



Photo courtesy Disney Conservation

A Magic Kingdom for Pollinators

How Disney uses its commitment to solar energy to expand habitat for pollinators

By Chris Warren

Sustainability-minded visitors to Walt Disney World's EPCOT in Florida may well find themselves lingering outside the entrance of the 305-acre attraction theme park. That's because a 22-acre swath of land just outside the park is home to a 48,000-panel, 5-megawatt (MW) solar power plant in the shape of Mickey Mouse's head.

It's appropriate that EPCOT is the site of such a conspicuous and memorable solar power plant. Conceived by Walt Disney himself, EPCOT originally stood for *Experimental Prototype Community of Tomorrow*, and its attractions celebrate the magic of possibility through technological innovations and humanity's capacity to forge a better future together. But the solar plant is by no means ornamental. Along with the much-larger, 270-acre, and 57 MW Citrus Ridge Solar facility (also known as [FL Solar 5](#)) nearby, solar now provides enough renewable electricity to operate two of the four Disney theme parks in Orlando.

The solar projects were developed with partners Duke Energy, Origis Energy, Reedy Creek Energy

Services, and Reedy Creek Improvement District as part of the company's sustainability and decarbonization goals. By 2030, the Walt Disney Company has pledged to produce or purchase zero-carbon electricity to power all its direct operations. In 2020, Disney achieved a 50 percent reduction in net emissions compared to 2012 levels.

Anyone encountering the Mickey-shaped solar array on their way into EPCOT should keep in mind that Disney is a storytelling company; there are always layers and nuances to what may otherwise seem like an obvious tale. In this case, Disney's commitment to solar energy is also a story about innovative efforts to provide vital habitat to Florida pollinators. "We recognize that renewable energy is amazing. But it takes up a lot of space," said Morgan Belle, who has helped spearhead Disney's effort to pair solar and pollinator habitats. "It was a natural progression to figure out what we could do with this land in addition to having it as a solar facility. There's all this valuable land underneath and around the panels, so we might as well figure out how to use that, too."

That has translated into 160-plus acres of pollinator habitat and 10 acres of research meadow that includes 18 species of grasses and forbs, including Birdsfoot Trefoil, Blackeyed Susans, and Purple Lovegrass. About two-thirds of the species are native to Florida. The mix of grasses and forbs was selected partly because they bloom at different times throughout the year to support pollinators like bees, butterflies, birds, bats, and some insects.

AN AWARD-WINNING PROJECT

In November, Disney was awarded the EPRI & North American Pollinator Protection Campaign's (NAPPC) Pollinator Electric Power Award for its success in co-locating solar and pollinator habitat. Founded in 1997, NAPPC runs a host of programs in North America and across the world with the mission of promoting pollinator health. The non-profit organization gives awards to honor the accomplishments of pollinator advocates, farmers and ranchers, and transportation agencies that promote the expansion of roadside pollinator habitat.

In 2020, EPRI's Jessica Fox helped brainstorm how NAPPC could add a unique recognition to its annual award program that would acknowledge projects working at the intersection of electric power and pollinators. Soon after, EPRI and NAPPC launched the award category. The inaugural award went to American Electric Power (AEP) for researching the pollinator benefits of planting native prairie grasses and flowers instead of traditional grasses along transmission line corridors. Last year's winner was the Toronto and Region Conservation Authority (TRCA), which was recognized for an urban restoration project creating a so-called "Meadoway" connecting seven rivers and ravine systems, 15 parks, 16 kilometers of trails, and 13 neighborhoods with over 200 hectares of green space populated by 1,000 species of flora and fauna. In October 2022, Disney accepted the award during the annual NAPPC meeting in Washington, D.C.

Winners of the award are thoroughly vetted by a panel of scientists who are primarily seeking to answer one fundamental question: Is the project having an important benefit to pollinators? "Disney



Photo courtesy Disney Conservation

received the Electric Power Pollinator Award because their project was backed by impressive ecological outcomes and public education, both things that the independent scientific review committee considers,” said Jessica Fox, a member of NAPPC and a senior technical executive at EPRI who leads the organization’s Power-in-Pollinators initiative.

