



Wildfire Situational Awareness Solutions for Power Utilities



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| Contents

Introduction	...	3
Three Stages of Choosing the Most Effective Wildfire Mitigation Partners	...	4
Evaluate	...	5
Quantify	...	6
Implement	...	7
Key Features of Wildfire Behavior Models	...	8



Introduction

As wildfire threats escalate in intensity, frequency, and geographic reach, utilities face increasing pressure to safeguard grid infrastructure, protect communities, and justify high-stakes decisions under extreme conditions. Meeting these challenges requires more than standalone tools. It requires trusted, science-based partners who understand utility operations, regulatory scrutiny, and public safety obligations.

Decision-makers must seek solutions to meet that need, and products developed in collaboration with utilities and wildfire experts. Choices must deliver enterprise-ready wildfire situational awareness through a user-friendly, cloud-based platform to deliver on needs from risk-informed planning and red flag readiness to real-time decision support during critical fire weather events. Additional features should provide important planning and communication factors including daily updated ignition forecasts, fire spread projections, and transparent scientific outputs built on advanced, open wildfire models.

Beyond technology, consideration of the quality of partnership should be a prominent factor in decision-making. Utility stakeholders must gain access to industry-leading wildfire insights alongside a responsive team committed to operational alignment, regulatory defensibility, and continuous innovation. Additionally, stakeholders must consider both historical and forward-looking attributes. Does the partner have a robust history of domain-specific scientific output? Do they possess a quality and quantity of public and private partnerships? Do their leadership group and investment structure create jointly aligned incentives? Together, a true partnership helps utilities transform complex wildfire science into actionable decision support at scale.

Three stages of choosing the most effective wildfire mitigation partners

Choosing the right wildfire mitigation partner and situational awareness platform has never been more critical. As wildfire risk intensifies, electric utilities face urgent pressure to make faster, more informed decisions to protect lives, infrastructure, and ecosystems. At the same time, the growing ecosystem of fire models, data providers, and technology platforms can make evaluation and selection challenging.

This Solutions Guide introduces a three-stage framework for identifying the most effective wildfire mitigation solution for your organization: Evaluate, Quantify, and Implement.

- **Evaluate:** Assess the transparency, scientific validity, and usability of wildfire forecasting tools. Are the underlying models peer-reviewed and well documented? Are the outputs interpretable and trustworthy for operational decision-makers?
- **Quantify:** Determine how effectively the platform translates science into operational value. Can it support decisions related to Public Safety Power Shutoffs (PSPS), fast trip, or resource pre-positioning? Are insights spatially and temporally actionable? Can benefits of targeted risk-reduction measures be assessed?
- **Implement:** Evaluate how easily the solution can be adopted, integrated, and scaled. Is it cloud-ready and compatible with existing utility systems? Does it offer API access, technical support, and a path for long-term collaboration?

This guide illustrates how solutions should support utilities across all three stages, combining advanced science, practical design, and mission-aligned partnership to deliver measurable, scalable wildfire resilience.



1. Evaluate

As wildfire threats intensify under a changing climate, utilities must adopt decision-support tools that go beyond historical fire data and static risk maps.

Evaluating a wildfire situational awareness platform requires more than comparing features - it demands a comprehensive assessment of scientific credibility, operational relevance, technical integration, and public trust. Utilities must ensure that chosen platforms not only enhance real-time visibility and predictive capacity, but also align with regulatory obligations, support defensible decision-making, and integrate seamlessly with existing operational workflows. This evaluation process is critical to ensuring that wildfire mitigation investments are both effective and equitable across the utility's service area.

When evaluating a wildfire situational awareness tool, an electric utility undertakes a rigorous, multi-dimensional assessment process to ensure the selected platform meets operational, regulatory, and public safety needs. This process often begins with defining key use cases, such as supporting de-energization or Public Safety Power Shutoff (PSPS) decisions, dispatching field crews, informing vegetation management, or communicating risk to regulators and the public. The utility will then review a tool's scientific credibility, including whether it incorporates peer-reviewed fire behavior models, real-time weather data, fuel moisture inputs, and predictive analytics that are validated by field conditions.

