Performing Circuit Performance In Sandy Compared to 2011
  - By our regulations based on the size of their operations, Pike does not report worst performing circuits.

- **PPL**
  - Restoration Efforts
    - After 72 hours, PPL restored approximately 68 percent of customers from the peak amount of outages at 8 a.m. October 30. PPL restored approximately 89 percent of customers from the peak by 8 p.m. November 3.
    - PPL did not have full restoration until November 7, which was approximately nine days after the initial storm-related outage. 37.5 percent of PPL customers experienced sustained outages as a result of Sandy.

- As compared to similar historical storms (see page 32), PPL ranked Sandy as first in terms of number and duration of outages. During Hurricane Irene, PPL was fully restored within seven days, during which, 30.9 percent of customers experiencing a sustained outage. PPL had 3,819 outage cases with 2,948 of those lasting more than six hours in Sandy as compared to 3,102 outage cases in Irene with 2,642 lasting more than six hours.
- As can be seen on page 32, PPL sustained significantly more physical damage during to its infrastructure in Sandy than during Irene.
- PPL deployed liaisons to the County EMAs in its service territory that were most affected by Sandy. During the response to Sandy, PPL also initiated daily conference calls for local, county and state elected officials and emergency managers.

o Media Use

- PPL utilized social media (Facebook, Twitter, text messages, website) in addition to traditional media resources to provide information and restoration messaging before and during Sandy.
- PPL's Twitter followers increased from approximately 3,500 to 6,500 between October 28 and November 8. PPL's "likes" on Facebook increased from 310 to 13,445 during that same time period. Also during that time period, PPL had 531,095 impressions on Twitter and 883,141 impressions on Facebook.
- PPL utilized Facebook and Twitter during its response to Sandy to address customer issues directly as well as to provide public education regarding storm preparedness and response.
- PPL's outage website provides a graphic map showing the number of current outages represented by colored dots. Users can click on the map to see outages by township for each county. Users may also scroll down to see a table of outages by county and click on the county to view outages by township. State and county emergency managers indicated they find the PPL outage website to be of great use during large storm events and also for everyday use. PPL's outage site had over 420,000 unique visitors and 5.1 million page visits between October 28 and November 8.

- Call Center Performance and Restoration Messaging
  - PPL suspended its automated restoration messaging on 5:30 p.m. November 3. Automated ETRs were turned back on at 5:30 p.m. November 7. PPL began issuing area ETRs at 1 p.m. October 31, which included both the IVR and outage website. PPL began providing ETRs specific to the Harrisburg and Lancaster regions at 11 p.m. November 1; the Central and Susquehanna regions at 11:00 p.m. November; and the Northern and Lehigh regions at 11:00 p.m. November 4.
  - PPL's percentage of outage calls not answered/abandoned and calls that received a busy out were consistent with the other EDCs. Both percentages were a significant improvement over PPL's performance in Irene. As can be seen on page 44, as compared to the other EDCs, PPL had the second highest number of inquiries and informal complaints. However, only nine of the complaints were related to inadequate restoration estimates and/or restoration information.
- Personnel Resource Management
  - As seen on page 58, PPL expected about 837 linemen and line support personnel to be available at the start of the storm. As seen on page 55, through contractors and mutual aid, PPL increased its total linemen compliment to a peak of approximately 2,274. This is over five times its normal complement of approximately 440 linemen.
  - PPL did not release any of its personnel to assist other utilities during the restoration period.
- Worst Performing Circuit Performance In Sandy Compared to 2011[6]
  - As can be seen on page 57, 77 of the 86 worst performing circuits that were identified in the 2011 report experienced an outage during Sandy. In Sandy, there were 583 outages on those circuits with 153 being of a duration greater than 72 hours. In 2011, the comparable worst performing circuits experienced 741 outages with 254 being of a duration greater than 72 hours.
  - Of the 583 outages on the identified worst performing circuits in Sandy, 422 (72.3 percent) of those were in the Lehigh and Northeast Regions.

[6] See page 57 for the specific data that was requested related to worst performing circuits.

In 2011, of the 771 total outages, 485 (63 percent) were in the Lehigh and Northeast Region.

- **UGI**
  - Restoration Efforts
    - After 72 hours, UGI had restored 100 percent of customers from the peak amount of outages at 8 a.m. October 30.
    - UGI had full restoration by November 1, which was approximately three days after the initial storm-related outage. Twenty-eight percent of UGI customers experienced sustained outages as a result of Sandy.
    - As compared to similar historical storms (see page 32), UGI ranked Sandy as third in terms of number and duration of outages. Irene was number one. UGI was fully restored in 11 days during Irene in 2011, with58 percent of customers experiencing a sustained outage. UGI had 54 outage cases in Sandy lasting more than six hours as compared to 318 outage cases in Irene lasting more than six hours.
    - As can be seen on page 32, UGI sustained more physical damage to its infrastructure in Irene than in Sandy.
    - During storm events, UGI communicates directly with the county 911 and emergency management agencies in its territory. UGI operates mainly in Luzerne County, but has a small presence in Wyoming County as well.
  - Media Use
    - UGI implemented its Crisis Communication Plan before and during the storm response. This includes messages distributed via social media (Facebook, Twitter, Email, website) in addition to traditional media resources to provide information and restoration messaging.
    - UGI's Twitter followers increased from 575 to 682 between October 28 and November 8. UGI's "likes" on Facebook increased from 3,688 to 5,275 during that same time as well as approximately 113,527 impressions on Facebook.
    - UGI's outage website provides general information on outages and the overall status of restoration by area. Customers may sign up for outage updates via email. UGI's outage site had over 35,000 visits, 30,000

unique visitors and 10,187 mobile visits between October 28 and November 8.

- Call Center Performance and Restoration Messaging
  - UGI did not use automated messaging during Sandy. Restoration messaging was provided directly from call center representatives and through messaging distributed via email, social media, media, etc. UGI began providing restoration estimates at 9 p.m. October 30.
- Personnel Resource Management
  - As seen on page 58, UGI expected about 42 linemen to be available at the start of the storm. As seen on page 55, through contractors and mutual aid, UGI increased its total linemen complement to a peak of approximately 67. This is more than eight times its normal complement of approximately eight linemen.
  - UGI did not release any of its personnel to assist other utilities during the restoration period.
- Worst Performing Circuit Performance In Sandy Compared to 2011[7]
  - As can be seen on page 57, of the three worst performing circuits that were identified in the 2011 report, during Sandy one of those circuits experienced an outage. During Sandy, there were two outages on that circuit with none lasting longer than 72 hours. In 2011, there were three worst performing circuits with 24 outages and all 24 were of a duration greater than 72 hours.

- **West Penn Power**
  - Restoration Efforts
    - After 72 hours, West Penn restored approximately 85 percent of customers from the peak amount of outages at 8 a.m. October 30. West Penn was over 90 percent restored from the peak by 8 p.m. November 3.
    - West Penn did not have full restoration until November 6, which was approximately eight days after the initial storm-related outage. Only 5.5 percent (39,539) of West Penn customers experienced sustained outages as a result of Sandy.
  - Media Use

[7] See page 57 for the specific data that was requested related to worst performing circuits.

- West Penn utilized social media (Twitter, text messages, website) in addition to traditional media resources to provide information and restoration messaging before and during Sandy.
- West Penn's Twitter followers increased from 437 to 685 between October 28 and November 8. West Penn posted 55 messages on its Twitter account during that time. West Penn does not utilize Facebook at this time.
- West Penn's outage website provides a graphical map showing the number of current outages as well as summary data tables that show outages by county and by town/municipality. State and county emergency managers indicated that they find the West Penn outage website of great use during large storm events and also for everyday use. West Penn's outage site had over 129,000 unique visitors and 400,000 views between October 28 and November 8.

o Call Center Performance and Restoration Messaging

- West Penn suspended most automated restoration messaging at 3:30 p.m. October 29, except for three districts that were suspended at 3:52 p.m. Automated ETRs were back on by on November 6, in all areas except three districts, which were returned on November 8. Beginning at 10 a.m. October 30, West Penn provided area specific restoration messaging to all areas except Hyndman, Waynesboro, and McConnellsburg. Those areas began receiving area specific ETRs at 10 a.m. October 31. West Penn does not provide customer specific restoration estimates during storm events, only area specific.
- West Penn's percentage of outage calls not answered/abandoned and calls that received a busy out were consistent with the other EDCs. A minimal number of informal complaints related to inadequate restoration estimates and/or restoration information were filed against West Penn with the Commission.

o Personnel Resource Management

- As seen on page 58, West Penn expected about 100 linemen to be available at the start of the storm. As seen on page 56, through contractors and mutual aid, West Penn increased its total linemen

complement to a peak of approximately 309. This is approximately 50 more than its normal complement of 252 linemen.

- As can be seen on page 51, West Penn sent numerous personnel to assist other FirstEnergy companies, including Penelec, during the restoration period, including 83 linemen on October 31. As can be seen on page 57, West Penn also released some contractor linemen on October 31. These movements were based on the forecasted impact to West Penn's territory as compared to other FirstEnergy service territories. West Penn did not complete restoration until November 6. This is in contrast to Penelec, which was restored on November 3, despite having more than twice the number of customers with sustained outages and more than twice the number of customers out at the peak. When asked about the reasoning behind the personnel movements given the long restoration times, West Penn noted that at the time the decision was made to release crews, it was estimated that the remaining crews could restore the current outage cases. However, West Penn continued to experience bad weather and increased outages after the October 31 and restoration took longer than expected.

- Worst Performing Circuit Performance In Sandy Compared to 2011[8]
  - As can be seen on page 57, none of the five worst performing circuits that were identified in the 2011 report experienced an outage during Sandy.

[8] See page 57 for the specific data that was requested related to worst performing circuits.

CONCLUSION

Several key findings were made after reviewing the EDCs' outage reports as well as their preparation for and responses to Sandy. The findings are noted below and recommendations based on those findings follow in the next section. Overall, utility crews and support workers all performed admirably, under a difficult situation, to restore a large portion of affected customers in a relatively short period of time.

Findings

- **All EDCs**
    - Most EDCs made good use of social and traditional media to communicate with customers before and during the effects of Sandy.
    - Customers and Emergency Managers utilized EDC outage websites, especially those with maps and tables that provide outage and restoration information by geographic area.
    - All EDCs communicated more effectively with elected officials, county emergency management, and local emergency management than they did in the response to Hurricane Irene and other major storms in 2011.
    - The EDC daily conference calls with elected officials, county emergency management, and local emergency management were received well and beneficial to all stakeholders. However, further refinement to the process and facilitation of the calls would be beneficial. The EDCs worked together to address those issues so that the calls will go more smoothly during future events.
    - The daily conference calls held by the Commission with the Lieutenant Governor's Office, utility presidents and operational staff were informative and beneficial.
    - The staffing of county 911 centers and/or emergency operations centers with EDC liaisons was a benefit and should be continued and expanded for those EDCs that do not have such staffing plans.
    - Sandy caused more damage to EDC infrastructure (see page 32). However, the restoration for Sandy took approximately as long as that for Irene (see page 31). Utilities that experienced longer duration outages had difficulty managing the restoration estimates for customers and communicating effectively with the local responders and elected officials.

- PPL, PECO and Pike and UGI experienced fewer issues handling peak call volume during Sandy as compared to their performance during Irene and the October snow storm in 2011.
- EDCs were able to bring in mutual aid and contractor assistance before the storm and during the restoration period. Many EDCs substantially increased their linemen work complements. Adequate staffing did not appear to be a problem.

- **Met-Ed**
  - Met-ED effectively used traditional and social media to communicate with customers during the response to Sandy.
  - A much higher percentage of informal complaints related to inadequate restoration estimates and/or restoration information were filed with the Commission against Met-Ed than the other EDCs.
  - Met-Ed had issues tracking embedded outages in certain locations, which led to customers receiving incorrect restoration information.
  - Based on the review of the worst performing circuit data, Met-Ed should analyze the 11 circuits in the Easton and Stroudsburg Districts that experienced higher numbers of outages during Sandy.
- **PECO**
  - While PECO effectively used traditional media and mobile platforms, the company should increase its social media presence through platforms such as Facebook and Twitter. With the increased use of mobile devices, customers are increasingly looking to social media for information and to directly interact with the companies.
  - PECO's outage website should provide more detailed information on the number of outages in each county on the main outage website screen.
  - PECO's ability to handle high call volume to the customer service line was significantly improved over its performance in Irene.
  - Based on the review of the worst performing circuit data, PECO should analyze the 14 circuits in Bucks County that contributed a high number of outages of a duration greater than 72 hours.
- **Penelec**
  - Penelec effectively used traditional and social media to communicate with customers during the response to Sandy.

  - Penelec was restored much faster in Sandy than in Irene, despite more physical damage and customers affected in Sandy.
  - Based on the review of the worst performing circuit data, during Sandy Penelec experienced less outages and fewer outages of a duration greater than 72 hours on those circuits.
- **Pike**
  - Despite having the longest restoration time of all EDCs during Sandy, Pike managed its communications with customers and local officials effectively and received no customer informal complaints or inquiries.
  - Pike's ability to handle high call volumes to its customer service line was significantly improved over its performance in Irene.
- **PPL**
  - PPL effectively used traditional and social media to communicate with customers during the response to Sandy.
  - PPL's ability to handle high call volumes to its customer service line was significantly improved over its performance in Irene.
  - Based on the review of the worst performing circuit data, PPL should analyze the circuits in the Lehigh and Northeast Regions that contributed to the increased percentage of outages during Sandy.
- **UGI**
  - UGI's ability to handle high call volumes to its customer service line was significantly improved over its performance in Irene.
  - UGI managed its personnel resources more effectively in Sandy than in Irene and were able to procure adequate mutual aid and contractor assistance.
  - UGI effectively used traditional and social media to communicate with customers during its response to Sandy.
- **Wellsboro**
  - Wellsboro was restored relatively quickly in Sandy and did not experience outage numbers or damages to the level of the other EDCs.
- **West Penn Power**
  - West Penn effectively used traditional and social media to communicate with customers during its response to Sandy.

- West Penn took longer to have full restoration than did Penelec (November 6, as compared to November 3), but still had West Penn linemen out of the territory as mutual aid (including to Penelec) until November 17.

Recommendations (It is noted where action was already taken and continued follow up is recommended by TUS.)

- **Recommendation 1:** EDCs should continue to utilize social and traditional media outlets to communicate to customers before, during, and after major storms. EDCs should also continue to enhance their web and mobile platforms so customers can find more information about their outage status and to report outages and other issues.
  - In order to address response and communications issues raised by Irene and Sandy, the EDCs have formed a best practice working group with several subgroups tasked with addressing specific issues. The EDCs are sharing best practices in this regard to utilizing social media and other new media platforms.
- **Recommendation 2:** EDCs should work together on a best practice for managing restoration estimates, especially during long-duration outage events.
  - The EDC best practice working group is working on this issue.
- **Recommendation 3:** EDCs should continue to work to improve communications and restoration messaging with customers during long-duration outage events and avoid inconsistencies and inaccuracies when providing information to customers. TUS should specifically follow up with Met-Ed on the messaging issues experienced during Sandy as well as Met-Ed's issues with embedded outages.
  - The EDC best practice working group is working on this issue and TUS will follow up with Met-Ed on their specific issues.
- **Recommendation 4:** EDCs should continue their cooperation and communication with county 911- centers and emergency management agencies (EMAs). EDCs should continue to offer liaisons to counties during major outage events and should meet with county 911and EMA staff at least yearly to ensure contact information is up to date and to review response expectations. EDCs should share best practices on this process as some have prior experience in this area.
  - The EDC best practice working group is working on this issue.
- **Recommendation 5:** EDCs should continue to offer regional conference calls for state and local elected officials, and local emergency managers. EDCs should initiate the calls before expected major storms, as much as possible, and should also ensure expected

participants have the required call-in information prior to the storms impact. EDCs should work together to share best practices on how to best structure and manage the regional conference calls.

  - The EDC best practice working group is working on this issue.

- **Recommendation 6:** EDCs should continue efforts to lower the number of busy out calls and abandoned calls for customers that call during storm events.
- **Recommendation 7:** TUS shall continue to work with EDCs to reduce the duration and number of service outages attributable to the worst performing 5 percent of circuits and shall work with EDCs to ensure circuits (where possible) do not remain on the worst performing 5 percent of circuits list for more than four consecutive quarters.

Appendix

Key Information Reported on the Report of Outage Form

Where practical, outage information from Hurricane Irene is included for comparison. It should be noted that Irene was a smaller storm and caused much less damage than Sandy in the northeast states, including Pennsylvania.

