

# **FIRE***Bird*

## **Rapid Wildfire Detection System**



**LINDSEY**  
*FireSense*

## Facts to Know About Wildfires Along Boundaries

**10x**

Wildfires started along power lines average ten times larger than other wildfires.<sup>1</sup>

**19%**

19% of all wildfires between 2016 and 2020 in California were caused by the power network.<sup>2</sup>

**90%**

90% of all wildfires in the United States occur within 1/2 mile of a road.<sup>3</sup>

**12.6 Million**

U.S. new home construction from 1990 - 2010 resulted in 12.6 million more homes being placed in wildfire vulnerable wildland urban interfaces.<sup>4</sup>

<sup>1</sup>Mitchell, Joseph W; "Power line failures and catastrophic wildfires under extreme weather conditions"; Journal of Engineering Failure Analysis #35, 2013, page 728, Table 1

<sup>2</sup>"Electrical System Safety Auditor's Report" Auditor of the State of California, March 2022, download @ <https://information.auditor.ca.gov/pdfs/reports/2021-117.pdf>, Table 1

<sup>3</sup>Peterson, Peter H., "Roads and Wildfires," Pacific Biodiversity Institute, Winthrop, WA, 2007, page 4

<sup>4</sup>"Wildland-Urban Interface Growth in the U.S.," Northern Research Station, USDA Forest Service, <https://research.fs.usda.gov/nrs/projects/wuigrowth#research> 5/7/2024

# FIREBird Rapid Wildfire Detection System

## Automatic Detection for High Fire Risk Zones

FIREBird is the first wildfire detection system intended specifically for deployment along high fire risk rights-of-way, such as utility power lines, or wildland urban interface boundaries adjacent to residential developments. Easily mounted on any structure, FIREBird devices support continuous wildfire detection along these high fire risk boundaries when placed at regular intervals.

This unmanned system delivers automatic notification of detected wildfires; typically within 2 minutes.



### Small Fire Detection

The FIREBird system is capable of quickly detecting and reporting wildfires as far away as 10 miles.<sup>1</sup> Each FIREBird unit can detect fires as small as a few square feet over a 60-acre area. With regular placement, the system delivers continuous, fast, fire detection along that path. The FIREBird system is ideal for use along any property border or right-of-way.

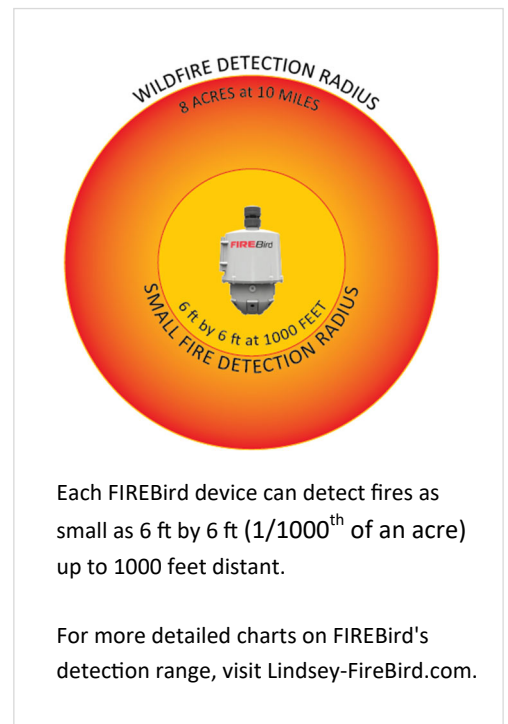
Protection across larger land areas is as simple as deploying additional devices. FIREBird devices are also capable of detecting and reporting on multiple, simultaneous fires within their zone of coverage.

### Focused Detection

Many wildfire detection systems and programs watch for wildfires at a distance. Detection occurs only once the fire becomes large enough to sense. High fire severity areas require an additional layer of detection.

FIREBird devices offer the ability for a focused, highly localized approach to wildfire detection. The result is detection of fires when they are smaller and easier to contain with fewer resources, resulting in less financial devastation.

<sup>1</sup>The FIREBird system can be used as a stand alone solution or can be used to complement other wildfire detection systems.



## **FIREBird System**

### ***Innovative Technology for Early Detection***

A FIREBird system consists of one or more FIREBird wildfire detection devices and the FireSense web portal.

### **The FIREBird Wildfire Detection Device**

The FIREBird system provides 360-degree wildfire detection by using a combination of wildfire-specific thermal sensors, optical imaging, and advanced computer algorithms.

#### **Autonomous Fire Detection**

Unmanned, autonomous operation ensures fast wildfire detection and notification without the need for a full-time staff to monitor the system.

#### **Heat-Based Fire Detection**

Heat-based fire detection is very sensitive to small fires at the time of ignition. Unlike smoke-only detection methods, it works regardless of time-of-day or atmospheric conditions, including wind. Detection of heat-sources also provides for better identification of where a fire is located compared to smoke-only methods.

