

ZNE...Not What You Think

People often mistake housing with solar panels as using zero-net energy, but achieving full zero-net is more complicated than installing a photovoltaic system to capture the sun's energy.

When zero-net energy (ZNE) first became a goal of Mutual Housing California, staff undertook a research project to gain clarity on what ZNE was—and how to achieve it—since team members had different definitions.

Bottom line? A development can't use gas to power anything if it's going to be ZNE.

For its most recent development, Spring Lake, a 62-apartment and townhome community for agricultural workers and their families in Woodland, Calif., meeting zero-net energy had three major components:

- Having the building envelope so tight there were no energy leaks;
- Designing every aspect of construction with energy efficiency in mind; and
- Using a water or air-based heating and cooling—and hot water—system.

One of the most important aspects of ZNE design is the air barrier—figuring out how air flows in and out of the building. Having quality insulation—and installation—that seals the structure is one of the most important aspects.

Shower heads that cut-off water when warmed until the shower is occupied, all electric Energy Star appliances, low-flow toilets and drought-resistant landscape are just a few ways Mutual Housing staff added energy efficiency.

As importantly, residents have energy monitors in each apartment that use a color-coded system to communicate to household members whether real-time energy use is efficient, typical or above normal. Depending on climate and household habits, heating water can take 25 to 50 percent of total energy use.

In Woodland, which has a mild climate, staff was able to use a heat-pump for hot water as well as for heating and cooling. That type of system takes hot or cold energy from the exterior air and feeds it into water—instead of a refrigerant—to produce hot or chilled water that heats or cools apartments. Using a water storage tank and fan coil, the system switches



FRANK DOMIN PHOTOGRAPHY

In this photograph of Mutual Housing of Spring Lake in Woodland, Calif., the solar panels are visible on its community center.

back and forth, depending on what's needed in each home. Since the system takes two-thirds of its energy from the air, it reduces electricity by as much as 30 to 40 percent.

As a result of the Sacramento-based nonprofit's diligence, Mutual Housing at Spring Lake was the first rental property nationwide to be certified by the Department of Energy as a Zero Energy Ready Home. Mutual Housing staff also is applying for LEED certification and has a green leadership and resident-education program.

In it, residents receive stipends to learn more about the sustainable aspects of their community and to develop an educational project for fellow residents on one aspect. Four youth residents currently are receiving stipends to develop a bike-sharing program in conjunction with a local bike cooperative. [CHB](#)

Founded in 1988, Mutual Housing California develops, operates and advocates for sustainable housing for the state's diverse households. For more information about Spring Lake, go to www.mutualhousing.com/yolo-communities/spring-lake/.

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