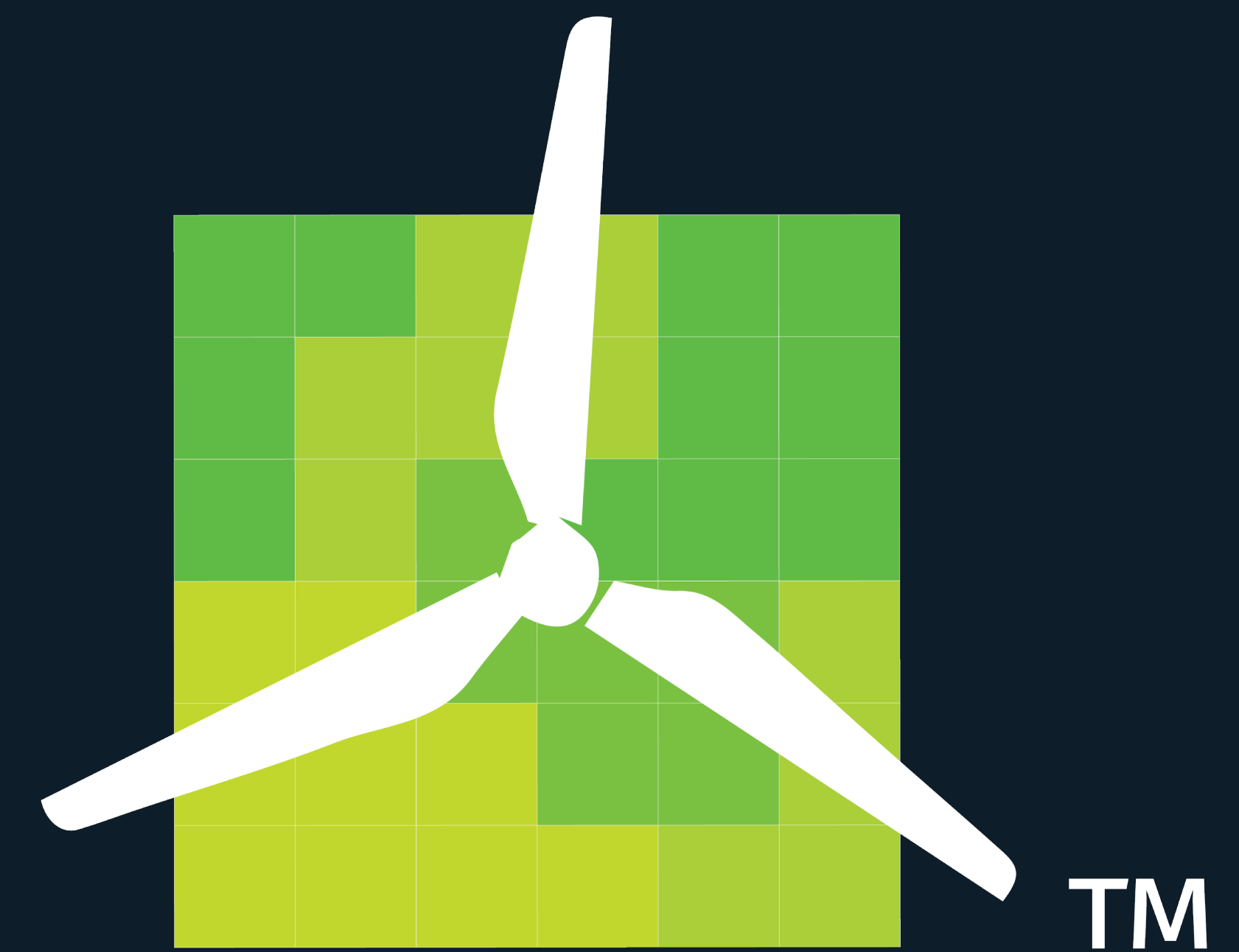
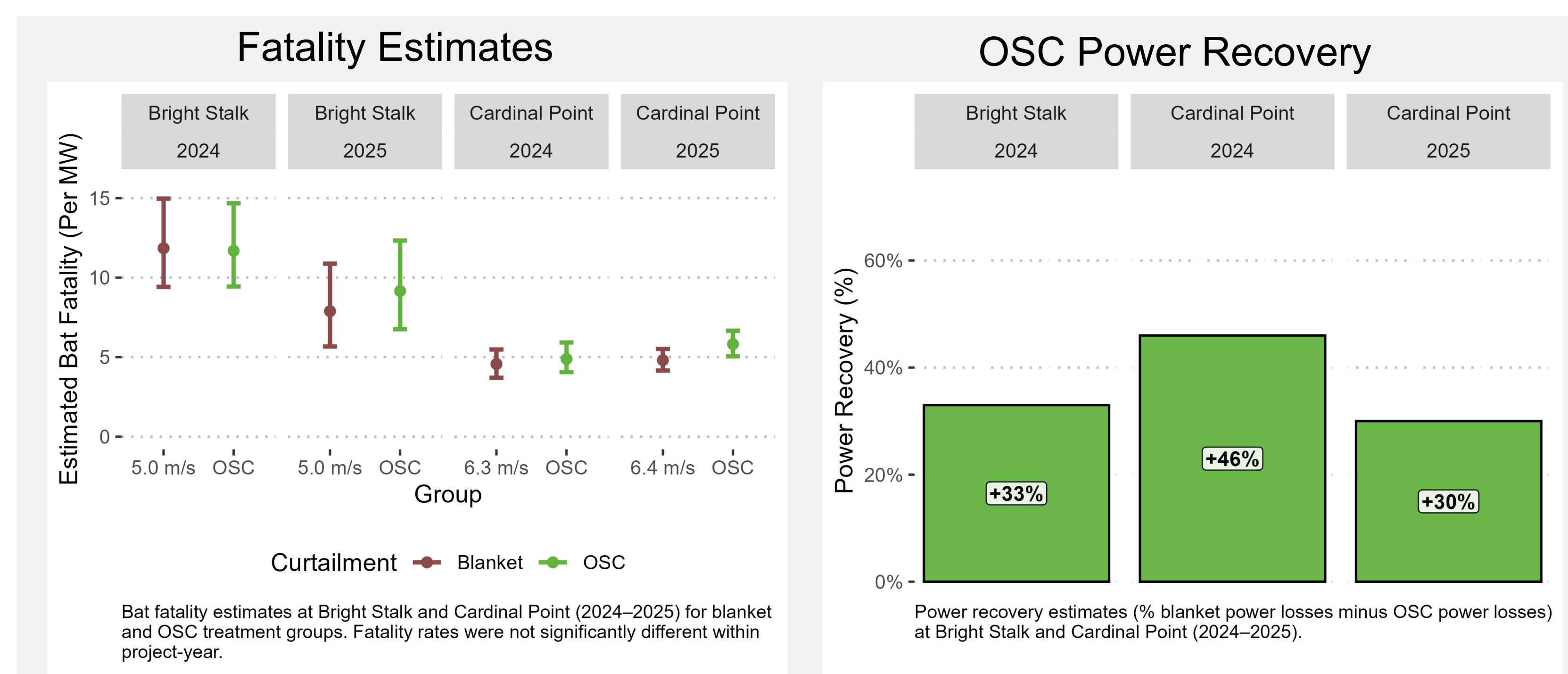


