



COMMERCIAL CASE STUDY
ALLENWAITE FARMS
SCHAGHTICOKE, NY



DAIRY FARM CUTS COSTS WITH SOLAR THERMAL TECHNOLOGY



Heifers in one of Allenwaite Farms' older barns. Allenwaite Farms milks nearly 1,600 cows.

“We have consistent hot water demand every day of the year, regardless of whether it’s warm or not.”

David Waite started his farm near Easton with just two cows. Seven generations later, his descendants, the Allen family, milk nearly 1,600 cows, employ 26 workers and use forward-looking farming approaches Waite couldn't have imagined. They're using innovative technologies such as solar hot water systems to heat water for cleaning the milking and storage equipment and laundry, and for the calf-feeding system.

The Radiant Store in Troy, NY installed two solar hot water systems at the farm in ten days in July 2013. Each displaces electricity to reduce energy costs.

“We have consistent hot water demand every day of the year, regardless of whether it's warm or not,” says Allenwaite Farms Manager Aaron Allen.

Constant Demand, Consistent Supply

At the calf barn, a 50-million BTU seven-collector system feeds two 75-gallon and one 115-gallon storage tanks; electrical backup isn't needed in the warmer months. At the main dairy barn, a 100-million BTU 14-collector system feeds four 80-gallon storage tanks. First, waste heat from compressors in rapid milk-cooling systems is reclaimed to heat water. Then, solar energy raises its temperature further. In colder months, boilers complete the process.

Hot water production typically accounts for 18 percent of a dairy farm's utility bill. Allenwaite Farms uses 800 gallons of hot water daily. Its solar hot water

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However, the savings available to commercial users from solar hot water solutions depend on whether the user pays demand billing for electric demand outside the peak solar production times: 9 a.m. to 3 p.m.

systems are designed to offset approximately 30 percent of the farm's total hot water heating costs, last 40 years, deliver a return on investment of more than 20 percent annually and offset nearly 20 tons of carbon annually.



Solar collectors on the calf barn facilitate the warming of the young animals' feed.

Raised on a dairy farm himself, Terry Moag of the Radiant Store leveraged his understanding of the industry to custom-design the Allenwaite Farms solar hot water systems with innovative controls to maximize efficiency.

"In the summer...those collectors just sit up there and work all day," says Allen. "It's pretty impressive."

Support Reduces Payback Time

With the expertise of suppliers such as The Radiant Store and the leadership of innovative operations including Allenwaite Farms, more New York dairy farmers are adopting solar hot water systems, as support from the New York State Energy Research and Development Authority (NYSERDA) make them affordable.

NYSERDA support helped offset equipment and installation costs for Allenwaite Farms' solar hot water systems.

"Solar hot water is a win for farms, and it's certainly a win for us," says Allen. "I think NYSERDA's involvement has helped us, and I think it can help a lot of other farmers." Speaking with fellow farmers about solar hot water, "I've told them they should do it," he reports.

"Any sunny day when your system is collecting energy from the sun and making hot water, that's a day that you don't need to provide heat from a non-renewable energy source."

For more information, visit nyserdera.ny.gov/solar-hot-water

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NYSERDA support is currently available only for customers that heat their hot water with electricity.