New Jersey's cleanenergy program™
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Success Stories

Edible Garden Corp.

PROJECT INFORMATION

Program Participant
- Edible Garden Corp.

Location
- 283 County Rd 519
  Belvidere, NJ 07823

Project Contact
- Ken Vande Vrede
  Owner
  Edible Garden Corp.

Technology
- Thermal nighttime canopy
- Four 4 MMBtu/hour condensing boilers
- Variable frequency drives (VFDs) on pump motors

Total Project Cost
- $720,005

NJCEP Incentives
- $315,673 through the Pay for Performance program

Estimated Annual Savings
- 5,517 kWh
- 6,445 MMBtu
- $56,845

Project Payback
- 7.1 years

Pay for Performance Partner
- Energy Squared, LLC

Project information, savings and environmental benefits were provided by the project contact.

Herb and vegetable grower builds energy-efficient greenhouse to expand regional distribution

Background

In 1973, Dave and Gerda Vande Vrede opened a small garden center on their family farm in Morris County. In the years that followed, their sons Ken, Mike, Steve and Dan experimented with a wider selection of flowers and vegetables. The family business continued to expand, under the name Naturally Beautiful Plants, with sales to garden centers, landscapers and supermarkets. To accommodate greater production, in 1997, the Vande Vrede family purchased a 116-acre farm in Belvidere and built a 45,000-square foot greenhouse.

With an increase in popularity for fresh herbs such as basil, parsley and cilantro, the greenhouse shifted to a hydroponic system. Using nutrient-laden water rather than soil, the herbs could grow quickly, within a four-to-six week timeframe, all year round.

Energy costs quickly started to add up. Greenhouses are designed to allow as much light in as possible, but the design results in poor heat retention during colder months. Plus, hydroponic systems have high electricity costs due to their use of complex pumping and air-moderation systems.

Containing energy costs became an even greater priority when the family business merged with Terra Tech Corp., a California-based hydroponic agricultural technology company, and decided to scale up production. The new company, Edible

A thermal canopy attached to the greenhouse rafters descends at night, acting as insulation for Edible Garden's herb plantings, maintaining temperatures at the plant level.

Garden Corp., developed plans for a major expansion that included construction of an additional 214,000-square foot greenhouse on the Belvidere farm.

"As operators of a greenhouse, we knew we needed to make it as efficient as possible so that in the long term we can control as many costs as possible," said Terra Tech CFO Mike James.

To afford the most energy-efficient equipment for their new greenhouse, Edible Garden turned to *New Jersey's Clean Energy Program*™ (NJCEP) to apply for financial incentives provided through the Pay for Performance New Construction program.

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Mike James
Chief Financial Officer
Terra Tech

Edible Gardens Corp.
283 County Rd 519
Belvidere, NJ 07823

Solution

The NJCEP Pay for Performance program incentivizes developers who take a comprehensive, whole-building approach to saving energy in new construction as well as existing buildings. Incentives are directly linked to reducing energy use by at least 15 percent below the state's current energy code.

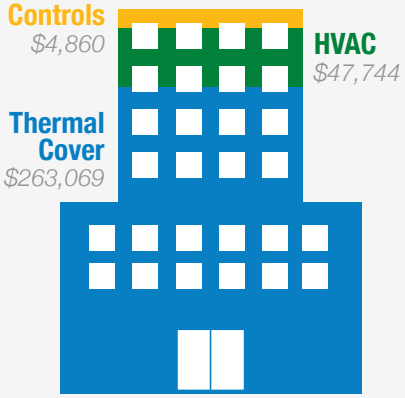
Energy Squared, LLC, a participating NJCEP Pay for Performance contractor, was contacted by Edible Garden to identify energy-efficiency upgrades. Recommendations included installation of four high-efficiency condensing boilers to provide a total of 16 MMBtu per hour in heating capacity. Additionally, variable frequency drives on the greenhouse's pump motors circulate hot water from the boilers throughout the greenhouse to maintain optimal growing temperatures.

Energy-efficiency features also include a thermal canopy attached to the greenhouse rafters that descends at night, trapping heat so that it remains around the plants. "From ground to the canopy it's 68 degrees; from canopy to glass it's 50 degrees; outside the glass it's 30 degrees or below," James said. "The canopy creates layers so we're not losing all that heat beyond the glass."

NJCEP provided $315,673 in incentives to lower the project cost to $404,332. Energy Squared anticipates the project will save Edible Garden 5,517 kWh in electricity and 6,445 MMBtu of gas, resulting in an estimated $56,845 in energy savings per year. The project is expected to pay for itself in seven years.

Pay for Performance incentives were disbursed in three rounds. An initial incentive of $21,368 was awarded in July 2015 upon Edible Garden's submission of a proposed energy reduction plan. A second incentive of $213,684 was awarded five months later once energy-efficiency measures were installed, calculated at $1 per square foot. The remaining incentive of $80,621, calculated at $0.38 per square foot, is anticipated in spring of 2016 after Edible Garden completes a commissioning report to verify performance of the installed energy-efficiency equipment.

Project Incentives: *$315,673*



With the new, more energy-efficient greenhouse facility, Edible Garden has been able to increase production to reach a wider range of retailers. "We were in 200 stores when we started, now we're pushing 2,000 today. That's a 10-fold increase in a little over two years," James said.

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