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WHITE PAPER / **WILDFIRE MITIGATION PLANNING**

# A holistic approach to meeting wildfire mitigation goals

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As the risk of wildfires increases, utilities have a responsibility to protect the public while also providing resilient power. Following an established mitigation planning road map allows utilities to align the most impactful projects and technologies with larger organizational goals.

The number and intensity of wildfires in California have increased dramatically over the past 10 years. Aging electrical infrastructure and an increase in fuel and ignition sources have raised the risk of wildfires. At the same time, social media has increased public and private awareness of the issue.

With awareness comes action from policymakers, public and private businesses, public safety organizations and academia. The urgency of the problem makes it tempting to hastily implement corrective projects. But, it's impossible to implement an effective and efficient program overnight. To mitigate such a complex threat, utilities must be equipped with a sound strategy.

This paper provides a road map for developing a wildfire plan that provides short-term benefits and the potential to achieve long-term goals. We'll explore methods for framing, compartmentalizing and maintaining an executable vision. We'll also discuss the merits of incremental execution and consider this approach in the context of technology. By the end, you'll have the framework to begin developing a comprehensive wildfire mitigation plan that meets your responsibility to stakeholders and aligns with your business goals.

## Strategizing for success

In wildfire mitigation, as with any initiative, success must be measured against predetermined goals. When you're embarking on lengthy and expensive initiatives, it's wise to set goals at various levels within your organization.

Too often, companies jump straight to defining project goals. They attempt to tie a specific technology solution to an operational issue before articulating their larger business strategy. This inevitably leads to misplaced efforts and ineffective deployment of capital. It's far more efficient to start at the business level — setting strategy and doing gap analysis — before progressing to the portfolio level and, finally, the project level.

By working through the following road map, you can see that each of your projects and programs will accomplish incremental goals in line with your overall business objectives:

- **Set your business strategy.** Define your vision. Then, consider how achieving that vision will contribute to your business objectives. Set appropriate time frames and identify key performance indicators (KPIs).

- **Analyze your current state and identify gaps.** Determine which systems, processes and groups contribute to your vision. Next, identify which ones will need to be improved or expanded to achieve that vision.
- **Develop an effective portfolio.** Identify how your organization will achieve its vision. Leverage insights from the gap analysis to frame the most impactful project types. Then, classify projects as prevention, detection or response.
- **Define your project strategy.** Evaluate, prioritize and schedule each project. Select technologies that meet your project objectives and also support your larger business strategy.

We'll take a closer look at each of these stages throughout the paper.

## Setting your business strategy

The first step in developing an effective wildfire mitigation plan is setting your business strategy. This includes formulating a vision of what you want to accomplish. Is your goal to eliminate wildfire risk? To be recognized as the safest utility? To provide best-in-class fire mitigation?

Your vision will be influenced by the challenge you face, so it's essential to clearly define that challenge. Many factors come into play, some of which are universal and some of which are unique.

### Outline the challenge

Universally, utilities are investing significant time and resources in understanding utility risk and implementing risk mitigation measures. Many have dedicated groups, executive sponsorship and task forces evaluating ways to reduce risk. In addition, the California Public Utilities Commission (CPUC) Safety and Enforcement Division (SED), in consultation with the California Department of Forestry and Fire Protection (CAL FIRE), recently published a report on wildfire risk and mitigation.

The SED-CAL FIRE Joint Assessment and Recommendation Report states that current regulations outlined in Rulemaking (R.) 15-05-006 are inadequate for fire mitigation because "most utility-caused fire ignitions are due to (1) contact with vegetation and (2) failure of conductors" rather than to wind loading.

Specifically, R.15-05-066 recommends that utilities focus on the development of a statewide fire-threat map and correcting Priority Level 2 fire-safety risks within a six-month period. However, the Joint Assessment and Recommendation Report indicates utilities would be smart to deploy weather stations to collect high-quality weather data and evaluate "potential development of situational awareness tools and predictive capabilities."

### Establishing timelines and metrics

This is just one example of how your vision may be impacted by regulatory drivers that include procedural and technological components. In addition, many utilities have developed multiyear action plans that include risk, technological, procedural and other components specific to their own service territories, grid infrastructure and human assets. The question now becomes: How can a utility effectively integrate its current and future plans into a changing technological and regulatory landscape?

Again, the road map points you in the right direction. Once you've defined your vision, you can determine how achieving that vision will contribute to your larger business objectives. Then you can set timeframes and identify metrics that align your projects with your business objectives.

### A comprehensive gap analysis should progress through the following stages:

- Assess where you are now in terms of available data, technologies and immediate questions or problems.
- Understand the end-state goals of external drivers and establish a process to refine your vision — because refinement is inevitable.
- Determine what processes would benefit from automation, technology or other solutions, such as process improvements or integration of systems to correlate data and make informed decisions.
- Pull data from different silos, both internally and externally. For example, you may gather data from transmission and distribution engineering and vegetation management and correlate that data to weather, grid health and project and personnel in the region.

## Analyzing your current state and identifying gaps

With your business strategy in hand, you're ready to evaluate which of your existing systems, processes and groups support your vision and which ones need to be enhanced. For example, if your objective is to eliminate wildfire risk, you'll need a means to quantify and track the current risk exposure. If you don't have the appropriate procedures and technology in place, you'll need to engage knowledgeable and experienced professionals to help.

