

Citizens' Electric Company  
2019 Summer Readiness Overview  
5/22/2019

## Summary

Citizens' Electric Company's approved 2019 inspection and maintenance plan is well underway. This plan was designed to help ensure that system facilities remain in good condition and ready for the storm season.

### A. Reliability Enhancement Program

#### a. Enhanced Vegetation Management

Since 2012, Citizens' Electric has been investing increasing resources to identify and remove off right-of-way hazard trees. A primary focus has been the continuing impact from the Emerald Ash Borer. The Company has again committed additional resources to identify, prioritize and remove significant threats to reliability from hazard trees during 2019. The Company's vegetation coordinator, line crews, and trimming contractors have all been trained to continue identifying and resolving off right-of-way priority trees where possible.

The exceptionally wet summer and fall of 2018 caused a significant number of hazard tree related outages, but also confirmed the value of the steps taken to date to identify and eliminate off right-of-way hazard trees. The Company continues to maintain its focus in this area and has begun a program to expand trimming clearances to further reduce vegetation related outages over the next trimming cycle.

Citizens' Electric was recently recognized for the seventeenth consecutive year as a "Tree Line USA" utility. This award from the National Arbor Day Foundation recognizes the Company for using nationally approved trimming techniques and procedures in its vegetation management program.

#### b. Storm Hardening

While not responsible for the most individual outages, weather related outages caused the greatest impact to customers in 2018. The Company has budgeted a major reliability project in 2019 aimed at improved sectionalizing and isolating capabilities for a line section that impacts over 1,000 customers (nearly 15% of total customer base). The project will allow three line sections with a history of tree and weather related outages to be completely isolated, restoring all customers prior to making repairs. Additional prescriptive tree trimming was also performed in these areas following the scheduled trimming work in 2018, further reducing the likelihood of future outages.

The Company continues to identify and replace equipment known to be failure prone—namely specific vintages of porcelain arrestors and cutouts—during its annual inspections. All new cutouts use polymer-based insulators.

#### c. Fuses/Reclosers/Automatic Switches

The company is currently in the process of completing scheduled recloser inspections for 2019, in accordance with its PUC-approved comprehensive inspection and maintenance program. Recloser maintenance is also currently in progress. This year, comprehensive maintenance will be performed on nine reclosers. This work includes removing the units

from service, filtering or replacing the dielectric oil, inspecting contacts and replacing if needed, and testing to ensure proper response timing. All scheduled units are expected to be maintained and returned to service for the coming thunder storm season.

The Company does not utilize automatic switches.

**d. Smart Grid**

The Company recently began a project to replace all remaining first-generation smart meters within five years. The project is currently on schedule, with over one third of the 2019 meter exchanges completed YTD. Replacing these meters will provide many benefits, including faster, more-reliable communications. This will help operations staff more quickly assess outages, dispatch repair crews, verify restorations, monitor voltage quality and identify areas of load growth.

All smart grid systems, including AMR infrastructure, Outage Management System, GIS Mapping and associated online and telephone customer service systems are fully operational and ready for processing outage transactions.

**e. Conservation Voltage Reduction (CVR) Activity**

Citizens' Electric does not utilize substation voltage regulation equipment. As a result, the Company does not currently have a Conservation Voltage Reduction (CVR) program.

**B. Preventative Maintenance Programs**

**a. Capacitor Inspections**

The Company currently has 22 capacitor locations in service. In accordance with its approved inspection and maintenance plan, all locations have been inspected for 2019 and are available as needed.

**b. Vegetation Management**

Nearly all of the Company's routine vegetation work is completed by contractors. Typically, this work is conducted during the early spring and summer months. This allows the Company to better respond to any unexpected "hot spots" that may require attention during the growing season. This schedule also helps ensure that contract crews will be present during the bulk of the summer storm season so they can be quickly deployed for restoration work if needed.

This year's contract has been awarded and trimming work is underway. As discussed above, the Company will continue its aggressive program of maintenance and danger tree removals again this year, as well as expanding clearances.

As trimming is completed, the Company's inspector closely monitors work performed to ensure it is done in accordance with contract specifications and to verify that all work included in the contract is completed. Daily work reports are received from the contractor. These reports include a listing of work performed by each crew on a particular day. Reports are reviewed by the Company's inspector to verify overall contract completion.

As an additional performance measure, the Company's Vegetation Management Coordinator monitors all tree-related outages to help identify and respond to emerging trends as quickly as possible, and to assess the Company's overall vegetation program effectiveness.

**c. Substation Inspections**

All monthly substation inspections have been completed on schedule. Any issues requiring attention have been addressed.

**d. Aerial Patrols**

The Company does not own any transmission facilities and does not conduct any aerial patrols of its distribution facilities.

**e. Infrared Inspections**

Infrared inspections are performed on all three-phase primary overhead line sections each year and all single-phase line sections on a three-year cycle. To date, approximately 30% of this year's inspections have been completed. The Company tracks progress electronically and expects to complete 100% of these inspections by year-end. Any issues found have been addressed.

**C. Capacity Planning**

The Company provides load forecasts and works closely with its transmission provider and System Operator to ensure continued transmission capacity availability. Long-range plans for additional substation or transmission facilities are refined periodically as load forecast trends are adjusted. System and feeder loading patterns and circuit voltage profiles are analyzed to ensure adequate capacity at all points on the Company's distribution system.

**D. 2018/2019 Storm Update and Lessons Learned**

The Company experienced typical outages from spring wind, summer thunderstorms and winter snows. No significant tropical systems impacted the area, however two significant weather events did occur.

In November of 2018, a winter storm bringing a mixture of heavy, wet snow and ice caused outages on both of the Company's 69kV sources. Repairs were made quickly by PPL, owner/operator of the 69kV lines, and the event highlighted the value of the regular and reliable communications established between the Company and PPL's transmission operations.

