FROM FORECAST TO FIELD: OPTIMIZING PSPS DECISION-MAKING

BY LIONEL BODIN, LOGIC20/20

Wildfires are lasting longer, spreading faster, and occurring under a wider range of conditions than in the past. In 2024, the United States recorded 64,848 wildfires that burned nearly 8.93 million acres, well above the 10-year average. As these fires advance ever closer to the wildland-urban interface (WUI) — where communities and forests meet — the scale of these events underscores the urgency of making defensible shutoff decisions.

Public safety power shutoffs (PSPS) are a critical but drastic tool, deployed only when risk rises beyond acceptable thresholds. Executing them in a way that is both defensible and minimally disruptive has become one of the defining challenges for utilities. Every PSPS decision draws scrutiny from regulators, communities, and customers — particularly those most vulnerable — who expect clear justification, transparency, and timely restoration.

While PSPS practices remain centered in the Western United States and parts of Canada, wildfire risk is expanding across North America, prompting utilities and regulators elsewhere to examine how shutoffs would fit into broader mitigation strategies. Beyond preventing ignitions, utilities are under pressure to show measurable progress in how they anticipate, justify, and recover from these events.

This article explores the PSPS lifecycle: anticipating risk before conditions deteriorate, acting decisively in emergency operations centers, communicating clearly with customers, and learning from each event through post-event reporting. Drawing on real-world utility projects, it highlights how predictive models, real-time decision tools, and streamlined reporting processes are helping utilities strengthen both their ability to respond in emergencies and their capacity to build long-term resilience, with data and accountability at the center.

FORECASTING RISK WITH PRECISION

Effective PSPS planning begins long before an emergency operations center (EOC) is activated. Utilities must establish a clear and defensible understanding of ignition risk: where it is most likely to occur, which assets are most vulnerable, and how those risks intersect with communities.

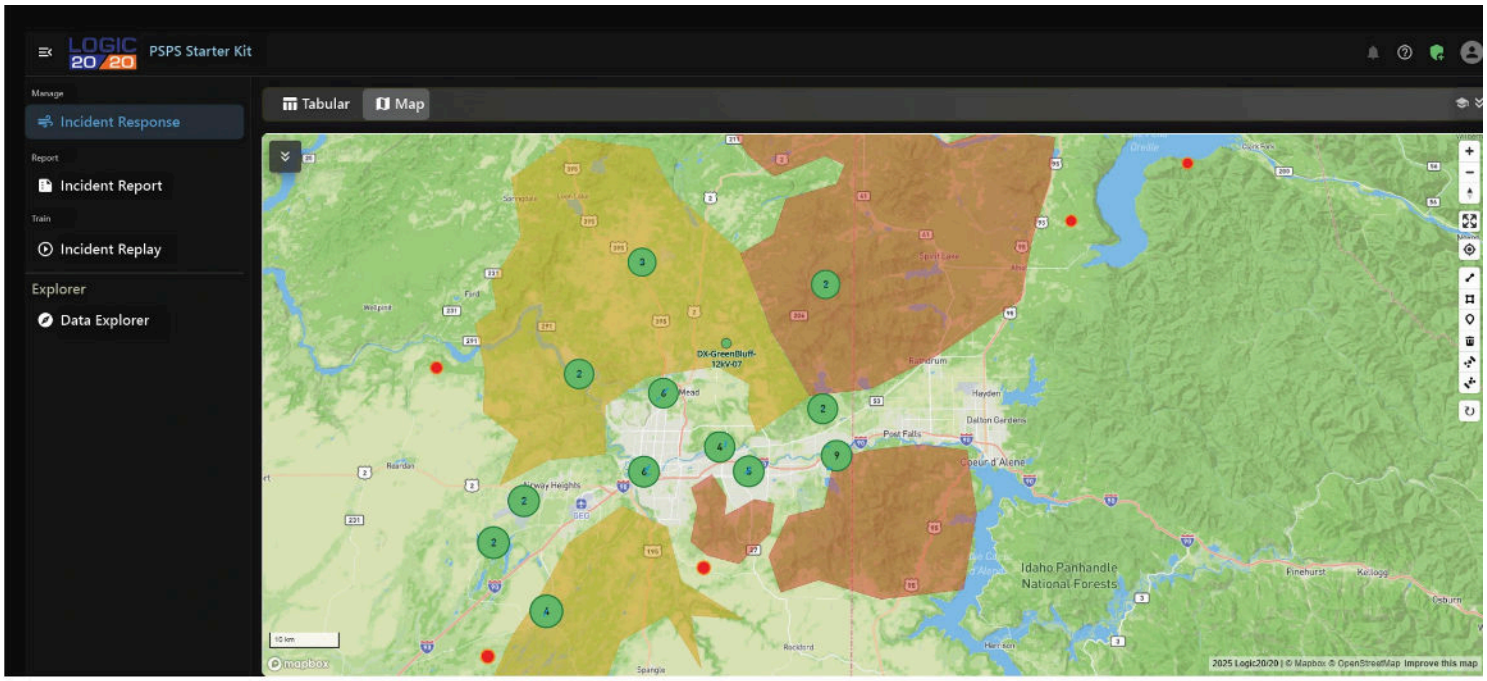
Achieving accurate risk awareness requires integrating data sources that are traditionally siloed — asset condition, vegetation encroachment, weather forecasts, historical fire activity, and even social vulnerability indices—into forecasting models that provide actionable intelligence.

