SIEMENS
Ingenuity for life

Minimizing the risk of wildfires

It only takes one spark

Due to changing climate conditions in the west, the idea of a fire season is quickly becoming obsolete as the reality of year-round wildfire exposure continues to grow. Trends in snowpack data show decreasing volume and earlier melting concurrent with summer temperature rise – a combination that is exacerbating the potential for wildfires across the region.

Verisk's 2017 Wildfire Risk Analysis[1] identified over 4.5 million U.S. residences at high or extreme risk of experiencing a wildfire. According to reports from the National Interagency Fire Center, 8.8 million acres were scorched by wildfires across 58,000+ individual incidents in 2018 alone. Not only are wildfires becoming more common, but also more costly. Total potential exposure for single-family residences to wildfire damage in California is greater than $240 billion.

Siemens has identified increasing wildfire risk as a megatrend that is a current and future consideration in the design of communities across the world. Siemens aims to enable electric power system owners with means to mitigate ignition risks, analyze and respond to environmental hazards, and improve network monitoring and control for proactive planning and response.

The western U.S. faces an elongated annual fire season and the severity of recorded wildfires is on the rise.[2]

Spark risk mitigation

Environmental data analysis and hazard mitigation

Monitoring, control, and flexibility

Trainers, stakeholders, and partners for ongoing service

Footnotes:

[1] "Verisk Wildfire Risk Analysis 2017." Key Findings from the 2017 Verisk Wildfire Risk Analysis, Verisk Insurance Solutions, July 2017.

[2] "Total Wildland Fires and Acres (1926-2018)." NIFC.gov, National Interagency Fire Center, 2019.

Proactive planning for minimizing wildfire risk exposure

Siemens is actively responding to California Public Utilities Commission (CPUC) wildfire mitigation initiatives through focused development of future-oriented, system hardening, and grid monitoring and response solutions.

With a full suite of time-tested products ranging from power distribution equipment to software, Siemens is capable of dousing risks across the wildfire risk spectrum.

Spark risk mitigation:

- Reduce ignition hazards from grid infrastructure through implementation of advanced distribution network protection equipment for overhead lines.
- Improve system reliability and resiliency by upgrading individual components in targeted fashion.

Environment analysis and hazard mitigation:

- Enable properly designed networks to operate with minimized threat from natural hazards.
- Improve understanding of network interaction with the environment using sophisticated data analytics capable of processing evergrowing environmental data sets.

Monitoring, control, and flexibility:

- Enable data acquisition for transparency into network.
- Enable bi-directional communication of real time data and commands to enable system control.
- Choose how the grid is operated.
- Plan for the event of wildfires within network territory boundaries.

With a global network of engineers and subject matter experts paired with the most extensive system hardening portfolio in the market, Siemens is uniquely positioned to provide full-scope consultation services for enterprise risk management, protection and control systems, and grid network studies.

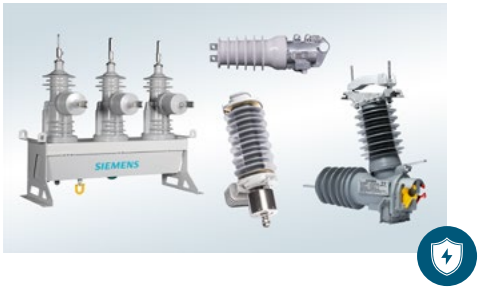
Spotlight products and services for wildfire mitigation initiatives

Distribution automation with high-speed FLISR (fault location, isolation, and service restoration):

- Allows for remote monitoring and control of power distribution grids, with added benefits of FLISR and volt/VAR control via automated applications.
- Isolates faults without reclose operations via sophisticated differential protection scheme.
- Automatically command SCADA to operate the network in accordance with environmental conditions (i.e., real-time weather, red flag days).
- Localizes faults in the Cloud, enabling direct communication to maintenance crews and first responders.

Overhead power distribution solutions for rapid-fault detection and isolation:

- Detect, open, and clear a fault in as little as one-half cycle (10 ms) with Fusesaver™ medium-voltage outdoor circuit breakers, significantly reducing sustained ignition risk from conventional fused circuits. Configurable to either protect or replace network fuses.
- Implement cost-effective alternative to traditional oil-filled reclosers and enable FLISR protection scheme compatibility with Siemens Compact Modular Recloser (CMR).
- Enhance feeder protection and enable FLISR schemes for three-phase networks with Siemens Distribution Recloser (SDR).
- Surge arresters with arc-protection system (APS) effectively minimize spark and ember production in the most demanding operating conditions.



Trench rapid-earth fault current limiter (REFCL) solution:

- Significantly reduces potential for fire ignition in the event of ground fault scenarios by limiting fault current to 3–10 percent of that for an ungrounded system within a fraction of a second.
- Inherently provides enhanced fault detection for fast, reliable isolation of high-impedance faults.
- Mitigates line downtime during red flag days and provides reliable service without compromising safety.

Spectrum power microgrid management system (MGMS):

- Enables adaptive, advanced control and network optimization with real-time monitoring through model-based software.
- Mitigates risk in high-fire threat districts by enabling islanding, black start, and grid resynchronization based on real-time coordination of generation, storage, and loads.
- Adds modular applications that are purpose-built for specific needs as they arise.

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