#### **Continuous Fire Detection**

Each FIREBird device is equipped with 8 wildfire-specific thermal detectors and 6 optical cameras. The sensors provide continuous, 360-degree monitoring of the surrounding area, as well as 200-degree vertical monitoring ensuring that fire even directly below a FIREBird will be detected.

#### **Fast Fire Detection**

Each FIREBird device contains a powerful computer which performs all fire detection computations, eliminating the need to transmit data for further processing. The result is the fastest fire detection possible with wildfires being typically sensed and reported in 2-minutes.

#### **Fire Weather Reporting**

Knowledge of local weather conditions is crucial both before and during fire events. The optional maintenance-free weather station gives highly accurate measurements of wind speed, wind direction, ambient temperature, barometric pressure, and humidity for pinpoint monitoring of weather conditions conducive to wildfires.

#### **Communications**

All FIREBird devices include built-in cellular radios. External radios may also be connected.

#### **Flexible Power Options**

FIREBird devices are powered by a solar panel or external AC power. An optional battery, specially encased to prevent thermal runaway, delivers days of power in the event of a power outage or dark or smoky skies.

#### **FireSense Web Portal**

The web-based FireSense portal connects to all your FIREBird devices, and provides for fast deployment and set-up without the expense and complication of installing and managing software.

# Tour the FIREBird

## A Fully Self-Contained Wildfire Detector

### Communications

Cellular communications is included with each FIREBird device.

### Weather Station

The optional weather station offers wind speed, wind direction, ambient temperature, barometric pressure, and humidity information.

Weather data is always available even in the absence of a fire event. The accessibility of this data can help to quickly identify local red flag conditions.

### Lateral View Cameras

When a FIREBird is installed along a utility right-of-way, these two cameras can help utilities determine the condition of a power line at any time.

### Cameras

Six visible light cameras give visual confirmation of fire events.

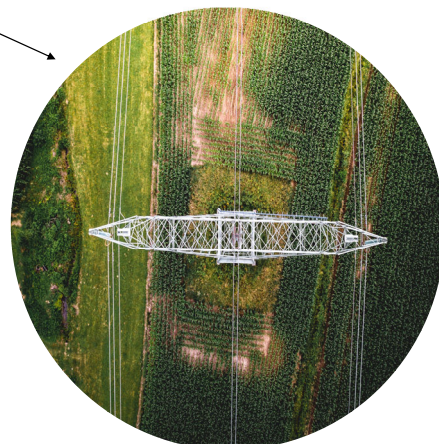
### Continuous 360° Detection

The overlapping fields of view of the cameras and thermal sensors give continuous fire detection around the device without the need for scanning or panning.

### Thermal Sensors

Eight advanced sensors detect the unique thermal signature of wildfires, providing rapid heat event detection.

Sophisticated neural network algorithms minimize false alarms.



## The FireSense Web Portal

### A Convenient, Powerful Web Interface for FIREBird Devices

The FireSense web portal is a secure, password protected, cloud-based graphical interface for the collection and viewing of data from FIREBird devices, and for alarm notification management. FireSense data may be easily integrated into existing emergency communication systems

#### Get a Quick Overview

The Dashboard view demonstrates a status summary of all FIREBird devices.

#### See Where the Problems Are

Auto-zooming maps quickly isolate the areas of concern. Color-coded status indicators allow for rapid fire identification. Images, alarm status, device history, and notification history are all a click away.

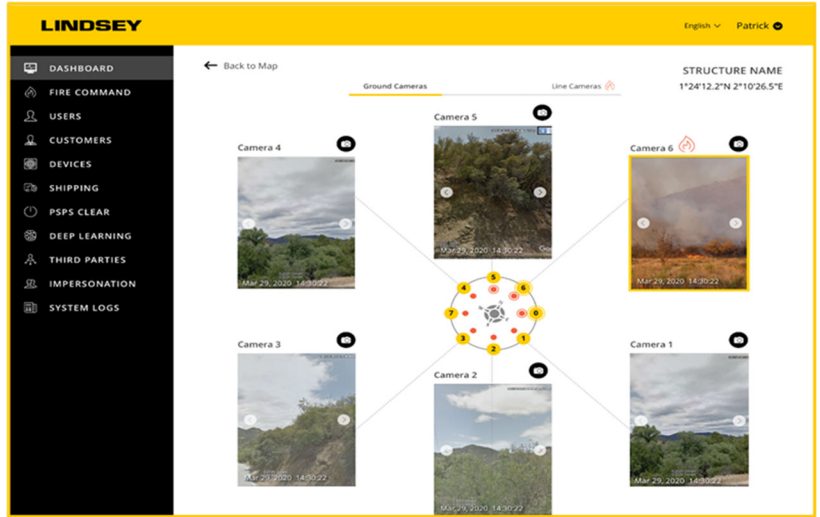
#### Enhance Your View

While in map view, toggle on or off various layers to add weather information, red flag warnings, and locations of existing, named, fires.

