How Hurricane Idalia can inspire utilities to take a data-driven approach to outage prediction

By Kyle Decker
October 19, 2023

How Hurricane Idalia can inspire utilities to take a data-driven approach to outage prediction

Late this summer, the Southeast US was hit by Hurricane Idalia, a Category 4 hurricane that caused significant damage for nearly a week. Idalia wasn't the first storm of its size to strike in 2023. In fact, it was the *10th* tropical storm (so far) and the second major hurricane of the 2023 Atlantic hurricane season. And almost immediately following Idalia was the third major hurricane, Hurricane Lee, in mid-September.

Take inspiration from Hurricane Idalia. Proactively plan for the next storm with reliable outage forecasts.

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

If it feels as though we're getting hit by hurricanes more frequently than before, that's because we *aren't*. Wait—what? Let me explain. Hurricanes (and the destruction they leave behind) feel as though they're becoming more common and frequent in the US, according to the NPR article Why hurricanes feel like they're getting more frequent but the *number* of hurricanes isn't necessarily increasing. The *strength* of the storms we're getting is, and it feels as though we're getting bombarded because smaller scale storms are what are actually occurring more than ever. And that's becoming a problem.

While most utilities are well prepared for hurricanes like Idalia, they still fall short for the other frequent bad weather days that take place year-round. During these harder-to-predict storms, reliability is at risk and utilities end up working harder to resolve outages. Talk about death by a thousand cuts.

This is why utilities should take inspiration from storms like Idalia. While not every storm is an "all hands on deck" situation, utilities should expect the same level of prediction accuracy year-round. They

can achieve this by implementing a data-driven solution that will make sure teams are ready to take on the challenges that come with storms.

With a storm comes a breadth of challenges

There's no doubt about it: storms wreak havoc. A storm causes a ripple effect of strain on multiple utility departments. Customers turn to their utility's contact center immediately to inquire about restoration times and further assistance, expecting help and quick turnaround times.

And storms routinely damage electrical power distribution infrastructure, causing outages that can range from minor disruptions to severe structural damage. Basic crews can usually handle the damage of minor storms, severe weather events increase outages and require additional teams for timely restoration.

E Source Storm Insight: An intuitive, visual tool

With this solution, you can:

- Pan, zoom, and view aggregated information at varying resolutions and system levels
- Set predicted outage thresholds to automatically trigger notifications and visual warnings
- Give your storm-response teams access to distribution system outage predictions up to five days before a storm event
- View outage-prediction trends

Utilities do their best to prepare for storms, allocating resources in advance or seeking mutual aid. But accurately predicting outage numbers and required resources is exceptionally challenging due to complex weather forecasts and interactions with vegetation and infrastructure. Luckily, data-driven outage prediction exists and the advancements in data science can help utilities stay ahead of storms—three to five days ahead—to be more exact.

Accurately predict storm-induced outages and mobilize crews

The E Source Storm Insight solution's storm-outage model is a real-time, data-driven, outage-prediction system that uses a mechanistic approach to model when and where outages will occur. The modeling approach is comprehensive, collaborative, and configured specifically to the utility to build each of the fundamental mechanisms for outage risk into the data-driven model.

Rather than relying on weather forecasts alone, Storm Insight builds a model on data that incorporates the relative risk from vegetation, various infrastructure types and conditions, terrain, geography, and inspection history before integrating high-resolution numerical weather prediction model outputs. The model forecasts weather and nonweather causes for a more accurate and reliable total outage prediction (**figure 1**). This approach predicts expected daily system-wide outages up to five days before storm impact and hourly location-specific outages up to 24 hours before storm impact.

Figure 1: E Source Storm Insight outage dashboard

Storm Insight provides probabilistic outage and thread-level forecasts up to five days in advance of an

event with insights into aggregate forecasted weather conditions.



