

CASE STUDY / **SELF-PERFORM SOLAR CONSTRUCTION**

EMBARKING ON A UTILITY-SCALE SOLAR PROJECT TO MEET EMISSION REDUCTION GOALS

To continue to provide reliable service, CenterPoint Energy needed a new 50-megawatt alternating current (MWac)/ 64.7-megawatt direct current (MWdc) universal solar array. Burns & McDonnell was brought on to self-perform the construction and stayed on-site despite challenges related to the ongoing COVID-19 pandemic.



INNOVATIVE SELF-PERFORM CONSTRUCTION TEAM DIVERSIFIES GENERATION PORTFOLIO

Serving residents in CenterPoint Energy's Indiana electric territory, an integrated direct-hire team supplied an innovative solution to engineer and construct a solar array.

PROJECT STATS

CLIENT

CenterPoint Energy

LOCATION

Troy, Indiana

COMPLETION DATE

January 2021

50

MWAC ADDED SOLAR SITE

400

ACRES

150K

SOLAR PANELS ON-SITE

165K

SAFE WORK HOURS

CHALLENGE

CenterPoint Energy was looking to add renewables to its portfolio in order to meet its goal of reducing operational emissions by 70% by 2035 based on its emissions in 2005. The building of a utility-scale 50-megawatt (MWac) photovoltaic solar site marked the utility's first solar project in its generation portfolio, working to meet this standard of reduced emissions.

When CenterPoint Energy's original engineer-procure-construction (EPC) contractor left the EPC market after completing 30% of the project's design, CenterPoint Energy looked to Burns & McDonnell, its owner's engineer for the project, to provide engineering and construction services.

The site posed a variety of challenges with variations found in soil conditions. Four different soil zone types were identified, equating to 30 different pile length, weight and size variations. Piles were deployed in the field through a robust pile plan, which required our integrated team to plan, coordinate and check that piles were in the proper location. Additionally, the presence of jurisdictional waterways at the site led to the team strategically breaking the project up across eight different areas.

Site restrictions were not the only challenges that had to be overcome during the project. The ongoing COVID-19 pandemic brought on new safety protocols and other factors that required quick, attentive adaptations to maintain safety on the site and keep work on schedule.

SOLUTION

Working with approximately 150,000 solar panels distributed across 400 acres, we coordinated the project to keep costs at a minimum and maximize efficiency. Our ability to self-perform the construction of this project with AZCO, part of the Burns & McDonnell family of companies, was critical to the success of this project. Together, we provided engineering, detailed electrical, civil and structural design,





procurement specifications and construction execution services.

Each solar module is mounted on a Nextracker single-axis tracker allowing the modules to track with the sun to maximize energy generation as the sun's rays move throughout the day. We worked with local building trades and other subcontractors to assist with on-site labor efforts, providing job opportunities in Indiana during a tough economic downturn as a result of the ongoing pandemic.

The team used drone imagery and mapping to obtain preliminary topography information of the site. This data allowed the site design team to conduct the preliminary site assessment and acquire as-built data for piling data development. Structural design phase data could then be strategically paired with global positioning system-equipped pile-driving equipment to greatly improve efficiencies. Through the

use of drone imagery and on-site mobile applications, the team could also accurately assess and maintain progress updates and support safety management, daily reporting, quality forms and more throughout the project. The collaboration between CenterPoint Energy's procurement team and various partners was crucial in providing the Burns & McDonnell team the ability to install key equipment for a successfully executed project delivered on-time and on-budget.

The team continued to provide critical services during the COVID-19 pandemic. Throughout the project, the team persevered to travel and meet with CenterPoint Energy even while the world was shut down, often seeing few other vehicles on the highway, to keep the project on track. Additionally, for every phase of the project the team learned to quickly pivot and adapt to keep social distancing and other safety measures in place.

RESULTS

This project marked CenterPoint Energy's largest utility-scale solar project and the utility has reported positive feedback after working with our integrated team. The integration and constant communication throughout design and construction allowed our construction team to mobilize quickly, while supporting constructability reviews to address potential conflicts throughout the project and identifying a suitable solution in real time.

Safety was kept a top priority every step of the way with more than 164,000 safe work hours — including about 155,000 self-perform hours — logged, zero days away and zero lost time incidents. With construction completed in January 2021, the new solar field generates enough electricity to power more than 12,000 households per year.



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