Technology Advisory

Leveraging Technology for Avian Protection

What has changed?

Two cooperatives are bringing new meaning to the line that 'information is power,' by using robust analytics and visual data applications to proactively protect birds from negatively interacting with electrical facilities.

- SECO Energy serves 200,000 members in Central Florida. It developed a visual web-enabled application as part of its Avian Protection Plan. The application shows existing nesting sites, relocated or removed nests, and specific "bird-friendly" equipment installed on the electric system. The cooperative's Florida service area features extensive waterways that are home to a variety of birds, including ospreys and eagles.

- Coles-Moultrie, which serves 9,500 members in central Illinois, called on a partnership with Lake Land College, the local community college, to create an Avian Risk Assessment Tool. The co-op and Lake Land teamed up to do a scientific study of its avian population and spatial analysis to produce a potential risk score for every pole in the co-op's service area. The co-op subsequently has also partnered with Eastern Illinois University (EIU) to potentially continue to develop the tool and to create ways to engage the community. The cooperative's service area intersects the Mississippi flyway, an area in the Midwest where more than 325 bird species migrate annually.

What is the impact on cooperatives?

Avian interactions with power lines – including electrocutions, collisions, and nest construction – and subsequent impacts to power reliability have prompted many utilities to initiate efforts to identify the causes of and to develop solutions to address these problems. A utility can have the greatest impact on reducing avian mortality and improving system reliability by focusing its efforts in a cost-effective manner on the areas that pose the greatest risk to birds. GIS and visual display of data through mobile apps are emerging as supporting technologies to evaluate risks and identify areas of particular concern.

Equipment damage, momentary short-circuits, outages, and other bird-related reliability issues are a concern for many utilities. The costs associated with these events include power outages, lost revenue, and equipment repair; installation of "bird-friendly" devices; reduced reliability; and negative public perception. It is estimated that utilities lose $15 million to $18 million annually from bird- and other animal-caused power outages.

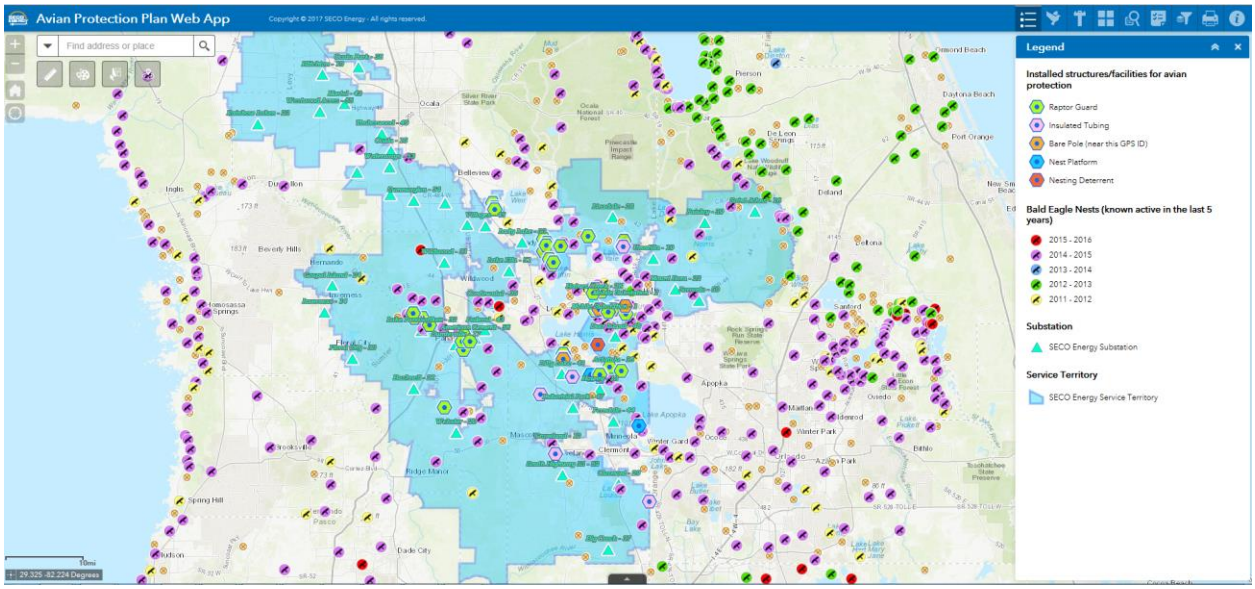
However, a utility that implements an avian protection program that addresses its specific avian populations can see benefits in regulatory compliance, reliability improvements, cost savings, and positive recognition from regulators and members. NRECA's Endangered Species Resolution urges NRECA to continue communication and education programs for electric cooperatives and employees, applying best available practices, including design and technology for avian protection.