Storm Insight's comprehensive approach delivers a more accurate prediction of expected outages, which enhances utilities' ability to prepare for storms and make responsive decisions, leading to:

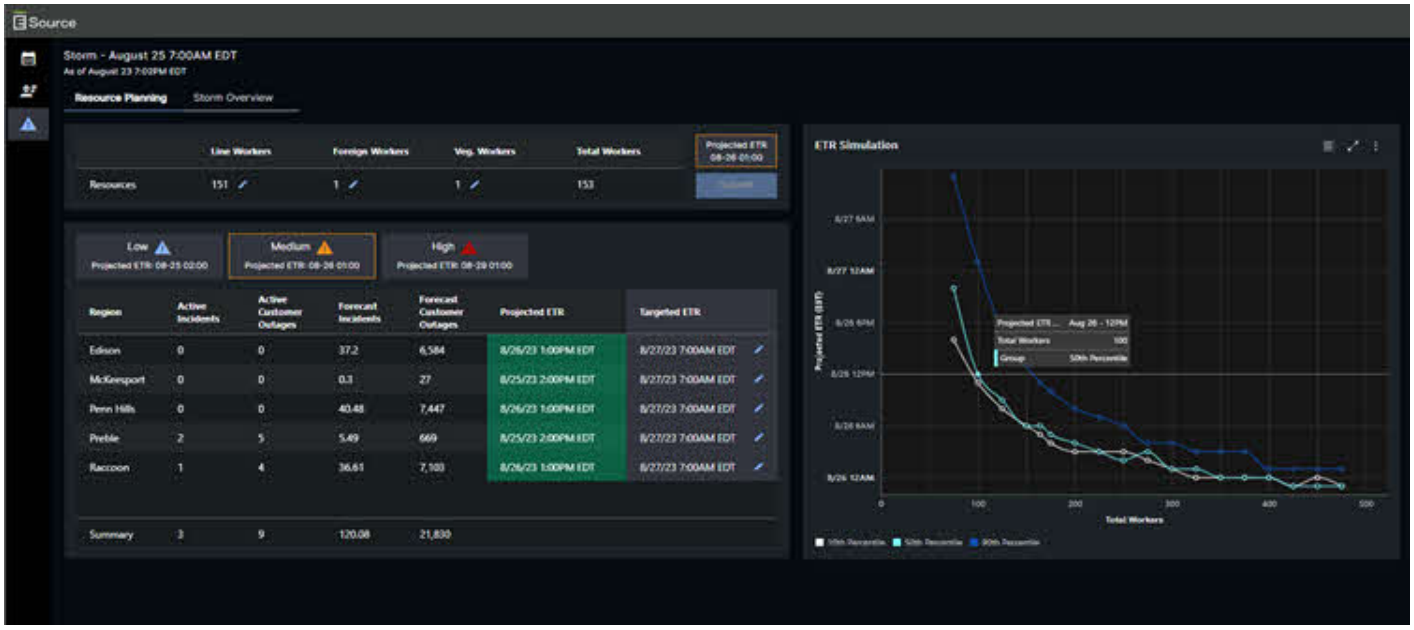
- Increased outage prediction accuracy by more than 20% three to five days ahead of a storm
- Coordinated crews and mutual assistance in advance, improving response time
- Improved outage prediction accuracy of more than 30% and a planned disaster response one day ahead of a storm
- Better planned crew sizes and decisions about when and where to send crews, reducing costs by 10% to 20%
- Lower prediction variability during a storm's prediction window

Be prepared for whatever Mother Nature throws at you

Better preparation and storm-response planning can improve reliability metrics, decrease costs associated with the inaccurate allocation of resources, and improve customer satisfaction through faster restoration times (**figure 2**). Even with the innate variability of the weather, Storm Insight visualizes your data along with our risk predictions, empowering you to prioritize recovery efforts in advance to maintain grid reliability and limit expenses.

Figure 2: E Source Storm Insight Estimated Time of Restoration

Storm Insight accounts for forecasted outages, enabling earlier and more accurate estimated time of restorations.



To learn even more about storm predictive analytics, check out our on-demand webinar [Storms are coming: The power of predictive analytics for storm response, restoration, and outage communications](#).

Effectively manage storm-related outages with Storm Insight

© 2008 - 2026 E Source Companies LLC. All rights reserved.
Distribution outside subscribing organizations limited by license.