For many utilities, developing accurate and timely risk forecasts remains a challenge. Risk awareness efforts often rely on manually staged data or processes that cannot keep pace with rapidly changing conditions. A model that takes a week to generate new predictions may be technically impressive, but it cannot deliver the speed required for operational decision-making in an environment where wind speed, humidity, and fire danger indices shift by the hour.

One West Coast utility faced precisely this forecasting challenge. Its wildfire risk forecasts required seven days of manual processing, constraining their usefulness during high-risk periods. By automating data ingestion and building a scalable analytics environment, the utility was able to reduce forecast runtime to about 75 minutes. The model incorporates billions of data points from the latest weather and asset sources, producing comprehensive daily outputs.
Forecasts integrate social vulnerability data, allowing decision-makers to understand not just where fires might ignite, but what the potential consequences could be for different communities.

These improvements enable the utility to publish analytics-ready wildfire risk predictions every day to a shared data platform accessible across the organization. The EOC can use this information immediately, rather than waiting a week for refreshed results. The shift has transformed risk awareness from a periodic exercise into a daily operational capability.

As this case study demonstrates, faster, deeper risk intelligence enables utilities to make PSPS planning both defensible and transparent. When operators can point to up-to-date, validated forecasts, they strengthen their ability to justify why a shutoff is necessary, which sections of the grid must be de-energized, and how long it may take to restore service. Regulators gain confidence that decisions are rooted in evidence,



Integrating weather, asset, and social vulnerability data into daily wildfire risk forecasts enables utilities to pinpoint ignition threats with precision and make PSPS decisions that are both defensible and transparent.

while communities benefit from the assurance that shutoffs are targeted, data-driven, and tied to real conditions on the ground.

As wildfire threats grow more complex, utilities that invest in predictive modeling capabilities position themselves not only to respond more effectively to immediate risks, but also to learn and adapt over time, establishing risk awareness as the foundation of PSPS strategies that earn trust and withstand scrutiny.

TURNING DATA INTO DECISIONS

When wildfire conditions deteriorate, the EOC becomes the hub of decision-making. Teams must evaluate shifting weather patterns, grid conditions, and community impacts in real time. The pace and complexity of these events leave little room for delays or fragmented information. If data lives in separate systems — or worse, on spreadsheets updated by hand — operators risk acting without the full picture.