- Number of customers affected and as a percentage of total customers

	Customers Affected	% of Total Customers	Ct. Affected Irene 2011	% of Total Ct. Irene 2011
Med-Ed	298,300	54.0%	255,981	46.7%
PECO	845,703	54.2%	511,102	30.4%
Penelec	96,847	16.4%	55,057	9.4%
Pike County	4,487	100.0%	4,366	97.2%
PPL	523,936	37.5%	428,503	30.9%
UGI Electric	17,395	28.0%	35,975	58.0%
Wellsboro	1,820	29.4%	n/a	n/a
West Penn	39,539	5.5%	n/a	n/a
Total	**1,788,488**	**35.5%**	**1,290,984**	**25.6%**
				Approximate % of total in 2011

- Date and time of first information of a service outage

	Date of First Outage	Time of First Outage
Med-Ed	10/29/2012	12:03
PECO	10/29/2012	5:59
Penelec	10/29/2012	12:16
Pike County	10/29/2012	14:30
PPL	10/29/2012	6:00
UGI Electric	10/29/2012	13:00
Wellsboro	10/29/2012	16:08
West Penn	10/29/2012	13:53

- Date and time that service was restored to the last affected customer

	Date of Final Restoration	Time of Final Restoration	Duration in Days	Irene 2011 Duration
Med-Ed	11/8/2012	20:23	10	9
PECO	11/7/2012	14:55	9	7
Penelec	11/3/2012	15:03	5	9
Pike County	11/9/2012	22:48	11	6.5
PPL	11/7/2012	20:30	9	7
UGI Electric	11/1/2012	13:30	3	11
Wellsboro	10/31/2012	18:50	2	n/a
West Penn	11/6/2012	15:44	8	n/a

- Outages six or more hours in duration

Outages 6 or more hours in duration				
	≥6 Hour Outage Cases	Total Outage Cases	Irene 2011 ≥6 Hr	Irene 2011 Total O.C.
Med-Ed	2,422	2,473	1,935	2,766
PECO	4,674	4,540	2,113	n/a*
Penelec	814	1,006	336	738
Pike County	6	6	9	n/a*
PPL	2,948	3,819	2,642	3,102
UGI Electric	54	59	318	n/a*
Wellsboro	22	36	n/a	n/a
West Penn	700	705	n/a	n/a
Totals	**11,640**	**12,644**	**7,353**	**n/a***
		*Total outage cases was not required information on outage reports at the time		

- Rank of Sandy compared to a comparable storm event

	Sandy Rank	Sandy Outages	Sandy Max Duration	Event 1 Rank	Event 1 Outages	Event 1 Max Duration
Med-Ed	1	298,300	10 days	Snow 2011 - 2	277,109	9 days
PECO	1	845,703	9 days	Ice Storm 1994 - 2	520,016	4 days
Penelec	3 (duration)	96,847	5 days	Irene 2011 - 1	55,057	9 days
Pike County	1	4,487	11 days	Irene 2011 - 2	4,366	6.5 days
PPL	1	523,936	9 days	Isabel 2003 - 2	495,721	
UGI Electric	3	17,395	4 days	Irene 2011 - 1	35,975	11 days

- Description of physical damage to utility infrastructure

Sandy 2012				
	Poles Replaced	Transformers Replaced	Miles/Spans of Wire	Crossarms Replaced
Med-Ed	1,040	550	112.7 miles	2,530
PECO	750	398	141 miles	2,875
Penelec	94	87	13.4 miles	339
Pike County	29	17		
PPL	619	601	76 miles	1,494
UGI Electric	7			
Wellsboro	10			
West Penn	43	36	18.8 miles	35
Totals	**2,592**	**1,689**	**Over 361 miles**	**7,273**

Irene 2011				
	Poles Replaced	Transformers Replaced	Miles/Spans of Wire	Crossarms Replaced
Med-Ed	143	130	18 miles	211
PECO	316	278	90.6 miles	
Penelec	30	10	3 miles	132
Pike County	10	5	45 spans	
PPL	215	281	47.7 miles	458
UGI Electric	39	23	1,043 spans	
Wellsboro	n/a	n/a	n/a	n/a
West Penn	n/a	n/a	n/a	n/a
Totals	**753**	**727**	**Over 160 miles**	**458**

Summary of Requested Additional Information

In addition to the previously submitted information, the Commission requested that EDCs provide additional information and answer questions concerning their preparation and response to Hurricane Sandy. The following questions are specific to preparation, media use, call center performance, restoration messaging and personnel resource management. The questions will be listed in order followed by a brief summary of the individual EDC response. The questions were organized by the following categories: Preparation, Media Use.

Preparation

1 - Describe how your utility prepared for the storm, including the following: what planning measures were taken and when; what pre-deployment of assets occurred and specifically when and where; and what type of outside resources (personnel or equipment) were requested and received and when.

- **Met-Ed** – On October 24, Met-Ed began holding conference calls to plan service restoration efforts. On October 25, FirstEnergy requested assistance for Met-Ed from various mutual assistance organizations. Through these organizations Met-Ed was able to secure over 700 linemen with varying arrival dates. Staging sites for external work crews were initiated on October 27. On October 28 callouts for line and forestry crews were initiated to be fully operational by 7 a.m. October 29. By 7 a.m. October 30 Met-Ed storm organizations were fully operational restoring service to customers.
- **PECO –** PECO began storm preparations on October 24, and on October 25, opened their Emergency Operations Center (EOC). PECO requested assistance from their sister utilities and mutual assistance organizations. Those resources began arriving on October 28. The resources included contractor lineman, mutual aid lineman, mutual aid contractor lineman and contractor forestry and vegetation management workers. Crews were available and ready to mobilize prior to the storms arrival. By November 5, more than 3,000 full time equivalents (FTE)'s in addition to PECO resources assisted in restoration efforts.
- **Penelec –** Penelec leadership participated in multiple conference calls concerning the preparation for Hurricane Sandy. These calls were held on October 24, and additional calls were made from October 26 through October 29. Penelec initiated several actions aimed to be prepared for the storm. These actions included but were not limited to: increased shift coverage; equipment preparation; and requesting assistance in line

personnel from FirstEnergy corporate. On October 27, 118 external contractor line resources began reporting to Penelec. 42 linemen from West Penn Power arrived on October 31 to assist.

- **Pike –** On October 25, company officials through their parent company, Orange & Rockland Utilities participated in a conference call to discuss potential storm impacts. Internal conference calls were scheduled with the incident command system (ICS). Company officials participated in calls with mutual assistance organizations. The company began requesting additional resources including line, site safety, damage assessment and vegetation management. Those requests continued through October 29. On October 26, the company, and its parent company, Con Edison requested an additional 1,800 line workers from mutual aid organizations. On October 28, all storm functions were mobilized and employees scheduled to cover 24/7 operations.
- **PPL –** PPL participated in a conference call with a mutual assistance group on October 24, to discuss mobilization of external resources to assist in storm response. Requests to PPL's sister electric utilities in Kentucky to make their resources available to PPL were made on October 30. On October 25, PPL staffed its Emergency Command Center to begin mobilizing resources for storm response and all contractors were notified of their storm response expectations. On October 26, PPL created Incident Command Teams to manage complex localized restoration activities. On October 28, PPL made telephone calls to all customers notifying them that unprecedented damage and service outages of up to a week or longer was possible. PPL had their Emergency Command Center fully operational from October 28 to November 6.
- **UGI –** UGI held an operations team meeting and participated in a mutual aid organization call on October 24. On October 25, UGI requested 26 FTE's from mutual aid, which was increased to 40 FTE's on October 26. UGI acquired the 40 FTE's from Westar on October 26. Several storm related calls and meetings were held from October 26to October 28. Mutual aid crews arrived at UGI on October 29. Multiple conference calls and meetings were held by UGI to provide restoration updates and other related issues. These calls continued until restoration was completed on October 31.
- **Wellsboro –** Wellsboro began contacting outside contractors for line construction and tree trimming on October 24. The company was able to secure three crews and place them on stand-by. One of these crews was staged in Wellsboro on October 26. Wellsboro contacted a tree trimming contractor and placed three crews on stand-by on October 27. Wellsboro began responding to storm outages on October 28. Wellsboro initially

anticipated having full restoration by October 30, but had completed that activity by October 29.

- **West Penn Power –** West Penn began preparing for the storm on October 24, beginning with conference calls. Conference calls continued to be made with various entities within West Penn and FirstEnergy from October 24 through October 29.West Penn began mobilizing line crews October 29, and these crews were available for deployment October 30. In addition to West Penn crews 59 external linemen from three contractor groups were sent to West Penn on October 30.

2 – Detail what proactive outreach to special-needs populations occurred and how those messages were disseminated; what proactive outreach to county and local emergency management agencies occurred and what proactive outreach to local and state elected officials occurred and how those messages were disseminated. Provide the dates and times of those outreach efforts.

- **Met-Ed** – Met-Ed worked closely with emergency management authorities (EMA) in Pike, Monroe, Northampton, Berks, York, Adams counties and emergency personnel from the municipalities in northern Bucks County. Met-Ed had liaisons on site at operations centers for the extent of the storm event. PennDOT and the Pennsylvania National Guard were able to assist the EMAs to deliver water and ice to various locations outside the normal retail channels. Met-Ed began outreach communications at 12:19 p.m. October 25 to November 7. Met-Ed disseminated information by email, reverse IVR, IVR and phone.
- **PECO –** PECO utilized several mechanisms to communicate with its customers. Direct communication through the company automated phone system, on the web through PECO's Storm Central and for customers with accounts online, calls to customers with extended outages and outage monitoring for critical care customers. PECO conducted nearly 800 media interviews to provide storm related information. PECO communicated with elected and regulatory officials through phone calls, email, and on-site briefings. In areas where there were extended outages, PECO set up field customer care centers to provide restoration information and interact in person with customers. Communications began at 2 p.m. October 26 to 8a.m. October 29.
- **Penelec –** Penelec began their outreach to special needs customers, local emergency management agencies and state and local elected officials at 9:36 p.m. October 26. Messages were conveyed by email and reverse IVR through 4:49 p.m. October 29.
- **Pike –** Pike utilized its IVR to call all customers coded LSE (requiring electricity for Life Support Equipment), to notify them of the approaching storm and to prepare for service

interruptions. Pike contacted these customers again on October 29. On October 26, emergency management conducted daily OEM conference call to update officials on restoration efforts. 13 conference calls were made between October 26 and November 9. These calls were for local elected officials, OEM and Highway Department personnel. The calls highlighted restoration updates, dry ice distribution and a question and answer session.

- **PPL –** PPL does not distinguish between special needs and non-special needs customers and extends the system outreach to all customers. On October 28, PPL called 1,048,480 customers to alert them to possible service outages of a week or longer. PPL called 7,255 customers on November 4, and 1,243 customers on November 6, to provide updated restoration information. On October 29, PPL initiated a free water and ice program using nearly 180 vendors. On November 1, water was delivered to the Monroe County EMA. On November 3, water was delivered to Red Cross shelters in Bethlehem and Allentown. PPL's Regional Community Relations Directors (RCRD) called to county emergency management directors on October 28, to inform them about storm preparations. Email updates also were sent to EMA staff and local, state, and federal elected officials once per day.
- **UGI –** UGI implemented its Crisis Communications Plan during the storm event. Customer notifications and preparedness tips began at 10:30 a.m. October 26. Information was provided through a press release, UGI Outage Center postings, and postings on Facebook and Twitter. Special needs customers had the opportunity to sign up for UGI email outage notification. All storm related information was sent by email to participants in the program. Notifications were discontinued after 1:30 p.m. November 1, when UGI returned to normal operations.
- **Wellsboro –** Wellsboro exchanged emergency contact information with the Tioga County EMA to be used if needed throughout the storm. Wellsboro began issuing press releases twice a day beginning October 28 and October 30. On October 29, Wellsboro placed projected restoration times and dates on their outage and IVR system for the areas affected by outages.
- **West Penn Power –** West Penn began sending out storm related information at 8:20 a.m. October 26. Contacts included EMA/911 centers, emergency management coordinators, state and local elected officials and customers. Information was disseminated by email, press release, IVR, reverse IVR and phone. Messages continued through to 12:30 p.m. October 27.

Media use

1 - Describe how your utility utilized both traditional (print/radio/TV) media and social media (Twitter/Facebook/Texts/Web site) before the storm and throughout the restoration process.

- **Met-Ed** – Met-Ed utilized social media, media relations, advertising and web postings to provide restoration updates and safety messages to customers. Radio and newspaper advertising was used to inform customers the best way to report outages, provide restoration updates and highlight safety messages. Met-Ed utilized web-based resources to reach customers. Customers could use www.firstenergycorp.com to view multiple resources for information on storm related issues. Met-Ed also used Twitter as a means to communicate with customers and provide important restoration information.
- **PECO –** PECO began contacting traditional media October 25, prior to Sandy's arrival. Live and taped TV and radio interviews were made at PECO's Emergency Operations Center. PECO used a mobile application, which is the version of the PECO website customers can access using their personal mobile device.
- **Penelec –** Penelec utilized social media, media relations, advertising and web postings to provide restoration updates and safety messages to customers. Radio and newspaper advertising was used to inform customers the best way to report outages, provide restoration updates and highlight safety messages. Penelec utilized web-based resources to reach customers. Customers could use www.firstenergycorp.com to view multiple resources for information on storm related issues. Media relations staff was made available 24/7 to respond to any reporter requests for information and interviews. Penelec also used Twitter as a means to communicate with customers and provide important restoration information.
- **Pike –** Pike began communication with the public on October 25, using press releases. Pike made regular updates to the public throughout the storm to provide information on restoration efforts, dry and wet ice availability and offer helpful tips to prepare and respond to storm related issues. Pike also utilized Twitter, Facebook and YouTube to disseminate important storm related information. On October 25, Pike began a series of eight emails to customers. Pike also used their website to communicate with customers. Website traffic was tracked and reached its peak on October 30.
- **PPL –** Between October 25 and November 9 PPL issued 10 storm related news releases. The releases contained information emphasizing PPL's preparations for the storm, customer tips for storm preparation, restoration information, water and ice availability,

shelter information, and numbers of staff involved in recovery activities. PPL conducted 522 interviews with national and regional media outlets discussing PPL various storm related activities. Social media was also utilized to interact with customers on storm related activities.

- **UGI –** UGI began issuing storm preparation news releases starting October 26. On October 30, media outlets began receiving regular updates on restoration efforts. The media contacted included all Wilkes-Barre media outlets in addition to print and broadcast media outlets in Northeast Pennsylvania. There were significant media inquiries made as the storm reached the area. Radio interviews began on October 20, and were completed by November 1, as the number of outages continued to diminish and media interest decreased. UGI also utilized social media. Critical outage information was posted in accordance with the Electric Division Outage Crisis Communications Plan. Information was sent by email, posted on UGI's Outage Center website and on Facebook and Twitter.
- **Wellsboro –** Wellsboro issued press releases twice a day October 29 and October 30. Wellsboro does not currently use Facebook or Twitter but plans to do so in 2013. In addition information and outage counts will be available on the company website.
- **West Penn Power –** West Penn utilized social media, media relations, advertising and web postings to provide restoration updates and safety messages to customers. Radio and newspaper advertising was used to inform customers the best way to report outages, provide restoration updates and highlight safety messages. West Penn utilized web-based resources to reach customers. Customers could use www.firstenergycorp.com to view multiple resources for information on storm related issues. Media relations staff was made available 24/7 to respond to any reporter requests for information and interviews. West Penn also used Twitter as a means to communicate with customers and provide important restoration information.

2 – Document any earned media coverage and provide any instances of media buys, if any.

- **Met-Ed** – Met-Ed bought 21 spots each from eight local radio stations in Reading, York, Harrisburg, Lebanon, Easton and Stroudsburg. Earned media coverage for Sandy began October 24, and continued to November 12. Numerous contacts and interviews from print, radio and television outlets were also made during this time period.
- **PECO –** PECO storm preparation and restoration efforts were covered by approximately 800 stories from print, online, TV and radio outlets. PECO spent $135,000 for print ads

in their service area. Ads began on November 9, with some ads placed in weekly publications that ran the week of November 12.

- **Penelec –** Penelec's Hurricane Sandy activities were covered by numerous media outlets beginning October 24, and concluding on November 12. Penelec also purchased 21 spots on five radio stations in Altoona, Johnstown, and Towanda.
- **Pike –** Pike recorded over 100 interviews and calls with print and electronic media outlets. Pike also began purchasing advertising spots on two area radio stations. The ads ran from October 25 to November 9.
- **PPL –** PPL purchased advertisements with both radio and print media outlets across their service area to provide storm related information. Radio ads were purchased on 11 stations from October 31 to November 3. Newspaper ads were placed in 17 newspapers covering areas with large concentrations of customers impacted by the storm.
- **UGI –** UGI had significant earned media coverage throughout the storm. Coverage occurred between October 27 and November 6. Coverage was by print and electronic media.
- **Wellsboro –** Wellsboro reported no media coverage or advertising buys but did issue press releases twice a day October 28 and October 29.
- **West Penn Power –** West Penn's storm response and recovery efforts were covered by various news outlets in Pennsylvania. West Penn purchased 21 radio spots each from two radio stations in State College and Chambersburg.

3 – Provide the dates and times that media releases and/or media interviews occurred, and the subject matter.

- **Met-Ed** – Met-Ed participated in over 450 interviews or media contacts throughout the storm in Pennsylvania. News releases and advisories were issued by FirstEnergy Corporate Communications on behalf of Met-Ed. The releases began on October 25 and ended November 6.
- **PECO -** PECO responded to more than 800 media requests and issued seven news releases. News releases and interviews with multiple media outlets began on October 26 and ended November 7.
- **Penelec –** Penelec participated in over 450 interviews or media contacts throughout the storm in Pennsylvania. News releases and advisories were issued by FirstEnergy Corporate Communications on behalf of Penelec. The releases began on October 25 and ended November 1.

