

# Hospitality future is Looking Brighter for Solar Hot Water Heating Systems

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Historically, owners of lodging establishments throughout the United States and Canada have ignored the sun as a source of potential energy to heat water. Whether because of concerns about cost or misperceptions about how solar thermal technology works, solar hot water heating systems are rare.

That is all beginning to change, however, thanks to improving technologies, tax incentives and rebates, creative financing, better education about solar thermal heating, an increase in the number of developers interested in building to Leadership in Energy and Environmental Design (LEED) standards, and an increase in the number of qualified vendors that sell and install solar hot water heating systems.

How does solar thermal energy work? If you have returned to your car and opened the door after the car has been sitting in the sun for an hour, you have experienced solar thermal energy. According to the website [www.solar-is-future.com](http://www.solar-is-future.com), in a typical solar hot water heating system, solar collectors absorb the sun's rays, convert them to heat and then transfer that heat to a heat-transfer fluid. The heat-transfer fluid is typically a glycol and water mixture in regions where seasonal freezing is a concern.

'The heat-transfer fluid is then pumped into a heat exchanger located inside the water storage tank where it heats the water,' the website says. 'After releasing its heat via the heat exchanger, the heat-transfer fluid flows back to the collectors to be reheated. The controller keeps the heat-transfer fluid circulating whenever there is heat available in the solar collectors. In the winter, a boiler serves as an alternate heat source. Solar thermal systems can be integrated into existing hot water systems with relative ease.'

## Appropriate for Any Location

One might conclude that solar hot water heating is only an option for properties in southern locations but that is not the case. The sun generates enough energy even in northern locations to make solar thermal systems feasible. For example, the Confederation Place Hotel in Kingston, Ont., has a 20-panel rooftop solar hot water heating system and the Best Western-Kelowna in Kelowna, B.C., has a 102-panel system.

'It pretty much works anywhere, from both a technological and financial standpoint,' says Kirk Norlin, vice president marketing for Novan Solar Inc., Golden, Colo. 'New England, for example, may get less direct sunlight but those living there pay more for their energy, so it makes sense.'

Norlin says 90 percent of the time roofs can bear the weight of a solar thermal structure. Adequate roof space is important and of course access to sunlight is key. A building rooftop cannot be shaded for a good portion of the day.

Other properties that have installed solar thermal systems include the Proximity Hotel in Greensboro, N.C., the new Andaluz hotel in downtown Albuquerque, N.M. (not yet open), the Park Place Hotel in Ocean City, Md., the Hyatt Regency Scottsdale Resort and Spa at Gainey Ranch in Scottsdale, Ariz., the Lodge at Sun Ranch in Cameron, Montana, and the Kanuga Lake Inn in Hendersonville, N.C. A large-scale solar water heating system is being installed at the Hilton Asheville in Biltmore Park Town Square in Asheville, N.C. That property, which is seeking LEED certification, is expected to open this summer.

## Proximity's System is a Success

The solar thermal system that has perhaps gotten the most buzz is the 100-panel installation at the Proximity Hotel. The panels cover 4,000 square feet on the roof of that LEED Platinum certified hotel. The water heated by the Proximity's system—approximately 5,000 gallons a day—is saving the property about \$16,000 in water heating-related costs per year, according to Dennis Quaintance, CEO and CDO (Chief Design Officer) of Quaintance-Weaver Restaurants and Hotels, the company that owns the property.

The system cost Quaintance-Weaver Restaurants and Hotels about \$400,000, more than a typical system for a property the Proximity's size, primarily because the owners chose to build a concrete structure and extra floor to support it. Even with the extra costs, however, the company should recover its investment in four to five years. Annual energy savings, having the ability to sell renewable energy credits (RECs) for \$20,000 a year for the first five years, a 30 percent federal tax credit, 35 percent state tax credit, and being able to take advantage of a provision for accelerated depreciation of \$84,000 are all shortening the time needed to recover the initial investment. The solar hot water heating system has been meeting 60 percent of the hotel's domestic hot water needs-the equivalent of the amount of water needed for 100 houses for one year. The solar system is backed up by natural gas for those days when supplemental energy is needed.

