UGI Utilities, Inc. – Electric Division
Electric Reliability Outlook for 2015

Summary

UGI Utilities, Inc. (UGI) continues to review and implement programs aimed at improving our summer readiness with respect to providing safe and reliable service during peak summer loading conditions and to minimize customer outages and restoration times during the summer storm season. The programs that UGI currently has in place and the programs and initiatives currently under review are discussed below.

Reliability Enhancement Programs

In addition to fulfilling its Biennial Inspection, Maintenance, Repair, and Replacement Plan as filed with the Commission that became effective on January 1, 2015, UGI Electric Division has the following ongoing programs geared toward enhancing the reliability of service it provides its customers:

- A Danger Tree Mitigation Program to identify and address off right of way trees that pose a threat to its transmission and distribution lines. This program involves line clearance crews identifying and addressing such trees. In addition UGI continues the practice of "ground to sky" trimming on multi-phase circuits and on single phase lines where appropriate.
- A line segmentation program focuses on identifying locations to install fuses, disconnects, and other devices to limit the number customers affected when line damage occurs and enable field personnel to restore service to customers on unaffected line segments through switching before repairs are made. To date UGI has completed patrols of 46% of our overhead distribution feeders identifying over 167 locations for new devices with installation completed at 133 or 79% of these locations. In 2015 UGI will complete patrols of an additional four distribution circuits and plans to install 15 new sectionalizing devices.
- A line relocations program to move distribution lines from troublesome off road locations to road side rights of way. Relocating the lines to road side enable quicker patrolling as well as making repairs quicker and safer because mechanized aerial equipment can be used as opposed to climbing the poles to do repair work. In 2014 UGI completed six (6) line relocation projects identified as priority locations by field and operations personnel. Two (2) additional projects have already been completed in 2015 and UGI will continue to identify and relocate additional line sections going forward.
- A secondary modernization program aimed at upgrading open-wire secondary that is undersized, out of specification, end-of-life etc. to the current triplex wire construction standard. In 2014, UGI completed 13 projects and another 14 have already been completed in 2015.

Preventive Maintenance Programs

In addition to fulfilling its Biennial Inspection, Maintenance, Repair, and Replacement Plan as filed with the Commission, UGI Electric Division has the following other programs geared toward enhancing the reliability of service it provides its customers:

- All overhead line devices, which includes capacitor control, recolosers, sectionalizers, and voltage regulators and their controls are removed from service and maintained on a fixed periodic basis.
- An intrusive inspection is made on all underground line terminal equipment and a neutral integrity test is performed on all line segments on a fixed periodic basis. Corrective maintenance or replacement is performed on deficiencies identified during these inspections.
- Intrusive inspections and/or diagnostic tests are made on all substation equipment on a periodic basis with corrective maintenance or replacement performed to address identified deficiencies.
- Automatic splice connections on the distribution system are being visually inspected and their location documented for future reference. Any issues identified during the inspection are corrected immediately.

Capacity Planning

UGI does not expect any significant issues with respect to capacity and serving the forecasted peak summer load. UGI performs annual planning studies and reviews of feeder and substation loading for compliance with its

Planning Standards. Delivery system capacity expansion plans are made based on these study results. In 2015, UGI is undertaking both transmission and distribution re-enforcements to ensure that adequate capacity is available to serve existing and planned load. On the transmission side, UGI is in the second year of a five year project to re-conductor the Swoyersville-Huntsville 66kV line to provide an additional 54 MWs of transmission capacity to customers served by substations in the Back Mountain area. UGI also completed a re-conductor project in late 2014 on a section of Mountain-Lincoln Street 66kV line. This conductor upgrade provides an additional 37 MWs of transmission capacity to customers in the Nanticoke area and eliminated numerous splice points.

UGI continues to enhance the distribution system with a focus on substation tie-line development and load balancing. For 2015, in conjunction with a project to expand our Huntsville 66/13.8kV substation, additional tie-lines between Huntsville substation and two neighboring distribution substations are currently being constructed to provide additional distribution switching options from both a peak load serving and restoration perspective. A similar project is currently being designed for the Swoyersville 66/13.8kV substation with construction to begin by mid-summer. One additional distribution projects is currently underway that will extend a high capacity three-phase circuit into a rural portion of UGI's service territory to provide additional capacity and restoration options. This is a multi-year project which is scheduled to be completed in 2018. UGI also has an ongoing line rebuild and voltage conversion program to rebuild vintage 8 kV and 4 kV distribution lines and convert them to operate at 13 kV. The goal is to convert two line segments fed by step-down transformers to 13kV operation later in 2015.

2015 Summer Readiness

As mentioned above in the Capacity Planning section, UGI has a number of projects either completed or in various stages of completion that will increase the capacity of its distribution lines and provide more options to restore service to customers during storm restoration events.

As mentioned above UGI is scheduled to complete the second phase of a transmission re-conductor project in June, 2015. UGI also performed the annual planning review of the transmission system utilizing current and forecast load flow models to identify any voltage or thermal criteria violations. Results of the analysis did not indicate any issues under the various contingency scenarios. Finally, UGI completed annual inspections of its transmission lines including an aerial LiDAR inspection of the 230kV bulk electric facilities. These inspections look to identify facility deficiencies, maintenance issue or vegetation conditions which require attention. Priority concerns are addressed immediately.