- **Pike –** Pike recorded over 100 interviews and calls with print and electronic media outlets. Pike also began purchasing advertising spots on two area radio stations. The ads ran from October 25 to November 9.
- **PPL –** Between October 25 and November 9, PPL issued 10 storm related news releases. The releases contained information emphasizing PPL's preparations for the storm, customer tips for storm preparation, restoration information, availability of water and ice, shelter information, and the number of staff involved in recovery activities. PPL conducted 522 interviews with national and regional media outlets discussing PPLs various storm related activities. Social media was also utilized to interact with customers on storm related activities.
- **UGI –** Media releases were sent to pre-determined contacts on a specific schedule as identified in the UGI Electric Outage Crisis Communications Plan. Pre-storm releases focused on preparedness and customer communications. Subsequent releases focused on storm preparation, storm response and storm restoration. Releases were issued between October 26 and November 1. Times of releases ranged from 9:30 a.m. to 9:10 p.m.
- **Wellsboro –** Wellsboro reported no media coverage or advertising buys but did issue press releases twice a day on October 28 and on October 29.
- **West Penn Power –** West Penn had over 450 media contacts throughout the storm event. In addition media advisories and news releases were made by FirstEnergy Corporation for West Penn Power starting on October 25, and ending November 1.

4 – Describe how your utility utilized social media – direct response to customer tweets or Facebook posts, Facebook and Twitter updates, updated messaging on outage websites, etc.

- **Met-Ed** – Met-Ed utilized Twitter to communicate with customers throughout the storm and after. Using Twitter, Met-Ed responded to customer questions and concerns and communicates restoration and outage information. Safety tips and additional resources were also shared with customers.
- **PECO –** PECO utilized the Storm Central portion of its website to inform customers about storm damage, restoration work, outages and safety. PECO also promoted the use of its Mobile On-The-Go application. The application allows customers to report outages and check restoration status. PECO also provided FAQ's and messages on restoration efforts.
- **Penelec –** Penelec utilized Twitter to communicate with customers throughout the storm and after. Using Twitter, Penelec responded to customer questions and concerns and

communicates restoration and outage information. Safety tips and additional resources were also shared with customers.

- **Pike –** Pike utilized its company website and mobile website to communicate with customers. Twitter, Facebook and YouTube were also used to provide important restoration information.
- **PPL –** PPL has accounts on Twitter, Facebook, Google+ and Flickr. PPL used social media to respond to common questions, communicate restoration activities and locations of work crews and respond directly to posts when appropriate.
- **UGI –** UGI utilized email, their company blog, Facebook and Twitter to communicate with their customers and convey important storm related information. Because of social media customers had a wide range of resources available for important storm related information. Email communications began on October 30 and ended November 1.
- **Wellsboro –** Wellsboro does not currently use social media but plans to use Facebook and Twitter in 2013.
- **West Penn Power –** West Penn utilized Twitter to communicate with customers throughout the storm. Using Twitter, West Penn responded to customer questions and concerns and communicated restoration and outage information. Safety tips and additional resources were also shared with customers. Similar information was available on their outage website.

5 – Provide information on traffic to the company's outage website – both the numbers of unique users and the number of page visits.

- **Met-Ed** – Outage maps for Pennsylvania at www.firstenergycorp.com had over 129,000 visitors and over 400,000 views from October 28, to November 8.
- **PECO –** PECO's outage map received 342,000 unique visitors and 501,000 page views. The Storm Central site received 91,000 unique visitors and 109,000 page views.
- **Penelec –** Outage maps for Pennsylvania at www.firstenergycorp.com had over 129,000 visitors and over 400,000 views from October 28 to November 8.
- **Pike –** The Company's website www.oru.com had its peak traffic on November 1 with 75,331 visits and 302,717 pages viewed. The mobile website had peak traffic on October 30, with 32,883 visits.
- **PPL –** PPL's website received more than 420,000 unique visitors and 5.1 million page visits in less than one week.

- **UGI –** UGI's Online Outage Center (www.ugi.com/outages) received 35,383 visits, 30,898 unique visitors and 10,187 mobile visits from October 26 to November 1
- **Wellsboro –** Wellsboro reported no website information.
- **West Penn Power –** Outage maps for Pennsylvania at www.firstenergycorp.com had over 129,000 visitors and over 400,000 views from October 28 to November 8.

6 - Provide the number of followers on the company's Twitter page before October 28, and after November 8.

- **Met-Ed** – Prior to October 28, Met-Ed's Twitter page had 565 followers. After November 8 there were 2,165 followers.
- **PECO –** PECO does not currently use Twitter
- **Penelec –** Prior to October 28, Penelec's Twitter page had 317 followers. After November 8, there were 393 followers.
- **Pike –** Prior to October 29, Pike had approximately 120 followers. After November 8, there were 1,552 followers on Twitter
- **PPL –** Prior to October 28, PPL had less than 3,500 followers. After November 8, there were more than 6,500 followers on Twitter
- **UGI –** Prior to October 31, UGI had 575 followers. After November 16, UGI had 682 followers on Twitter
- **Wellsboro –** Wellsboro does not currently utilize Twitter but plans to do so in 2013
- **West Penn Power –** Prior to October 28, West Penn's Twitter page had 437 followers. After November 8, there were 685 followers.

7 – Provide the number of likes on the company's Facebook page before October 28 and after November 8.

- **Met-Ed** – Met-Ed does not currently use Facebook.
- **PECO –** PECO does not currently use Facebook.
- **Penelec –** Penelec does not currently use Facebook.
- **Pike –** Prior to October 28, Pike had 900 likes on their Facebook page. After November 8, Pike had 2,450 likes.
- **PPL –** PPL had 310 likes on Facebook prior to October 28 and 13,445 likes after November 8.

- **UGI –** UGI had 3,688 likes on Facebook prior to October 28 and 5,275 likes after November 8.
- **Wellsboro –** Wellsboro does not utilize Facebook.
- **West Penn Power –** West Penn does not currently use Facebook.

8 – Provide the number of impressions for both Twitter and Facebook between October 28 and up to and including November 8.

- **Met-Ed** – Met-Ed had 170 messages posted on its Twitter account. Met-Ed does not utilize Facebook.
- **PECO –** PECO does not currently use Facebook or Twitter
- **Penelec –** Penelec had 55 messages posted on its Twitter account. Penelec does not utilize Facebook.
- **Pike –** In early October, the Company had 120 followers on Twitter, at the end of the storm 1,552 followers. On Facebook with its pre-storm announcement the Company had 900 likes, at the end of the storm there were 2,450 likes on Facebook.
- **PPL –** PPL had an estimated 531,095 impressions for the storm event on Twitter and 883,141 impressions on Facebook.
- **UGI –** UGI had approximately 113, 527 impressions on Facebook from October 26 to November 8.
- **Wellsboro –** Wellsboro does not utilize Facebook or Twitter at this time.
- **West Penn Power –** West Penn does not have a Facebook page but posted 55 messages on its Twitter account from October 25 through November 2.

Call Center Performance

1 – Provide the following information: How many outage and hazard calls were received each day from October 28 until November 8; how many of those calls were answered each day and what was the average answer time each day; how many calls were not answered each day; and if any calls during each day received a message indicating all lines are busy and to please call back

- The following table represents the combined answers from all the EDC's identified in this report as well as a comparison to the performance in Irene.

Sandy 2012 - Call Center Performance October 28, 2012 to November 8, 2012

	Outage Calls Received	Outage Calls Answered	Outage Calls Not Answered/Abandoned	% Outage Calls Not Answered/Abandoned	Outage Calls Receiving Busy Signal	% Total Outage Calls Receiving Busy Signal	Average Answer Time - Seconds
Med-Ed	165,145	156,610	8,535	5.2%	5,283	3.06%	16
PECO	1,177,427	1,133,600	43,827	3.7%	33,117	2.74%	17
Penelec	75,163	69,333	5,830	7.8%	5,579	6.91%	39
Pike County*	285,218	283,351	1,867	0.7%	1,867	0.65%	9
PPL	436,408	417,517	18,891	4.3%	6,280	1.42%	141
UGI Electric	6,697	6,658	39	0.6%	0	0.00%	8
Wellsboro	757	734	23	3.0%	0	0.00%	n/a
West Penn	21,586	20,660	926	4.3%	249	1.14%	27
Totals	**2,168,401**	**2,088,463**	**79,938**	**3.7%**	**52,375**	**2.36%**	**257**

*These numbers reflect all of Pike's parent company, Orange & Rockland

Irene 2011 - Call Center Performance

	Outage Calls Received	Outage Calls Answered	Outage Calls Not Answered/Abandoned	% Outage Calls Not Answered/Abandoned	Outage Calls Receiving Busy Signal	% Outage Calls Receiving Busy Signal	Average Answer Time - Seconds
Med-Ed and Penele	168,634	164,290	4,344	2.6%	n/a	n/a	13
PECO	618,942	586,829	32,113	5.2%	59,091	8.7%	180
Pike County*	65,636	60,309	5,327	8.1%	n/a	n/a	19
PPL+	213,294	180,758	32,536	15.3%	217,654	50.5%	159
UGI Electric~	13,884	9,903	3,981	28.7%	4	0.03%	507
Totals	**1,080,390**	**1,002,089**	**78,301**	**7.2%**	**276,749**	**20.4%**	**878**

*These numbers reflect all of Pike's parent company, Orange & Rockland
+The number of callers receiving busy signals represents the unique numbers that called - there were over 800,000 calls from those unique numbers.
~The average answer time was for the peak day on 8/28/11.

- The table below summarizes the information regarding informal complaints received by the Commission's Bureau of Consumer Services (BCS) during the response to Sandy from October 29 to November 8.

	Complaints	Inquiries	Complaints Related to ETRs/Inadequate Info
Med-Ed	70	171	33
PECO	12	29	4
Pike County	0	0	0
PPL	14	58	9
West Penn	7	9	4
Totals	**103**	**267**	**50**

Restoration Messaging

1 - Describe how your company managed estimated time of restoration (ETR) messaging by providing a general description of your company's process.

- **Met-Ed** – Met-Ed considers several factors and makes judgments based on experience to determine restoration estimates. Factors include historical results of similar storms, total

number of crew resources and number of orders completed each day, total number of outage orders, scope of damage, field experience, weather, restoration trends and geographical issues.

- **PECO –** PECO sets a global ETR. PECO suspends individual ETR's when storm outages increase above the number of available crews. PECO uses a tier system, which can increase or decrease depending on storm length. ETR tiers reflect the restoration process by customer count. PECO will set a more accurate ETR when a crew has been dispatched to an outage. On occasion ETR's are adjusted due to embedded outages, or localized damage to equipment.
- **Penelec –** Penelec considers several factors and makes judgments based on experience to determine restoration estimates. Factors include historical results of similar storms, total number of crew resources and number of orders completed each day, total number of outage orders, scope of damage, field experience, weather, restoration trends and geographical issues.
- **Pike –** Pike uses four levels of restoration estimate messaging for large storm events: global, regional, local, and incident. The global estimate is the time 90 percent of total customers will be restored. The regional estimate is the time when 90 percent of a specific county's customers will be restored. The local estimate is when 90 percent of customers will be restored to a specific substation or circuit. The incident estimate is the time a group of customers with a specific work order will be restored. All estimates are calculated using historical restoration information, severity of damage, number of customer outages and available restoration assets.
- **PPL –** PPL manages all ETRs using their outage management system (OMS). The ETRs are communicated in five ways: a messaging system called PPL Alerts; IVRs, through customer service representatives; PPL's outage website; and social media.
- **UGI –** Restoration messaging was provided directly from call center representatives and through updates provided as part of the UGI Crisis Communications Plan.
- **Wellsboro –** Beginning October 29, projected restoration times and dates were placed in the company outage and IVR system for affected areas. Customers using the automated system were able to receive a projected time and date of restoration.
- **West Penn Power –** West Penn considers several factors and makes judgments based on experience to determine restoration estimates. Factors include historical results of similar storms, total number of crew resources and number of orders completed each day, total number of outage orders, scope of damage, field experience, weather, restoration trends

and geographical issues. The process of developing restoration times is constantly reviewed and monitored by the Company during the entire storm event.

2 – Describe whether your company suspended automated restoration estimate messaging and if so, provide the dates and times the messaging was suspended and the date and time when it was resumed.

- **Met-Ed** – ETRs were turned off at 6 a.m. October 29. ETRs were reinstituted on November 2 and by 10 p.m. November 8 were restored company-wide.
- **PECO –** PECO suspended ETRs at 9 p.m. October 29. On October 31, the company began utilizing a tiered ETR approach. On November 8, at 7:48 p.m. PECO resumed the normal ETR process.
- **Penelec –** ETRs were turned off for most districts on October 29. All areas were back on at 11:35 p.m. November 2.
- **Pike –** ETRs were turned off at 8:53 a.m. October 29 and resumed at 12 p.m. November 1.
- **PPL –** At 5:30 p.m. November 3, alerts were turned off and were restored at 5:30 p.m. November 7.
- **UGI –** Restoration messaging was provided directly from call center representatives and through updates provided as part of the UGI Crisis Communications Plan. No automated messaging was used.
- **Wellsboro –** Not applicable
- **West Penn Power –** West Penn suspended most automated restoration messaging on October 29. Automated messaging was resumed to most areas November 6 with complete automated messaging restored on November 8.

3 – Provide the dates and times that your company began to provide initial restoration estimates to customers calling into the customer service line and whether those initial estimates were global (system-wide), or geographically specific and whether customers could access those restoration estimates via the IVR, or customer service representatives, or both.

- **Met-Ed** – The first global message to all Met-Ed customers began at 5:15 p.m. October 26. The first geographically specific message was issued at 6:01 p.m. October 29. Customer information is provided through the IVR, outage website and customer service representatives.

- **PECO –** Restoration estimates to customers were provided after 4 p.m. October 31. Customers could receive information by the IVR, customer service representatives, PECO's website or mobile site.
- **Penelec –** The first global message to all Penelec customers began at 2:23 p.m. October 26. The first geographically specific message was issued at 11:17 a.m. October 31 by IVR and customer service representatives. The FirstEnergy Pennsylvania Contact Center provides customers information through the IVR, area specific IVR, outage website and customer service representatives.
- **Pike –** Global restoration information began at 12 p.m. November 1. Regional restoration information began at 10 p.m. November 2. Restoration information was made available via IVR, storm website and customer service representatives.
- **PPL –** Customers began receiving area ETRs at 1 p.m. October 31. Harrisburg and Lancaster regional ETRs began at 11 p.m. November 1. Central and Susquehanna regional ETRs began at 11 p.m. November 2. Northern and Lehigh regional ETRs began at 11 p.m. November 4.
- **UGI –** The first restoration estimate was provided to customers at 9 p.m. October 30. Information was provided by call center representatives, news releases, posted on the UGI webpage, sent by email, and posted on Facebook and Twitter. Restoration estimates were not available by IVR.
- **Wellsboro –** Beginning October 29, projected restoration times and dates were placed in the company outage and IVR system for affected areas. Customers using the automated system were able to receive a projected time and date of restoration.
- **West Penn Power –** West Penn provided specific messaging to most areas at 10 a.m. October 30. The Hyndman, Waynesboro, and McConnellsburg areas were notified at 10 a.m. October 31. The FirstEnergy Pennsylvania Contact Center provides customers information through the IVR, area specific IVR, outage website and customer service representatives.

4 – Provide the dates and times that your company began to provide customer-specific restoration estimates to customers calling in to the customer service line and whether customers could access those restoration estimates via the IVR, or customer service representatives, or both.

- **Met-Ed** – Customers contacting the customer contact center receive a global or area specific message. Restoration estimates are provided utilizing both the IVR and customer

service representatives. Met-Ed does not provide customer specific restoration estimates during storm events.

- **PECO –** Restoration estimates to customers were provided after 4 p.m. October 31. Customers could receive information by the IVR, customer service representatives, PECO's website or mobile site.
- **Penelec –** Customers contacting the customer contact center receive a global or area specific message. Restoration estimates are provided utilizing both the IVR and customer service representatives. Penelec does not provide customer specific restoration estimates during storm events.
- **Pike –** Incident specific restoration estimates were not provided during Sandy due to the restoration methods utilized. Local restoration information was provided which was at the substation/circuit level.
- **PPL –** Crews responding to individual cases provided ETR's to affected customers utilizing all PPL communication options including a messaging system called PPL Alerts, using an IVR, speaking to customer service representatives, PPLs outage website, and using social media.
- **UGI –** On October 31, UGI provided staff to offer "in person" updates and restoration information to UGI customers. Limited customer specific restoration information was made available and provided by UGI customer service representatives. Specific customer data was not available by IVR.
- **Wellsboro –** Beginning October 29, projected restoration times and dates were placed in the company outage and IVR system for affected areas. Customers using the automated system were able to receive a projected time and date of restoration.
- **West Penn Power –** Customers contacting the customer contact center receive a global or area specific message. Restoration estimates are provided utilizing both the IVR and customer service representatives. West Penn does not provide customer specific restoration estimates during storm events.

5 – Provide the dates and times that your company began providing restoration estimate messaging on your outage websites and indicate whether the initial estimates were global or geographically specific. Provide the dates and times the restoration messages on your outage websites were updated and the date and time geographically specific restoration estimates were provided.

- **Met-Ed –** Restoration estimate messaging began at 6a.m. on October 29 with a global message. Further messages on the outage website were updated from October 29 through November 8.
- **PECO –** Restoration estimates to customers were provided after 4 p.m. October 31. Customers could receive information by the IVR, customer service representatives, PECO's website or mobile site.
- **Penelec –** Restoration estimate messaging began with a global message on 3:49 p.m. October 29. Subsequent messages were placed on the outage website from October 29 through November 2.
- **Pike –** Global restoration information began 12 p.m. November 1. Regional restoration information began 10 p.m. November 2. Restoration information was made available via IVR, storm website and customer service representatives.
- **PPL –** Customers began receiving area ETRs 1 p.m. October 31. Harrisburg and Lancaster regional ETRs began at 11 p.m. November 1. Central and Susquehanna regional ETRs began at 11 p.m. November 2. Northern and Lehigh regional ETRs began at 11 p.m. November 4.
- **UGI –** The first restoration estimate was provided to customers at 9 p.m. October 30. Information was provided by call center representatives, news releases, posted on the UGI Outage Center web page, sent by e-mail, and posted on Facebook and Twitter. Restoration estimates were not available by IVR. Subsequent information was provided at 9 p.m. October 31 and at 1:15 p.m. November 1.
- **Wellsboro –** Beginning October 29, projected restoration times and dates were placed in the company outage and IVR system for affected areas. Customers using the automated system were able to receive a projected time and date of restoration.
- **West Penn Power –** Global restoration estimate messaging on West Penn's website began on 3:19 p.m. October 29. Additional messages were updated on the website from October 29 through November 5.

