

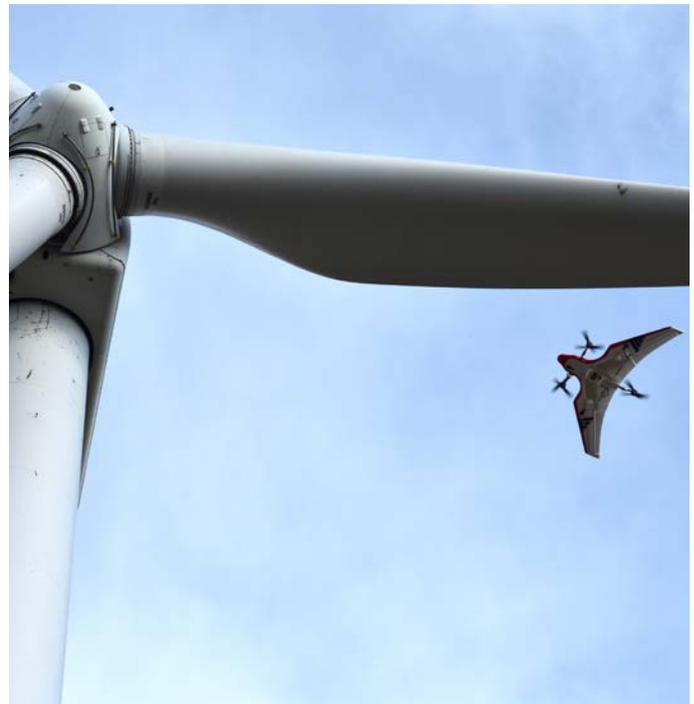


# Wind and Wildlife Co-Exist With Help From ECO Wind

Through robust research, outreach, and engagement efforts, ECO Wind advances wind energy and wildlife conservation

Sustainable deployment of wind energy requires a balance of conservation, energy, and economic goals. The Enabling Coexistence Options for Wind Energy and Wildlife (ECO Wind) project at the U.S. Department of Energy National Renewable Energy Laboratory (NREL) supports efforts to reduce wildlife impacts at land-based and offshore wind energy facilities with monitoring and minimization technology solutions.

Through ECO Wind, the National Wind Technology Center at the Flatirons Campus collaborates with technology developers to support the development, validation, and engineering of emerging technologies that detect and deter birds and bats at wind farms.



Drones like the one pictured above help NREL researchers simulate bird flight patterns near wind turbines. This drone was used to validate a camera system developed by Pacific Northwest National Laboratory. *Photo by Brendan Davidson, NREL*

## ECO Wind Activities

Through research, outreach, and engagement, ECO Wind works to close knowledge gaps, grow and support collaborative organizations, and disseminate scientifically credible information to key stakeholder groups.

### Research

Research conducted under ECO Wind reduces uncertainty surrounding wind-wildlife interactions, sheds light on drivers of risk, and identifies effective solutions to mitigate impacts on wildlife.

#### Intelligent Thermal Camera Helps Researchers Monitor Wildlife-Wind Turbine Interactions

Certain species of bats are among the most vulnerable to wind turbine collisions. Thermal video surveillance has proven to be a powerful tool for studying bat behavior around wind turbines, though current analytical approaches take a significant amount of time because methods of processing data are not yet fully automated.

NREL researchers are working to improve and validate a thermal camera vision system that uses artificial intelligence to identify and track biological objects—like birds or bats—in real time. Once complete, this system will be available as open-source software that will significantly accelerate the wind industry's ability to understand bat behavior around wind turbines.

### Outreach

ECO Wind outreach ensures science-based results, tools, and resources are widely disseminated and accessible to stakeholders.

#### Webinar Series Balances Wind Energy Advancement With Species Conservation

NREL bolsters land-based wind energy content on [Tethys](#), Pacific Northwest National Laboratory's publicly accessible online knowledge base that facilitates the exchange and dissemination of knowledge needed to advance wind energy development in an environmentally responsible manner.

In 2020, NREL and Defenders of Wildlife hosted the [Wildlife & Wind Energy Webinar Series: Considerations for Monitoring and Managing Impacts](#), a nine-part webinar series that helped familiarize stakeholders with the nuances of land-based wind energy development in the context of species conservation.

## Engagement

ECO Wind's engagement activities build and maintain trust among key stakeholders, encourage adoption of new technologies and mitigation strategies, avoid redundant efforts, and ensure the project remains relevant and responsive to stakeholder needs.

#### Bats and Wind Energy Cooperative Develops Solutions To Meet Conservation and Renewable Energy Production Goals

NREL coordinates the [Bats and Wind Energy Cooperative](#), an alliance of experts from government agencies, private industry, academic institutions, and nongovernmental organizations that develop solutions to monitor and mitigate the impact of wind turbines on bats while operating wind energy facilities in a competitive and cost-effective manner.

Through the Bats and Wind Energy Cooperative, NREL organizes and hosts triannual science meetings, facilitates peer review of wind energy-bat research, educates target audiences via workshops and trainings, and organizes working groups and expert forums to address key challenges specific to bats and wind energy.



Engagement efforts like the NREL-coordinated Bats and Wind Energy Cooperative build trust among key stakeholders and encourage research of new technologies and mitigation strategies to protect vulnerable species like this hoary bat. *Photo by Kathleen Smith, Florida Fish and Wildlife Conservation*

### Learn More

For more information, contact: [Cris.Hein@nrel.gov](mailto:Cris.Hein@nrel.gov) or visit <https://www.nrel.gov/wind/technology-development-innovation.html>