LINDSAY™ | REMOTE ASSET MONITORING CASE STUDY

# Light Guard™ Pulse

## Case Study: More Than One Way to Monitor Any Type of Wire Theft

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CASE STUDY: MORE THAN ONE WAY TO MONITOR ANY TYPE OF WIRE THEFT

## Introduction

Copper wire theft has become one of the most persistent and costly threats facing roadway and street lighting infrastructure. Beyond the immediate loss of materials, these incidents often leave corridors dark and unsafe, increasing the risk to motorists, pedestrians, and first responders. The true cost of copper theft extends far beyond replacement wire, it includes extensive labor, damaged conduit and equipment, emergency repairs, repeated site visits, and prolonged outages that strain already limited transportation agency resources. As theft methods become more deliberate and organized, traditional deterrents alone are no longer sufficient to protect critical lighting systems.

To effectively address this growing challenge, agencies must move from reactive repairs to proactive protection. Light Guard Pulse represents a shift in how copper theft is deterred—by combining real-time monitoring, remote control, and system intelligence to disrupt theft activity before it results in major damage. Rather than relying solely on physical barriers or after-the-fact inspections, Light Guard Pulse provides continuous visibility into lighting circuits and wiring integrity, allowing agencies to respond faster, smarter, and more strategically.

## How Light Guard Pulse Helps Deter Wire Theft

LightGuard Pulse helps deter copper wire theft in four key ways. The first two options are by providing early detection of abnormal circuit conditions, identifying wire cuts or current drops that often signal the initial stages of a theft attempt, in two ways: when the system is energized during normal operating hours and through software programmable spot checking. The third option is by alerting the DOT when the door of the main control box or the LightGuard Pulse unit opens. The fourth consists of a psychological deterrent.

### Alerts During Normal Energized Operating Hours

When the system is energized during normal operating hours, Light Guard Pulse detects potential wire cutting and copper theft by continuously monitoring the electrical behavior of each lighting circuit using current transformer (CT) coils installed at the lighting control cabinet. Each CT coil measures the normal amperage flowing through a circuit. Once baseline conditions are established, Light Guard Pulse watches for abnormal changes—such as a sudden drop in current, loss of load, or unexpected interruption—that commonly occur when a wire is cut or partially severed. Because copper theft typically begins with daytime cutting of de-energized circuits, these current anomalies provide an early technical indicator that the integrity of the circuit has been compromised, even before visible outages occur. This monitoring approach allows agencies to detect issues that would otherwise go unnoticed until thieves return to extract the wire and cause extensive damage.

When Light Guard Pulse detects a current interruption or abnormal condition through the CT coils, the system immediately generates automated alerts that are sent via email and text message to designated personnel. These real-time notifications inform operators of a potential wire cutting or theft-related event, allowing them to quickly assess whether the issue is caused by utility outages, equipment failure, or suspicious activity.

### Software-Programmable Spot Checking

If a user wants to verify the integrity of the lighting system before it automatically energizes during its normal hours of operation, Lindsay has developed advanced software commands that allow Light Guard Pulse to temporarily energize circuits at user-predetermined times outside of those normal operating hours. This capability enables agencies to proactively check circuit health and wiring continuity before the lights are scheduled to turn on for the evening. For example, if a lighting system normally operates from 6:00 PM, when the lights turn on, to 7:00 AM the following day, when they turn off, the user can configure multiple scheduled “spot checks” during the daytime hours when the system would otherwise remain de-energized. During these spot checks, Light Guard Pulse automatically turns the lights on briefly, analyzes the integrity of each circuit using current measurements, and then returns the system to its normal off state. The user can program as many spot checks as desired; if a wire has been cut or a circuit has been compromised, the system detects the abnormal condition during the spot check and alerts the user, allowing issues to be identified and addressed before nighttime operation, when outages are most visible and theft-related damage is typically immediately discovered.

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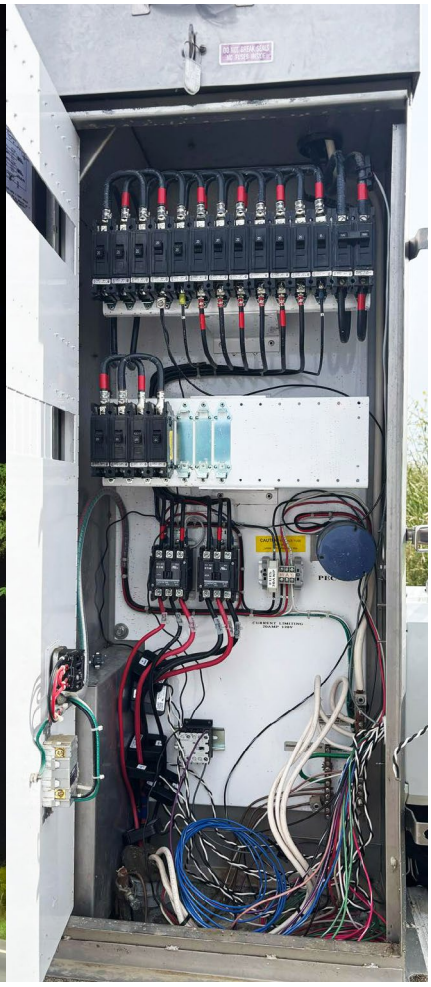
### 24/7 Door-Open Alarm Monitoring

