The three Ps of outage management: Prevention, prediction, and proactive communication

By Sara Patnaude

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Utilities are faced with increasing pressure to cut costs while maintaining reliability and reducing risk. Most still approach age-old problems with tried-and-true solutions. They trim vegetation on a set schedule, they address gas-leak issues only when they become a problem, and they don't plan proactively for predicted storms and their potential impacts.

Traditional risk management approaches now have risk managers scrambling, mainly because of climate change and the severe weather it's unleashing. Utilities can't afford to keep doing what they've always done.

The good news is through data science and machine learning, there's a better way to get ahead of outages and manage risk. We call it the three Ps of outage management: prevention, prediction, and proactive communication.

Check out our recorded webinar, where data science expert Tom Martin covered how E Source can help your utility reduce operating costs and improve grid reliability through better vegetation management.

Watch the recording

Prevent vegetation-induced outages

Managing vegetation and tree growth around power lines is an important utility responsibility. It plays a critical role in mitigating fire hazards and ensuring grid reliability, but it's costly when done inefficiently.

How E Source can help with outage management

Fill out this short form to start a conversation about your needs and how we can help.

Traditionally, utilities have handled vegetation management with a recurring schedule. This has worked well enough, but that was before advances in predictive data science. It's inefficient to treat all areas of the grid as equal in terms of vegetation management. Now, we have the technologies to reevaluate traditional approaches to vegetation management through granular data analysis, which will help utilities achieve operational efficiencies and save money.

Our vegetation management module displays a view from above, representing individual trees mapped onto the grid. By combining methodologies from environmental science, forestry, statistics, and computer science with historical utility data such as outage records, asset types, maintenance and inspection records, and lidar scans, our AI and machine learning models calculate a vegetation risk score. With this score, you can better prioritize vegetation management to the most at-risk areas. Budget planners can also use our risk scores and propensity models to forecast the effects of initiatives like spraying a certain herbicide or postponing the removal of hazard trees.

E Source Data Science case study

Recently, a Midwest utility was planning its midcycle tree-trimming work. With our analysis, we found that 28% of the predicted outage duration was being created by only 4% of the utility's high-risk areas. By targeting only the highest-risk areas, the utility reduced its targeted trim miles by almost 80%—from 800 to 180 circuit miles—while simultaneously improving overall grid reliability.

Predict storm impacts to better allocate resources

In the most extreme storm events, a utility's storm-response team is tasked with appropriately allocating resources before the storm. They need to predict how many crews to send out, where to send them, and whether other utilities might need mutual aid.

> **With our storm prediction models, E Source Data Science helped a Southern utility improve its outage prediction accuracy by 30% three days in advance of storms.**

But predicting the number of expected outages and the resources needed to restore power is extraordinarily

difficult. Weather forecasts are complex, and the interaction with vegetation and utility infrastructure plays a huge factor in outage predictions. But E Source can help.

Our storm outage model is a real-time, data-driven outage prediction system that determines when and where outages will occur. Our modeling approach is comprehensive, collaborative, and configured specifically to the utility.

E Source Data Science builds a model on data that incorporates the relative risk from vegetation, infrastructure, terrain, geography, and inspection history and integrates it with high-resolution numerical weather prediction models. This delivers a more accurate prediction of hourly, location-specific outages up to 24 hours before storm impact.

E Source Data Science case study

With our storm prediction models, we helped a Southern utility improve its outage prediction accuracy by 30% three days in advance of storms during hurricane season. The utility was also able to put the right levels of staffing in place, secure or deploy mutual aid, and implement a data-driven response plan. This accuracy prompted the utility's leadership to deploy the data science model at its other operating companies to support storm readiness and operations at an enterprise level.

Read more in our blog Utility risk management: Why "the way we've always done it" is now the riskier approach.

Proactively communicate to improve the customer experience

Even with the advances in data science, outages will still occur. You need to have solid plans in place to provide customers with the best experience. During outages, customers want proactive, clear, and frequent updates so they can work around the outage. Put together a plan for:

- How quickly you'll notify customers
- How often you'll provide updates
- What information you'll include

> **Proactive communication is the most effective way to reduce strain on the contact center during an outage while also easing customer concerns.**

Proactive communication is the most effective way to reduce strain on the contact center during an outage while also easing customer concerns. The best way to accomplish this is by streamlining your internal

systems, processes, and communications—for example, using an outage management system (OMS). Doing so will help you give customers faster, more-accurate, and more-frequent updates during unplanned outages.

The City of Palo Alto Utilities (CPAU) uses an OMS to share updates with customers and the media. When large outages happen, the operator team—in conjunction with the OMS—sends outage information via text message and email to a distribution list that includes the utility's communications manager and key account reps. Customer service reps also receive updates and follow progress via CPAU's outage map to keep customers informed of restoration efforts. And the communications manager updates social media accounts and the website during and after all outage incidents.

Earlier this year, we looked through the E Source Website Benchmark and reviewed eight utilities' websites at random to learn which channels they use to notify customers about an outage and what information they provide.

Channels and content of eight utilities' public-facing outage alert websites

Utility	Text message	Email	Phone call	Expected time of restoration	Status update	Cause	Notice of restoration	Lets users exclude time periods for receiving alerts
Alabama Power	✔	✔	✔	✔	✔	✔	✔	✔
Alliant Energy	✔	✔	✔	✔	✔		✔	✔
ComEd	✔	✔	✔	✔	✔		✔	
FPL	✔	✔	✔	✔	✔		✔	✔
Hydro One	✔	✔		✔	✔	✔	✔	✔
MidAmerican Energy	✔	✔		✔	✔		✔	
PSEG Long Island	✔	✔	✔	✔	✔		✔	
WPS	✔	✔		✔	✔	✔	✔	

If you subscribe to the E Source Corporate Communications Service or Digital Self-Service, you can read more about this data in our report The essentials for communicating about unplanned and planned outages.