Modernized EOCs are beginning to close these gaps by consolidating situational data into integrated platforms. Weather forecasts, SCADA device status, outage management system feeds, and customer impact models are now available via applications designed for emergency response. This integration ensures that operators do not just know where the wind is blowing, but also which customers will lose power if a specific feeder is de-energized and how critical facilities will be affected. The experience of one utility in the western United States illustrates the impact of this approach. Facing the challenge of assessing PSPS decisions across multiple wildfire risk zones, it deployed a segmentation tool that links feeder devices directly to customer accounts. Operators can instantly see which households, businesses, and vulnerable populations depend on the segment under consideration. Instead of toggling between OMS and GIS databases, the EOC has a single view that maps risk to customers in near real time.

The result is a more precise understanding of the consequences of each potential shutoff and a faster path to informed decisions. Of course, decisions are only as effective as the ability to execute them in the field. Utilities must balance data-driven insights with operational realities such as crew availability, vegetation clearance backlogs, and supply chain delays that can extend restoration timelines. Improved visibility also enhances coordination with first responders by ensuring fire crews, law enforcement, and emergency management partners have consistent, timely information about grid conditions and shutoff boundaries.

Training and preparedness also play a vital role. Utilities are experimenting with simulation environments that allow operators to rehearse activations before they happen. Digital twins of the grid and integrated training modes enable teams to test how different conditions would play out, improving coordination under pressure. These training-ready applications allow operators to rehearse activations in realistic environments, building familiarity with tools and processes before an actual event occurs. In one case, incorporating these capabilities into an operational application increased training efficiency by 30 percent while reducing the likelihood of errors during actual events.

Precision data in the EOC transforms PSPS from a blunt safety measure into a targeted intervention. When operators have a consolidated, real-time view of weather, assets, and community impacts, they can sectionalize with confidence, limiting the number of customers affected while still reducing wildfire

risk. While the complexity of EOC decision-making is largely invisible to the public, the outcomes are clear: smaller outage footprints, shorter disruptions, and stronger confidence in how utilities balance safety with reliability.

REACHING CUSTOMERS WHEN IT MATTERS MOST

PSPS events are judged not only by how they are executed, but also by how they are communicated. Customers judge PSPS communication by whether notifications are accurate, timely, and actionable. A well-targeted outage that is poorly communicated can cause more public frustration and regulatory exposure than a larger outage that was explained clearly.

