DIREXYON

Giving utilities the ability to make evidence-based capital planning decisions to achieve their strategic objectives

WILDFIRE MITIGATION PLAN GUIDELINES FOR ELECTRIC UTILITIES

435,000 miles of power grids are **vulnerable to physical climate hazards in the U.S.**, with utilities facing more than $4 billion per year in climate impacts from rising sea levels, severe storms, and wildfires.

It's wildfires that pose a unique threat to utilities, though. While they don't cause hurricanes or deep freezes, they can cause fires.

Last year alone, **68,988 wildfires burned 7.6 million acres** across the United States. While the percentage of fires caused by utilities is small (either by electrical equipment failure, downed lines, contact with vegetation, etc..), they have sparked some of the deadliest fires on record.

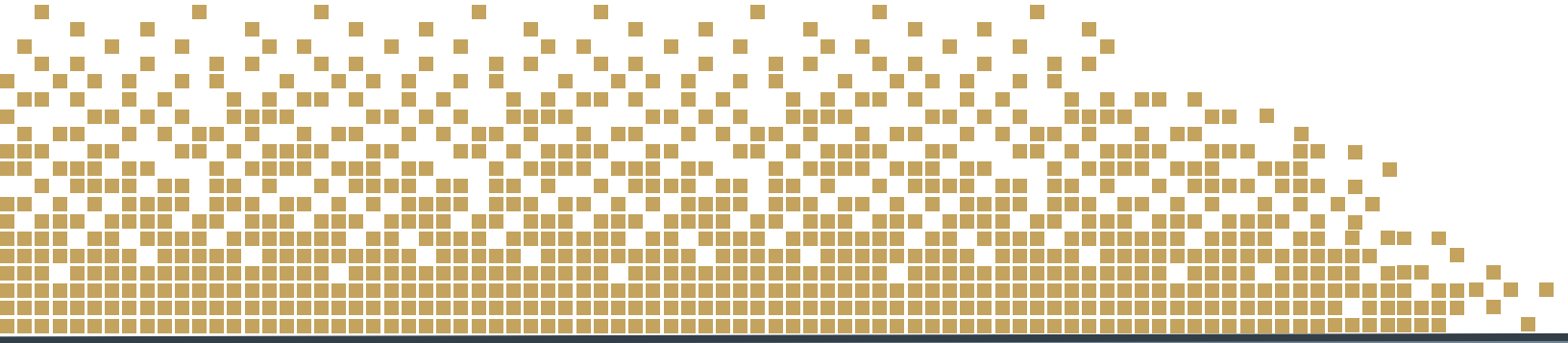
Without a serious overhaul of strategic, seasonal, and operational practices, utilities and their customers are going to continue to face the same bleak choice each time wildfire season comes around: do we roll the dice with deadly fires or endure multiday blackouts?

Neither of these is a sustainable choice. By prioritizing efforts that aim to reduce ignitions, promote industry resilience to wildfire alongside the modernization of long-term strategic assets, it's a choice that one day shouldn't need to be made.

NO ONE SIZE FITS ALL APPROACH TO WILDFIRE MITIGATION PLANS (WMP)

Wildfire risk assessment is a rapidly developing field, with new technologies, models and methods being developed continuously. Utilities are having to assemble the different pieces of the puzzle to best assess their current state and plan for future outcomes.

If you're looking for general guidance on how to develop or optimize your current WMP, or to see how wildfire risk can fit into your overall risk assessment, this guide is the place to start to build that framework. It'll assist with developing a plan that includes all your wildfire data, performance objectives and risk value framework, as well as your regulatory needs, as they evolve over time.



THINGS TO CONSIDER AS PART OF YOUR WMP

All states are at risk of wildfires, but California has been the unfortunate poster child in recent decades. While regulation and enforcement of wildfires caused by power equipment failures used to be relatively lax, the state has come together and made serious progress in recent years when it comes to mandating utilities submit plans for mitigating wildfire risk, regardless of their size or ownership.

This makes their efforts a good blueprint for other utilities and state regulators to look to as they develop their own in response to the rising risk and losses associated with wildfires, as well as the surge in insurance premiums. Utilities that have not yet had to do so are likely to face similar regulations soon.

Here is a checklist of some of the critical areas for you to consider as you develop or optimize your WMP:

Risk analysis

- [ ] What are the contributing factors in igniting a fire?
- [ ] What would the consequence of a fire be (social, environmental, financial, etc.)?
- [ ] What is the likelihood of fire ignition or spread?
- [ ] Where are the high-risk areas?

Risk evaluation

- [ ] How can risk change and evolve over time?
- [ ] What would the fire risk be in best-case and worst-case scenarios?
- [ ] What are the contributing factors in risk evolution?
- [ ] What would the immediate (interim) risk reduction strategies be?
- [ ] What would the longer-term risk mitigation strategies be?

