Supplemental Project Notice

# AVIAN COLLISION AVOIDANCE SYSTEM: MARKING POWER LINES WITH LIGHT

Sandhill cranes (Antigone Canadensis) during migration

## PROJECT HIGHLIGHTS

- In the U.S., avian mortality resulting from power line collisions is as high as 130 million birds each year.
- Reducing mortality by traditional line marking strategies is expensive, sometimes dangerous, and collisions typically persist.
- New approaches developed at EPRI have the potential to not only lower avian collisions but provide a conservation benefit to different species around the world.

## Background, Objectives, and New Learnings

Large numbers of birds are killed annually by colliding with power lines and communication towers. Researchers estimate U.S. transmission power line collisions can impact up to 130 million birds per year, which is an environmental concern, can create legal liability for utilities, and may impact stakeholders. Collision mitigation usually involves installing line markers designed to increase the visibility of power lines to birds in flight. The best science indicates line markers reduce collision rates by approximately 50% on average.

Collisions often occur at night or in low light conditions when markers are least effective. In 2017, work began to evaluate a new technology called the Avian Collision Avoidance System (ACAS). The ACAS system uses ultraviolet (UV) light to illuminate power lines. UV light is visible to many bird species but not to people. Bats may also see UV light and respond to the ACAS system.

When ACAS was used to illuminate conductors and overhead shield wires at a transmission span crossing the Central Platte River at the Ian Nicolson Audubon Center at Rowe Sanctuary (Rowe) southeast of Kearney, Nebraska, Sandhill Crane collisions reduced by a 192% difference and dangerous flights near the line decreased by 133%.

The goal of this study is to mark power lines with UV light to determine whether this technology will reduce avian collisions while remaining unnoticed by the public in a specific location.

This approach developed at EPRI have the potential to not only lower avian collisions but provide a conservation benefit to different species around the world.

## Benefits

If the technology proves successful, marking lines with UV light may be more effective than traditional line marking, safer to install, less expensive, easier to maintain, and may not draw negative attention. The approach may also be useful on other suspended wires, on towers, or at renewable facilities.

## Project Approach and Summary

### *This Task 1: Identification of Test Locations*

Additional applications are needed to test the efficacy of the ACAS system, not only on cranes and waterfowl but also passerines. Areas that have a history of low light collisions will be targeted for testing the ACAS system.

### *Task II: ACAS Installation*

ACAS will be installed on high consequence spans. The number of units and their configuration will depend upon the length and number of spans in question.

### *Task III: Monitoring*

Monitoring protocols will be established depending upon the species in question. Typically, the ACAS system will be turned on and off in a randomized nightly pattern. If the species at question is migrating, monitoring can be designed for the length or peak of the migration period. Field personnel can use night vision optics or next day carcass searches to identify collisions. Other monitoring technologies like the Animal Activity Monitor and the Bird Strike Indicator could also be used to determine the number of collisions. Data to be recorded includes date, time, collision species, ACAS status, and estimated distance from ACAS to collision location. Field personnel will visit the study span daily to:

1) Turn off the ACAS system if it is not remotely controlled

2) Search for carcasses

3) When possible, identify the species and age of carcasses found

### *Task IV: Data Analysis and Reporting*

Collision and flight behavior data will be analyzed primarily in terms of the number of collisions and dangerous flights when the ACAS is on and when it is off. All data will be summarized in a final report.

## Deliverables

Final EPRI Report synthesizing findings and lessons learned.

Bi-annual webcasts to provide project updates, review draft results, and solicit input from project participants.

## Price of Project

The price is based on the total scope of the project and the following site-specific considerations: number of units deployed, whether there's a dedicated power source or if one needs to be installed, the total length of span in question and number of spans; the migratory species of concern that will be monitored including length of respective migration season and the correlating monitoring requirements.

## Project Status and Schedule

EPRI will start work as soon as host access agreements and research contracts are in place.

## Who Should Join

The project is open to all EPRI members and other utilities. Utilities and other companies currently facing seasonal restrictions and bat conservation challenges are encouraged to participate.

## Contact Information

For more information, contact the EPRI Customer Assistance Center at 800.313.3774 (askepri@epri.com).

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