Personnel Resource Management

1 – Indicate if from October 28 through November 8 any of your company linemen, troublemen, damage assessors or forestry personnel were assigned outside of your service territory to other utilities - whether they be affiliates or foreign companies.

- **Met-Ed** –No Met-Ed personnel assigned outside the Met-Ed service area to assist other utilities.

- **PECO –** PECO did not release any resources.
- **Penelec –** Penelec began assigning some personnel outside their service area on November 2.
- **Pike** – Pike did not sending any personnel outside its service area.
- **PPL –** No PPL personnel were assigned to other utilities.
- **UGI –** UGI did not release any personnel to other utilities
- **Wellsboro –** No Wellsboro personnel were assigned outside their service area until full restoration was complete. From November 2 to November 9, Wellsboro sent two journeymen lineman to assist FirstEnergy in the Easton area.
- **West Penn Power –** West Penn sent some personnel outside their service area.

2 - If yes, please indicate the number of personnel, their job function (linemen, troublemen, etc.), the date they left your service territory and their return date, or expected return date if they have not yet returned.

- **Met-Ed-** Not applicable
- **PECO-** Not applicable
- **Penelec-**

Date Workers Sent	Number of Workers	Job Function	Release Date	Date Returned to Penelec
11/2/12	50	Linemen	Released from Met-Ed 11/9/12 and sent to JCP&L	11/18/12
11/2/12	10	Linemen	Released from CEI 11/5/12 moved to Met-Ed and released on 11/9/12. Sent to JCP&L	11/15/12
11/2/12	54	Hazard Responders	Released from CEI 11/5/12 and sent to JCP&L	11/15/12
11/2/12	47	Hazard Responders	Released from Met-Ed 11/5/12 and sent to JCP&L	11/15/12
11/4/12	8	Transmission Linemen	Released from Met-Ed 11/9/12 and sent to JCP&L	11/18/12

- **Pike-** Not applicable
- **PPL-** Not applicable
- **UGI-** Not applicable
- **Wellsboro-** From November 2 to November 9, Wellsboro sent 2 journeymen lineman to assist FirstEnergy in the Easton area.

- **West Penn Power-**

Job Function	Number of Personnel	Date Left West Penn Power Service Territory	Date Returned to West Penn Power Service Territory
Distribution Linemen	83	October 31	November 17
	2	November 5	November 14
	22	November 8	November 13
	9	November 5	November 17
Transmission Linemen	5	October 30	November 9
Equipment Operator	1	October 30	November 9
Forestry Contractors (non-WPP employees)	100	October 28	November 14
	100	October 30	November 7
	15	November 1	November 14
	16	November 1	November 9
	17	November 3	November 9
Garage Mechanics	4	October 31	November 17
	5	November 7	November 8
Hazard Responders/Damage Assessors	33	October 30	November 14
	27	October 31	November 14
	1	November 2	November 7
	1	November 3	November 7
	2	November 4	November 7
	1	November 5	November 6
Manual of Operations Support	25	October 31	November 14
Office Support	5	October 31	November 8
	2	November 6	November 13
	15	November 8	November 18

3 - Provide the number of all personnel, whether company employees, contractors, mutual aid contractors, affiliate mutual aid, or foreign mutual aid that worked each day during the restoration from October 28 through November 8. Provide this information by each individual work day and not in the aggregate. Also list the personnel by specific job function, such as linemen, troublemen, damage assessors, forestry, flagmen, etc.

A summary of the utilities' responses is below. It should be noted that utilities do not all classify workers in the same way, whether they are company linemen or contractor linemen. The utilities did the best they could to fit the personnel groupings as outlined so that there could be an accurate comparison. Where differences exist, a note explains why.

Lineman Personnel Amount - All Utilities*			Represents peak linemen amount					
Utility	Med-Ed	PECO	Penelec	Pike County~	PPL	UGI Electric	Wellsboro	West Penn
Total Linemen Resources								
(Company, Contractor and Mutual Aid)								
10/28/2012	392	828	364	12	303	30	9	240
10/29/2012	425	1,040	399	12	1,549	67	12	240
10/30/2012	425	1,370	399	12	1,970	67	6	309
10/31/2012	834	1,645	457	12	2,251	67	6	182
11/1/2012	844	1,860	408	12	2,230	32	n/a	172
11/2/2012	998	2,280	326	12	2,274	n/a	n/a	172
11/3/2012	1,063	2,492	55	12	2,220	n/a	n/a	172
11/4/2012	1,040	2,512	n/a	12	2,189	n/a	n/a	158
11/5/2012	1,000	2,523	n/a	12	860	n/a	n/a	141
11/6/2012	1,055	1,919	n/a	12	394	n/a	n/a	141
11/7/2012	1,064	1,656	n/a	12	287	n/a	n/a	n/a
11/8/2012	1,064	1,109	n/a	12	136	n/a	n/a	n/a
Utility	Med-Ed	PECO	Penelec	Pike County	PPL	UGI Electric	Wellsboro	West Penn
Company Linemen								
10/28/2012	212	463	296	9	6	7	5	240
10/29/2012	212	463	296	9	484	7	6	240
10/30/2012	212	463	296	9	485	7	6	235
10/31/2012	219	463	312	9	486	7	6	152
11/1/2012	218	463	305	9	479	7	n/a	152
11/2/2012	223	463	262	9	463	n/a	n/a	152
11/3/2012	205	463	55	9	436	n/a	n/a	152
11/4/2012	205	463	n/a	9	453	n/a	n/a	152
11/5/2012	195	463	n/a	9	448	n/a	n/a	141
11/6/2012	189	463	n/a	9	394	n/a	n/a	141
11/7/2012	189	463	n/a	9	287	n/a	n/a	n/a
11/8/2012	189	463	n/a	9	136	n/a	n/a	n/a
Utility	Med-Ed	PECO	Penelec	Pike County	PPL+	UGI Electric	Wellsboro	West Penn
Contractor Resources								
10/28/2012	152	57	0	0	297	25	4	0
10/29/2012	173	226	0	0	1,065	25	6	0
10/30/2012	173	226	0	0	1,485	25	0	74
10/31/2012	239	226	0	0	1,765	25	0	30
11/1/2012	238	226	0	0	1,751	25	n/a	20
11/2/2012	305	226	0	0	1,811	n/a	n/a	20
11/3/2012	348	226	0	0	1,784	n/a	n/a	20
11/4/2012	312	226	n/a	0	1,736	n/a	n/a	6
11/5/2012	276	226	n/a	0	412	n/a	n/a	0
11/6/2012	307	226	n/a	0	0	n/a	n/a	0
11/7/2012	334	160	n/a	0	0	n/a	n/a	n/a
11/8/2012	334	152	n/a	0	0	n/a	n/a	n/a
Utility	Med-Ed	PECO	Penelec	Pike County	PPL	UGI Electric	Wellsboro	West Penn
Mutual Aid (including Mutual Aid Contractors)								
10/28/2012	28	308	68	3	0	0	0	0
10/29/2012	40	351	103	3	0	35	0	0
10/30/2012	40	681	103	3	0	35	0	0
10/31/2012	376	956	145	3	0	35	0	0
11/1/2012	388	1,171	103	3	0	0	n/a	0
11/2/2012	470	1,591	64	3	0	n/a	n/a	0
11/3/2012	510	1,803	0	3	0	n/a	n/a	0
11/4/2012	523	1,823	n/a	3	0	n/a	n/a	0
11/5/2012	529	1,834	n/a	3	0	n/a	n/a	0
11/6/2012	559	1,230	n/a	3	0	n/a	n/a	0
11/7/2012	541	1,033	n/a	3	0	n/a	n/a	n/a
11/8/2012	541	494	n/a	3	0	n/a	n/a	n/a

*These numbers represent workers actually working that date and not the available number of workers as some may have been on rest, etc.

~ The personnel listed for Pike County may not have all been operating in Pike's territory the entire time as they may have been deployed on certain days in the adjoining Orange and Rockland territories during the event, depending on the type and scope of work.

+The total includes mutual aid workers from other utilities as well as contractors and mutual aid contractors. PPL was unable to parse all of those elements out separately for each day.

Med-Ed												
	10/28/2012	10/29/2012	10/30/2012	10/31/2012	11/1/2012	11/2/2012	11/3/2012	11/4/2012	11/5/2012	11/6/2012	11/7/2012	11/8/2012
Linemen Resources												
Company Linemen	212	212	212	219	218	223	205	205	195	189	189	189
Contractor Linemen	152	173	173	239	238	305	348	312	276	307	334	334
Mutual Aid Linemen	28	40	40	376	388	470	510	523	529	559	541	541
Mutual Aid Contractor Linemen												
Total Linemen Available	392	425	425	834	844	998	1,063	1,040	1,000	1,055	1,064	1,064
Other Resources												
Hazard Responders	277	277	346	292	295	338	221	195	165	26		
Mutual Aid Hazard Responders					54	52	52					
Troublemen												
Mutual Aid Troublemen												
Forestry/Veg Management Workers	5	5	5	9	9	9	9	9	9	9	9	5
Contractor Forestry/Veg Management Workers	170	170	184	298	404	409	409	409	409	415	219	239
Assessors			7	19	35	35	31	3	15	7	5	4
Contractor Assessors				2	45	25	104	50	38	13	13	
Wire Guards	14	14	20	36	26	40	20	40	40	6		
Contractor Wire Guards												
Electricians						5	15	56	78	40	52	14
Contractor Electricians											62	
Energy and other Technicians												
Substation Workers	8	8	5	37	13	14	11	7	12	9	15	
Company Supporting Staff	280	280	329	337	331	351	312	334	335	300	295	224
Mutual Aid/Contractor Supporting Staff	13	50	50	348	402	385	365	373	406	374	366	301
Total Other Resources	767	804	946	1,378	1,614	1,663	1,549	1,476	1,507	1,199	1,036	787
Total Resources	1,159	1,229	1,371	2,212	2,458	2,661	2,612	2,516	2,507	2,254	2,100	1,851

PECO												
	10/28/2012	10/29/2012	10/30/2012	10/31/2012	11/1/2012	11/2/2012	11/3/2012	11/4/2012	11/5/2012	11/6/2012	11/7/2012	11/8/2012
Linemen Resources												
Company Linemen	463	463	463	463	463	463	463	463	463	463	463	463
Contractor Linemen	57	226	226	226	226	226	226	226	226	226	160	152
Mutual Aid Linemen	60	60	365	521	540	766	806	826	837	485	293	74
Mutual Aid Contractor Linemen	248	291	316	435	631	825	997	997	997	745	740	420
Total Linemen Available	828	1,040	1,370	1,645	1,860	2,280	2,492	2,512	2,523	1,919	1,656	1,109
Other Resources												
Hazard Responders												
Mutual Aid Hazard Responders												
Troublemen	55	55	55	55	55	55	55	55	55	55	55	55
Mutual Aid Troublemen												
Forestry/Veg Management Workers	23	24	27	27	27	27	27	27	27	22	21	14
Contractor Forestry/Veg Management Workers	199	582	582	969	969	969	969	969	969	784	784	549
Assessors												
Contractor Assessors												
Wire Guards	94	94	94	94	94	94	94	94	94	94	94	94
Contractor Wire Guards												
Electricians												
Contractor Electricians												
Energy and other Technicians	256	256	256	256	256	256	256	256	256	256	256	256
Substation Workers												
Company Supporting Staff												
Mutual Aid/Contractor Supporting Staff												
Total Other Resources	627	1,011	1,014	1,401	1,401	1,401	1,401	1,401	1,401	1,211	1,210	968
Total Resources	1,455	2,051	2,384	3,046	3,261	3,681	3,893	3,913	3,924	3,130	2,866	2,077

Penelec												
	10/28/2012	10/29/2012	10/30/2012	10/31/2012	11/1/2012	11/2/2012	11/3/2012	11/4/2012	11/5/2012	11/6/2012	11/7/2012	11/8/2012
Linemen Resources												
Company Linemen	296	296	296	312	305	262	55					
Contractor Linemen												
Mutual Aid Linemen				42								
Mutual Aid Contractor Linemen	68	103	103	103	103	64						
Total Linemen Available	364	399	399	457	408	326	55	0	0	0	0	0
Other Resources												
Hazard Responders	165	165	165	165	165	165						
Mutual Aid Hazard Responders												
Troublemen												
Mutual Aid Troublemen												
Forestry/Veg Management Workers	11	11	11	12	12	12						
Contractor Forestry/Veg Management Workers	192	168	187	162	152	150						
Assessors			7	16	16	16						
Contractor Assessors												
Wire Guards												
Contractor Wire Guards												
Electricians												
Contractor Electricians												
Energy and other Technicians												
Substation Workers	78	78	78	78	78	78						
Company Supporting Staff	220	220	220	220	220	220	9					
Mutual Aid/Contractor Supporting Staff		15	15	19	15	7						
Total Other Resources	666	657	683	672	658	648	9	0	0	0	0	0
Total Resources	1,030	1,056	1,082	1,129	1,066	974	64	0	0	0	0	0

Pike County*												
	10/28/2012	10/29/2012	10/30/2012	10/31/2012	11/1/2012	11/2/2012	11/3/2012	11/4/2012	11/5/2012	11/6/2012	11/7/2012	11/8/2012
Linemen Resources												
Company Linemen	9	9	9	9	9	9	9	9	9	9	9	9
Contractor Linemen												
Mutual Aid Linemen	3	3	3	3	3	3	3	3	3	3	3	3
Mutual Aid Contractor Linemen												
Total Linemen Available	12	12	12	12	12	12	12	12	12	12	12	12
Other Resources												
Hazard Responders												
Mutual Aid Hazard Responders												
Troublemen	2	2	2	2	2	2	2	2	2	2	2	2
Mutual Aid Troublemen												
Forestry/Veg Management Workers												
Contractor Forestry/Veg Management Workers												
Assessors	6	6	6	6	6	6	6	6	6	6	6	6
Contractor Assessors												
Wire Guards												
Contractor Wire Guards												
Electricians												
Contractor Electricians												
Energy and other Technicians												
Substation Workers												
Company Supporting Staff	1	1	1	1	1	1	1	1	1	1	1	1
Mutual Aid/Contractor Supporting Staff												
Total Other Resources	9	9	9	9	9	9	9	9	9	9	9	9
Total Resources	21	21	21	21	21	21	21	21	21	21	21	21

* The personnel listed for Pike County may not have all been operating in Pike's territory the entire time as they may have been deployed on certain days in the adjoining Orange and Rockland territories during the event, depending on the type and scope of work.

PPL												
	10/28/2012	10/29/2012	10/30/2012	10/31/2012	11/1/2012	11/2/2012	11/3/2012	11/4/2012	11/5/2012	11/6/2012	11/7/2012	11/8/2012
Linemen Resources												
Company Linemen	6	484	485	486	479	463	436	453	448	394	287	136
Contractor Linemen+	297	1,065	1,485	1,765	1,751	1,811	1,784	1,736	412	0	0	0
Mutual Aid Linemen												
Mutual Aid Contractor Linemen												
Total Linemen Available	303	1,549	1,970	2,251	2,230	2,274	2,220	2,189	860	394	287	136
Other Resources												
Hazard Responders												
Mutual Aid Hazard Responders												
Troublemen	20	37	40	37	38	39	32	39	29	11	9	1
Mutual Aid Troublemen												
Forestry/Veg Management Workers												
Contractor Forestry/Veg Management Workers*	927	927	927	927	927	927	927	927	927	927	927	927
Assessors		61	62	63	63	61	58	56	58	58	55	54
Contractor Assessors												
Wire Guards		12	12	12	12	12	8	8	10	9	4	5
Contractor Wire Guards												
Electricians		65	65	64	64	64	58	58	60	55	34	15
Contractor Electricians												
Energy and other Technicians		19	19	17	17	18	16	9	11	8	0	0
Substation Workers		47	46	47	45	46	35	27	23	15	9	4
Company Supporting Staff		48	48	46	41	41	35	32	39	31	21	17
Mutual Aid/Contractor Supporting Staff												
Total Other Resources	947	1,216	1,219	1,213	1,207	1,208	1,169	1,156	1,157	1,114	1,059	1,023
Total Resources	1,250	2,765	3,189	3,464	3,437	3,482	3,389	3,345	2,017	1,508	1,346	1,159
+The total includes mutual aid workers from other utilities as well as contractors and mutual aid contractors. PPL was unable to parse all of those elements out separately for each day.												
*Those 927 forestry contractors are a cumulative total - not all arrived on 10/28 and not all worked every day until the 8th.												