Risk informed decision making

- [ ] What is the relationship between interim risk reduction strategies and long-term mitigation strategies?
- [ ] What are the benefits and drawbacks of each strategy (can we compare each scenario)?
- [ ] What is the optimal strategy that maximizes benefits while meeting existing constraints?
- [ ] What are the impacts of different strategies on the overall risk/KPIs of the network?

Grid design, operations and maintenance

- [ ] What are the main operational and maintenance actions?
- [ ] What are the expected outcomes of those actions?
- [ ] What is the timeframe to achieve those outcomes?
- [ ] What are the metrics to measure performance of the identified objectives?
- [ ] What are the constraints in achieving those objectives?
- [ ] What is the optimal cycle for each action?

Vegetation management

- [ ] What are the short-term and long-term objectives of vegetation management?
- [ ] What constraints are there in vegetation management? (Resources, regulations, weather, etc.)
- [ ] What is the optimal inspection/vegetation management cycle to achieve the identified objectives, while meeting constraints?
- [ ] How effective is the optimal strategy in wildfire and Public Safety Power Shutoff (PSPS) risk reduction?

Situational awareness and forecasting

- [ ] What is the estimated ignition likelihood?
- [ ] How might weather conditions change over time?
- [ ] What is the required real-time data for forecasting wildfires and PSPS?
- [ ] Which are the best wildfire detection systems and alarms?

Emergency preparedness

- [ ] What is the wildfire and PSPS emergency and preparedness plan?
- [ ] Who are the related public safety partners?
- [ ] What are the public safety communication strategies?
- [ ] What is the plan for service restoration after an emergency?
- [ ] What is the plan for customer support in wildfire and PSPS emergencies?

Community outreach and engagement

- [ ] What are the objectives and performance metrics for community outreach and engagement mitigation?
- [ ] What is the timeframe for achieving those goals?
- [ ] What is the method of verification of achieving those objectives?