A second major evaluation factor is data transparency and auditability. Utilities must be able to understand how wildfire hazard and risk or fire forecasts are derived, especially when these outputs support decisions that affect customer safety and grid reliability. Tools built on open science principles or those that allow utilities to interrogate inputs and fire behavior models, and associated assumptions are often favored, particularly in regulatory environments where justification of actions is essential. Closely tied to this is regulatory alignment - evaluating whether the platform can support compliance with state mandates and produce outputs suitable for filing in risk mitigation plans or incident reports.

The utility will also assess technical and operational integration, including whether the tool offers APIs or microservices that can plug into existing GIS platforms, enterprise dashboards, or other in-house systems. User interface design, ease of use for emergency operations staff, and visualization quality also play a role. Cost is a further consideration - not just initial licensing but total cost of ownership, including compute costs, training, and support. Utilities often prefer modular and scalable solutions that align with constrained budgets and evolving needs.

Finally, vendor alignment and mission fit may influence decision-making. A utility may favor providers who share a public safety mission, are not profit-driven, or bring credible wildfire science expertise. Tools that have been field-tested with other utilities, fire agencies, or research partners - and that can demonstrate clear case studies - are more likely to gain institutional trust.

In sum, the evaluation process is technical, strategic, and stakeholder-focused - reflecting the high stakes of wildfire risk in an era of climate-driven fire regimes and heightened public scrutiny.





2. Quantify

To quantify the value of a wildfire situational awareness tool, an electric utility typically undertakes a structured evaluation that spans operational, regulatory, financial, and public safety dimensions.

The process often begins by identifying key pain points - such as the frequency and consequences of de-energization events, regulatory compliance burdens, and gaps in predictive capacity for fire risk. Utilities then assess how a situational awareness tool addresses these challenges by examining improvements in forecast accuracy, lead time for operational decisions, and the granularity of risk data across circuits and assets.

From a financial standpoint, the evaluation often includes risk-spend efficiency modeling - analyzing whether the tool enables smarter, more targeted mitigation investments such as vegetation management, crew staging, or hardening infrastructure. Utilities may use avoided-cost models or scenario analysis to estimate potential reductions in fire-caused damages, de-energization impacts, and regulatory penalties. Additionally, they consider workflow integration and IT compatibility (i.e., whether the tool's outputs can plug into existing operational dashboards, outage management systems, or customer communication platforms).

On the regulatory front, utilities assess whether the tool enhances defensibility of de-energization decisions, supports wildfire mitigation plans (WMPs), and facilitates reporting to

oversight agencies. Credible, science-based platforms with transparent methodologies are particularly valued in this context. Utilities may also include qualitative benefits such as improved public trust, better coordination with emergency responders, and reduced reputational risk, which - though harder to quantify - are increasingly critical in the era of climate-driven wildfire liability.

Finally, and perhaps most crucially, utilities increasingly recognize that selecting a wildfire tool is not just about acquiring software it's about choosing a partner in wildfire mitigation. The developer's willingness to provide support, transparency into model assumptions, and a collaborative approach to evolving risk landscapes is vital. A true partnership enables joint validation, shared innovation, and alignment with utility-specific goals - whether that's optimizing de-energization thresholds, refining asset-level risk scoring, or informing long-term capital improvement plans under a changing climate. Thus, the value of a wildfire awareness tool extends beyond its technical features; it resides in the trust, adaptability, and co-production of solutions between the utility and the developer.

3. Implement

Once you've understood the modern application of wildfire science, evaluated your solution's fit against risk spend efficiency, and are ready to move forward, it's time to put that plan into action. Below is a thoughtful review of implementation guidance that should help you get up and running.

When implementing a wildfire situational awareness tool, the primary goal is to enhance the utility of decision-making processes and ensure positive outcomes backed by reliable, essential data. The implementation should focus on creating a seamless connection between the wildfire tool and the electric utility's existing workflow, leading to more informed decisions during critical situations like Power Safety Power Shutoff (PSPS) events. This effort is typically led by a project manager or any designated individual who understands the utility's current operations. The project lead has the expertise to identify where and how the selected wildfire tool will be most effective for their organization.