#### Organize Your FIREBird Devices

Create FIREBird device groups organized by right-of-way, boundary name, location perimeter, land area, or any other method to enhance your ability to manage alarms.

For utilities, organizing FIREBird devices by feeder or electrical circuit simplifies monitoring the condition of their rights-of-way.



#### Fire Imagery

Once a heat event or fire is detected, the FIREBird captures six overlapping images, providing a 360-degree view of the surrounding area. This allows for quick, visual confirmation by the user and provides valuable visual information to fire fighting staff. Clicking on any image allows for full screen inspection of the image. Users can view images from any camera on the FIREBird device and additional images may be captured as needed.

#### Fire Documentation

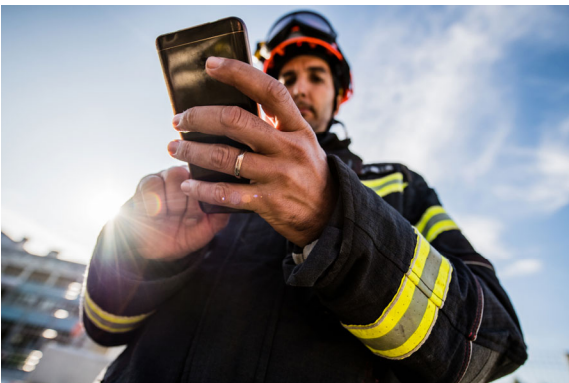
The images captured at the time a wildfire is detected can furnish important documentation regarding the cause of an event.

#### Desktop and Mobile Friendly

Compatible with any browser, the FireSense portal is also mobile friendly, eliminating the need to download a separate application.

#### Control Who Gets Notified

An adaptable notification tool offers control over which person or persons get notified of alarms, for which devices, and whether by text and/or email.



## Support for Electric Utilities

### Fast Fire Detection Along Power Lines and (PSPS) Support

Geography ensures many power lines will always be overhead. Arcs and sparks can be caused by animals, wind, flying debris, accidents, and normal equipment operation. Not many will result in fire ignitions, but FIREBird can detect those that do.

### Right-of-Way Condition Monitoring

Each FIREBird device can be equipped with two additional cameras that look along the monitored right-of-way. The primary role of these two lateral view cameras is to document the condition of the right-of-way at any time.



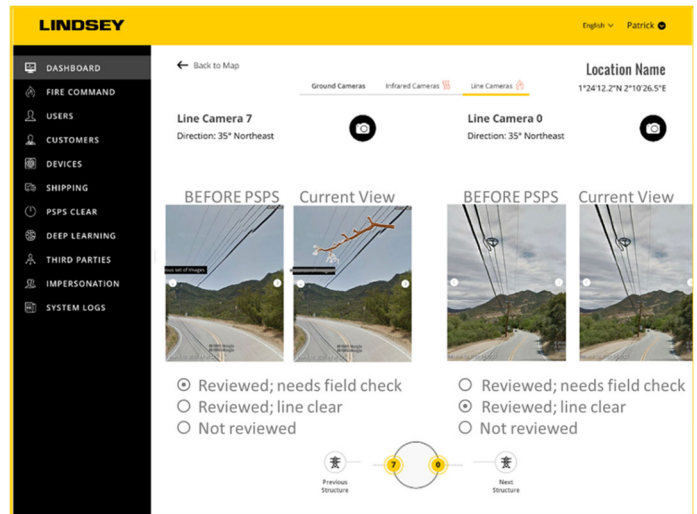
Dedicated cameras provide images in either direction along the protected right-of-way.

### The PSPS CLEAR Function

The unique “PSPS CLEAR” function is designed specifically for electric utilities to help assess the physical condition of a de-energized power line.

Images from the two lateral view cameras may be captured before a power line is de-energized and before a power line is re-energized. This visual comparison tool helps utility personnel evaluate whether damage has occurred to the line during the PSPS event.

This feature can also be used for comparison of image sets along roadways, pipelines, railroad lines, or for any other asset that follows a path.



### Advantage of Regular Placement

Placement of FIREBird devices at 1/2-mile intervals along a utility right-of-way gives a continuous 1-mile wide fire detection zone. The lateral view cameras add a practical means of protecting assets, monitoring their condition, and documenting any changes.





## About Lindsey FireSense

Established in a foothill community of Southern California, Lindsey FireSense is in a high-risk location for wildfires. Our products are developed by a group of engineers and scientists who have decades of experience with sensors, wildfire detection, the utility industry and IoT devices and applications.

Lindsey FireSense focuses on products designed to detect and mitigate damage associated with wildfires.

For more information, visit [www.Lindsey-FireSense.com](http://www.Lindsey-FireSense.com).

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Multiple U.S. and foreign patents pending.  
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