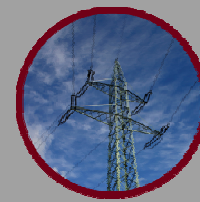




Public Utilities
Commission



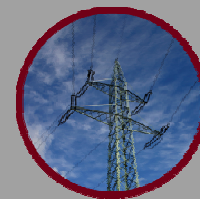
Welcome to the **Reliability and Service Analysis Division** (RSAD)

To develop and enforce service reliability and consumer protection policies and rules for gas, water, electric, and telephone services.

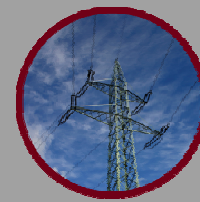
Y. Laketa Cole, Chief of Division
Pete Baker, Section Chief (Non Competitive)
Duane Roberts, Utility Specialist



Public Utilities
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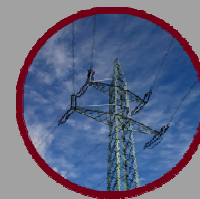
Electric Service Reliability Measurements, Standards, and Reporting



The PUCO measures reliability using SAIFI and CAIDI

- SAIFI represents the average number of interruptions per customer
- CAIDI represents the average time to restore service to interrupted customers
- SAIFI and CAIDI calculations are based on sustained interruptions, which involve a complete loss of power for over five minutes
- SAIFI and CAIDI calculations exclude data for major events and transmission outages

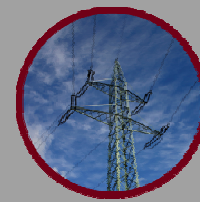




The PUCO has established reliability standards for SAIFI and CAIDI performance

- Each electric utility has different standards
- Standards are based on:
 - Historical system performance
 - System design
 - Technological advancements
 - Service area geography,
 - Customer perception surveys, and
 - Other relevant factors

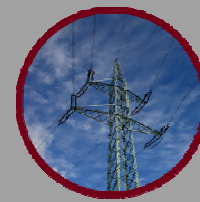




Reliability Surveys

- Each electric utility is required to conduct periodic survey to measure customers' reliability perceptions and expectations - Rule: 4901:01-10-10
- The survey is paid for by the utility, and is developed and conducted under Staff supervision

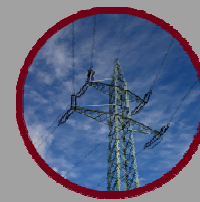




The PUCO has a formal process for establishing reliability standards

- The electric utility must file its application in a formal docket. The application must include:
 - A methodology for establishing reliability standards
 - The proposed standards resulting from that methodology
 - Justification supporting the proposed standard
- The legal process includes the following steps:
 - A technical conference is convened to explain the utility's application
 - Interested parties file comments on the application
 - Staff files comments on the application
 - Utilities and interested parties file reply comments
 - The commission may order a hearing
 - Interested parties may file a motion to intervene and participate in the hearing

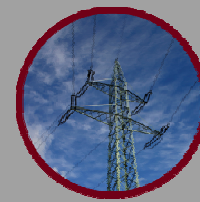




The PUCO requires each electric utility to file an annual report of its reliability performance

- The annual report must include the following information:
 - System-wide SAIFI and CAIDI performance for the year compared to the utility's standards
 - Separate data for the utility's performance during major events and transmission outages
 - Data supporting the above performance
 - Outage-by-cause data, including outages, customers interrupted, and customer minutes interrupted
- If the utility misses a standard, it must submit an action plan, which shall include:
 - The factors contributing to the miss
 - A proposal for improving performance to meet the standard, including each action and its planned completion date



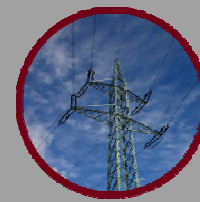


An EDU is in violation if it misses the same performance standard two years in a row. (Rule: 4901:01-10-30)



- Sanctions for such a violation may include:
 - Corrective action to return to compliance
 - Restitution to customers
 - Fines up to \$10,000 per day
- Staff investigates each miss to determine what action to take
- Actions could range from no action at all to recommending the maximum fine

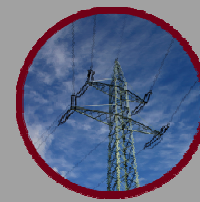




The PUCO also requires electric utilities to report their worst performing distribution circuits Rule: 4901:01-10-11