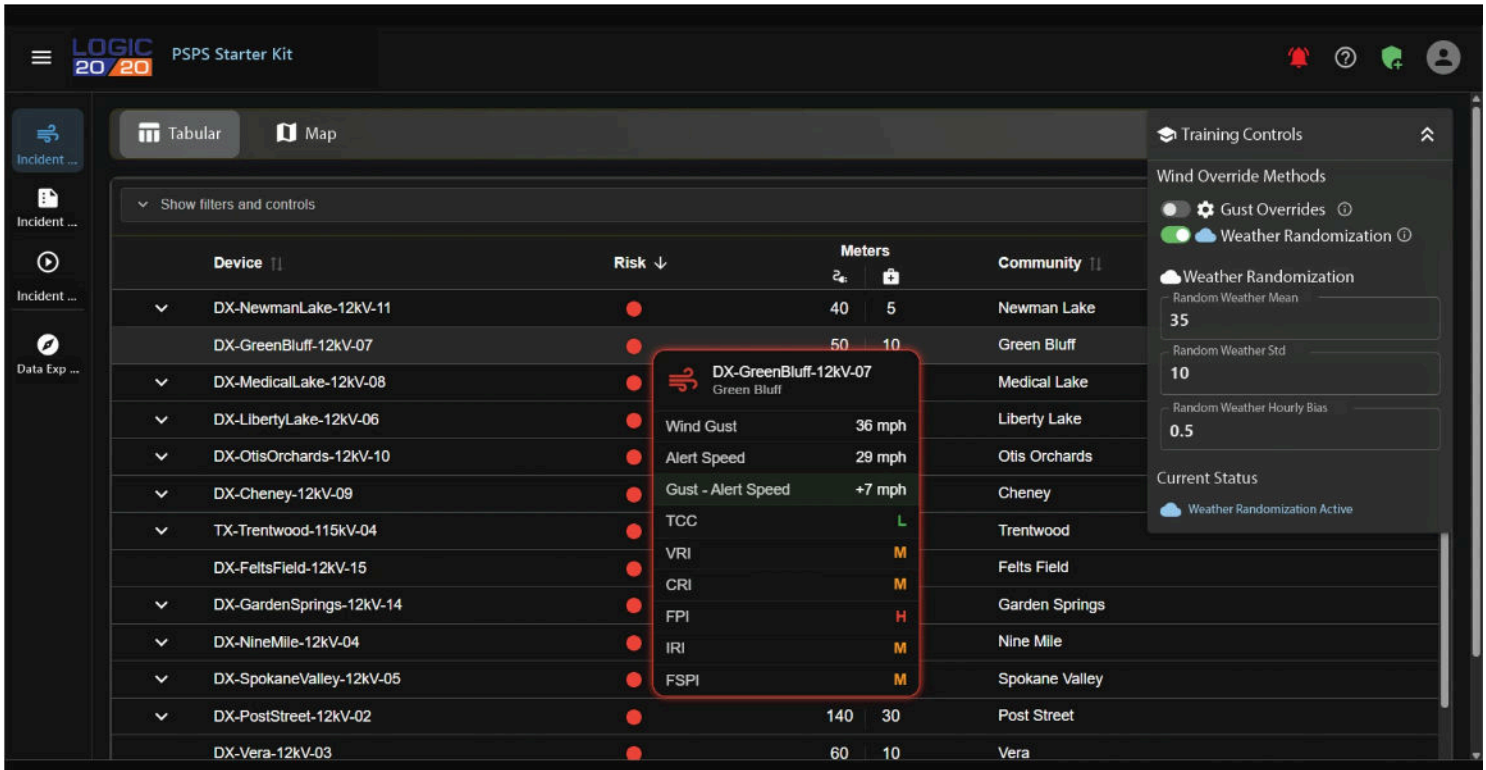
One utility in the western United States experienced significant challenges during a wildfire event when inaccurate notifications undermined customer confidence. Some households received repeated alerts, others received none at all, and restoration times proved unreliable. Regulators responded with fines and formal investigations, while customer trust suffered lasting damage.

For utilities, compliance alone is not enough. Regulators demand defensible reporting and communication standards, but customers measure success by whether they feel informed, protected, and supported. Trust, once lost, is harder to restore than regulatory approval, which is why utilities increasingly treat customer confidence as equal in importance to formal compliance.