Light Guard Pulse also offers the option to install a contact door alarm on either the main lighting control cabinet or directly on the Light Guard Pulse enclosure. This sensor monitors the cabinet 24/7, and when a door is opened, the system immediately sends an alarm notification to designated DOT personnel indicating that access has occurred. This allows agencies to quickly determine whether the individual who opened the cabinet was authorized or uninvited, and to act accordingly. In one real-world example at a site in California that was frequently targeted by wire thieves, the maintenance group received an alert that a cabinet door had been opened during off hours. The team promptly reviewed nearby CCTV footage and identified an unauthorized individual leaving the area, likely with the intention of returning after dark. Following the alert, the site was inspected, the damaged lock was replaced and reinforced, and the potential theft event was prevented, avoiding what would likely have resulted in significant copper wire theft that same night.



### Psychological Deterrant

In locations that have historically been targeted by wire thieves, agencies that have installed Light Guard Pulse have observed a noticeable reduction in the frequency of attempted thefts after installation. We believe this reduction is due in large part to the fact that once thieves recognize a site is being actively monitored, the perceived risk of being detected and caught increases significantly. Real-time alerts, circuit monitoring, and access alarms change the environment from a passive target to a controlled and supervised asset. As a result, potential thieves are deterred by the higher likelihood of immediate response, making monitored sites less attractive compared to unprotected locations.

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**Bonus: Not Only Copper Wire, But Also Other Wire Materials and Equipment**

Light Guard Pulse can also be used to monitor other materials and electrical equipment beyond traditional copper wiring. In response to ongoing copper theft, some DOTs have replaced copper conductors with aluminum as a deterrent, since aluminum is less attractive to thieves. However, this type of overhaul is often costly, as it requires significant changes to existing cable infrastructure, and despite being less desirable, aluminum wiring continues to be targeted in many locations. Light Guard Pulse offers a solution that works with existing infrastructure, whether copper or aluminum, and is fully compatible with LED, HPS, or mixed lighting circuits. Because the technology is based on monitoring electrical current flowing through a conductor (rather than the conductor material itself) it can detect interruptions regardless of whether the wire is copper or aluminum. This same approach makes Light Guard Pulse valuable in other scenarios where cables or electrically powered assets are prone to theft or tampering, such as traffic cameras, sensors, or other roadside electrical equipment connected by wire.

## Conclusion

By transforming lighting infrastructure from a passive asset into an actively monitored system, LightGuard Pulse empowers agencies to reduce theft-related losses, improve public safety, and protect their investments more effectively. LightGuard Pulse's proactive approach not only combats wire theft (copper, aluminum) and helps protect critical electrically wired infrastructure such as lights, cameras, and sensors, but also delivers long-term operational and safety benefits for modern roadway lighting systems.

Through the RoadConnect platform, users can remotely review circuit data, verify the condition of the lighting system, and act without dispatching crews blindly into the field. This rapid alerting and remote visibility significantly shorten response times, disrupts the typical two-stage theft process, and often enables agencies to secure wiring and other infrastructure before thieves return—reducing both repair costs and prolonged lighting outages.

LightGuard Pulse's remote circuit control and diagnostics allow agencies to verify issues, energize circuits, and isolate problems without sending crews blindly into the field, reducing both response time and risk. Finally, the system's constant monitoring and visibility act as a powerful deterrent, disrupting the typical theft cycle by increasing the likelihood that criminal activity will be detected and addressed quickly.

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## What Light Guard Pulse Provides

- Real-time alerts for light and power outages (for DOT personnel or other authorized entities like law enforcement)
- Photocell control and failure detection.
- Improves operational efficiency
- Eliminates “night rides”: keep DOT staff safe by avoiding manual nighttime inspections
- Customize light schedules for energy savings or additional illumination in shaded or high-risk areas
- Saves time and money

For more information about Light Guard Pulse, please contact:

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