The review process is rigorous, and competition for the award is increasingly fierce. The review committee considers award applications by asking specific questions to determine the tangible benefits pollinators receive. “The committee looks at the region where the project is located and asks what species were planted to determine whether it’s a native mix able to bloom over multiple seasons,” Fox said. “People on the committee are botanists, entomologists, and restoration ecologists, so they understand if legitimate pollinator conservation protection is occurring.” The award committee also reviews the applicant’s success in communicating the value and importance of pollinator protection and the commitment to keep a project up and running over the long term.

BUILDING ON A LEGACY OF CONSERVATION

Heading into this project, Disney had the advantage of years of experience with pollinator habitat. The company has maintained pollinator gardens at its parks and resorts and has long conducted butterfly surveys in its conservation areas. “We have pollinator programs across our parks and resorts where guests and cast members (employees) can come and actually learn how to survey these gardens and gather data,” Belle said.

In selecting the species to plant under the solar arrays, Belle and her colleagues wanted to ensure that there was a range of blooming times, that the plants were drought tolerant and commercially available, and that the species didn’t grow to heights that would shade the panels. “We started with a species list that we tend to use in our ornamental gardens in our theme parks and resorts, where families have helped us with community science,” Belle said. “That helped us determine which plants receive the most visits from pollinators. So, families visiting the theme parks helped influence which plants we initially selected.”



In 2018, Disney planted 68 two-by-two-meter test plots to better understand different species before opting to go under and around the solar arrays. “There’s not a lot of information about solar pollinator habitat in our region,” Belle said. “We wanted to start small and prove that it works well before scaling up.” In the years since, Disney has scaled up its planting of pollinator habitat. Vegetation management involves mowing one to three times per year, depending on the location, and is handled by the energy companies operating the power plants.

The fact that Disney owns the land and leases it to the energy companies that run the solar arrays is an indication of the influence that large corporate purchasers of clean energy can have on project details—including whether they provide pollinator habitat. “As a large customer, corporations can say, ‘This is the type of power that we want,’” Fox said. “With the idea of end-to-end sustainability, one of the huge drivers is that large customers like Disney can say to the power company, ‘This is what we want; can we work together and figure out how to do it?’”

This was exactly the attitude Duke Energy brought to the project. “The credit goes to Disney in this,” said Will Ricks, senior environmental scientist at Duke. To Ricks, Duke’s task was to collaborate closely with

Disney to accomplish the necessary engineering and project planning to come up with the array designs that could accommodate pollinator habitat.

Ricks notes that local knowledge of Florida weather, soil, and plants was essential to the project's success. He's also certain that Disney's success will be a catalyst for more habitat conservation. "What's key for pollinators and solar moving forward are success stories, and I can't think of a better or more successful story of pollinators and solar than Disney," said Ricks, who has personal experience establishing pollinator habitat on his family's farm in North Carolina. "It can be challenging, but it takes folks like Disney to put those puzzle pieces together."

Origis Energy's involvement in the Disney project is part of the company's ongoing efforts to conserve pollinator habitat. "We are very proud that Disney selected the Citrus Ridge project to host its innovative pollinator conservation efforts and studies," said Jason Thomas, a project developer with Florida-based Origis Energy. "This is a perfect fit with Origis's pollinator program."

Ultimately, the project's goal is to provide carbon-free energy and genuine benefits to pollinators. In that regard, it has been a success. So far, over 40 native species of pollinators and at least 60 species of insects have been making use of the solar pollinator habitat. "We're finding more pollinators are making use of our solar gardens in comparison to the standard turf grass sites, and we compare these results to a conservation management area we monitor," said Belle, who is working on a peer-reviewed publication to share the results.

One of the factors considered in the award review is future plans for the pollinator sites. To that end, Disney is going to continue adding more habitat in and around the solar arrays and is initiating several research projects as well. Among the things Disney wants to study are best management practices to maintain the habitat, how the microclimate under the arrays impacts flowering phenology and abundance, and the solar habitat's effect on native bees.



Photo courtesy Disney Conservation

As a storytelling company, Disney has also proactively shared what it learned throughout the project with the public, the scientific community, and its employees. "We are always pleased to share this story as part of our collective efforts through what we call *Disney Planet Possible*," Belle said. "As we look to the future, we are committed to taking action to put possibility into practice and inspire optimism for a brighter, more sustainable future."

EPRI TECHNICAL EXPERT

Jessica Fox

ADDITIONAL RESOURCES

- [Feasibility of Co-Locating Solar PV and Pollinator Habitat: Conceptual Modeling Results and Analysis](#)
- [SMUD Rancho Seco Restorative Energy Project](#)