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# Sacramento area emerges as epicenter for 'zero-energy' construction

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Until recently, Oscar Ortega was a laid-off carpenter with four young daughters to take care of and little in the way of job prospects.

The situation was grim enough that at 29, with more than 16 years of carpentry experience, the Citrus Heights resident considered changing careers.

"You get laid off and there's no work. Being head of the household, it's a lot to have on your shoulders," said Ortega. "Naturally, you're thinking of anything you can do to bring home a paycheck."

Then, in September, Ortega caught a break. He was hired as a siding specialist for ZETA Communities, a young "zero energy" building manufacturer that had taken over the same factory at McClellan Park that was abandoned by his former employer, a modular homebuilder called Details.

Zero energy buildings – defined as residential or commercial buildings that produce as much energy as they use over the course of a year – appear to be the wave of the future. And the Sacramento area has emerged as an epicenter for the zero energy push.

Premier Gardens and Carsten Crossings, two Sacramento projects, were key to mainstreaming the zero energy concept in the United States, said Rob Hammon, a principal with ConSol, a Stockton company that provides energy consulting services to builders.

Built in 2004, "Premier Gardens was the tipping point, and is now the most studied project in the country," he said.

## Lots of skilled workers available

One of the industry's newest players, San Francisco-based ZETA arrived in Sacramento in September flush with \$5 million in venture capital. ZETA reconfigured a cavernous former aircraft hanger last occupied by Details so it could produce ultra-efficient building modules in assembly-line format.

The factory had much of the equipment ZETA needed. And the recent closure of three modular housing plants in Sacramento meant there were plenty of skilled people like Ortega who were looking for work.

Shilpa Sankaran, ZETA's vice president of business operations, said the firm also chose Sacramento because it is "such a hub" for zero energy policy and green building. "It's penetrating there and they're trying to set an example," she said.

Today, the company is tiny. It employs three full-time workers at the McClellan factory, along with several locally based consultants and temporary employees. But it has big plans. ZETA expects to hire nearly 200 more workers by the end of 2011. The factory has the capacity to churn out 300 to 400 housing units per year.

"We're in a very positive mode," said ZETA general manager Karl Tarango. "We're first to market in what everyone believes is the next generation of housing. You can't be in a better position."

For Ortega, it's nice to have a job in what appears to be a growing sector – green construction. "It's reassuring to know that you're going to have work into the future," he said.

## **State providing serious funding**

California has one of the most aggressive building codes in the country when it comes to energy efficiency, but buildings still account for about 23 percent of greenhouse gas emissions in the state – more than any sector except transportation.

With such laws in place as Assembly Bill 32 – the climate change initiative that mandates a reduction in greenhouse gas emissions to 1990 levels by 2020 – state energy and air quality regulators are looking to expand efficiency programs and incrementally tighten building codes to reduce energy use.

State regulators recently set ambitious goals that all new residential construction in California be zero energy by 2020, with new commercial buildings meeting the zero energy mark by 2030.

The state is backing up these goals with serious cash. In September, the California Public Utilities Commission approved \$175 million in funding for zero energy pilot programs, incentives for above-code construction and early-stage design assistance for builders.

Some developers in the Sacramento region are already taking steps toward building zero energy projects. Construction is under way at West Village, for example, a \$280 million mixed-use community at the University of California, Davis, which is shooting for zero energy.

The privately funded project – which received a \$2 million grant from the California Energy Commission – will include 475 new homes for faculty and staff, housing for 3,000 students, retail space and a satellite campus for the Los Rios Community College District.

A key challenge is making the zero energy community affordable for students and faculty. West Village plans to sell homes with a starting price of about \$400,000 – below market rate

for comparable homes in Davis.

"We're trying to find that sweet spot that makes the most sense in terms of technical and financial feasibility," said Sid England, assistant vice chancellor of resource management at UC Davis.

Among the measures being considered for West Village are high-efficiency heating and cooling systems, solar thermal water heaters and sensor-controlled, compact fluorescent lighting.

These features would be combined with a sophisticated network, or "smart grid," for generating and distributing energy, England said. Solar photovoltaic systems and a biodigester – which would convert food and animal waste (the latter generated by UC Davis livestock) into fuel – will likely serve as energy sources.

## **Zero energy homes sell quickly**

While zero energy buildings are for the most part talked about in future tense – only a small number of finished projects exist around the country – there is evidence that super-efficient buildings are attractive to buyers, even in a down economy.

In 2005, just when Sacramento's new home market began to plunge, Stockton-based builder Grupe began selling new three- to five-bedroom residences at a development called Carsten Crossings in Rocklin.

The homes had rooftop solar tiles, high-performance insulation, on-demand tankless water heaters and other energy saving features that resulted in annual utility savings of up to 65 percent over those built to code and without solar.

Mark Fischer, president of green home solutions at Grupe, said the extra \$18,000 his company had to pay for the added features more than paid for themselves by the speed in which the 100 homes sold, which resulted in reduced holding costs.

"We outsold everyone 2-to-1," said Fischer. "We were clearly the absorption leader."

The Sacramento Municipal Utility District has been working closely with builders to help them integrate energy efficient features and solar systems into new construction.

In 2004, the utility subsidized Premier Gardens, one of the country's first all-solar, near-zero energy subdivisions. The 95 homes, which were constructed in Rancho Cordova by Premier Homes, were designed to use about 60 percent less power than comparable homes in the area and also sold faster than expected.

More recently, SMUD contributed funding and in-kind support to create the "Home of the Future" in Folsom, which was one of the first homes in California to achieve the U.S. Green Building Council's Leadership in Energy and Environmental Design platinum certification – the group's highest rating.

## **Modular construction retooled**

In ZETA's case, the company has taken a building method that's been around for ages – modular construction – and retooled it for the modern zero energy era – with high quality insulation, sophisticated heating and cooling systems, solar panels and other energy-efficient features. In other words, ZETA's buildings are nothing like grandma's double-wide.

Each building is constructed to order, and can be delivered with all the appliances and fixtures in place – and with the walls pre-painted.

Part of the appeal: Modular buildings can be finished faster and for less money than those erected on site.

ZETA has built a demonstration home in Oakland that it says cost \$165 per square foot for everything – from design to installation – minus the land and foundation. A comparable unit built using traditional construction would cost about \$250 per square foot, the company said.

The first building to come off the line at ZETA's McClellan factory was a seed lab for the Presidio Stewardship and Sustainability Center in San Francisco. The job was completed in just four weeks, including design, fabrication and delivery.

ZETA said it has a number of contracts in place for modular zero energy buildings to be assembled at its McClellan factory and is working with nonprofit affordable housing developer Pacific Housing on plans for two 30-unit buildings in the Sacramento area.

"I'm excited to see where ZETA's going to go," said Ortega during a recent lunch break at the ZETA factory. "Six years from now, I'll be able to say I was there from the start."

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