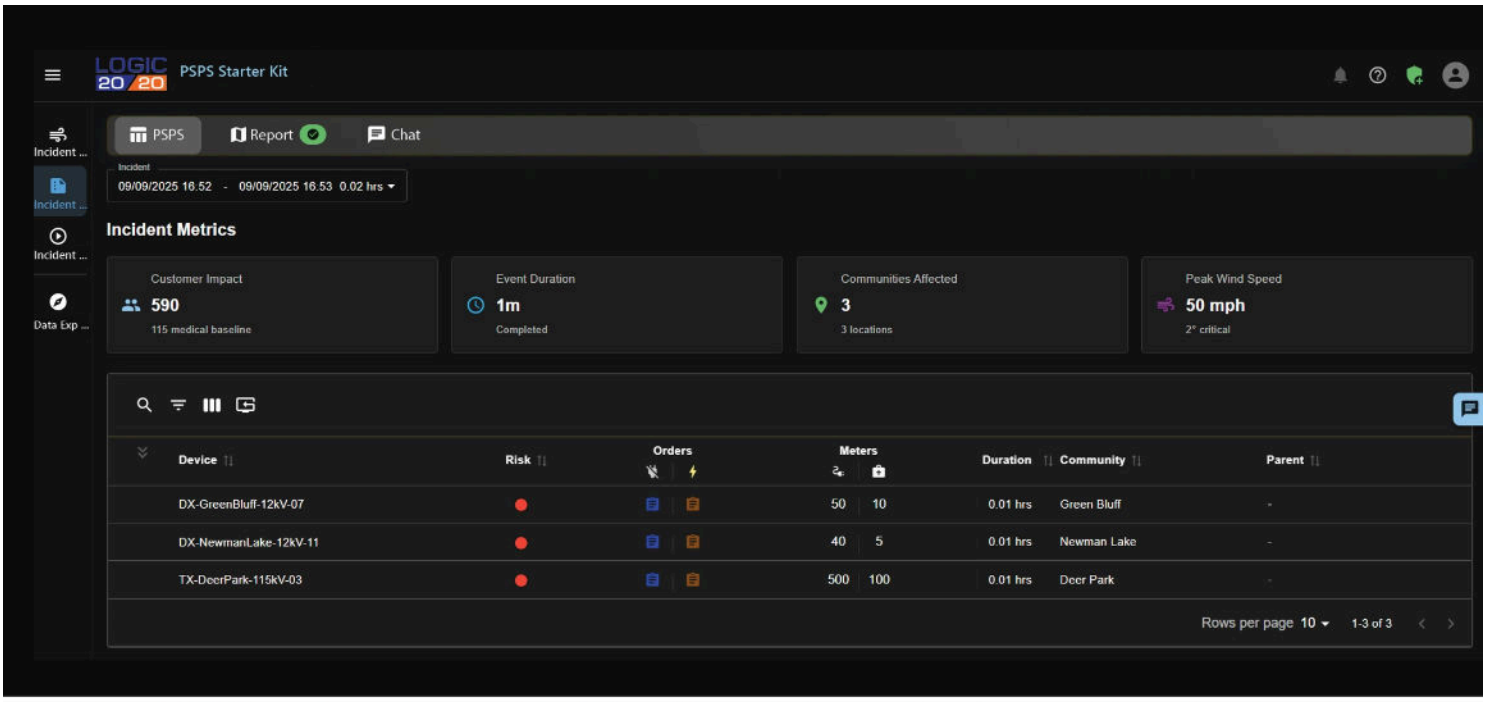
In the aftermath, the utility restructured its customer contact processes with an emphasis on precision, timeliness, and personalization. By integrating outage management and customer information systems, it now has a unified view that ties each feeder segment directly to the affected accounts. Notifications are delivered consistently across multiple channels—text, voice, email, and web portals—aligned with customer preferences. Rules are in place to prevent duplicate alerts and to suppress messages when restoration information is not yet reliable.

These changes yielded significant improvements. During subsequent PSPS activations, the utility delivers accurate, preference-based notifications to customers within minutes of decision-making. Critical facilities and medically dependent populations receive prioritized alerts, and customers have reported fewer redundant or confusing messages. Internally, the ability to consolidate messaging also reduces call center spikes, helping the utility manage resources during high-stress events.

This case underscores that effective PSPS communication requires delivering accurate, timely, and relevant messages to the customers who need them most. When utilities prioritize accuracy, consistency, and personalization, they not only meet regulatory requirements, but also reinforce public trust during one of the most visible and disruptive moments in grid operations.



A unified EOC application not only delivers real-time PSPS intelligence but also provides a training environment where operators can rehearse activations under realistic wildfire conditions.



Automated PSPS reporting captures event details in real time, reducing compliance burdens while creating a foundation for continuous learning and grid resilience.

FROM COMPLIANCE TO CONTINUOUS LEARNING

Every PSPS event concludes with a reporting requirement. Regulators expect detailed accounts of what happened: which circuits were de-energized, how many customers were affected, how long service remained off, and what steps were taken to protect vulnerable populations and critical facilities. In jurisdictions such as California, utilities must submit post-event reports on a fixed timeline, often within ten days of an activation. Meeting these requirements can be challenging when the necessary data is scattered across outage management systems, customer information platforms, and EOC decision logs.

