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CY 2022 ELECTRIC UTILITY SERVICE QUALITY REPORT UNDER 16 TAC§ 25.81	§ § §	PUBLIC UTILITY COMMISSION OF TEXAS

SOUTHWESTERN PUBLIC SERVICE COMPANY'S REPORT IN RESPONSE TO THE COMMISSION'S DECEMBER 14, 2023 ORDER IN DOCKET NO. 55614

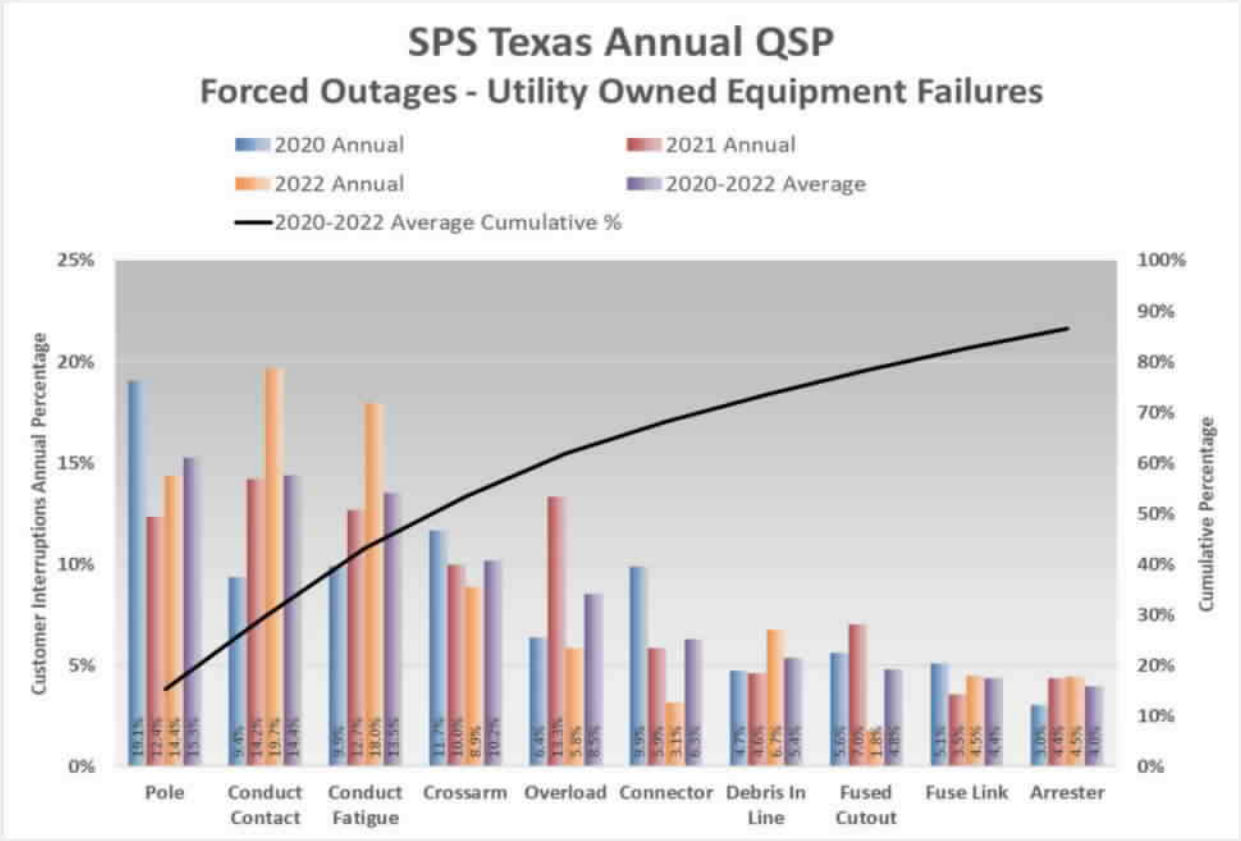
On December 14, 2023, in Docket No. 55614, *Settlement Agreement and Report to the Commission Regarding Southwestern Public Service Company's Violations of 16 TAC § 25.52, Related to Reliability and Continuity of Service for 2020 and 2021*, the Commission issued an Order directing Southwestern Public Service Company ("SPS") to take certain actions related to Electric Service Quality ("Order"). Ordering Paragraph Number 6 of the Order directed SPS to provide additional reporting, filed in the instant docket, related to its distribution feeder electric service quality performance. Specifically, the report must analyze SPS's forced outages in Texas since 2020 attributed to utility-owned equipment, including an analysis of the efficacy of SPS's efforts since 2020 to prevent additional forced outages on SPS's distribution system and an identification of what additional efforts might reduce the frequency of forced outages caused by utility-owned equipment. SPS now provides the following report, which is timely filed no later than December 15, 2023, as required by the Order.