'Each panel in the Proximity's installation is like a mini greenhouse,' says Michael Shore, president of FLS Energy, the company that installed the Proximity's system.

'I keep asking myself, 'Why didn't we do this before?'' Quaintance adds. 'It makes so much sense to do solar thermal.'

### The Largest Hotel Installation

A system that may get even more publicity than the Proximity's is the one installed on the Hyatt Regency Scottsdale Resort and Spa. The 166-panel, \$575,000 installation is helping to heat hot water for use in the resort's 490 guestrooms. It was installed by Novan Solar and includes a 20,000-gallon water tank. Novan Solar's Kirk Norlin says the hotel's owners should get a return on their \$550,000 investment in less than three years. Sixty percent of the system's cost is being paid for by Arizona Public Service through its purchase of RECs from the Global Hyatt Corp., the owner of the property. Plans are underway for a possible additional 212 panels, which would bring the system's size to 378 panels, making it the largest solar thermal installation on any hotel in the United States. The phase two installation will carry a cost similar to phase one and be eligible for the same type of financial assistance. The heated water from phase two will be used for the resort's restaurants, laundry and pool. Because so much water is used for these, payback time on phase two will be just six months.

Jennifer Schaff, director of engineering at the Hyatt Regency Scottsdale Resort and Spa, says phase one of the project is working very well. Hot water heated during the day is stored in the storage tank for use at night. The 166-panel system can heat 100,000 gallons of water daily.

'The hotel's owner decided we would use this hotel as beta site,' Schaff says, adding that Hyatt already has plans for an additional solar installation in Aruba at the Hyatt Regency Aruba Resort & Casino.

Bill Allinson, managing director of the Confederation Place Hotel, says the \$52,000 rooftop solar water heating system installed on that 95-room property in November 2005 is now paid for and netting the owners \$11,000 a year-30 percent to 40 percent of the property's annual water heating-related energy costs. The solar system is providing hot water for the hotel's kitchen and laundry facilities.

'The more you use it, the more efficient it gets,' Allinson says.

Options that require a hotel owner to put no money down and to not own a system at all are now being offered by different vendors. In this arrangement, the system installer owns the system and then bills the hotel for the cost of heating the water-at an amount lower than what the utility company would charge for the same heating. Be sure to ask about financing options, including rebates and tax credits, before finalizing any purchasing decision. (See [www.dsireusa.org](http://www.dsireusa.org) for local, state and national incentive information.) Thanks to the United States' recently passed stimulus package, any for-profit company can qualify for a 30 percent rebate on a solar hot water system.

### Feasible for Most Hotels

'Most hotels have solar potential,' FLS Energy's Shore says. 'The technology has gotten to the point where it is cookie cutter. It is a little bit easier to do for new construction but quite feasible for most hotels.'

When asked what advice they would give to those considering solar hot water heating systems, Novan Solar's Norlin and FLS Energy's Shore had this to say:

'Have a company come out to do a feasibility study,' Norlin says. 'Get a good handle on what your rates are, and your laundry and domestic hot water needs.'

'Work with a vendor experienced in doing large commercial systems,' Shore adds.

With typical installations reducing the amount of energy needed to heat hot water by two-thirds, solar thermal systems are becoming a much more sensible solution for new and existing hotels. In fact, Norlin says, they are five times more efficient at producing energy when compared to solar photovoltaic systems.

Also be sure to check out these vendors: EnerWorks, SMA America, Inc., Heat Transfer Products, Menova Energy Inc., Sol Verde Renewable Energy Solutions, Nexus Solar Corp., Vaillant Solar Systems, and Eco Hybrid Solar.

This article first appeared on the Green Lodging News website. To sign up to receive the weekly Green Lodging News newsletter, go to [www.greenlodgingnews.com](http://www.greenlodgingnews.com). Glenn Hasek can be reached at [editor@greenlodgingnews.com](mailto:editor@greenlodgingnews.com).