Optimized Smart Curtailment recovered 30–46% of lost power production compared to similarly effective blanket curtailment

Optimized Smart Curtailment™ (OSC™) for Bats: Boosting Energy Production while Maintaining Conservation Goals

Amanda Hale, Mike True, Rhett Good, Paul Rabie, Kevin Heist, Western EcoSystems Technology, Inc. (WEST); Brogan Morton, Jon Ritter, Wildlife Imaging Systems



Example composite image showing bat activity captured by thermal cameras. These data were used to develop OSC and estimate exposed bat activity at turbines.

Example of an acoustic microphone mounted on the nacelle. These data were used to develop OSC and estimate exposed bat activity at turbines.

Introduction

WEST's OSC reduces bat fatalities while increasing energy production by curtailing turbines only during high-risk, low-wind conditions.

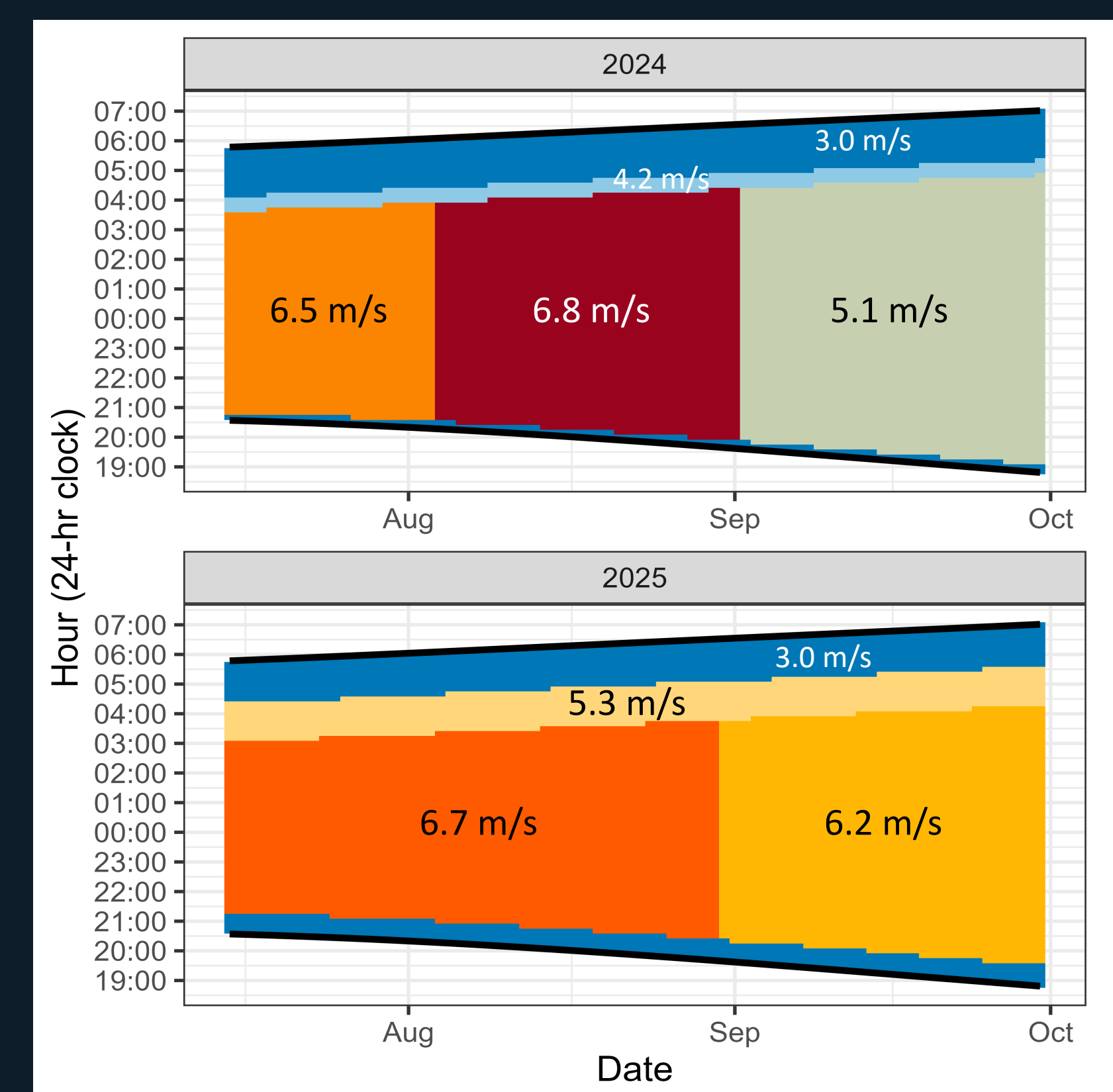
- It requires no long-term hardware, making it less costly than acoustic-triggered systems.

Methods

- OSC was designed to achieve fatality reductions comparable to blanket curtailment.
 - Cardinal Point: **6.3 m/s** (2024), **6.4 m/s** (2025)