REPORT OF SOUTHWESTERN PUBLIC SERVICE COMPANY AS REQUIRED BY ORDER IN PUC DOCKET NO. 55614

Forced Outages Attributed to Utility-Owned Equipment Failures

Graph 1 below illustrates SPS forced outages attributed to utility-owned equipment for reporting years 2020 to 2022, and specifically reflects the top ten types of failures that contributed to the most Customer Minutes Out (CMO) during this period.

Graph 1



Total forced outages attributed to utility-owned equipment, as compared to total forced outages of all causes, increased slightly from 56.1% to 59.2% during the period 2020 to 2022. As reflected in Graph 2 below, however, this observed increase correlates with an increase in weather-related failures experienced during extreme weather events during the analyzed period. Accordingly, the efforts SPS details herein that it has taken since 2020, and

will continue to take going forward, to reduce forced outages attributed to utility-owned equipment must be considered in context with the impact extreme weather had on forced outages during the analyzed period.

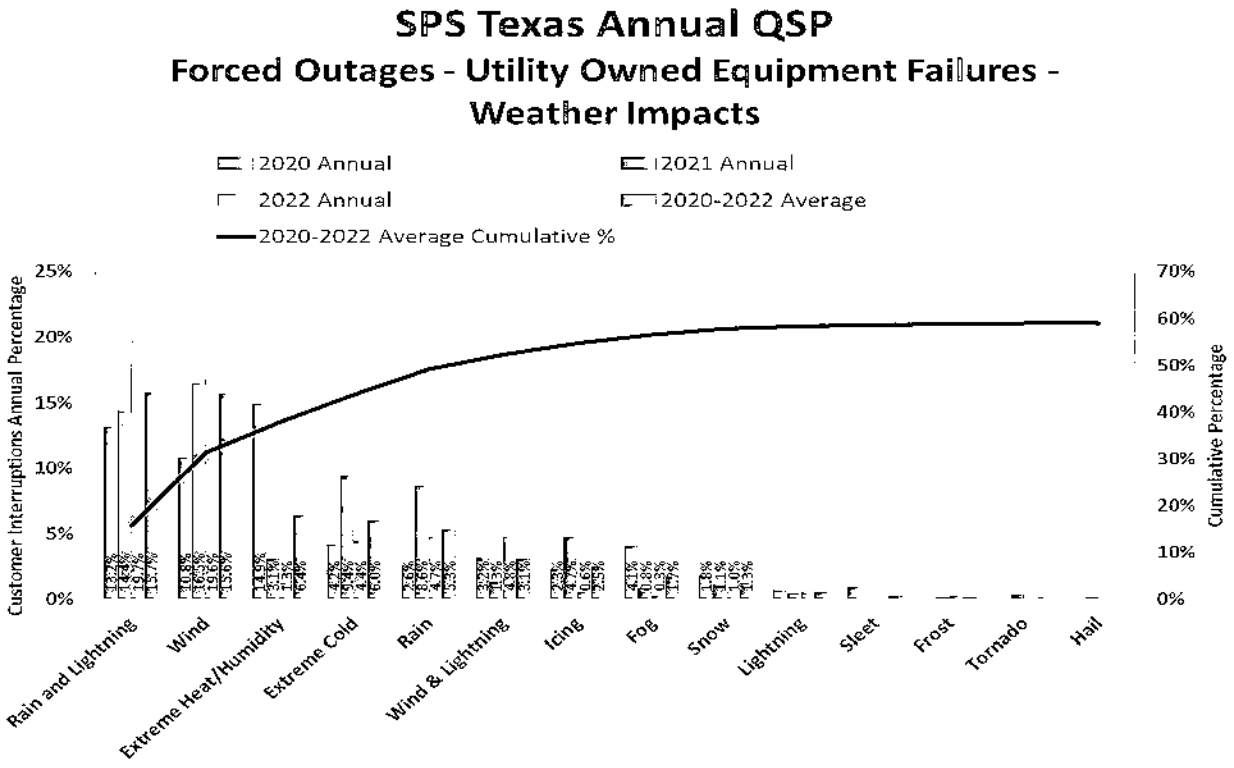
Weather-related impacts

SPS's service territory in the Texas Panhandle and South Plains region is susceptible to extreme weather events and high wind speeds, resulting in conditions that can increase the number of forced outages attributed to utility-owned equipment. For example, weather factors such as ice and wind can combine to produce failures of poles and conductor supports. High winds can also create galloping conductors, conductor contacts, debris in line, downed conductors, broken crossarms, and other outage causes and impacts.