Their first step in the implementation process is identifying the key personnel or teams from both the organization and the partner who will collaborate on the implementation of the wildfire tool. The project manager will consider the scale of the utility's operations and which processes will benefit from having a situational awareness decision support tool. The partner will be responsive to the project manager's needs and offer expertise to assist in the identification stage.

The second step involves assessing how flexibly the wildfire tool integrates with existing processes, workflows, and systems. For smaller organizations, this may look like applying easy-to-use, modular solutions that empower individuals or small groups to make informed decisions quickly during PSPS events. In larger organizations, different teams—such as meteorology, field technicians, client service representatives, or IT—may require access to various data sets to support their decision-making. The designated lead will consider these factors when determining where the wildfire tool will have the most significant impact. The partner will recommend implementation pathways based on their experience with applying the wildfire tool in past scenarios.

Once the implementation team identifies these integration points, they will work closely with the partners across the

organizations to ensure the tool is effectively applied. They will securely upload essential utility data, including regional boundaries and utility transmission and distribution lines, which are critical in making informed decisions about wildfire hazard and activity. The partner will provide comprehensive documentation implementing the wildfire tool within the current workflows to maximize impact. They will also offer wildfire tool technical support during the transition period and assist with data transfer. A thoughtful partner will also provide training sessions or materials to ensure successful implementation at the organization.

After the initial implementation process is complete, the designated team lead will test, evaluate, and monitor the effectiveness of the wildfire tool in the electric utility's new situational awareness processes. The project manager will ensure the new workflow is effective across the organization through rigorous end-to-end testing. Feedback is critical to maximize the impact the wildfire tool has on the electric utility's effective wildfire mitigation efforts. Regular communication between the implementation team and the partner ensures the wildfire tool provides timely and accurate assessments of ongoing wildfire activity.

Finally, and perhaps most importantly, acknowledge that collaboration leads to innovation. The strongest return in value from a partner should involve their application of ongoing, innovative research and development into the wildfire tool and future-proofing investment. This ensures ongoing confidence in the wildfire tool, and enables the electric utility to invest in capacity building – across their organization, communities, and through regulatory and industry bodies.

Key features of wildfire behavior models that provide the most effective, future-proofed wildfire situational awareness.

In an era of escalating wildfire complexity, utilities, emergency managers, and policymakers must rely on wildfire behavior models that are not only scientifically robust, but also operationally actionable and adaptable to future conditions. The most effective, future-proofed wildfire situational awareness platforms, such as those showcased in this guide, share several critical features:

- 1** High-resolution weather, fuels and topography integration, enabling localized insight into fire behavior driven by real-time wind dynamics, vegetation structure, moisture variability, and terrain.
- 2** Probabilistic and ensemble-based modeling approaches that explicitly account for uncertainty, evaluate ignition likelihood, and assess potential fire outcomes across a range of weather and climate scenarios.
- 3** Open architecture and modular design, allowing transparent model evolution, incorporation of new data sources, and customization across regions and operational needs.
- 4** Cloud-based deployment with API access, ensuring scalable, secure, and timely delivery of wildfire intelligence to operational users when and where it matters.

Together, these features empower decision-makers to shift from reactive to proactive wildfire risk management. By embedding cutting-edge science into operational forecasting tools, utilities and communities are better equipped to anticipate threats, plan risk-informed actions, and justify interventions such as fast trip, PSPS, and targeted fuels management. In this future-forward approach, wildfire modeling becomes more than a research exercise, it becomes the foundation of resilience.

About **PYRECAST**[™]

PyreCast represents a transformative advancement in wildfire situational awareness, pairing scientific credibility with operational usability. From supporting Public Safety Power Shutoff (PSPS) decisions to enabling rapid decision-making during active fire events, PyreCast empowers utilities, emergency managers, and public agencies with the data they need, when they need it.

The tools and solutions highlighted in this guide underscore PyreCast's core strengths: ease of use, flexible deployment, transparent modeling, and actionable, location-specific insights aligned with real operational needs. As wildfire risk continues to escalate, PyreCast is more than a technology solution - it is a strategic partner supporting resilience, infrastructure protection, and public safety.

Through continued collaboration and investment in innovation, PyreCast is helping utilities move from reactive response toward proactive, defensible wildfire preparedness.

