

Pedernales Electric Cooperative Uses Predictive-Based Maintenance & Exacter to Make Big Impact on Reliability

Summary

- PEC saw a 22% reduction in outages related to equipment CMI the following year
- PEC's analysis determined it could have incurred 3.3 million Customer Minutes of Interruption (CMI) had they not performed this assessment
- PEC estimated the repairs eliminated a potential 12.2 SAIDI minutes

UTILITIES ARE IMPROVING RELIABILITIES & PREVENTING OUTAGES WITH DAVEY & EXACTER'S 360° ASSESSMENTS

Field Report & Mapping

Problem Condition Discovered by Exacter

205 customers impacted

Exacter Group Number	2
Pole ID	22-236-456
Feeder	7B22
Latitude	N 45.028419
Longitude	W 86.813578
Address	Rt. 29 Johnson Rd.
City	Bellaire
State	MI
Finding 1	Transformer
Direction	Street Side
Location	Top Crossarm
Finding 2	
Direction	
Finding 3	
Direction	
Comments	

The Power to Deliver a Complete 360° View of Your Assets' Health Includes:

- Visual Inspection Data
- IR Inspection Data
- Exacter Vision Analytics Data

This program provides the industry's most comprehensive grid health assessment. Find out how utilities are preventing power outages, lowering their customer minutes of interruption, and reducing SAIDI using this approach.



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Electric utilities routinely measure success on reliability, determined by limiting downtime for customers. Equipment replacement generally occurs only when it has reached its maximum years of service or after it has caused an outage. But Pedernales Electric Cooperative (PEC), located deep in the heart of Texas, is striving for a new approach to making a greater impact on reliability.

"We've been able to put a team into the field that looks for things we cannot see and listens for things we cannot hear," said J.P. Donley, PEC's Director of System Maintenance Engineering and Energy Innovations Department.

"Notably, repairs were needed an average of every 5.5 miles, and lightning arresters alone accounted for nearly 30 percent of the work."

Donley worked with Davey Resource Group (DRG), which performed a full-system analysis of historical data to identify outages caused by failing equipment. Upon determining the historically worst-performing divisions throughout PEC's system, DRG began a pilot program, conducting scans along more than 700 line miles of three phase main line.

These inspections, which included infrared scans and Exacter predictive analytics, pinpointed equipment with problematic conditions that required timely attention, particularly those in early-or-late-stage failure—totaling 128 components. Notably, repairs were needed an average of every 5.5 miles, and lightning arresters alone accounted for nearly 30 percent of the work.

Each piece of equipment was prioritized for maintenance by DRG's criticality measure, which applies a customer impact number to each location, pinpointed using PEC's GIS connectivity data. This analysis determined that if all 128 components had failed, PEC would have incurred 3.3 million Customer Minutes of Interruption, or CMI—equating to a System Average Interruption Duration Index (SAIDI) rate of more than 12.3 minutes.

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In the year since repairs were complete in early Spring 2016, PEC has seen a CMI

reduction of 22 percent on outages related to overhead equipment across the entire distribution system. In particular, the area of the pilot program experienced a 15 percent improvement one year after repairs were completed.

Overall, the total system CMI related to equipment improved by 24 percent. To note, events caused by faulty arresters increased by 24 percent, but this is suspected to be due to end-of-life issues of equipment installed a decade ago. With this in mind, the DRG program continues to be valuable as findings from Exacter and infrared scans immediately bring matters to PEC's attention that must be addressed.

With the new predictive approach, the cooperative can rely on valuable reports that flag specific components before catastrophic failure or outage occurs. The data included precise GPS locations, maps and images of each noted piece of equipment, helping to further improve the overall efficiency of its maintenance program. By knowing exactly where to go for repairs, crews can address vulnerable equipment during normal business hours rather than being dispatched after hours to areas where failure occurred.

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"We adopted a very non-traditional approach for our staff and linemen, who were used to driving down the road and looking at every piece of equipment," Donley said. "DRG's asset health assessment with Exacter did the work for them."

PEC's operations team also experienced a change of their perception of how they define worst performing circuits—determining performance not just on total outages, but more specifically on customer impact, focused on member concentration.

"With the pilot complete and proven successful, other circuits are now being reviewed," Donley said.

"Overall, we are very pleased with the outcome," stated Donley. "This gives us a predictive tool to use that impacts the vast portion of our territory in a short period of time."