Cooperatives Approaches

SECO Energy

SECO Energy recognized the need to create a formal avian protection plan and to develop corporate processes related to regulations and incident reporting. One of the objectives of the plan was to create a visual tool for employees. The co-op created a web mapping application from its GIS database. The application, in the pilot phase, provides an interactive way to view SECO Energy electric facilities with respect to known nest locations. It also shows where the cooperative has already installed avian protection devices. The co-op used a data source of nest locations from Florida Fish and Wildlife Commission.

Screenshot of SECO Energy Avian Protection Plan Web App



Source: SECO Energy

The ongoing effort illustrates the cooperative's values in the environment and the protection of birds. SECO Energy is reinforcing its stewardship commitment by providing field personnel with this interactive and visual representation of sensitive areas, according to Barry Owens, SECO Energy manager of geospatial services. The co-op also is drafting a policy on avian protection and plans more training of personnel.

Coles-Moultrie

Coles-Moultrie in Illinois also leveraged its GIS, which it developed in-house using Open Source tools. To better understand how birds were affected by its lines, the cooperative conducted a scientific study to determine the risk factors associated with avian mortality and power lines. The resulting tool assigned numerical scores to each of poles, based off how likely that pole was to cause harm to a given bird. The Avian Risk Assessment Tool factored in collision and electrocution risk, bird size/shape, and flight behavior. The co-op pulled in data from eBird, a database of bird sightings operated and vetted by the Cornell Lab of Ornithology. The study also incorporated land cover data from the United States Department of Agriculture (USDA).

Lake Land College, the local community college, has a mature GIS program and previously provided the co-op with interns for development of its GIS. Two additional students had unique backgrounds – one degreed in conservation and forestry sciences and one with considerable experience with avian species. They were instrumental in developing the risk assessment predictive model and the overlay of the co-op's Avian Protection Plan into the GIS. The analysis has provided a data-rich foundation for the cooperative's Avian Protection Plan.

Coles-Moultrie has since worked with Eastern Illinois University to develop a colloquium to explore the Risk Assessment Study and assist the students in validating their conclusions. Eastern Illinois University also is including Avian Studies in its Earth Day events scheduled each April. The program will include seminars for high school and college students, community groups, and others. Trained spotters will be involved in these educational outreach efforts, and the bird sightings from the field trip will be included in the co-op's bird data and used for updating future maps.

Coles-Moultrie CEO, Kim Leftwich, said that one objective of the Avian Protection Plan is to "engage the community, not simply one time, but with an on-going community event that provides education and understanding of our region's environment."

Additional Resources

The Avian Power Line Interaction Committee (APLIC) was formed to foster collaboration on avian protection between the U.S. Fish and Wildlife and utilities. APLIC provides suggested guidelines for utilities on how to cost-effectively implement avian best management plans (BMPs).

Avian Protection Plan (APP) Guidelines

- APLIC. 2005. *Avian Protection Plan Guidelines*. APLIC and US Fish and Wildlife Service. Washington, D.C.
- Voluntary guidelines cooperatively developed by APLIC and the U.S. Fish & Wildlife Service, which is intended to provide a "toolbox" from which utilities may use to tailor an Avian Protection Plan (APP) that will best fit their needs while furthering the conservation of avian species, and improving system reliability and customer service.
- An APP is a utility-specific document that delineates a program designed to reduce the operational and avian risks that result from avian interactions with electric utility infrastructure.

Suggested Practices for Avian Protection on Power Lines

- APLIC. 2006. *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006*. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and Sacramento, CA.
- A resource developed by APLIC to assist those concerned with complying with federal avian laws, protection and enhancing avian populations, and maintaining the reliability of the electric power grid.
- Summarizes the history and success of over 30 years of utility best management practices to address avian powerline interactions, particularly electrocutions.

Reducing Avian Collisions with Power Lines

- APLIC, 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC. Washington, D.C.
- Provides guidance for reducing bird collisions with power lines based on research and utility best practices. Useful resource for helping guide decisions on how to reduce bird injury and mortality from collisions, comply with bird protection laws, and enhance system reliability.

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