

CASE STUDY



BUTLER FARMS **MICROGRID**

LOW-CARBON SOLUTION FOR
A DIVERSE MICROGRID

ABOUT THE CUSTOMER

South River Electric Membership Corporation (South River EMC) and its power supplier, North Carolina's Electric Cooperatives partnered with Butler Farms, a sustainability-focused hog farm in Lillington, North Carolina to develop an advanced microgrid. This project supports South River EMC and North Carolina's Electric Cooperatives efforts to build a brighter and more resilient energy future for cooperative members. This project is an innovative example about how two vital industries (agriculture and electric utilities) can collaborate in order to simultaneously reduce GHG emissions and increase community resiliency.

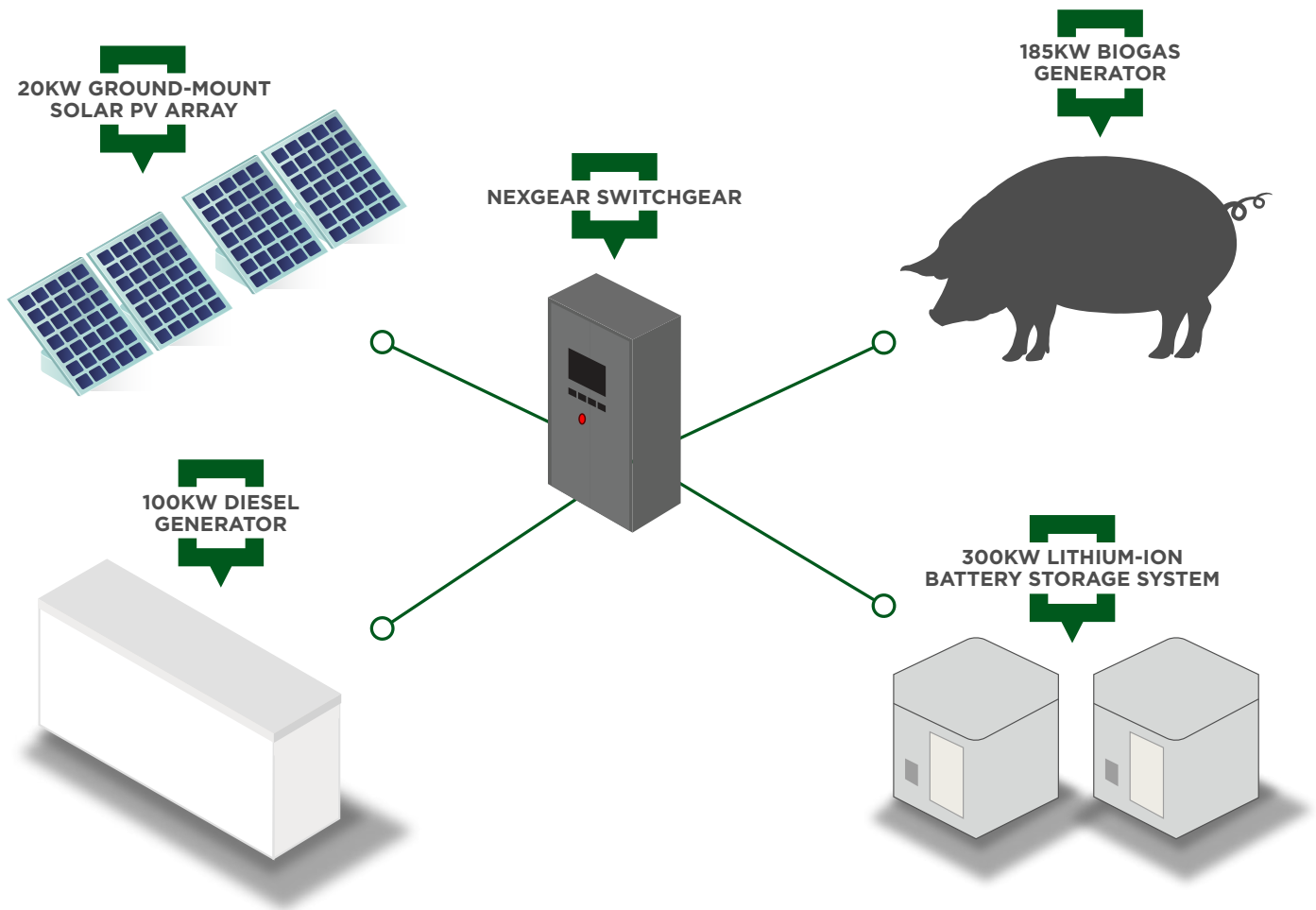


THE CHALLENGE

In 2008, to lessen the farm's GHG emission and ammonia impact on the surrounding community and environment, Butler Farms installed covers over their four-acre lagoon area. These lagoon covers capture anaerobically produced methane, known as biogas, to use as power generation fuel, rather than allowing the GHG to go directly into the atmosphere. During this time, the farm also installed a 20kW solar panel array, and a 100kW standby diesel generator, which can supply full system backup when needed. In 2017, Butler Farms opted to blend its existing biogas and power generation systems into a new microgrid in partnership with South River EMC and North Carolina's Electric Cooperatives.

THE SOLUTION

In 2017, PowerSecure was contracted to install a 250 kW/735 kWh battery storage system and microgrid controller to coordinate the new and existing components. This microgrid integrates local renewable energy resources, including solar and biogas, with energy storage to supplement traditional power sources, diversify the electric grid, and provide environmental benefits. PowerSecure's controller allows South River EMC and North Carolina's Electric Cooperatives to initiate the microgrid and automatically isolate the farm from the larger electric distribution system. Three reclosers were provided: a recloser that isolates the farm from the cooperative, and two reclosers on the utility line to isolate the surrounding area between the reclosers from the utility. The cooperative can dispatch the system during peak energy usage while connected to the grid to explore potential benefits of microgrids for demand response. PowerSecure's innovative energy storage system is a reliable, resilient, and low-carbon power source for the farm and 28 nearby homes. Beyond the grid and environmental benefits, the project serves as a STEM learning resource for local students at NC State University.



BENEFITS TO THE CUSTOMER

With PowerSecure's industry-leading reliability, the distributed generation microgrid solution provided:

- 1 Sustainable approach using low-carbon generator and renewable resources to provide grid flexibility and to reduce GHG emissions.
- 2 Improved reliability of the electric system and farm operations by avoiding prolonged outages after interruptions to the grid.
- 3 Unique partnership benefits agriculture and power sectors, as well as cooperative members by serving as a model for the integration of member-owned power generation that benefits the entire cooperative membership.

The innovative energy system is a reliable, resilient, and clean source of power for the farm and 28 nearby homes. Chris Spears, executive vice president and CEO of South River EMC, said the microgrid will serve as “a model for the integration of member-owned power generation that benefits the entire cooperative membership” and “a case study for how agriculture and electric utilities—two of North Carolina’s most important industries—can work together to promote sustainability and improve quality of life.”

Aaron Larson
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