UGI Electric												
	10/28/2012	10/29/2012	10/30/2012	10/31/2012	11/1/2012	11/2/2012	11/3/2012	11/4/2012	11/5/2012	11/6/2012	11/7/2012	11/8/2012
Linemen Resources												
Company Linemen	7	7	7	7	7							
Contractor Linemen	23	25	25	25	25							
Mutual Aid Linemen	0	35	35	35	0							
Mutual Aid Contractor Linemen	0	0	0	0	0							
Total Linemen Available	30	67	67	67	32	0	0	0	0	0	0	0
Other Resources												
Hazard Responders	6	6	6	6	6							
Mutual Aid Hazard Responders	0	0	0	0	0							
Troublemen	0	0	0	0	0							
Mutual Aid Troublemen	0	0	0	0	0							
Forestry/Veg Management Workers	0	0	0	0	0							
Contractor Forestry/Veg Management Workers	25	25	25	25	25							
Assessors	14	14	14	14	14							
Contractor Assessors	0	0	0	0	0							
Wire Guards	3	3	3	3	3							
Contractor Wire Guards	0	0	0	0	0							
Electricians	0	0	0	0	0							
Contractor Electricians	0	0	2	2	0							
Energy and other Technicians	6	6	6	6	6							
Substation Workers	8	8	8	8	8							
Company Supporting Staff	3	13	13	3	3							
Mutual Aid/Contractor Supporting Staff	0	13	19	13	0							
Total Other Resources	65	88	96	80	65	0	0	0	0	0	0	0
Total Resources	95	155	163	147	97	0	0	0	0	0	0	0

Wellsboro												
	10/28/2012	10/29/2012	10/30/2012	10/31/2012	11/1/2012	11/2/2012	11/3/2012	11/4/2012	11/5/2012	11/6/2012	11/7/2012	11/8/2012
Linemen Resources												
Company Linemen	5	6	6	6								
Contractor Linemen	4	6	0	0								
Mutual Aid Linemen												
Mutual Aid Contractor Linemen												
Total Linemen Available	9	12	6	6	0	0	0	0	0	0	0	0
Other Resources												
Hazard Responders												
Mutual Aid Hazard Responders												
Troublemen												
Mutual Aid Troublemen												
Forestry/Veg Management Workers												
Contractor Forestry/Veg Management Workers	6	7	0	0								
Assessors												
Contractor Assessors												
Wire Guards												
Contractor Wire Guards												
Electricians												
Contractor Electricians												
Energy and other Technicians												
Substation Workers												
Company Supporting Staff	3	3	3	3								
Mutual Aid/Contractor Supporting Staff												
Total Other Resources	9	10	3	3	0	0	0	0	0	0	0	0
Total Resources	18	22	9	9	0	0	0	0	0	0	0	0

West Penn												
	10/28/2012	10/29/2012	10/30/2012	10/31/2012	11/1/2012	11/2/2012	11/3/2012	11/4/2012	11/5/2012	11/6/2012	11/7/2012	11/8/2012
Linemen Resources												
Company Linemen	240	240	235	152	152	152	152	152	141	141		
Contractor Linemen			74	30	20	20	20	6				
Mutual Aid Linemen												
Mutual Aid Contractor Linemen												
Total Linemen Available	240	240	309	182	172	172	172	158	141	141	0	0
Other Resources												
Hazard Responders	141	141	108	81	81	80	79	77	76	76		
Mutual Aid Hazard Responders												
Troublemen												
Mutual Aid Troublemen												
Forestry/Veg Management Workers	16	16	16	13	10	10	10	10	10	10		
Contractor Forestry/Veg Management Workers	356	256	256	156	125	125	108	108	108	108		
Assessors												
Contractor Assessors												
Wire Guards												
Contractor Wire Guards												
Electricians												
Contractor Electricians												
Energy and other Technicians												
Substation Workers	65	65	65	40	40	40	40	40	40	40		
Company Supporting Staff	230	230	227	200	200	196	196	196	196	194		
Mutual Aid/Contractor Supporting Staff												
Total Other Resources	808	708	672	490	456	451	433	431	430	428	0	0
Total Resources	1,048	948	981	672	628	623	605	589	571	569	0	0

Worst Performing Circuit Data

In the response to the Joint Motion request for circuit outage data at Docket No. I-2011-2271989, utilities were asked to indicate if any of the circuits were also among the electric distribution company's worst performing 5 percent of circuits identified in the Quarterly Reliability Reports for the first three quarters of 2011.

1- For any of the worst performing 5 percent of circuits identified in the response to the Joint Motion, pinpoint any of those circuits that experienced a full or partial outage during Sandy (from 8 p.m. October 28 until 8 p.m. November 8).

2 – For each of the circuits identified in number 1, above, provide the following information:

a – List any full or partial circuit outage over 24 hours in duration.

b – Where there are instances of multiple outages of 24 hours or greater occurring on the same circuit, list each outage separately and group the outages by circuit.

c – When listing the outages by circuit, include the following information in regards to the circuit: the circuit ID number; the circuit's substation; the general geographic region the circuit serves; and the county(s) or political district(s) the circuit serves.

d – For each full or partial outage listing, provide the following information: the date and time of the first interruption and the date and time the final customer was restored; the proximate cause of the outage; and a general description of the terrain served by the circuit.

Comparison of Worst Performing Circuits (WPC) Identified in 2011 Outage Report to Those Same Circuits Performance in Sandy

	Med-Ed	PECO	Penelec	PPL	UGI	West Penn Power
Total Outages WPC 2011	1,232	190	160	771	24	16
WPC Circuits 2011	58	72	30	86	3	5
Outages WPC 2011 Also Affected in Sandy	1,026	163	101	741	9	0
WPC Circuites 2011 Also Affected in Sandy	46	58	17	77	1	0
WPC Outages >72 Hr in 2011 Also Affected in Sandy	500	13	16	254	9	0
WPC Circuits >72 Hr in 2011 Also Affected in Sandy	44	8	8	65	1	0
2012 Sandy WPC Outages	461	236	61	583	2	0
2012 Sandy WPC Circuits	46	58	17	77	1	0
2012 Sandy WPC Outages >72 Hr	214	83	2	153	0	0
2012 Sandy WPC Circuits >72 Hr	32	20	2	44	0	0

Additional Personnel Information

On October 27, TUS requested information on the expected available personnel resources each EDC would have on their system for response to Sandy. The responses are summarized below. **Please note** - These numbers should be taken in context in that they represent reporting by utilities as they were still gathering information on the availability of crews and as the mutual aid process was ongoing. Therefore, the numbers likely do not represent the actual numbers of personnel available to the EDCs when Sandy began to affect Pennsylvania, as seen in the personnel charts listed, above. These numbers represent an indication of what kinds of internal and external personnel were expected at the time of the request

Pre-Storm Expected Lineman and Other Personnel Amount - All Utilities*

Utility	Duquesne	Citizens	Med-Ed	PECO+	Penelec	Pike County	PPL~	UGI Electric	Wellsboro	West Penn
Total Linemen Resources										
10/28/2012	220	7	377	1,295+	385	437	837~	42	14	100
Company Linemen										
10/28/2012	200	4	200	431	300	120	437	8	6	100
Contractor Linemen Resources										
10/28/2012	20			142	25	317	400~	2	8	
Mutual Aid Linemen (including Contractors)										
10/28/2012		3	177	722+	60			32		
Veg Management/Veg Management Contractors										
10/28/2012	60	4	170	150	150	167	300	38	8	200
Other Support Personnel										
10/28/2012	130		230		80	363	1,144	18		50

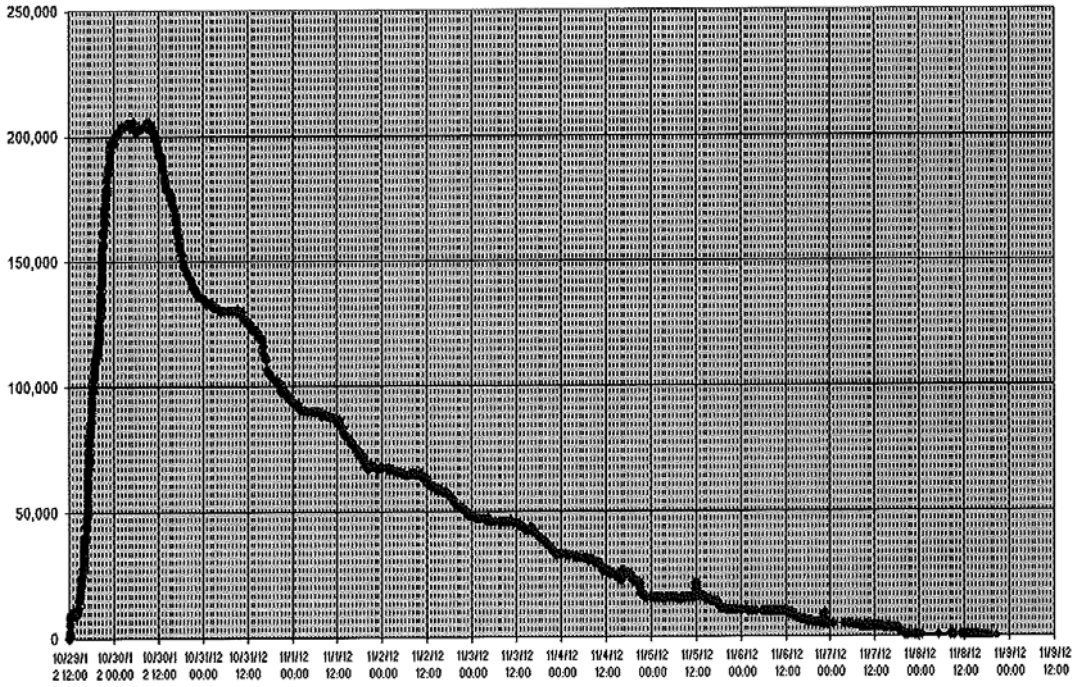
* These numbers should be taken in context that they represent reporting by utilities as they were still gathering information on the availability of crews and as the mutual aid process was ongoing. The actual number of crews received in each area may have been higher or lower, depending on the operational needs and the amount of damage sustained on their systems.

+ PECO's Mutual Aid numbers have personnel that do not perform linemen functions, so the number of total linemen resources is higher than it really turned out to be.

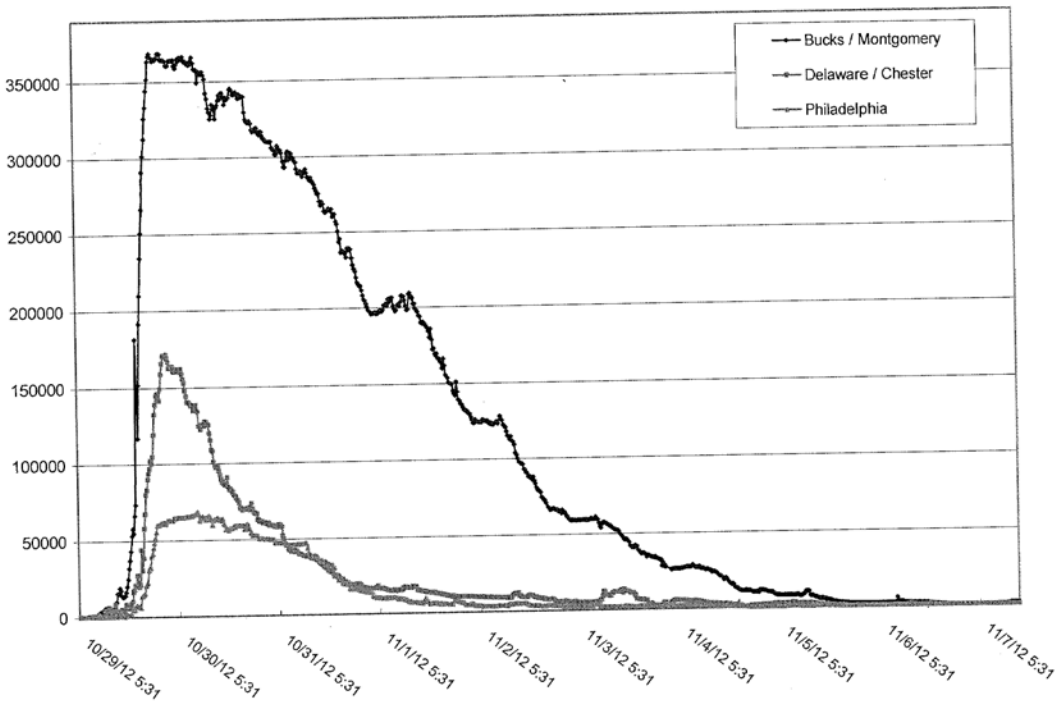
~ PPL's Contractor Linemen listing is an approximation of how many of the total contractor resources may have been linemen resources and may be lower or higher than the actual number that worked on PPL's system.

Outage Restoration Graphs

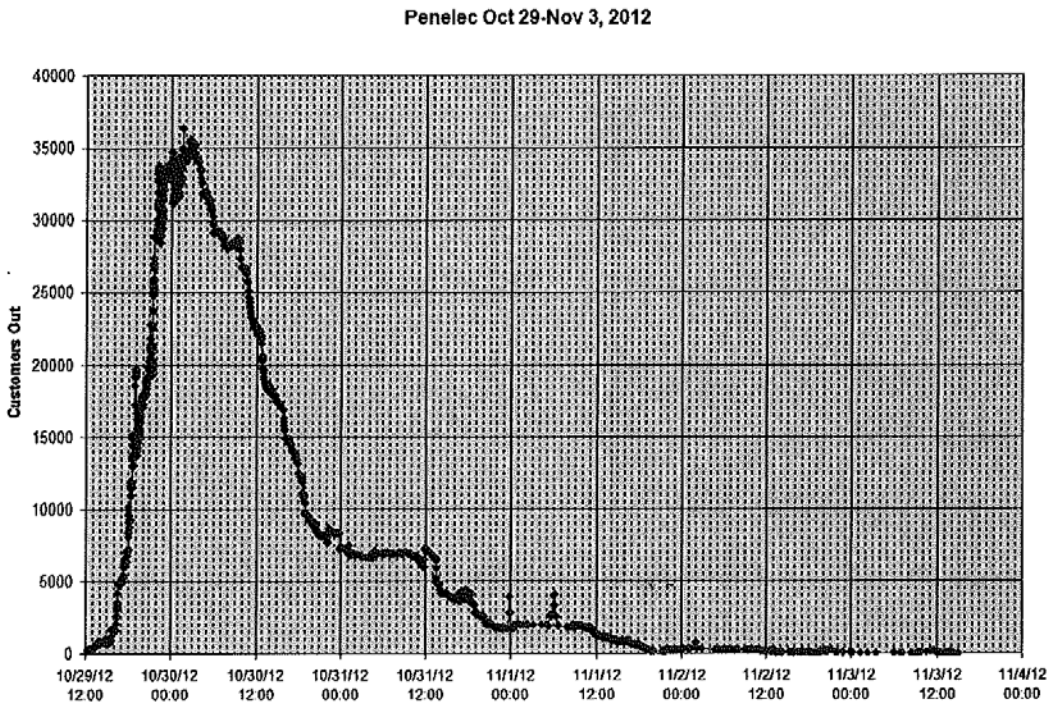
Met-Ed:



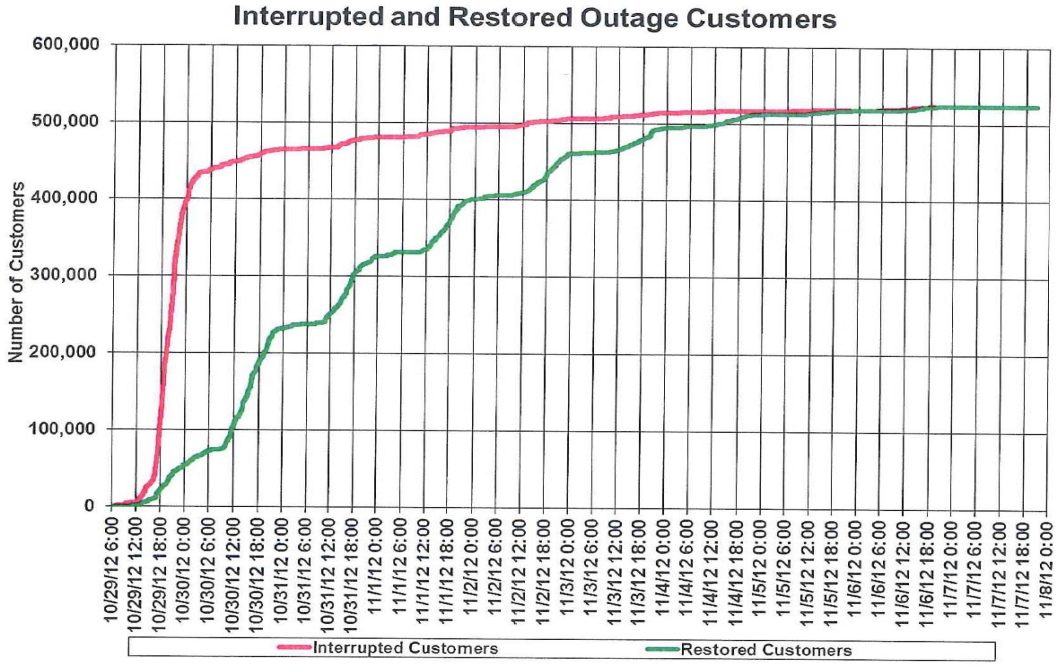
PECO Electric:



