# The Line Ranger Network from Smartkable Powerline Solutions

What it Provides

- *Real-time* **fire risk assessment** through *real-time* situational awareness, right on the power lines.
- **Automated *fault prediction*,** not just fault detection**,** through real-time data regarding electrical abnormalities (sags and shorts in voltage or current) along with environmental awareness including wind speed and direction, humidity and temperature. Preset conditions can enable needed actions.
- **Alerts enabling "surgical" shutdowns.** Signals from the Line Ranger network can be used to enable shutdowns when and where warranted, adding to safety with less public inconvenience.
- **instantaneous fire information.** Mitigates spread of ignited fires, providing critical information in seconds regarding fire location, direction and rate of spread. Enables faster actions by first responders, evacuation officials and others.
- **Actual Data** from points of origin to enable ever better analytics and predictive forecasts each year.
- **Line-life prediction** outlining remaining useful life of lines.

Gaps that it Fills

- **Preventive shutdowns generally rely on abstract forecasts and models.**
    - *Winds and conditions change too quickly for these to be sufficiently effective.*
    - *Multiple predicted fires have happened with the power still on.*
    - *Vegetation management and line hardening are not enough against high winds.*
- **Responders generally depend on 911 calls and utility workers.**
    - *Locations are often remote and unwatched.*
    - *When finally called in, can be late and lack critical information.*
- **There is reluctance to shut down power.**
    - *The public doesn't like shutdowns, wants them to be more precise.*
    - *No present way to verify actual high-risk conditions at specific locations.*
- **Evacuation notices can be unreliable.**
    - *Mobile towers can be destroyed as fire grows (as in the Camp Fire case).*
    - *Limited data regarding wind direction and speed hinders evacuation accuracy.*
- **Modelers have limited data from fire origins.**
    - *Expensive modeling work ongoing now, but lack of data from the actual locations.*

How it Works

Line Ranger unit and software
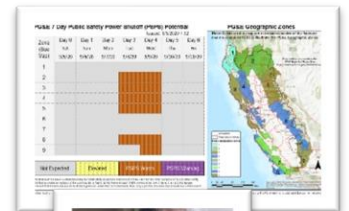
 It is the first solution to have sensors right on the powerlines to measure line voltage, current, impedance, and other electrical and environmental parameters, with wireless communication to an AI software platform. The **remote sensing, predictive analytics, and responsive data in real-time enable ultimate situational awareness** to help prevent fire ignition and limit spread and severity.

How it can be Tested

The Line ranger network is easy to install and evaluate. A pilot could be demonstrated with a relatively small number of units to confirm the capability and further match needs. Units can be installed on energized lines with a hot stick, or de-energized lines manually. Through a pilot install, utilities, first responders and public safety administrators can quickly evaluate how to potentially integrate the Line Ranger solution into existing systems.

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