## Developing an effective portfolio

The next step is to determine how your organization will achieve its vision. Understanding how to dissect the available resources and key data is critical to this process, but it can be overwhelming.

You'll want to leverage insights from the gap analysis to identify the types of projects that will have the greatest impact on your problem. You'll also need to implement effective data collection, analysis and correlation practices. This can be time-consuming and expensive. Still, it's not realistic to think data solutions alone will provide answers, or even sufficient data for analysis of complex problems.

Many utilities are turning to artificial intelligence (AI) for deeper insight. Yet, even AI doesn't provide the clarity utilities need to accurately define their challenges and identify incremental steps to achieve their end-state goal. AI won't solve a problem until a deeper understanding of how different types of data correlate to each other is understood, which requires an iterative approach.

### Implementing data solutions

Because data solutions, AI and other technologies are challenging and expensive to implement, we recommend taking an incremental approach to execution. This allows you to leverage existing technologies while working toward longer-term goals. Plus, you can realize increasing value along the way — without necessarily knowing what the full value will be in advance.

By following this approach, you can begin to formulate the appropriate solution for your specific application, which will depend on a number of factors, including your infrastructure, service area, existing data and budget.

### Classifying projects

Incremental execution also provides a useful framework for thinking about your portfolio. Incremental or agile execution is accomplished by compartmentalizing the problem, developing solutions that solve meaningful problems, understanding how each solution fits into your road map and refining it as necessary. In fire mitigation, we compartmentalize by framing the three stages of the risk life cycle:

- **Prevention** attempts to reduce the probability of a wildfire. Preventative programs include vegetation management, asset hardening, steel pole conversion, covering conductors and replacement of inadequate structures.
- **Detection** attempts to limit the consequences of a wildfire by decreasing time to intervention. Initiatives include increasing the frequency of patrols and implementing detection technologies such as drones and thermal cameras.
- **Response** attempts to reduce the impact of a wildfire. Response initiatives include increasing community outreach, upgrading response procedures to include automated messaging and emergency preparedness tools, and monitoring drone patrols, weather data and restoration progress.

Specific technologies can help reduce risk in each of these stages by identifying vulnerabilities (such as high-risk geographic areas or aging infrastructure), detecting incidents in a timely manner, and efficiently deploying and managing response assets.

### An incremental execution strategy allows you to:

- Define the core components you need to gather data on and begin doing that right away.
- Correlate the data, measure which components have the highest influence and pull out high-value data targets.
- Customize your technology and process to meet your changing needs as you progress from basic data analysis to sophisticated AI.
- Develop an understanding of existing technologies that, when utilized strategically and incrementally, fit into your strategy and leverage your data to achieve your goals.

## Defining your project strategy

Once you've developed a portfolio of prevention, detection and response initiatives, it's time to decide which projects you'll actually execute. The first step is identifying and scoping projects that effectively mitigate risk while adhering to the timelines and budget constraints you have established.

Think about this group of high-impact projects in tiers. Tier 1 projects, the highest impact group, should be scheduled first to reduce the greatest amount of risk for each dollar of capital invested. Tier 2 projects should be scheduled when additional budgetary resources will become available, and so on. For example, if your prevention portfolio includes steel pole conversion, you might identify specific geographic areas with the greatest risk exposure or groupings of aged assets as the most impactful projects within that portfolio.

Categorize each project in the context of your entire portfolio, so you can sequence projects for the greatest impact while staying within budgetary constraints. Portfolio optimization, schedule management and risk management technologies can be used to streamline this process.

### Choosing the best technology

Finally, in the last stage of the road map, it's time to decide how to deploy technology to execute individual projects. For some projects a stand-alone technology, such as a data analysis tool, will suffice. In other cases, you'll leverage technology on top of more physical or operational projects.

A variety of technologies exist for each of the portfolio categories described earlier:

- **Prevention technologies** include 3D vegetation survey data analysis, hardening infrastructure, threat indices, asset health assessments, power diversion/ shutoff procedures, and microclimate data and data correlation algorithms.
- **Detection technologies** include thermal cameras with AI ignition detection, real-time threat models, first responder/emergency team communication procedures and satellite image monitoring.
- **Response technologies** include predictive fire spread models, response team planning, satellite image monitoring and community outreach platforms/ alert systems.

Waiting until the final stage of the road map to select your technology solution — rather than choosing it first — allows you to develop a more efficient and effective mitigation plan overall.

## Conclusion

As wildfires become more frequent and more dangerous, utilities feel a social, moral and legal obligation to protect the public, while also providing resilient power. When properly applied, technology has the potential to help utilities meet their responsibility to stakeholders.

By following an established road map, utilities can develop a portfolio approach that aligns individual projects with organizational goals for wildfire mitigation. This approach focuses on defining a vision and business objectives, identifying the most impactful projects and technologies, and implementing solutions incrementally. In the end, both utilities and the public benefit from a comprehensive mitigation plan that delivers intermediate gains in the short term and achieves end-state goals in the long term.

## Biography

**Jonathan Leffert, PE,** is a regional manager at 1898 & Co., part of Burns & McDonnell. His team leads clients through business transformation by developing innovative solutions and providing high-value utility, security, technology and management consulting services around new, emerging technologies. Initiatives include grid modernization, transportation electrification, microgrids, cybersecurity and smart cities. Jonathan has a Bachelor of Science in electrical engineering from Kansas State University.

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