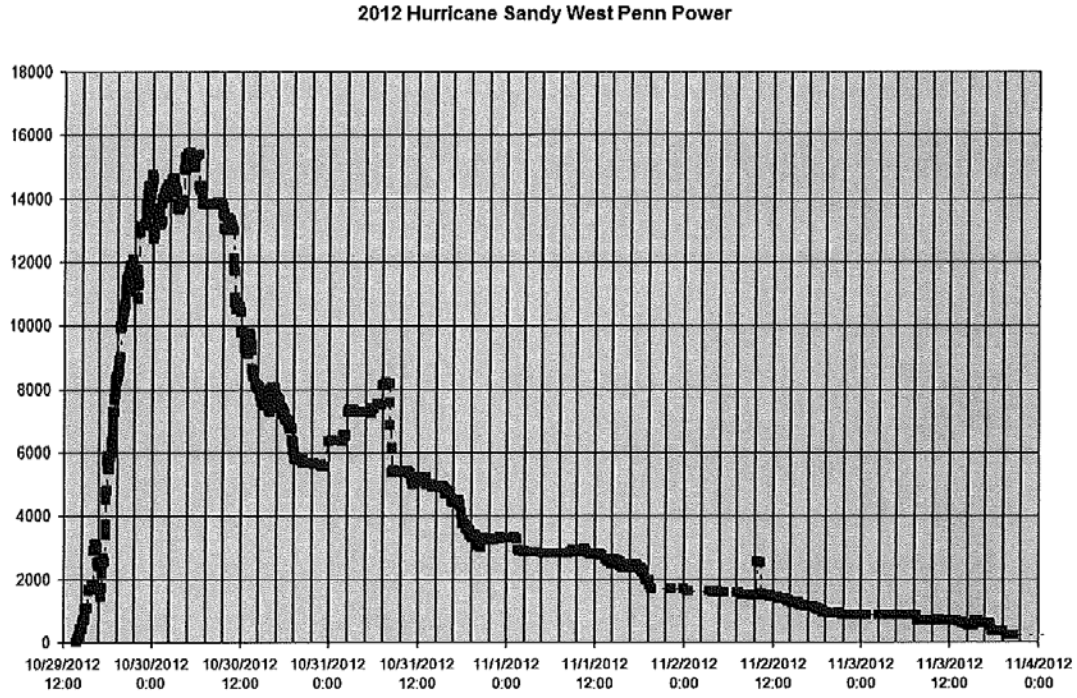
Penelec:



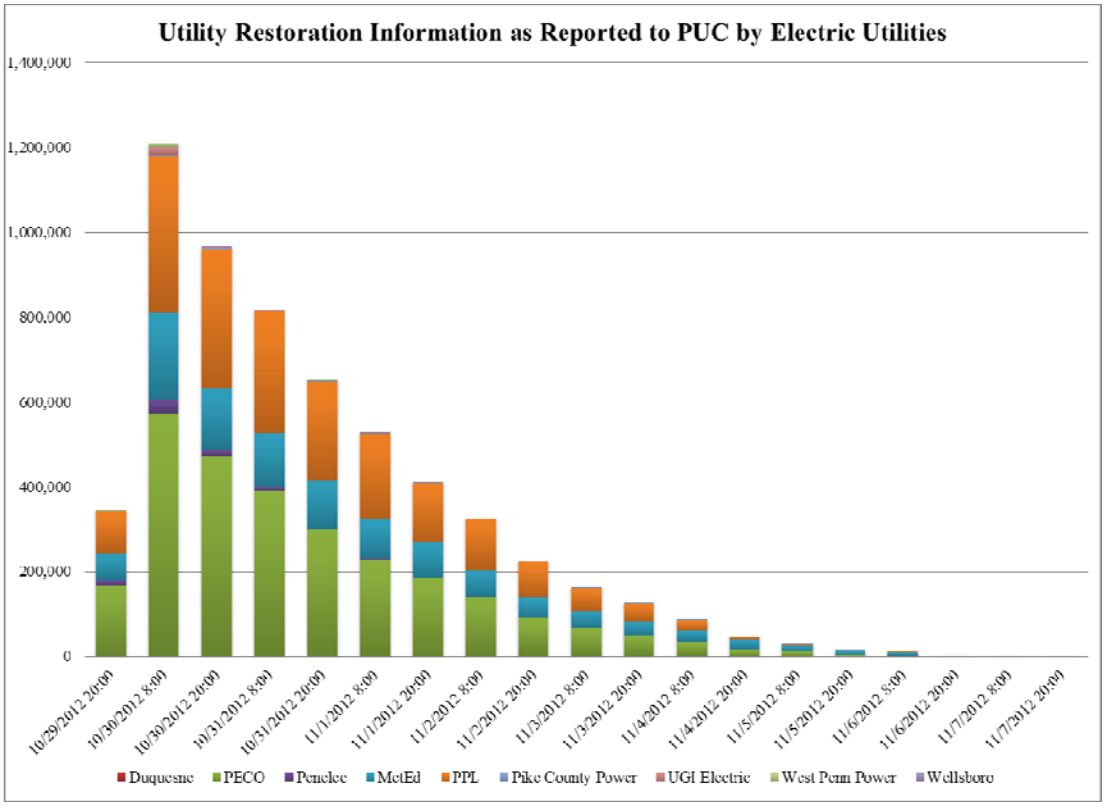
PPL Electric:

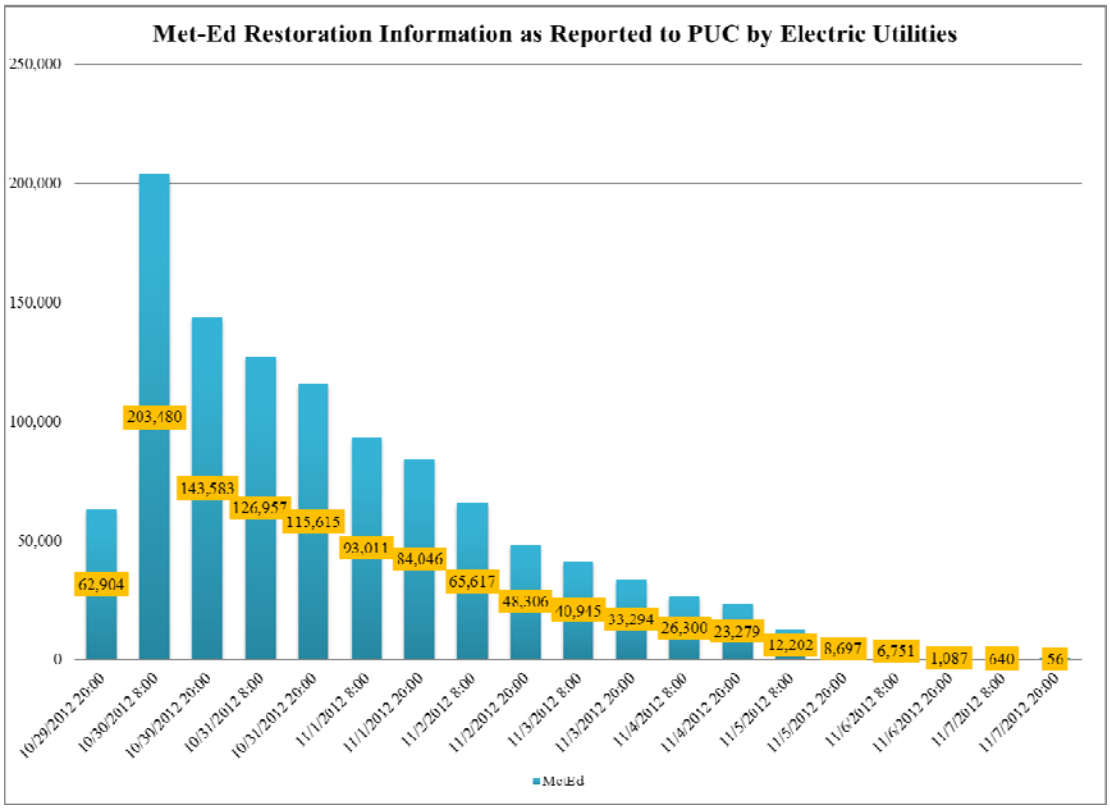


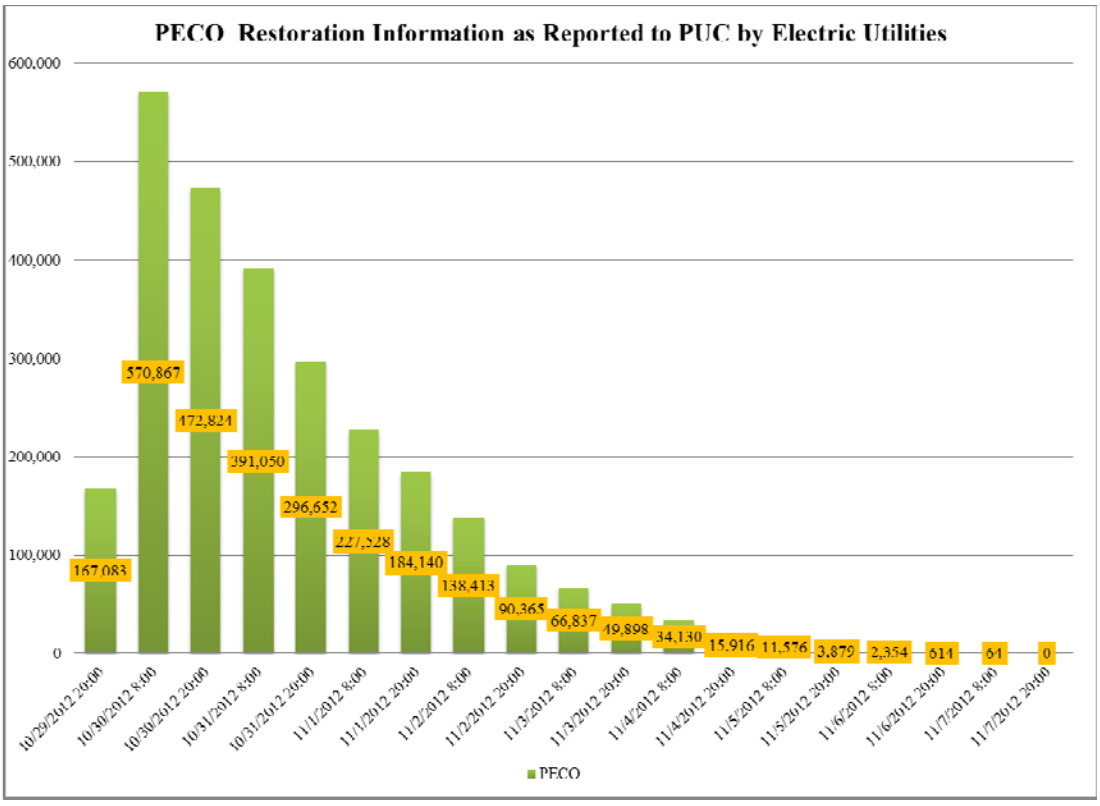
West Penn Power:

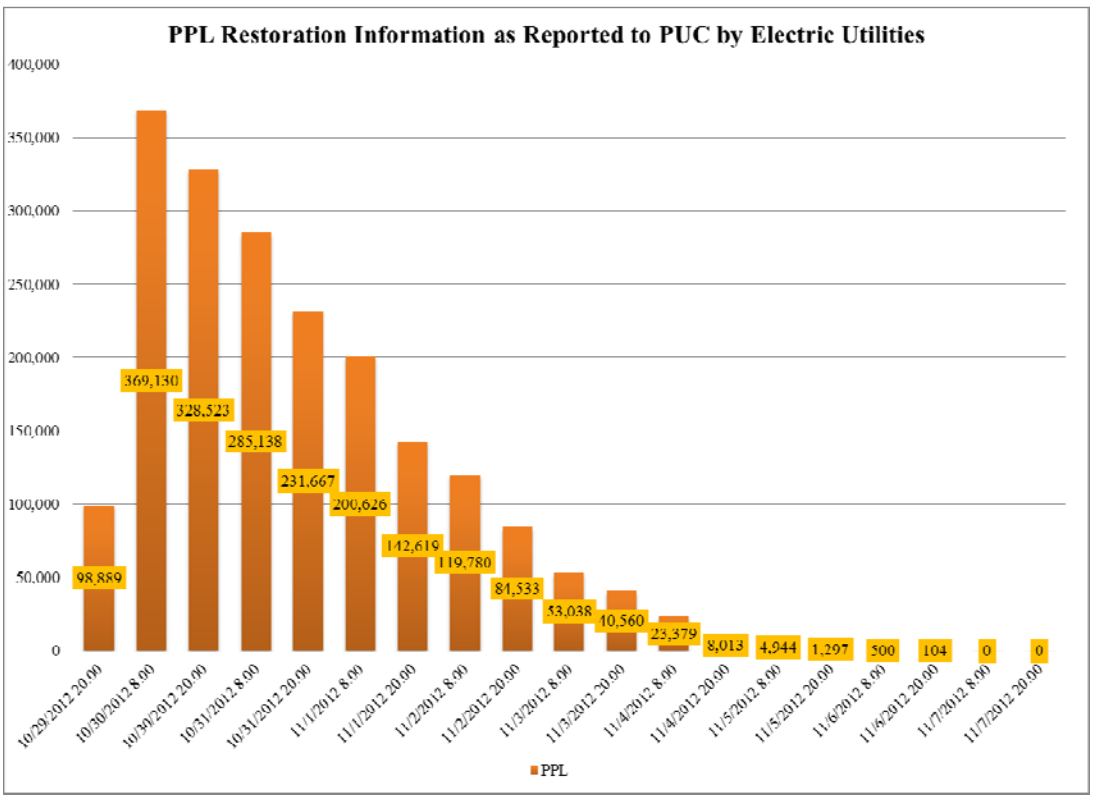


Outage Restoration Progress as Reported to PUC by EDCs During Restoration






PECO Restoration Information as Reported to PUC by Electric Utilities
600,000
500,000
400,000
300,000
200,000
100,000
0
167,083
570,867
472,824
391,050
296,652
227,328
184,140
138,413
90,365
66,837
49,898
34,130
15,916
11,576
3,879
2,354
611
61
0
10/29/2012 20:00
10/30/2012 8:00
10/30/2012 20:00
10/31/2012 8:00
10/31/2012 20:00
11/1/2012 8:00
11/1/2012 20:00
11/2/2012 8:00
11/2/2012 20:00
11/3/2012 8:00
11/3/2012 20:00
11/4/2012 8:00
11/4/2012 20:00
11/5/2012 8:00
11/5/2012 20:00
11/6/2012 8:00
11/6/2012 20:00
11/7/2012 8:00
11/7/2012 20:00
PECO


PPL Restoration Information as Reported to PUC by Electric Utilities
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
98,889
369,130
328,523
285,138
231,667
200,626
142,619
119,780
81,533
53,038
10,560
23,379
8,013
4,944
1,297
500
104
0
0
10/29/2012 20:00
10/30/2012 8:00
10/30/2012 20:00
10/31/2012 8:00
10/31/2012 20:00
11/1/2012 8:00
11/1/2012 20:00
11/2/2012 8:00
11/2/2012 20:00
11/3/2012 8:00
11/3/2012 20:00
11/4/2012 8:00
11/4/2012 20:00
11/5/2012 8:00
11/5/2012 20:00
11/6/2012 8:00
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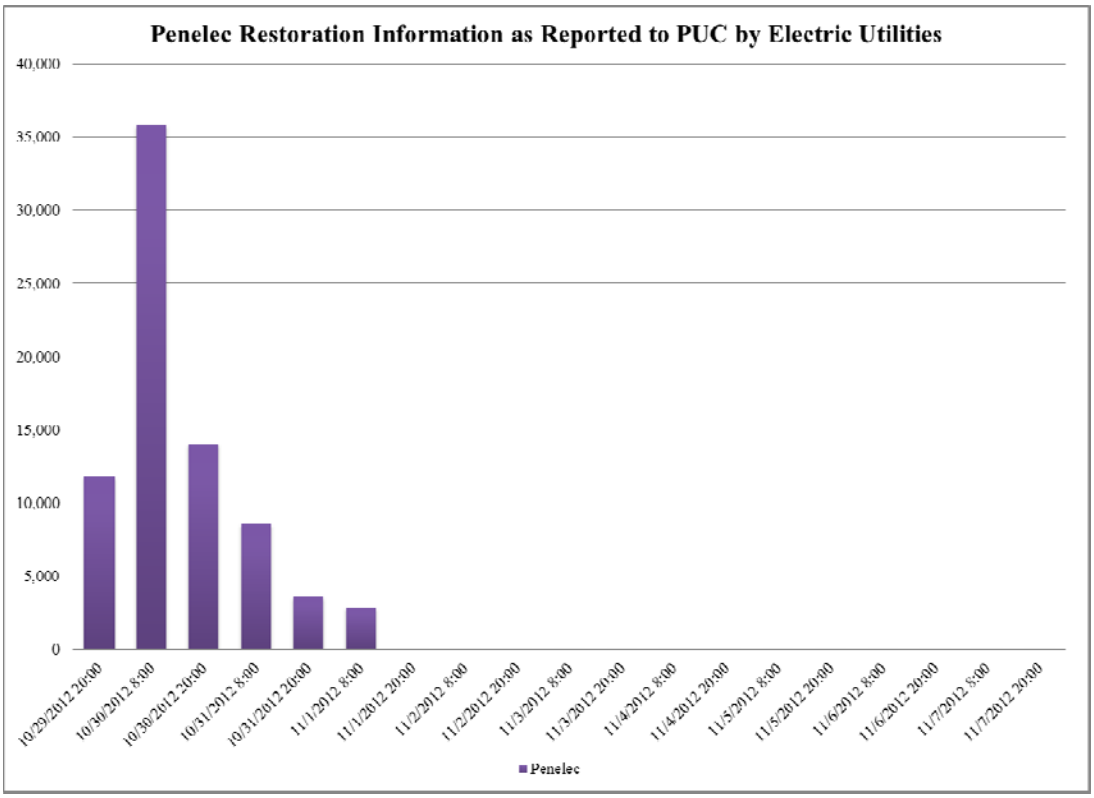
11/7/2012 8:00
11/7/2012 20:00
PPL


