CASE STUDY

SOLAR - CEDAR RIDGE SCHOOL DISTRICT & MIDLAND SCHOOLS

SUMMARY

Cedar Ridge Schools (CRS) and Midland School District (MSD) teamed up to improve their districts with a new solar facility. Entegrity designed, built, and will maintain a 1.36 MW single axis tracking system that operates on school grounds. CRS and MSD became the first districts in the state to utilize co-located solar energy technology after entering into a solar services agreement (SSA) with us. With this option, the districts share a common site and spread fixed costs, resulting in lower solar service rates and impressive savings for each school district.

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BACKGROUND

Cedar Ridge Schools and Midland School District are two small school districts in rural Arkansas that had previously taken steps to increase their energy efficiency and lower operational expenses. As Arkansas legislation made solar more accessible, the districts decided to take advantage of solar energy to further lessen operation costs. By allowing entities to enter SSAs and permitting 1:1 net metering, grandfathering, co-location, and larger arrays, Act 464, also known as the Solar Access Act, made solar viable for more entities in Arkansas like rural school districts.

The superintendents were eager to implement the upgrades and aid with various budget constraints caused by growth from district consolidation. By generating savings through energy efficiency upgrades and the new solar facility, the districts will have more financial freedom to reallocate operating funds to improve the learning environment for students and teachers.

"The Midland District knew it wanted to benefit from solar, so the Board decided to collaborate with one of our neighboring districts by installing a co-located array. I encourage more small districts in the state to explore all options available before ruling it out," stated Midland Superintendent Dr. Bruce Bryant. The districts trusted Entegrity to bring solar to their schools, having worked with us for previous energy efficiency solutions.

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PROJECT DESIGN

Design began with a utility rate assessment to analyze multiple years of the districts' utility bills to discern their total consumption and rate structure. As bill analysis is vital in determining the solar opportunity based on local rates, we examined a full year of energy consumption to get the best picture of their needs throughout the seasons. Then, we right-sized the array to prevent overproduction to the grid. During this process, we considered future energy efficiency and possible expansion to ensure the project will be beneficial in the long term. Next, we chose land for the project that would allow both districts to receive solar energy from one array. The array was built on an existing hay field next to the school that is used by the Future Farmers of America program, a detail that will play a part in maintenance. We test the site ground's resistance by analyzing piles driven into and removed from the ground, influencing how our engineers design the array's foundation. Data from local weather and flooding as well as the depth to the site's bedrock is also utilized to fine-tune array design.

FINANCE

We financed this project with a Solar Service Agreement (SSA) and third-party ownership, meaning Entegrity shoulders all burden of the array's performance and maintenance. As a private entity, Entegrity can also take advantage of tax credits and depreciation of the equipment, passing it along to the districts at a lower rate. By utilizing off-balance sheet financing, project costs do not become debt or limit the districts' future borrowing capacity. The project provides Midland SD and Cedar Ridge SD annual savings of approximately $46,000 and $65,000, respectively.

BUILD

The districts' array was expertly built by Entegrity's in-house installation team along with our partner, Nabholz Construction. First, the site was prepped by clearing debris and building a road to the array. While this site was flat, we can regrade land to obtain a uniform slope for the array if needed. Once the layout of the array was complete, Vermeer pile drivers were used to exactly locate array piles, easing the installation process. Next, OMCO racking with a single axis tracking system was installed, ensuring the arrays produce as much energy and savings as possible by following the sun. Our specialized team built the entire electrical system from the DC module strings to DC inverter inputs, AC inverter output to main medium voltage, and AC interconnection with the utility.

OPERATE

After we complete the array, Entegrity performs maintenance services for the next twenty-five years. We inspect the site annually as well as test the equipment to evaluate system performance and output. Examples of services include thermal imaging of modules and electrical connections, firmware updates, string analysis, tightness inspections of structure grounds, and array cleanup from the elements when necessary.

The Cedar Ridge Agricultural Education Department collaborated on an innovative strategy for maintaining the solar field with an efficient, educational, and environmentally friendly solution by raising Dorper sheep to maintain the grounds. The sheep strengthen the roots of the vegetation and spread seeds and fertilizer along the way, causing the restored soil and more biodiverse vegetation to absorb more carbon and water. This co-location of photovoltaics and agriculture, known as agrivoltaics, creates a green cycle without chemicals like herbicides and pesticides that pollute waterways.

Tim Cunningham, agricultural education instructor and FFA advisor, stated, "The solar project is a great fit with our agriculture program. The fields will have multiple agricultural uses such as cultivating certain plants and raising sheep that will aid students with hands-on activities in their animal science courses. Classes are learning to construct a barn and working area for their new animals. Our students will have first-hand experience in solar as farms and ranches begin to offset costs using this technology. Solar energy use, electricity demand and supply, and other relevant topics will shape our new curriculum."

Cedar Ridge Schools Superintendent, Dr. Sherry McMasters, added, "We are thrilled to work with Entegrity on yet another energy savings project. Not only are we saving money, we are improving the learning environment for our students and teaching them sustainable practices. Our student led FFA program will have ample opportunity to learn about agrivoltaics and the employment of sheep on our grounds for upkeep. I am proud to be a part of the first co-located solar array in the state and the first to incorporate sheep."

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