For the years 2020 to 2022, SPS experienced an average of 59% of its utility-owned equipment failures during weather-impacted events, where conditions were reported as other than "Fair." Of the weather-impacted events recorded during the analyzed period, 86.8% had one or more forced outage attributed to pole failures, 72.3% had one or more forced outage attributed to conductor contacts, 65.5% had one or more forced outage attributed to debris in line outages, 57.1% had one or more forced outage attributed to crossarm failures, and 44.2% had one or more forced outage attributed to conductor fatigue.

Graph 2 below illustrates the different types of weather events that resulted in forced outages attributed to utility-owned equipment between 2020 and 2022, and reflects that the number of weather events with recorded forced outages increased during the analyzed period.

Graph 2



Top causes of forced outages attributed to utility-owned equipment

As reflected in Graph 1 above and detailed below, the four most frequent utility-owned equipment failures associated with a forced outage during the analyzed time period were pole failure, conductor contact, conductor fatigue, and crossarm failure.

Pole Failure

Pole failures were the largest contributor to CMO for utility-owned equipment failures in the period 2020 to 2022. To help address this issue, SPS has prioritized its pole inspection program and pole replacements. Since 2020, approximately $40.6M has been invested in 7,930 wooden pole replacements. Regularly inspecting the health of poles is a crucial element in asset health management, because wooden poles decay with time and

exposure to elements and wildlife. To manage pole health, SPS's Distribution Operations conducts frequent assessments and maintains a continuing pole replacement schedule. To further reduce outages related to pole failures, SPS's distribution construction standards were upgraded from Grade C to Grade B in 2014 for all new and rebuilt construction—Grade B is approximately 50% stronger for pole class strength and 50% stronger for guy strength than Grade C.

Conductor Contact / Fatigue

SPS's distribution system consists of 93% overhead lines and 7% underground lines. SPS's service territory also contains large open areas with high wind conditions, crosswinds, and lengthy overhead spans. These conditions make conductors more susceptible to galloping and contact, which can lead to overall fatigue. Weather conditions not only affect conductors but can affect wooden pole integrity, which support conductors. To help address conductor failure, SPS has a multi-year, capital project plan in place that involves making additional investment to replace certain types of conductors that have been identified as being particularly prone to failure.

Crossarm Failure

Crossarms are the fourth largest contributor to CMO for utility-owned equipment failures. SPS transitioned to a fiberglass crossarm standard approximately 10 years ago and has had improvements in crossarm failure rates as a result. Prior to this transition, wooden crossarms were standard, and like wooden poles the crossarms were susceptible to weather degradation and weakening over time. Crossarms can also fail due to changes in conductor tensions driven by galloping cables, excessive cable sags, damaged poles, and more. Fiberglass crossarms, being stronger and resistant to degradation, are now utilized for Grade

B construction standards. In Texas approximately 21,000 crossarms were replaced by SPS between 2020 and 2022.

Efforts to Improve Operational Performance

SPS has implemented and will continue to implement an array of initiatives and efforts to improve the performance of utility-owned equipment so as to reduce forced outages. Detailed below are a number of efforts by SPS intended to help address the forced outages observed during the analyzed period in this report and reduce the number of such outages going forward.

Routine Rebuild Program

The routine rebuild program was developed to identify system degradation prior to an outage being incurred by our customers. In 2017, dedicated patrols were implemented to review all feeder lines. The patrols were then expanded to include all taps in 2019. The second cycle of feeder patrols and first cycle of all distribution lines was completed in the first quarter of 2022. Moving forward, the intent is to completely patrol every circuit in the distribution system every five years. Corrective actions will follow the patrols in a timely manner, based on the priority of the degradation detected.