Traditionally, preparing these reports has been a labor-intensive process. Teams pull information from multiple systems, verify accuracy across departments, and assemble documents that meet strict formatting and data requirements. The work is time consuming, and the pressure to meet regulatory deadlines can limit opportunities for deeper analysis or reflection.

AI-driven reporting can now capture required information as an event unfolds, from shutoff timing and circuit status to customer impacts. By centralizing this data within a single platform, utilities can replace labor-intensive manual collection with automated records that are accurate, consistent, and ready for reporting once the event concludes. This approach not only reduces the compliance burden, but also ensures that post-event reports are grounded in a complete operational record.

One utility recently piloted a new approach by implementing a cloud-based assistant to automate large portions of the post-event reporting workflow. The system draws from integrated operational data streams and generates draft content aligned with regulatory templates. Rather than spending weeks on manual work, teams can generate a defensible report in days. The automation also captures a more consistent record of decisions and actions taken during the event, creating a foundation for faster internal reviews and deeper understanding.

The benefits went beyond compliance. By reducing the manual burden of compiling reports, staffers gain more time to focus on analyzing outcomes and identifying improvements for future activations. Leaders can review trends across multiple events — such as how long it took to restore certain circuits or how effectively customer notifications aligned with de-energization timelines — and use that information to refine both operational processes and long-term mitigation strategies. With this approach, post-event reporting becomes more than a regulatory exercise. Treated as an opportunity to learn and adapt, it creates a feedback loop that strengthens both the precision of future PSPS decisions and the resilience of the grid overall.

BUILDING RESILIENCE BEYOND SHUTOFFS

Utilities are increasingly focused on investments that address risk at the source — grid hardening, vegetation management, and advanced modeling — so that fewer conditions require shutoffs and fewer customers are disrupted when they occur.

One Western utility demonstrated this shift through a recent assessment of its wildfire risk methodology. To better balance wildfire risk with service reliability, the utility adopted probabilistic models that combine ignition likelihood, weather conditions, and potential consequences across grid segments. Aligning the approach

with CPUC maturity scoring creates transparency for regulators while ensuring that internal decisions are defensible.

The assessment delivers more than a technical model: it provides leadership with a roadmap that compares the benefits of different mitigation investments, from covered conductors to vegetation programs. By quantifying risk reduction alongside cost, the utility identified where resources will have the greatest impact in reducing both wildfire ignition risk and reliance on PSPS. The framework gives decision-makers a structured way to prioritize resilience measures, rather than relying on isolated projects or reactive adjustments.

The benefits of these efforts are measured in outcomes: fewer outages, shorter disruptions, and clearer expectations for the communities that depend on the grid. Regulators, meanwhile, gain confidence from evidence-based planning that shows measurable progress year over year.

DEFINING RESILIENCE THROUGH ACCOUNTABILITY

PSPS will always carry weight because it affects entire communities at once. The act of cutting power is, at its core, a blunt safeguard against wildfire ignitions. Across the industry, a more disciplined, data-driven approach is taking shape, one that makes the decision less arbitrary, more transparent, and more responsive to the people it affects.

More accurate and timely forecasting, real-time EOC visibility, customer-focused communication, and structured post-event reporting are redefining how PSPS is planned, executed, and evaluated. These improvements strengthen the defensibility of each decision while reducing the uncertainty and disruption experienced by customers.

Ultimately, success depends not only on preventing ignitions, but also on ensuring that customers feel protected, informed, and supported when service is interrupted. Precision, accountability, and consideration for the human impact are becoming as central to PSPS as risk models and circuit maps. In doing so, utilities transform PSPS from a disruptive necessity into a defining measure of resilience and public trust. **WE**

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