



Adopting High-Tech Innovations Pays Off, but Can Have Glitches

Early adopters like Sacramento, Calif.-based developer Mutual Housing California reap rewards for high-tech innovations at their affordable housing communities, but it sometimes pays a price if new technology has glitches.

Despite setbacks at earlier communities, the nonprofit's staff chose many innovative technologies for their latest addition, a 62-home community for agricultural workers on 3.28 acres in Woodland, Calif.

"Mutual Housing at Spring Lake is very innovative for this type of property," said Vanessa Guerra, housing development project manager who oversees construction at the non-profit. "We're pioneers in the field of multi-family affordable housing when it comes to using new solutions for green building."

The community will be one of the first multifamily housing developments nationwide that is 100 percent zero-net energy, and not just solar-based as most ZNE projects claim.

To meet actual zero-net energy, no gas can be used; the development has to be all-electric.

"Most people don't realize that to be completely zero-net energy, you can't use fossil fuels to power the building," said consultant Sean Armstrong, partner and project manager of Arcata, Calif.-based Redwood Energy. "The goal of ZNE is to eliminate greenhouse gas pollution."

Because Sacramento has a mild climate, staff was able to use a unique heat-pump for the heating and cooling system as well as the hot water heater.

The HVAC takes hot or cold energy from the exterior air and feeds it into water—instead of a refrigerant—to produce hot or cool water to moderate the apartment temperature.

In summer, the system switches back and forth between the hot water storage tank and the fan coil because the water storage tank needs hot water while the HVAC fan coil needs chilled water.

"It's a very sophisticated system," said Bernard Keck, senior project manager of Chico-based Sunseri Construction, Inc.

Both systems derive two-thirds of their heat energy from the air, which reduces electricity use by as much as 30 to 40 percent. If you use electricity,

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1,000 watts of electricity produces 1,000 watts of heat with a standard electric heater. With a heat pump, you produce 3,000 to 5,000 watts of energy, depending on the efficiency.

“When you take heat from the outside air, it is very efficient,” said Keck.

Since the cost of utilities always is a concern for low to moderate-income people, each apartment or townhome will have a real-time energy monitor.

“It’s color-coded so it serves an educational tool,” said Guerra. “If it’s yellow, you’re using a typical amount of energy. If it’s green, you’re being efficient with energy. But, once you start using too much at any given moment, it alerts residents by turning red. This gives them a chance to look around to see where they can reduce energy use, like turning off a light or an appliance.”

Since the zero-net energy calculation is based on average consumption—and since residents will not have utility bills if they stay within that amount—there is an incentive for everyone to make the system work.

Showerheads that automatically shut off when the water becomes hot—before someone has entered the shower—is another minor detail that will make a big difference in overall energy use.

“If people run hot water and walk away, they’ve wasted energy and another important resource—water.”

After installing a centralized inverter system—to change DC from the solar panels to AC for use in homes—at an earlier project that kept malfunctioning, Guerra decided to go with standard inverters.

“Each inverter services a cluster of panels, so if something goes wrong with one, it doesn’t impact a huge percentage of the entire system,” said Guerra.

Setbacks are expected when any business adopts new technology, which Mutual Housing has been doing since 2002 when it became the first owner in the Sacramento Municipal Utility District service area to install solar photo voltaic panels at a multifamily development.

Chief Executive Officer Rachel Iskow is committed to bringing green solutions to the nonprofit’s 3,000 residents. “We have chosen to be a model for how developers can close the green divide,” said Iskow.

Since green building, longer-lasting materials and high-tech innovations save money in the long-run, a few temporary glitches don’t make that much difference.

“We are committed to bringing the same green revolution to our residents that middle and upper-income homeowners have benefited from,” said Iskow. “Because building sustainable communities is part of our mission, it is one of our top priorities.”

Innovative, environmentally friendly technology is helping the nonprofit do just that.

Founded in 1988, Mutual Housing California develops, operates and advocates for sustainable housing for the region’s diverse households.

A member of NeighborWorks America—a congressionally chartered nonprofit organization that supports community development nationwide—Mutual Housing has more than 3,000 residents, nearly half of whom are children.

Through its focus on leadership, the nonprofit also provides training and mentoring as well as educational programs, community-building activities and services for residents and neighbors.