 - Bright Stalk: **5.0 m/s** (2024–2025)
- OSC and blanket treatments were each implemented at half of the turbines during the highest risk period for bats at each facility.
- Collected PCM, acoustic, and thermal video data.

Results and Discussion

- Fatality rates and exposed activity were similar across treatments within each project year, indicating comparable protection for bats.
- OSC reduced power losses by 30–46% compared to blanket curtailment, providing substantial energy savings across all project years.
- Exposed activity is a reliable indicator of collision risk, supporting its use in building curtailment schedules.
- OSC avoids unnecessary power losses, with no evidence that it is less effective than blanket curtailment at reducing fatalities.



OSC algorithms implemented at Cardinal Point in 2024 (top) and 2025 (bottom). Note: Bright Stalk algorithms not shown.

Acknowledgements

Renewable Energy Wildlife Research Fund (REWRF) and our Host Sites: Cardinal Point and Bright Stalk

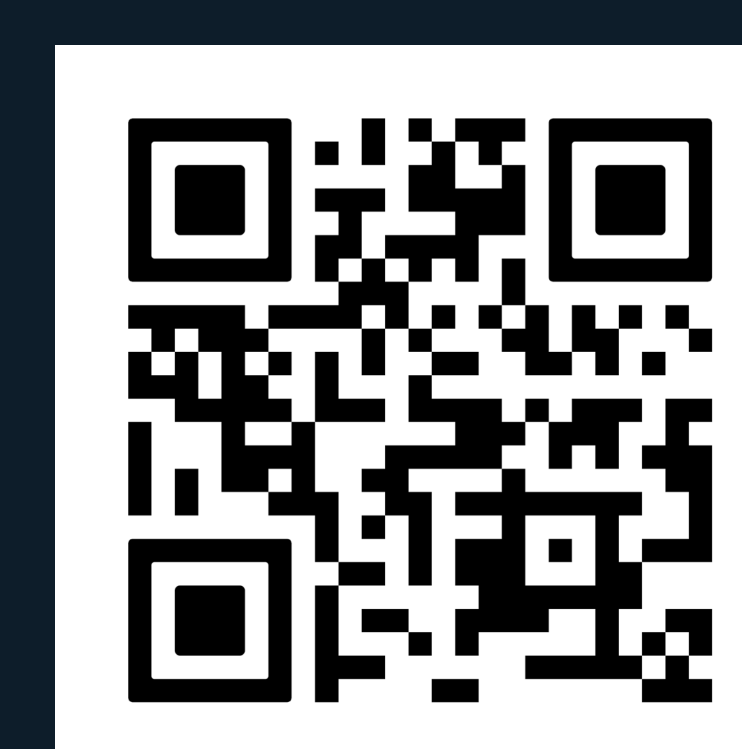


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