



Photos: ESA Renewables

At the 999 kW Martins Creek installation, errant golf balls and a nearby bird sanctuary call for more regular cleaning and inspection.

Benefits beyond electricity

Intersolar Award winner: A school PV project in North Carolina has provided an example of what PV can deliver, both to a school and local community, but also in financial support to the school during challenging financial times. ESA Renewables' Brittany Szafran sets out what makes the award-winning installation special.

Intersolar award winner: The third largest photovoltaic solar farm on school grounds in the US; the Martins Creek installation in Murphy, North Carolina was recognized for innovation and community impact by earning the Intersolar Award 2012 for Solar Projects in North America. The 999 kW solar farm has provided more to the local school and community than just green electricity and environmental benefits. The installation generates residual income for the Martins Creek Elementary School through their Power Purchase Agreement (PPA) and serves as an ongoing educational tool for the school's students, faculty and surrounding community.

Unique site conditions

Having sat inactive for months under a previous owner, turnkey solar solutions provider ESA Renewables took over the Martins Creek site in January 2011 and was able to quickly bring the project online. Assuming control of an existing basic structure for a solar farm had its

challenges. Site preparation conditions were not optimal, however ESA was able to manage the undertaking. ESA designed, engineered, procured, and constructed the Murphy, North Carolina solar farm by making crucial adjustments to the racking and other equipment conditions that were already in place. In addition to engineering, procurement and construction (EPC) services performed, ESA will continue to carry out a comprehensive operation and maintenance (O&M) plan for the duration of the 10-year contract.

The Martins Creek site has unique O&M conditions resulting in more frequent assessments and cleaning of the site's equipment. A few vandalism incidents have occurred when golf balls were hit onto the site resulting in damaged panels that required replacement and a need for increased inspections. Furthermore, the close proximity of a local bird sanctuary has required more regular cleaning and maintenance of the solar panels. As part of the customized O&M

strategy, ESA Renewables' team educated the local citizens on proper handling of the site and optimized the opportunity the solar project installation created to increase public awareness. The community education initiative resulted in widespread support for the solar system.

The PV system was completed in March 2011. This ground-mounted solar array sits on approximately five acres of property adjacent to the Martins Creek Elementary School. The project utilizes 235 watt Canadian Solar CS6P polycrystalline modules, 260 kW PV Powered inverters and Schletter's FS racking system. All of the electricity generated by the system is sold back to the Tennessee Valley Authority under a 10 year PPA term, with two possible five-year extensions, in conjunction with the Generation Partners Program.

Innovative benefits

The Martins Creek installation's groundbreaking feature is its distinct ability to directly impact the local residents of



Students were present at the installation ribbon cutting and commissioning ceremony.

Cherokee County. A portion of the PPA funds generated by the system are fed back into the school through a standard land lease agreement. The funds equate to keeping two school teachers employed annually for the 10 year period of the PPA. With statewide school budget cuts, the additional compensation awarded to the Martins Creek Elementary School for the teachers' salary is a much needed form of assistance.

In addition to funding teachers' salaries, the solar farm gives students an exclusive opportunity to learn more about the field of renewable energy, specifically solar PV. With a television monitor located inside the school, students can view real-time data coming from the site at any given time during the day via ESA Renewables' educational monitoring system. This grants students and the community the ability to learn about the benefits of solar as a key form of sustainable energy production. This combination of an educational opportunity for the community and local teacher salary creation makes the project an inventive use of solar that can lay down a trend for future projects.

Additionally, the site's construction positively impacted the community through rural job creation for approximately ten construction workers, supervisors, electricians and engineers, which have been employed since its inception.

Exceeding projections

After overcoming early construction challenges and enacting a total O&M strategy, the installation has surpassed the initial energy production estimation by producing approximately 20 percent more. The site was originally projected to produce approximately 1.3 million kilowatt hours (kWh) of electricity, the energy equivalent to running 150 average sized homes. With the system producing 20 percent more, it is actually running an average of approximately 180 average sized homes. This increase in production can be attributed to ESA's detailed focus on module selection and arrangement within the string to optimize performance, as well as their proprietary monitoring system. The monitoring system enables technicians to make immediate and continual adjustments to the system, which positively affects energy generation.

By successfully constructing imaginative and resourceful projects, solar energy providers can promote more than the traditional environmental benefits of sustainable, green energy. Turnkey solar solution providers, such as ESA Renewables, are further looking into developments that can have widespread positive impacts on communities and customers worldwide. ♦

Brittany Szafran

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