UGI conducted its 2015 Spring Restoration Drill on May 20, 2015. UGI's new Outage Management System (OMS) was utilized during the drill, populated with customer calls from the July 2014 major storm event to simulate a large scale restoration event. Personnel from UGI's Electric Operations and Communications Departments participated in the drill. The key focus areas for this year's drill were on field communications with dispatch, Estimated Time of Restoration (ETR) determination and wire-down dispatch and tracking. As always the drill provided UGI the opportunity to evaluate and update its current restoration and communications processes, provide OMS training to its personnel, and exercise its internal and external communication links in preparation for the summer storm season.

Outage Restoration Strategy

UGI's outage restoration strategy is similar to that of other electric utilities in the state. It first restores power to its substations and then focuses on restoring service to feeders that serve critical infrastructure, such as water, sewer, and emergency services facilities. It then works on restoring its remaining distribution lines starting from the substations and working outward locally prioritizing the repair jobs based upon the number of customers that can be restored, the location of its resources, and the magnitude of the repair jobs so that it generally restores service to the most customers in the shortest period of time. Restoring service to critical needs customers is factored into its restoration process. Public safety situations get immediate attention regardless of where UGI is in its restoration process.

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UGI uses a restore before repair approach such that customers that can have their service restored through switching and fuse replacement are restored before engaging the field crews in repair work. This method of operation applies throughout the restoration effort such that as line segments become available to return to service after repairs are made, they are placed in service to restore service to customers on them.

UGI uses a decentralized mode of operation during major event restoration effort. Depending upon the extent of the damage its delivery system UGI divides its service territory into areas and assigns an area coordinator to manage damage repairs in each area. Each area coordinator has complete responsibility to plan and manage the resource to restore service in his/her assigned area. UGI has found this strategy eliminates communications bottlenecks such that available resources are used most effectively.

Storm Updates/Lessons Learned

On July 2014, UGI experienced a major storm event that affected nearly 25% of our customer base. Thanks to the efforts of UGI restoration personnel and the influx of a record number of mutual assistance crews, over 95% of the customers were restored within three (3) days.

As with all major events UGI conducted a post storm review to identify areas for improvement and to communicate lessons learned to the entire restoration team. The review produced a number of recommendations including:

- A need for additional damage assessment and support personnel
- Investigate other weather service providers
- A need for more frequent updates from field personnel relative to device status
- Customer information handouts for crews to provide to customers that stop by restoration sites

These and other recommendations have been formalized into a Project Charter which is being administered by UGI's Program Management Office. The goal is to implement all of the recommendations by the end of 2015.

Restoration Enhancements

In September of 2013 UGI implemented its first commercial Outage Management System (OMS), Oracle's NMS. The OMS is linked with various UGI systems including field data terminals and a new IVR for processing electric emergency calls. The integrated platform provides for handling of expected large call volumes during outage events, faster determination of outage counts, efficient outage prioritization and dispatch, and improved customer communications. UGI continues to analyze and enhance its OMS functionality as it gains experience with the system to improve its restoration and communications processes. One of the systems linked to OMS is a mobile mapping and data display platform called Partner Software. The link between OMS and Partner allows field personnel to see graphically, on a UGI geo-referenced system map, the location of every damage report (clue) provided by customers during an outage event. This system also allows users to enter damage assessment information at each clue location and to track the status each incident. For 2015, additional functionality was added to display device status information from OMS for confirmation (predicted versus confirmed open) by field personnel and for the electronic communication of the information back to a dashboard in the main dispatch location. This new functionality was demonstrated during the 2015 Spring Restoration Drill.

Several additional enhancements have already been implemented in 2015 including a contract with Osmose to provide additional storm restoration services such as damage assessment and wire watching and a new weather service Earth Networks, which offers several monitoring stations within the UGI service territory for post storm and historical weather/damage correlations. UGI is also expanding its storm restoration resource base to UGI Gas Operations personnel. UGI Electric Operations is working to train personnel from Gas Operations to fill a field support role during large scale restoration events. The goal is to have these personnel trained and available by late 2015.

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Communications and Outreach

Traditional Customer Communication Channels

UGI maintains traditional direct-to-customer communication channels. These include information provided via continuously-updated Call Center messages on the Company's phone system, scripts prepared for use by Call Center representatives when interacting with customers, and messages prepared for use with the Company's 'predictive dialer' capability.

Additionally, UGI provides regular updates, information and links to additional resources on key topics to customers via bill messaging, inserts and notices included with printed and electronic bills.

UGI also conducts an extensive municipal outreach program aimed at reinforcing relationships and providing information to elected and appointed municipal leaders public safety and emergency response officials. Municipal outreach meetings are conducted throughout the year. Topics include coordination of emergency response, safety, and construction coordination among other items.

Broadcast Media, Social Media and Digital Communication Channels and Tools

The UGI Communication, Community Relations and Outreach Programs use an integrated platform of channels to provide critical information to customers. Additional communications are provided to customers and community residents during extreme weather events, or during emergency situations. The communication channels and tools UGI utilizes include:

- Media communications, including:
  - Public Service Announcements
  - Media advisories
  - News releases
  - On-air interviews and appearances
- UGI Website postings, including:
  - Banners on UGI.com homepage
  - Activation of Outage Center 'tile'
  - Live/updated information on Outage Center Map
- Social Media information and update postings, including:
  - Facebook
  - Twitter
  - UGI Connection (blog)
  - Linked-In
  - Instagram
- Outbound Email

All content provided to customers and interested parties is consistent across the traditional, broadcast, digital and social media channels. In addition, UGI maintains response protocols for inquiries from customers posted on social media sites. Social media postings from customers are treated as 'escalated' inquiries and the customer is asked to send a private communication (email or call) where specific customer information is collected and an appropriate response provided.