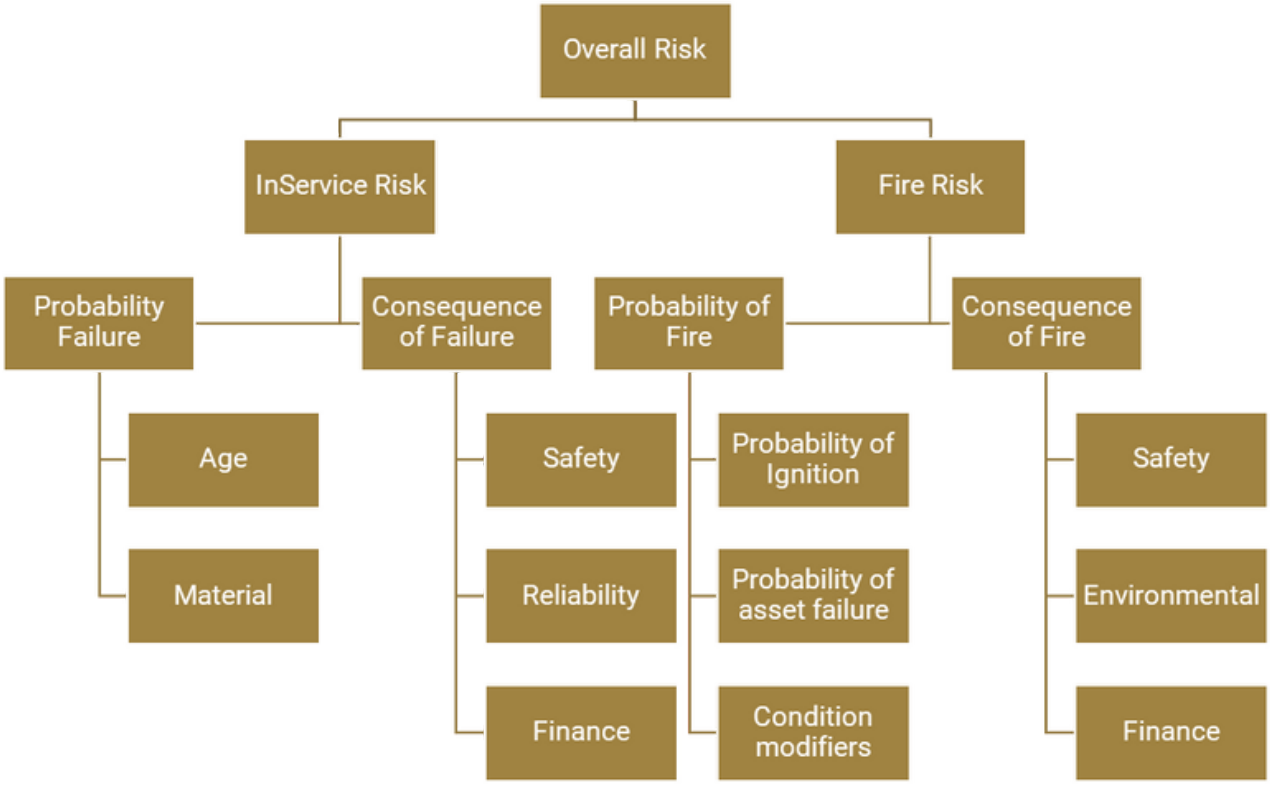
PSPS

- [ ] What are the key PSPS statistics (number of events, number of affected customers, de-energized circuits, customer minutes interruptions, etc.?)
- [ ] What are the most frequent de-energized circuits?
- [ ] What is the impact of that de-energization?
- [ ] What is the possibility of future PSPS for those circuits?
- [ ] How can the need for de-energization be reduced?

HOW DO WILDFIRES FIT INTO YOUR OVERALL APPROACH TO RISK?

Traditionally, utilities have used historical fire data, real-time weather data and location data as the foundation of their wildfire mitigation efforts. However, these elements only paint part of a picture and may not always be relevant to current conditions due to climate change and evolving landscape conditions.

Utilities should be expanding their horizons, and layering in other factors, such as asset health. Incorporating asset health and risk into your risk equation will help you better identify opportunities where strategic prevention and mitigation efforts can be expected to have the most benefit.



How does in-service risk (asset risk) impact fire risk?

Let's get granular. A common asset type utilities work with are poles. Here are examples of risk factors that need to be considered past just its location when it comes to probability of fire:

- Pole failure
- The number of pieces of equipment on the pole
- The failure of each piece of equipment on the pole
- Is the conductor material copper or another material?
- Is the conductor covered or uncovered?
- What is the tree density like around the pole?
- How quickly is vegetation growing into power lines?
- How likely will vegetation fall onto power lines?

How can utilities balance investment and risk between different strategies?

When it comes to risk, the pole itself is also a condition modifier. You can assign a probability of failure based on factors such as its material, age and location. The older the pole gets, the higher probability it has of failing.

Let's look at two different scenarios. Scenario one, you inspect the pole every two years. Scenario two, you inspect the poles every five years. Which scenario would you choose? Scenario two will save you money because you're conducting fewer inspections but increases risk because you'll have fewer opportunities to manage the vegetation in the area, or proactively identify and replace poles that have failed or are close to failure.

To get a clear picture into your overall risk, you need to layer asset data with all the different types of wildfire data to help identify assets that pose the greatest threat of ignition in high-risk fire zone.

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OVERHAULING YOUR STRATEGIC PRACTICE: HOW DIREXYON CAN SUPPORT YOU

At its core, AIP software helps utilities align their short-term metrics with their long-term goals, helping them to decide on the best course of action for them to reach their objectives, considering any number of variables.

In the case of wildfire, it's relatively straightforward. The utilities' main objective is to prevent in-service risk and minimize the impact of wildfires.

DIREXYION can't help you predict the future, but we will help you plan for it. Start making sense of the wildfire data you have so you can quantify your risk and see the impact of your decisions when it comes to investment, inspection and intervention planning. Ensuring that all the efforts you make are justifiable to regulators.

Intervention planning
Plan multiple interventions (vegetation management, equipment repair, inspection, and replacement) to reduce fire risk.

Transparency
Transparency in decision-making criteria, criteria considered in the risk model, input data, and modeling assumptions.

Best practices
Similarities with various parts of ISO55000 (communication on changes, continuous improvements, performance evaluation).

Investment planning
Define a portfolio of projects expected to provide maximal benefits and meet any identified constraints (e.g., overall budget for mitigations across the organization).

Strategic alignment
Run multiple scenarios, evaluate the benefits and drawbacks of each strategy. Define and document the best and worst-case scenarios as well as the optimal scenario based on your own criteria.

Risk insight
Visualize the evolution of your risk over time depending on which strategic direction you implement. Integrate risk across lines of business and consider any number of uncertainties.

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IF YOU'RE LOOKING TO BALANCE RISK, COSTS, AND THE PERFORMANCE OF YOUR ASSETS TO OPTIMIZE YOUR CAPITAL INVESTMENT PLANNING, LET'S TALK.

BOOK ASSESSMENT

Disclaimer: The best practices in this document are solely meant to be used as reference points, they do not constitute legal or professional advice. You should consult a professional advisor and follow the appropriate state and federal regulatory body guidelines. The use of this document or any information contained in it as part of a wildfire mitigation plan will be at the user's sole risk.

Get data-driven insights that give you the ability to compare all future investment outcomes. So, you can make the right decisions at the right time, to preserve and enhance the reliability, performance, and sustainability of your assets.

LET'S TALK

For more information about our solutions, check out our website at **direxyon.com**