Wood Pole Inspection & Replacement Program

The Wood Pole Inspection and Treatment Program at SPS provides for a ground line inspection and remedial protective treatment for wood distribution and transmission poles. Wood poles are on a rotating cycle for inspection, with all wood poles receiving a visual inspection and poles older than 15 years old receiving an invasive ground line inspection, assessment, and remedial treatment to arrest any existing deterioration and prevent future damage from insects and fungi. Poles receiving an invasive inspection are assessed for remaining strength in the ground line region of the pole using a software program to

calculate the remaining pole strength from measurements of the pole and any defects. Each pole is classified as compliant with or not compliant with National Electric Safety Code (NESC) guidelines. Poles found to be compliant with the NESC guidelines receive remedial treatments and remain in service. Poles found to be not compliant with the NESC guidelines are prioritized for either replacement with Grade B construction or for ground line reinforcement to bring the pole into compliance with the NESC guidelines. Because pole failures contributed to the largest amount of CMO since 2020, pole inspections have played and will continue to play an important part in identifying and mitigating pole failures.

Vegetation Management

SPS's has a vegetation management program to help ensure that vegetation near SPS distribution facilities is maintained in a manner that minimizes the risk of interference with the safe operation of its electric facilities. Trees are a major contributor to service interruptions nationwide—this can either be due to physically damaging facilities or becoming a short-circuit path for electricity. Adequate vegetation clearance from the conductor must be achieved to mitigate tree hazards to prevent interruptions of the electric service for the duration of the targeted maintenance cycle. Vegetation management helps mitigate debris in line and conductor contact events, which reduces CMO impact.

Feeder Performance Improvement Program (FPIP)

The FPIP program is designed to identify the worst performing feeders within SPS's service territory to create capital projects for improving system reliability. On an annual basis, SPS, along with the other Xcel Energy operating companies, will compile a list of distribution feeders and rank based on multiple reliability metrics. The feeders are evaluated, and projects are created to improve the reliability of the feeder. SAIDI, SAIFI,

CMO, and CEMI are the criteria used to rank the feeder's performance. Projects are created annually and constructed before summer, which is peak loading season.

Capacity Planning Projects

SPS continually evaluates planning and improvement projects, which are designed to mitigate potential overload of conductors and transformers. Through this effort, power quality issues due to voltage drop are addressed. Projects are evaluated and initiated to install equipment to provide voltage support, upgrade conductors to a higher ampacity rating to reduce voltage drop and increase capacity, ensure adequate feeder ties to support load movement, and install additional distribution substation transformers. These capacity planning projects help reduce CMO through proactive avoidance of equipment overloads.

Fault Location Isolation and Service Restoration (FLISR)

FLISR is an application that utilizes field equipment and an accurate real-time model to locate faults, isolate the faulted section and restore service where possible. The intent is to build an automated system of feeders that enhances customer reliability, improves control center operations, and reduces outage patrol times. SPS currently uses an open loop scheme where an operator is involved in the review of switching execution. Xcel Energy, SPS's parent company, has a corporate goal to implement a closed loop scheme (no operator needed) across all operating companies by 2030. Implementation of FLISR in SPS is expected to be functional by 2024.

Implementing FLISR will allow SPS to restore power more efficiently to customers with the use of fewer resources and will improve customer's outage experience. Specifically, if there is a fault on a feeder that is automated with FLISR, SPS will be able reduce the number of customers who experience a sustained outage and will shorten the

duration of certain sustained outages that affect a substantial portion of our customers.

Cutout Mounted Reclosers (Trip Savers II)

Cutout mounted reclosers are a catch-all term for single-phase automated reclosing device that are typically mounted in fuse cutouts. A Trip Saver II device is a unique single-phase, electronically controlled, cutout mounted recloser unit that can be programmed with time curves allowing it to emulate traditional reclosers or fuses. These devices are capable of multiple reclose attempts to clear downstream faults. SPS utilizes Trip Savers mainly on rural taps with a history of momentary outages or outages without well-established causes. Areas with vegetation or wildlife issues are also common candidates for the implementation of these devices. SPS is currently working on a wider deployment of the Trip Saver cut out mounted recloser to help improve performance.

Conclusion

SPS appreciates the priority the Commission places on ensuring the reliability of transmission and distribution systems in Texas. SPS remains committed to providing its customers with continued quality and reliable service. As identified in this report, SPS continues to take steps through capital improvements, equipment inspection and replacement programs, and technological advancements to improve its performance. SPS is available as needed to provide further information to the Commission regarding the data and efforts detailed herein.