Penelec Restoration Information as Reported to PUC by Electric Utilities
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
10/29/2012 20:00
10/30/2012 8:00
10/30/2012 20:00
10/31/2012 8:00
10/31/2012 20:00
11/1/2012 8:00
11/1/2012 20:00
11/2/2012 8:00
11/2/2012 20:00
11/3/2012 8:00
11/3/2012 20:00
11/4/2012 8:00
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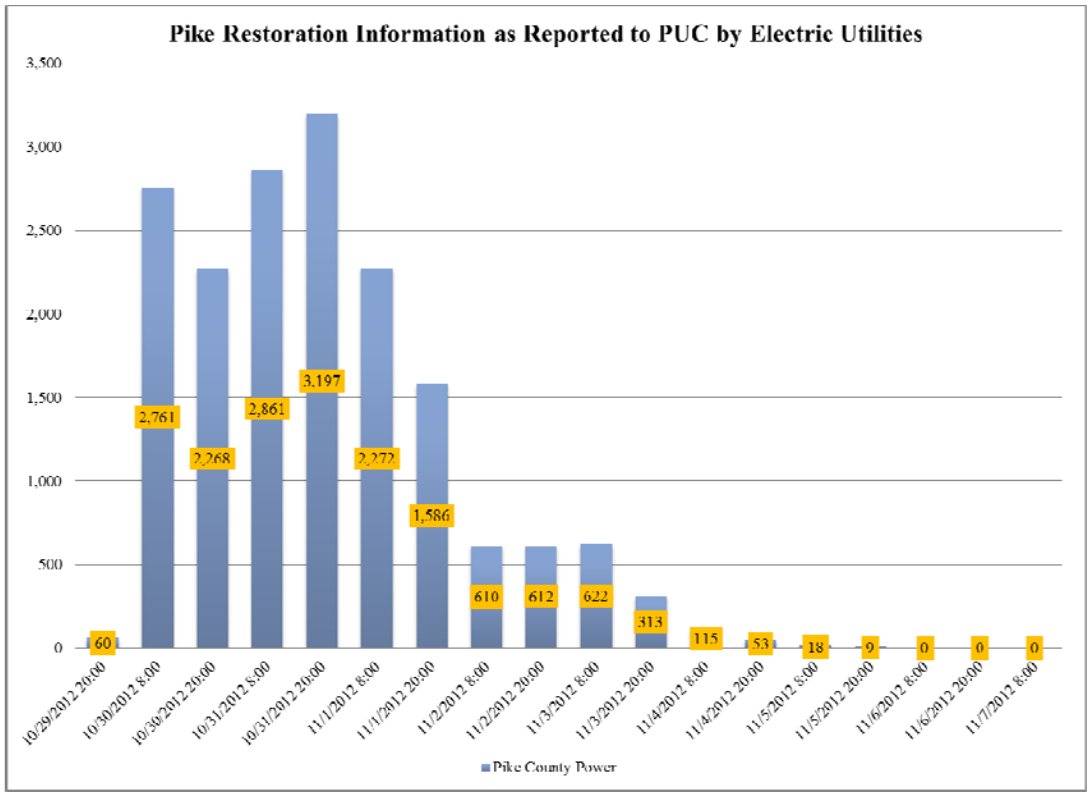
11/5/2012 8:00
11/5/2012 20:00
11/6/2012 8:00
11/6/2012 20:00
11/7/2012 8:00
11/7/2012 20:00
Penelec


Pike Restoration Information as Reported to PUC by Electric Utilities
3,500
3,000
2,500
2,000
1,500
1,000
500
0
60
2,761
2,268
2,861
3,197
2,272
1,586
610
612
622
313
115
53
18
9
0
0
0
10/29/2012 20:00
10/30/2012 8:00
10/30/2012 20:00
10/31/2012 8:00
10/31/2012 20:00
11/1/2012 8:00
11/1/2012 20:00
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11/4/2012 20:00
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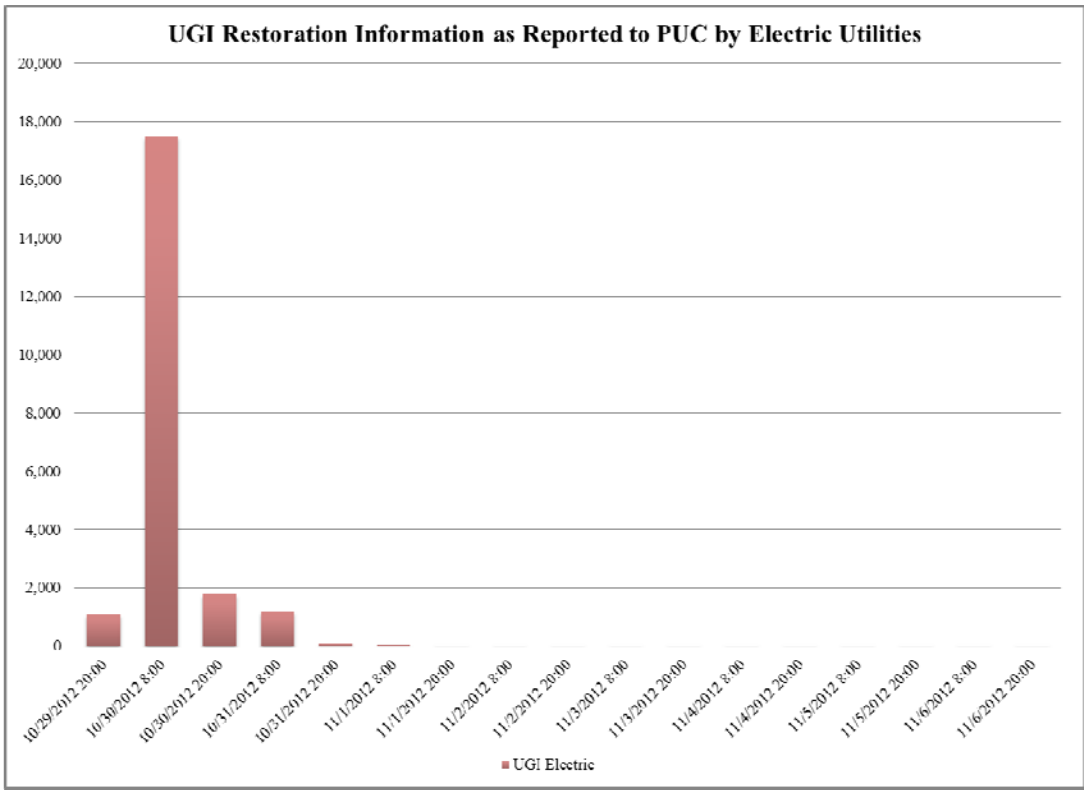
11/5/2012 20:00
11/6/2012 8:00
11/6/2012 20:00
11/7/2012 8:00
Pike County Power


UGI Restoration Information as Reported to PUC by Electric Utilities
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
10/29/2012 20:00
10/30/2012 8:00
10/30/2012 20:00
10/31/2012 8:00
10/31/2012 20:00
11/1/2012 8:00
11/1/2012 20:00
11/2/2012 8:00
11/2/2012 20:00
11/3/2012 8:00
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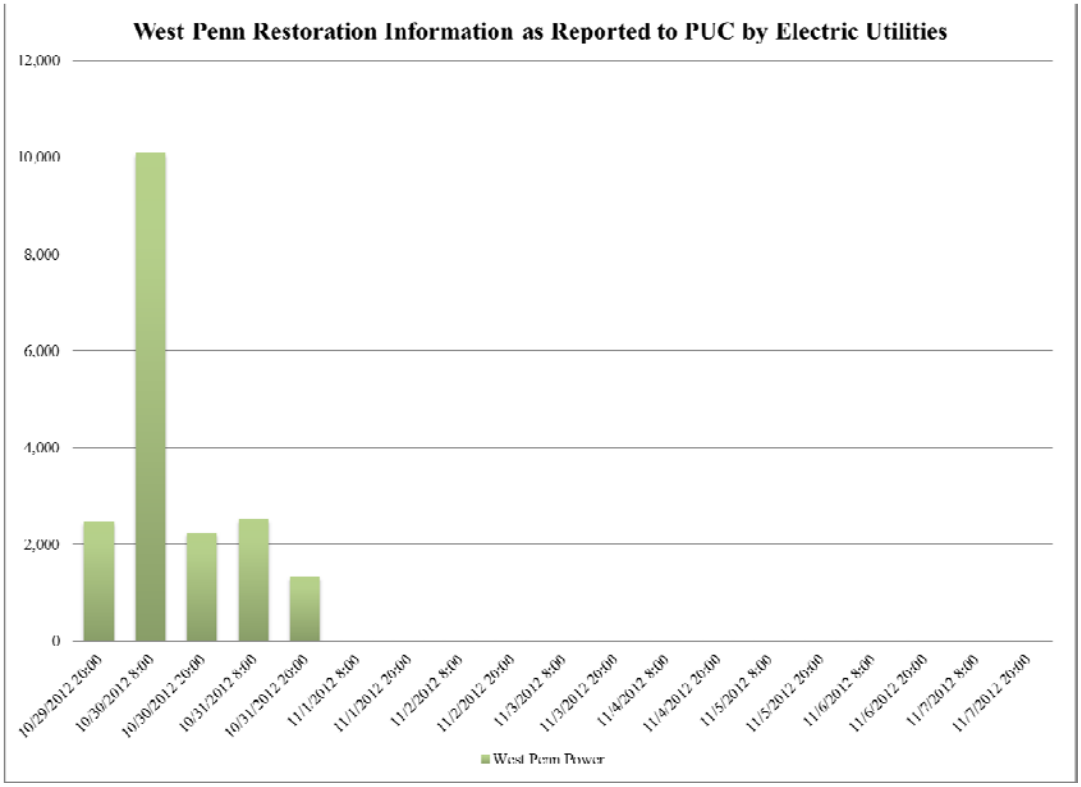
11/4/2012 8:00
11/4/2012 20:00
11/5/2012 8:00
11/5/2012 20:00
11/6/2012 8:00
11/6/2012 20:00
UGI Electric


West Penn Restoration Information as Reported to PUC by Electric Utilities
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10,000
8,000
6,000
4,000
2,000
0
10/29/2012 20:00
10/30/2012 8:00
10/30/2012 20:00
10/31/2012 8:00
10/31/2012 20:00
11/1/2012 8:00
11/1/2012 20:00
11/2/2012 8:00
11/2/2012 20:00
11/3/2012 8:00
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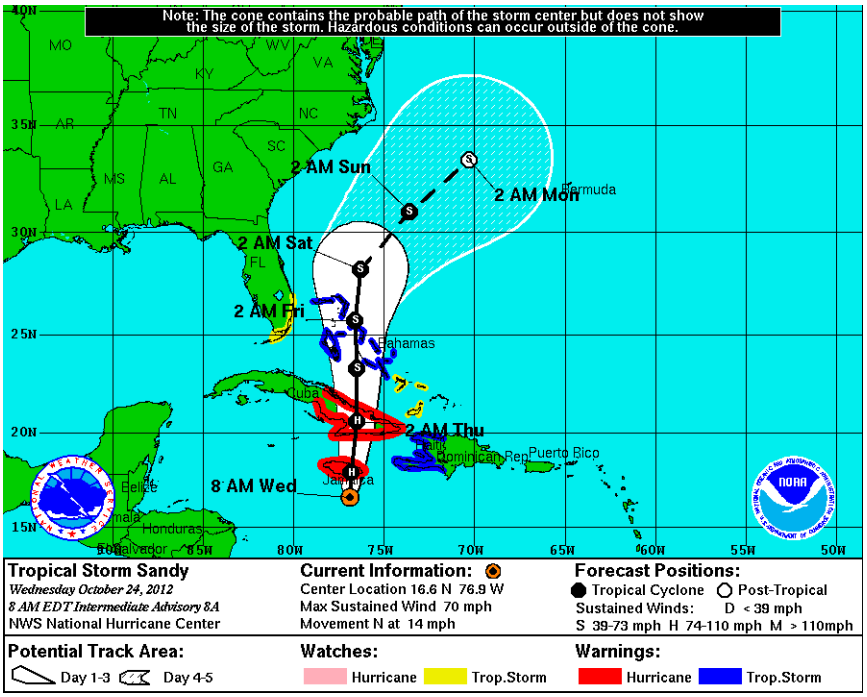
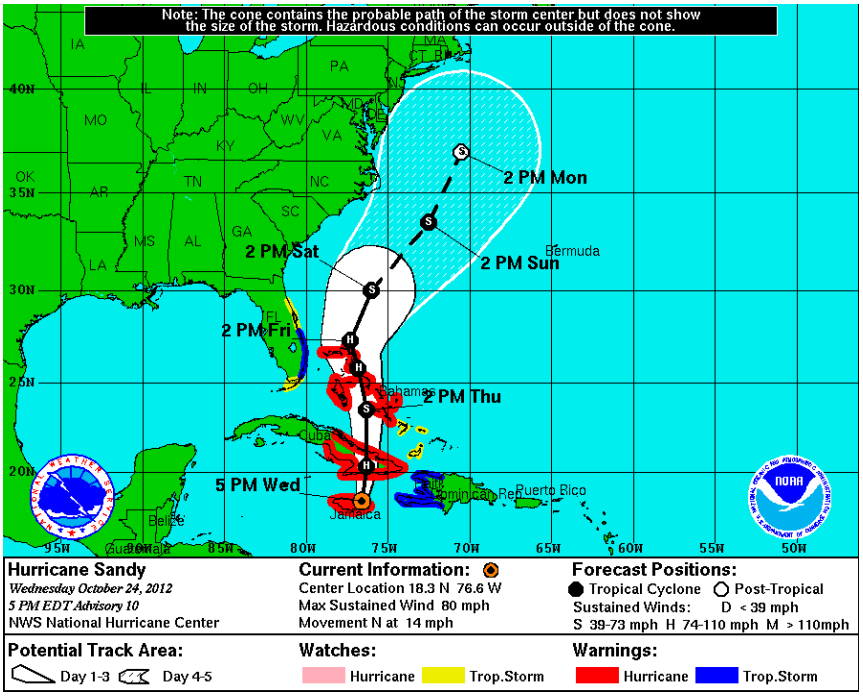
11/4/2012 8:00
11/4/2012 20:00
11/5/2012 8:00
11/5/2012 20:00
11/6/2012 8:00
11/6/2012 20:00
11/7/2012 8:00
11/7/2012 20:00
West Penn Power

