



# Restoring a historic farmhouse to have net zero energy performance

## Case Study

**Name:**

Paul and Joanne Coons

**Location:**

Clifton Park, New York

**Measures Implemented:**

- Solar panels
- Solar hot water
- Insulation and air sealing
- High-efficiency heating and cooling systems
- ENERGY STAR®-qualified appliances, programmable thermostat, and high-efficiency lighting

## Background

When Paul and Joanne Coons first saw their 1830s farmhouse, it had been vacant for 10 years. Water filled the basement. Animals lived inside. The retired couple restored the home to its original columned, Greek Revival dignity. The renovation was designed to achieve net zero energy performance, an exceptional accomplishment for a historic property like this.

“A net zero energy house is one that generates at least as much energy as it uses, if not more,” Joanne explained, noting that NYSERDA facilitated energy-saving and energy generating improvements and helped them stay focused on the path to achieving net zero energy.

## Implementing Clean Energy Measures

The home’s historic designation limited some choices, such as windows that had to retain their vintage look. Behind pine clapboards and under a historically accurate standing seam roof, soy-based closed-cell foam insulation ensured a high-performance thermal envelope.

“We put in the solar panels at the same time that we renovated the house,” said Paul, pointing out the window to where a solar electric array is located. “We’re producing more electricity now than what we’re using in the house,” he explained. In their first year, they sold 2,500 kWh of power back to their utility. Now, however, the solar electric system also charges their two electric vehicles, so their surplus production has dropped to 1,300 kWh annually.\*

Joanne added that a second solar array heats water and probably would not have been possible without support from NYSERDA. Excess hot water from the solar hot water system funnels into a ground source heat pump that provides both air conditioning and heat to the entire home. “Instead of putting money in the stock market, we put it into solar panels,” she said. “I think the investment has really paid off for us.”

\*New construction systems must be sized not to exceed 110% of the calculated yearly projected kWh of electric usage.





**Joanne explained why she would recommend net zero energy improvements to anyone:**

**“It’s nice to see that meter spin backwards.”**

— Joanne Coons

## **Savings and Benefits**

“The best way to save energy is not to use it,” Joanne noted, explaining that all lighting in the home is ENERGY STAR compact fluorescent or LED units. All home appliances are ENERGY STAR as well, including an induction range/convection oven.

Pleased with the savings they’ve seen, Joanne explained why she would recommend net zero energy improvements to anyone: “It’s nice to see that meter spin backwards.”

Owners of new homes, gut rehabilitated, or historic homes such as the Coons’ Greek Revival home can all take advantage of the support NYSERDA offers.

Nearly any home, regardless of the style, size or price, can benefit by being built or renovated to the required standards, which typically include:

- Improved insulation and air-sealing techniques.
- High-efficiency insulated windows and doors.
- High-efficiency heating and cooling systems with well-sealed duct systems.
- ENERGY STAR-qualified appliances and programmable thermostat.
- High-efficiency lighting.

As Paul and Joanne’s experience demonstrates, even a historic property can be renovated to net zero energy performance.

## **Learn how you can reduce energy consumption and costs.**

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