Bryan Haeffele photos

Green living

The sun and the earth power a home in New Canaan

New Canaan residents Cliff and Lauren Chanler wanted to lower their home's environmental impact by harnessing the power of renewable energy. Their project provides some lessons in making green improvements. Installing solar panels on ground supports rather than on the roof of the house preserved the home's architectural character, while also allowing for a larger installation. Apart from the solar panels, many energy-saving features aren't easy to spot. Beneath the backyard lawn, a network of copper pipes forms the core of another renewable energy system: a geothermal heat pump that replaced an inefficient oil heater. Designed to use the consistent temperature of the earth, this state-of-the-art system can heat and cool the house, while also providing hot water for washing. Even better: It's powered primarily by solar electricity. A bank of deep-cycle batteries in the basement stores electricity generated by the PV panels, enabling the house to operate on renewable energy even when sunlight isn't available. The pool also relies largely on the sun for heat, thanks to solar thermal panels that are included in the panel array.

Anticipating the use of electric cars, the Chanlers had two car chargers installed – one in the garage and the other outside. The station can fully charge an electric vehicle in four hours.

The "net meter" will track electricity coming from the utility and going back.

Streamside solar-powered pathway lights add atmosphere to the property.

Integrated approach

The work being done by companies like CT Energy Services is setting a new standard for "green" home makeovers that focus on energy savings. In the past, a homeowner would typically need to hire a solar PV installer to have a solar electric system installed and a specially trained plumber to install a solar thermal system. Then the homeowner would also contact an insulation contractor to upgrade insulation levels, and an HVAC contractor to replace old, inefficient heating and cooling equipment with efficient, Energy Star HVAC components. The homeowner might even contact a remodeling contractor to install energy-efficient replacement windows.

Negotiating with so many different contractors and trying to coordinate their work can be a nightmare. And even though the changes that one contractor makes often impact the work done by another, there's no system in place to integrate these interdependent upgrades. Using a single comprehensive-service contractor can make a big difference. By coordinating and orchestrating the work done by numerous specialty contractors on the New Canaan project, CT Energy Services ensured that a number of different energy-saving upgrades would perform well together.

Selling electricity back

"Our project is about trying to do the right thing and setting an example for others, especially younger generations. At the same time, the use of radiant light and heat from the sun, and thermal energy from the Earth, to power our home has virtually eliminated our energy expenses and is enabling us to actually sell electricity back to CL&P at a fairly sustainable clip.

"It's also interesting to note that all of the solar panels used on this project were made in Europe, the company that supplied them has its national headquarters in Connecticut and the vast majority of the other major components and materials on the job were manufactured right here in the United States."

—Cliff Chanler

A field of panels

"Not many roofs are ideal for solar panels," says Bruce Angeloszek of CT Solar Services. "With a ground installation, we have room for more panels, and panel orientation isn't dictated by the slope of the roof. Instead, we can optimize how the array is aimed to maximize the amount of electricity generated."

—Bruce Angeloszek

A record-setting solar array. CT Solar Services installed a 44.2kW photovoltaic array as the centerpiece of the Chanlers' renewable energy system – the largest residential solar system in Connecticut. Both PV and solar thermal panels fill a south-facing slope just below the Har-Tru tennis court.

"Our project is about trying to do the right thing and setting an example for others, especially younger generations."