Forecast Path of Sandy – National Weather Service Hurricane Center

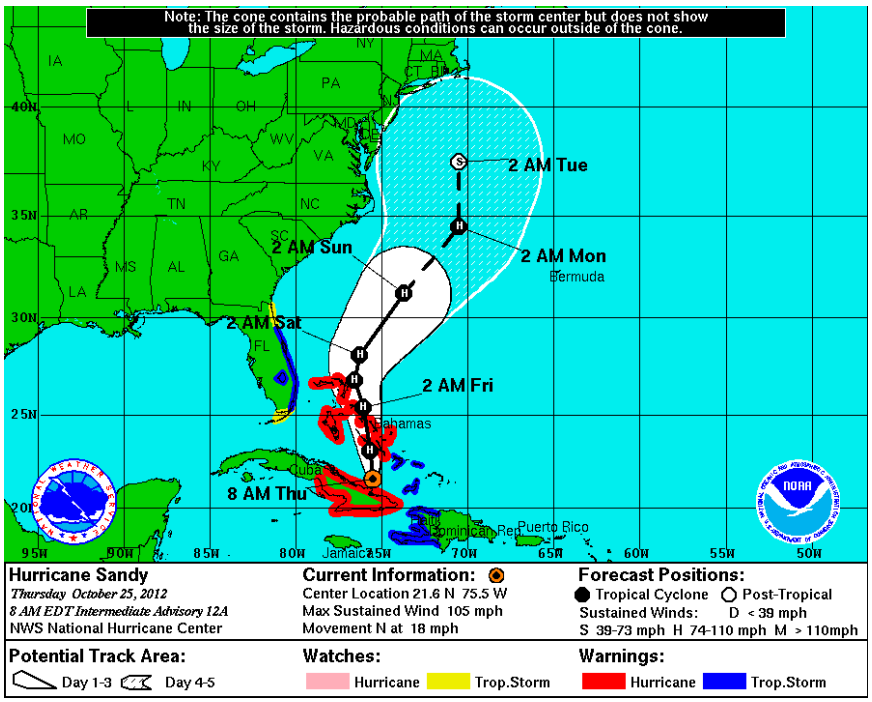
8 a.m. October 24, 2012



5 p.m. October 24, 2012



8 a.m. October 25, 2012



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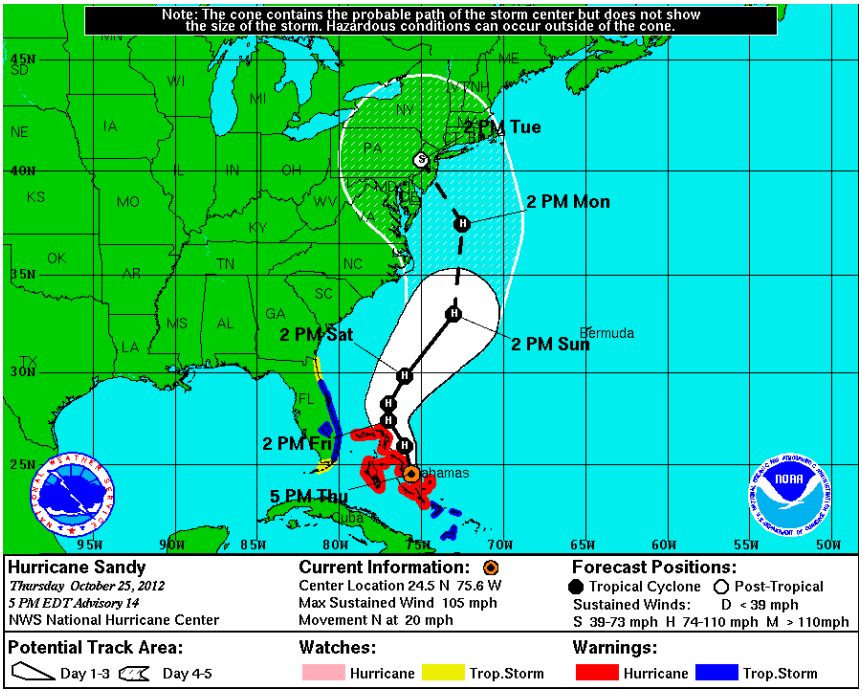
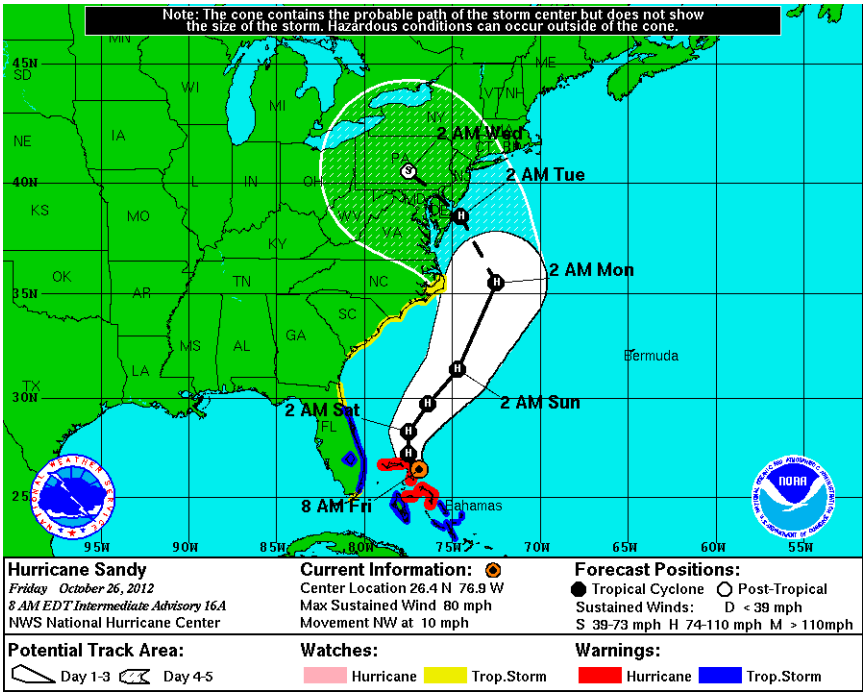
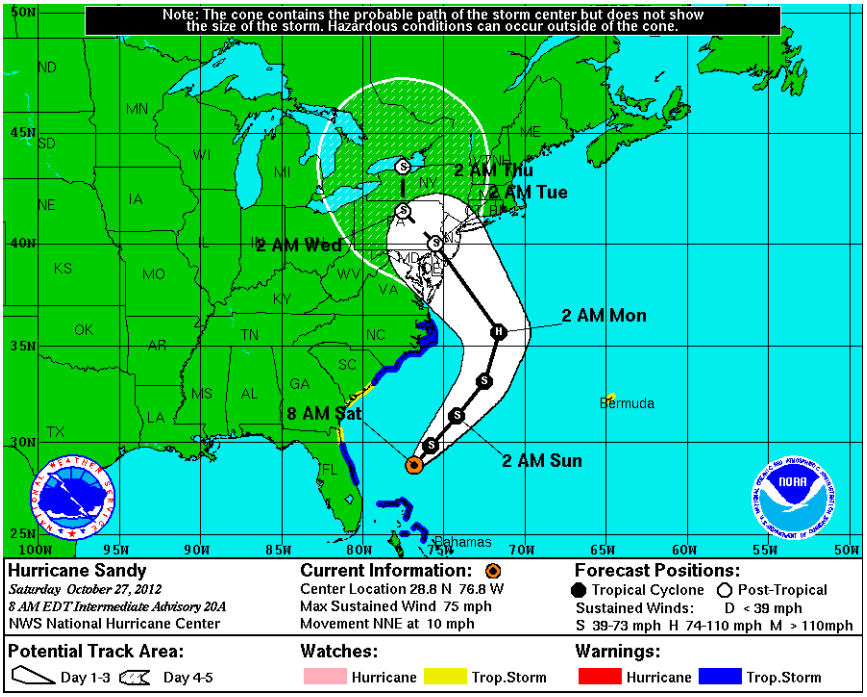


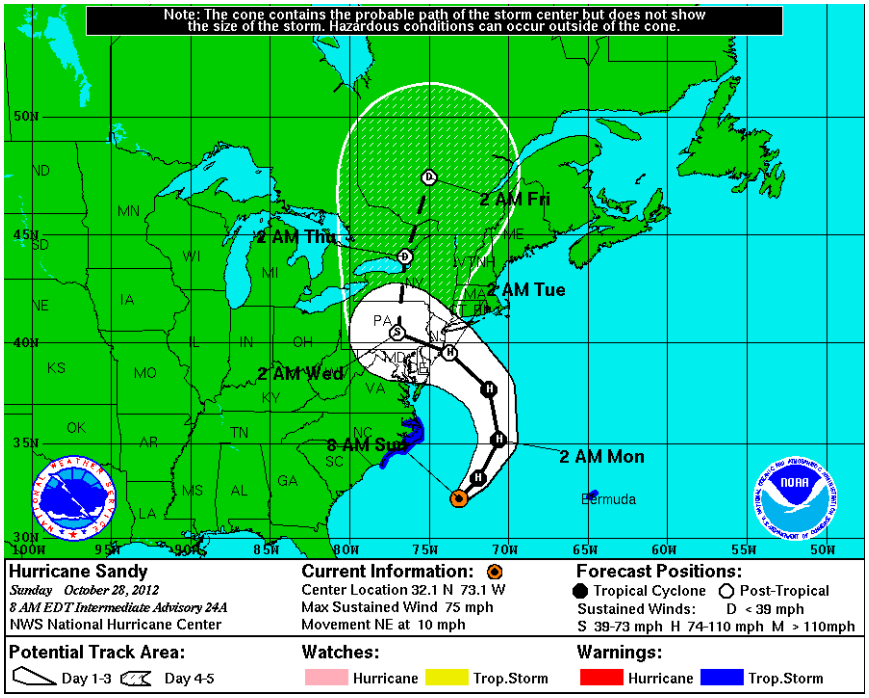
8 a.m. October 26, 2012



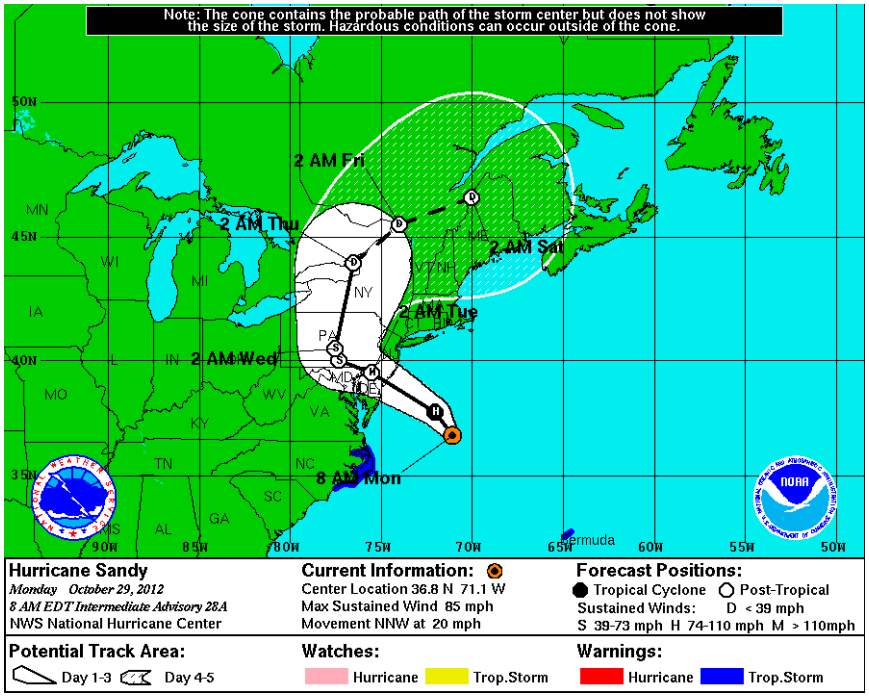
8 a.m. October 27, 2012



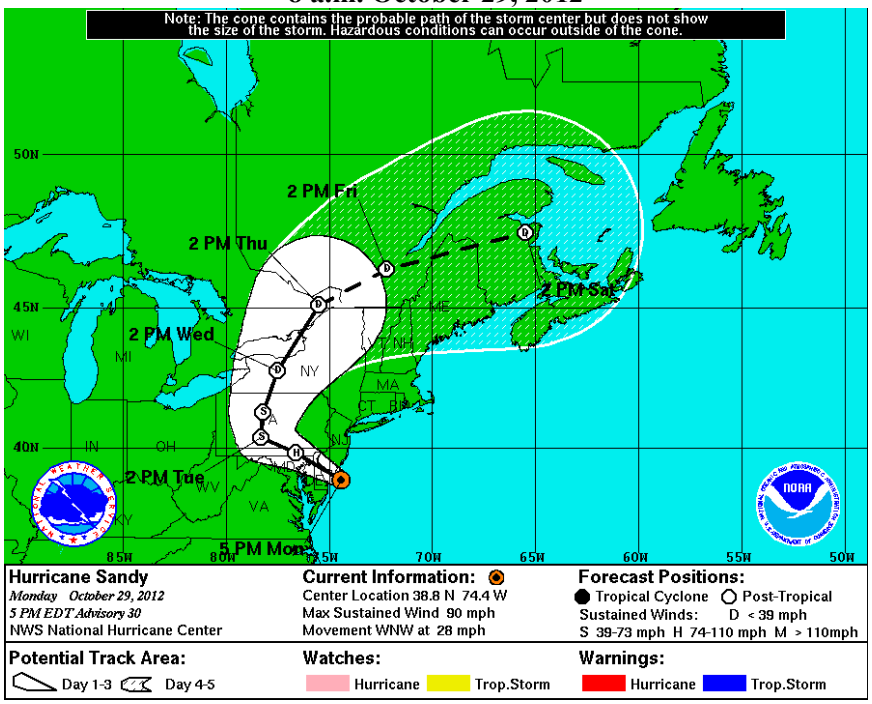
8 a.m. October 28, 2012



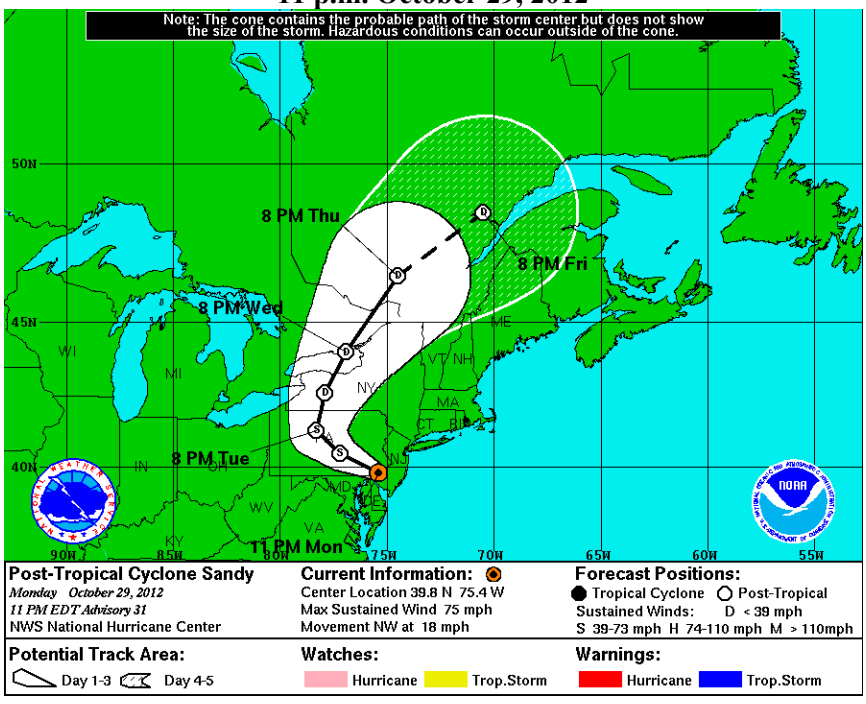
8 a.m. October 29, 2012



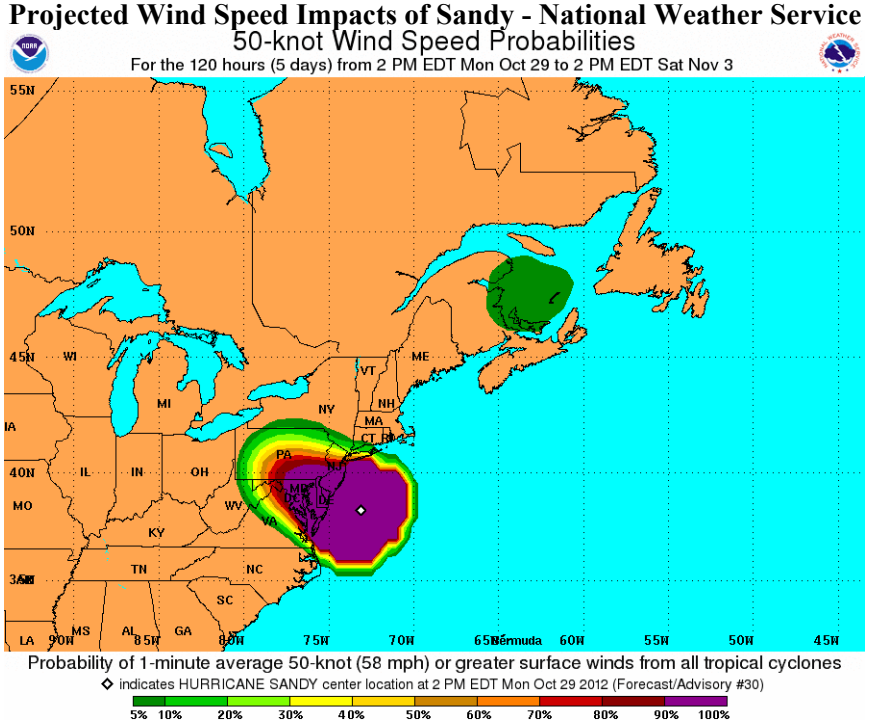
8 a.m. October 29, 2012



11 p.m. October 29, 2012

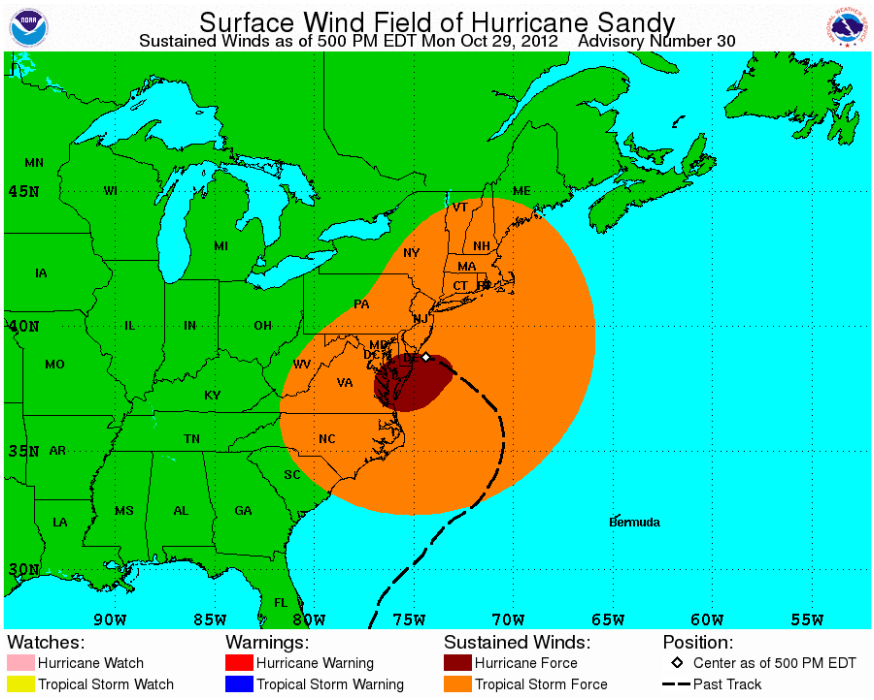


Projected Wind Speed Impacts of Sandy - National Weather Service



Actual Wind Speed Impacts of Sandy – National Weather Service

5 p.m. October 29, 2012



One-Day Rainfall – 8 a.m. October 29 to 8 a.m. October 30, 2012