- Each utility's circuit-ranking methodology must be reviewed and accepted by staff
- Each utility must file an annual report of its eight-percent worst performing circuits. The annual report must include the following:
 - The circuit ID number, location, and number of customers
 - The circuit ranking value
 - The circuit's SAIFI, SAIDI, and CAIDI performance
 - The number of safety and reliability complaints
 - The number of critical customers on the circuit
 - A listing of circuit lock-outs with associated cause and duration
 - A listing of outages by cause with associated frequency and customer interruption minutes
 - Identification of major factors causing the circuit to be reported
 - An action plan to remove the circuit from the report within the next two reporting periods

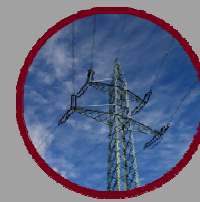




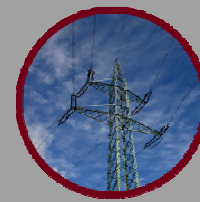
Worst Performing Circuits – Continued

- If the Staff believes an action plan is insufficient or unreasonable, it must provide a written rejection notice to the utility within 45 days (otherwise the action plan is deemed to be approved).
- If no agreement is reached within 30 days after the rejection notice, the utility shall apply to the Commission for a hearing
- If a circuit remains on the report for three consecutive years, this creates a rebuttable presumption that the rule has been violated





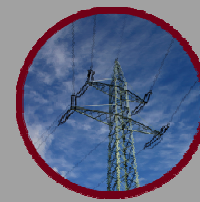
Electric Service Reliability Recording Interruptions



Ohio's electric utilities rely primarily on customer phone calls to register service interruptions

- If a circuit lockout occurs and there is SCADA communication to the substation, the outage begins when the lockout occurred.
- If only part of the circuit is affected, or if there is no SCADA communication, the dispatcher will not be aware of the outage until customers report it. In this case the outage begins when the first customer submits a report – usually by phone.
- All Ohio electric utilities determine the number of customers affected based on customer outage reports and their relation to local interruption devices.
- Outages end when the fault is cleared and service to affected customers has been restored.

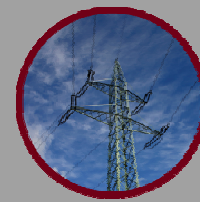




All of Ohio's EDUs have outage management systems that collect and record outage data used for calculating reliability performance

- Prior to 2002, all of Ohio's EDUs used a paper form driven outage management system. Line personnel used paper forms to document customer outages. This paper form system had numerous setbacks which caused the data collected to be unreliable.
 - Forms would get lost or line personnel would forget to turn them in.
 - Line personnel would estimate the outage start times and/or end times or forget to record these times.
 - Line personnel would estimate the number of customers out of service or forget to record this information.
 - Line personnel would input the wrong outage cause or just forget to record the cause.

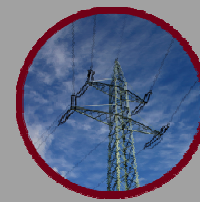




All of Ohio's EDUs have outage management systems that collect and record outage data used for calculating reliability performance - Continued

- After 2002, all of Ohio's EDUs used an automated outage management system. Line personnel either recorded the pertinent outage data into an electronic recording device located in their service vehicle or they would have direct communications with a dispatcher who would record the information directly into the outage management system.
 - No more forms to lose and no more forgetting to record pertinent outage data.
 - Via direct communications between the dispatcher and the line personnel recording of outage start times would match the start time recorded by SCADA or the time the first customer called to report the outage. The outage end times would be captured via the recording of the actual time of restoration input by the dispatcher through communications with the line personnel.
 - The automated outage management system would record the exact number of customers out of service based on the fault location and the nearest upstream fault device.
 - Via direct communications between the dispatcher and the line personnel known outage causes and estimations of outage restoration times can be recorded.





Verification of the accuracy of outage data recorded in the electric utilities' automated outage management systems.

- All of the electric utilities have teams of personnel including distribution line engineers, which analyze the accuracy of recorded outage data for up to 60 days after each outage has been restored. After 60 days, procedures require that the data is locked down in the automated system and no changes can be made to the data.
- PUCO RSAD Staff has performed random audits on the electric utilities' processes and procedures for the recording of, verifying the accuracy of, and reporting of outage data.

