SUNWATER SOLAR

St. Ignatius Church and the University of San Franscisco School of Law overlook one of the Ereklens' four water-heating systems.

Solar Water Heating CUTS COSTS for Apartment Buildings

A San Francisco couple stabilized their utility costs with four rooftop water-heating arrays.

By **LINDA ERKELENS**

In San Francisco, home to environmental activists of every stripe and numerous renewable energy companies, many building owners have embraced low-carbon technologies. What began as a fad among environmentally conscious trailblazers has become a common method of reducing operating costs and attracting conservation-minded tenants.

My husband, Ron Dion, and I own four San Francisco apartment buildings, ranging in size from nine to 21 units. We've made it a priority to reduce our carbon footprint in accordance with our strong environmental beliefs. We installed faucet aerators, low-flow toilets and showerheads. I instituted a recycling system in coordination with a local nonprofit long before city ordinances required tenants to recycle waste. We're now installing a photovoltaic array on one of our buildings and evaluating the possibility of doing three more rooftops.

We recently installed new solar thermal systems on all four buildings, providing domestic hot water to our tenants. As a backup for rainy days, we put in high-efficiency boilers burning natural gas with a 95 percent efficiency rate. The investment has reduced our utility bills and the carbon footprint of our residents. Our tenants now know that the energy used to power their apartments is mostly renewable.

We had known about the benefits of solar thermal for years because one of our properties had a system installed in the early 1980s, feeding hot water to 21 apartments. When we calculated the cost and payback of updating that system, it led us to consider installing solar thermal on all of our buildings. Then, at a meeting of local apartment owners, I ran into Chris Chappell from SunWater Solar (sunwatersolar.com), a Richmond, Calif., firm specializing in thermal

Linda Erkelens worked as a computer programmer/analyst for the University of California – San Francisco for 25 years. She began investing in rental properties in the late 1960s and was an early investor in energy-efficiency technologies as a way to save money.

system design, installation and integration. After soliciting bids from several solar companies, Ron and I hired SunWater Solar to remove and replace our old system. Commissioned in October 2009, the high-efficiency installation utilizes 406 square feet (about 38 square meters) of Schüco Premium LA collectors.

We wanted assurance that our system was performing as intended and achieving maximum output and savings. We spend part of the year abroad, so it's important that we're able to monitor our system remotely and address any performance issues promptly. The SunReports Apollo1 monitoring device installed in just a few minutes and provides us with performance and energy savings data via the internet. From my iPod Touch, I log onto the SunReports customer portal to get the operating temperature of the systems, the timing of pump activation and how many British thermal units the system is producing. Our system installer has access to similar system data through the SunReports installer portal. SunWater Solar was able to monitor solar loop pump activity, as well as the temperature of the solar loop and solar hot water tank, and make minor adjustments to improve performance.


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Author Linda Erkelens shows off some of the 14 Schüco collectors that provide 1,277 therms per year at her 21-unit apartment building.

The installation went smoothly, with minimal disruption of the building's water system. I got daily updates on the progress of the installation. We gave 24-hour notice to tenants whenever the hot water had to be shut off for short periods.

Shortly after the new system was commissioned, Ron and I decided to have solar thermal installed on a second apartment building. The second system, consisting of 232 square feet of collector space, went in quickly and was running within the same month. We had another similarly sized system installed on a third property, commissioned in November 2009.

Ron and I left for an extended stay in New Zealand. During the trip, I kept a close eye on the remote monitoring system. On our return, I was ready to have solar thermal installed on the fourth apartment building. This system, with 116 square feet (about 11 square meters) of collector space, was commissioned in June.

You can count on some challenges in retrofitting an older building. One of our smaller properties still had its original boiler and 300-gallon (about 1,135-liter) water tank. The tank was too big to fit through the mechanical room door, so it had to be cut up. It was covered with its original asbestos insulation, which had to be professionally removed before SunWater Solar could remove the tank. A new solar hot water system may not work with a building's original thermal siphoning system. We need a recirculation pump to keep hot water flowing.

All four of our thermal systems are retroactively eligible for California Solar Initiative Thermal Program rebates and also qualify for a federal tax credit equivalent to 30 percent of the cost. Accelerated depreciation also helps to offset the cost of the solar equipment.

Solar Thermal System Snapshot

Solar Collectors: 14 Schüco Premium LA collectors serve one of four Erkelens-Dion properties, a 21-apartment building

System Collector Area: 406 sq. ft.

Solar Hot Water Storage: Four 120-gallon U.S. Rheem solar hot water tanks

System Energy Production: 1,277 therms per year

Savings: Roughly $1,277 per year (based on natural gas rate of $1 per therm)

Emissions Displacement: Equivalent to 1.2 cars driving for a year, or burning 14.8 barrels of oil

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The Erkelens' smallest array, with four Schüco collectors and a single Phoenix storage tank, supplies nine apartments in an older building.

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A SunReports sensor box collects data and sends it out to a web portal for remote monitoring of temperatures and pump status from anywhere with internet access.

In June, Ron and I showcased one of our new solar water-heating systems during San Francisco's Solar Day environmental fair. Ron and I, with our property manager Mindy Kershner, got to show off our solar collectors and mechanical room to homeowners and others on the tour. While Ron and Mindy welcomed visitors, I was up on the roof showing off the sleek new collectors. The San Francisco Environment Department, which organizes the annual Solar Day event, is a strong supporter of solar water heating, and we were excited to have the chance to support them and talk about our own experience with solar thermal.

As we watch fossil fuel prices rise, utility bills associated with water heating rise too. By installing solar technology today, business owners like me can begin saving money immediately and take a big step toward ensuring the future profitability of their buildings. The value of the solar thermal investment is immense, unambiguous and quantifiable. ST