In April of 2019, an EF-1 tornado, accompanied by straight-line wind and down-draft phenomena affected the Company's territory, with the tornado taking a path directly across the center. Based on total customers affected, this event is the second most impactful on record for the Company. Two key opportunities were gained from the event and, additionally, several earlier initiatives were proved effective.

Key Opportunities:

- 'No Outage' process was cumbersome in large volumes and caused temporary loss of 'no outage' tickets.
  - This deficiency will be explored with the OMS vendor and reviewed with dispatch employees resolved.
- Foreign crews showed interest in utilizing Company outage restoration app.

- Company and affiliates are exploring use of app when crossing company boundaries, this may be expanded to include any mutual aid crew in the future.

Notable Successes:

- ‘AppSuite’: AppSuite outage restoration use allowed management and crew chiefs to assess the situation remotely prior to reporting in or even being contacted. Most linemen were aware of the extent of outages prior to being called in.
- Capacity Additions/Tie Strengthening: Projects to improve transfer capabilities were put in use, with customers transferred and problem isolated on a major three phase line that saved both the customers directly affected, as well as those other outages that would have been prioritized lower, several hours of interruption.
- Affiliate Company Mutual Aid: The Company’s affiliates under C&T Enterprises have significant geographic diversity. For the April storm system, two of four affiliates were heavily damaged, with the other two having little trouble, leaving crews available for mutual aid.

## **E. 2019 Summer Readiness**

### **a. Capacity Additions**

Continuing on the 6,500 feet of three-phase upgraded in 2018, crews are working on the upgrade of approximately 7,200 feet of three-phase overhead line to provide enhanced capacity and reliability. This project will continue throughout 2019.

### **b. Transmission Preparedness**

The Company does not own any transmission facilities. However, it provides load forecasts and works closely with its transmission provider to ensure continued transmission capacity availability.

### **c. Event Preparedness**

Lessons learned during 2018 have been incorporated into the Company’s storm process. Access to resources from utilities in the PREA group and across the region will continue to play a significant role in any major event response.

The Company continues to foster relationships with local EMA officials to ensure efficient coordination during storm efforts. Emergency material stock levels are adequate, the construction fleet is in good operating condition and staffing is at expected levels. All technology systems are fully operational.

### **d. Training**

In an effort to ensure efficient response to customer outage calls, refresher training has again been provided to all office personnel involved in outage activities. All line personnel training is up-to-date in accordance with Company training plans and OSHA requirements.

### **e. Personnel**

As with many electric utilities, Citizens' must address the pressures of an aging workforce. It is expected that within the next 10 years, 13 of Citizens' current 17 employees will retire. Eight will be in the operations area. Turnover has already begun, with one additional lineman hired in 2015, one retiring employee replaced in 2017, two more in 2018 and another two hires to replace upcoming retirements planned within the next 6 months.

Citizens' Electric's management team has been entrusted by the shareholders, customers and the Public Utility Commission to provide safe and reliable service at a fair cost. To address this core responsibility and the potentially negative impact from failure to plan, management has adopted a long-term and methodical transition strategy that will prevent a lapse in experience and job knowledge that is so necessary to effectively operate the Company. To begin this orderly transition process, the Company increased its line crew staffing level by 12.5%, through the hiring of one additional apprentice in 2015.

It typically takes up to seven years to fully develop a journeyman lineman. While no retirement announcements have been made, 75% of the line crew is considered as "approaching" retirement age. Incorporating additional apprentices in a timely manner will ensure there is an adequate supply of knowledge and skills available to provide a safe and proficient workforce.

## **F. Storm Response**

### **a. Outage Restoration Strategy**

Citizens' Electric employs a restoration strategy which aims to restore customers in the most efficient way possible. Ensuring the safety of the public and the Company's employees is the first priority. Crews are first dispatched to trouble locations that will restore service to the largest number of customers in the shortest amount of time, with priority given to incidents that will restore service to critical public infrastructure. Next, outages affecting individuals or small groups of customers are restored.

### **b. Communications and Outreach**

In addition to providing timely information through traditional methods such as newsletters, newspaper articles, and direct employee contact, the Company utilizes social media including Facebook and Twitter.

The Company continues to encourage its customers to utilize the online and mobile portal called 'SmartHub.' Customers frequently report outages and communicate concerns via SmartHub, and much of the feedback received following events is the result of direct replies to SmartHub notifications, an encouraging sign that many customers are looking to it as their primary source of information regarding outage restoration.

Customers can also monitor restorations via the Company's online outage map, which is updated real time from OMS.

To increase public safety awareness, the Company conducted electrical safety training with various groups during the year. Demonstrations were provided for members of the local university community and the general public.

The Company maintains effective information exchange with county EMA officials and coordinates response to local emergencies as needed.

**c. Outage Restoration and Storm Response Best Practices Implemented and/or Identified for Future Implementation**

The Company participates in various statewide and national industry organizations, including the PA Best Practices Team. It will continue monitoring the findings and recommendations of these groups and will implement them where appropriate.

**G. ASAI (Average Service Availability Index)**

**a. Small EDCs provide ASAI for one of the worst circuits.**

The worst performing circuit during 2018 was the Rt. 15 circuit, fed from the Saint Mary Street substation. It had an annualized ASAI of 0.99951. Because this circuit is one of the Company's longest, it has correspondingly greater exposure to outages. There are no known issues unique to this circuit, but the Company will continue monitoring to identify opportunities to improve availability.

**Conclusion**

The Company believes it is ready and well-positioned for the coming summer storm season. Through the application of the above initiatives, safety, reliability and customer satisfaction will be maintained throughout 2019.