

# Lakeside

Elk Grove, California



## Moving Toward Zero Energy Homes

### Zero Energy Homes Provide Competitive Advantage

**M**orrison Homes at Lakeside is located within the master-planned community of Lakeside in the “hometown” of Elk Grove.

Within this luxury community, Morrison Homes offers Sacramento’s first homes built under the U.S. Department of Energy’s Zero Energy Homes (ZEH) initiative. Lakeside – the last project in the area for Morrison Homes – is located in Elk Grove, a burgeoning bedroom community just south of Sacramento. There are many communities for buyers to choose from in the area, and the builder needed something unique to compete for potential buyers. The ZEH concept filled this need. Morrison has been pleased at the buyers’ response to the ZEH program and based on the

interest that has been developed, the builder will probably exceed their 10% commitment of ZEH homes offered.

The homes combine state-of-the-art energy-efficient construction and solar electricity to meet cooling needs – nearly displacing the remaining electrical needs for the home. By producing nearly as much electricity as it consumes, this home’s electricity consumption results in an almost net zero annual electricity use. The builder will build one near ZEH with each release of homes – at least 10 percent of the homes in the community ultimately will be near ZEHs.

***“Morrison’s goal is to improve homebuilding technology, reduce operating costs for our homeowners, and help minimize the impact of homebuilding on our environment.”***

***– Bob Walter, president,  
Morrison Homes Sacramento***



**The building-integrated photovoltaic panels blend seamlessly with the concrete tile roofing materials on this Zero Energy Home.**

Even so, with so many housing options available, the builder had to be sure the ZEH offered competitive pricing. Owners will pay a premium for a ZEH home, approximately \$18,000 – but the overall price is still well within comparables for the area. Morrison anticipates that homeowners will recoup the cost through lower utility bills. *(Rob verify.)*



U.S. Department of Energy  
Energy Efficiency and Renewable Energy

*Bringing you a prosperous future where energy is clean,  
abundant, reliable, and affordable*

## About Zero Energy Homes

To take U.S. home energy performance to a higher level, DOE created the Zero Energy Homes (ZEH) initiative, bringing the latest R&D out of the laboratory and into homes. Both energy efficiency and renewable energy technologies - like solar water heating and solar electricity - serve these homes. DOE's goal is to help builders create homes that produce as much energy as they use over the course of a year. ZEHs are connected to the utility grid, and some are even energy generators, rolling the utility meter backwards when they produce more electricity than they consume.

DOE selected four teams that are working with researchers at the National Renewable Energy Laboratory to introduce the ZEH concept into the single-family, new-home construction industry. The four teams are ConSol, Stockton, California; Davis Energy Group, Davis, California; NAHB Research Center, Upper Marlboro, Maryland; and Steven Winter Associates, Norwalk, Connecticut.

**For more information:**  
**Building Technologies Program**  
[www.buildings.gov](http://www.buildings.gov)  
Select Programs & Initiatives

## Research that Works



### A Strong Energy Portfolio for a Strong America

Energy efficiency and clean, renewable energy will mean a stronger economy, a cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.



**U.S. Department of Energy**  
**Energy Efficiency**  
**and Renewable Energy**

The U.S. Department of Energy's National Renewable Energy Laboratory works with a team of building industry partners on the Zero Energy Homes initiative. Energy consultant ConSol leads the collaborative effort between Morrison Homes, Sacramento Municipal Utility District (SMUD), subcontractors, and product manufacturers to create near ZEH homes designed to reduce the homeowner's energy bill by 60% with an annual energy bill under \$600.

All Lakeside homes also meet the SMUD Advantage Home as well as the ENERGY STAR Home<sup>®</sup> and ComfortWise<sup>™</sup> requirements. SMUD Advantage Home and ComfortWise combine to reduce heating and water heating energy use by over 15% and cooling by 50% compared to California Title-24 standards.

Five home plans are available - and all are available with the ZEH package. Floorplans range from 2,126 square feet up to 3,672 square feet. Five out of the committed twelve ZEH homes have been built - one is a model and another has been delivered to the homeowner. The community was originally designed with ZEH in mind, but no special architectural design was required for the reduced-energy homes. In addition, ZEH is an option available on most of the remainder of the regular homes, with a few exceptions where the roof solar exposure is not optimal.

Monitoring equipment has been installed on the model home. SMUD installed sensors for determining solar insolation and PV panel temperatures. This data, along with electric meter readings, is provided to ConSol, to track the home's performance.

Key Features	
<b>Energy Efficiency</b>	
Appliances	ENERGY STAR <sup>®</sup>
<b>Building Envelope</b>	
Air Sealing	Caulking and sealing measures ensure low air infiltration
Insulation	R-19 wall insulation R-30 second-story floor insulation (two-story plans) R-38 attic insulation R-6 duct insulation - Plans 1 & 4
Windows	Spectrally selective glass high performance windows, U-factor ??, SHGC ???
Heating/Cooling	.92 AFUE furnace 14 SEER A/C
Lighting	All fluorescent lighting
Water Heating	Tankless water heater with .82 energy rating Hot water pipe insulation
<b>Renewable Energy</b>	
Photovoltaics	2 kW roof-integrated photovoltaic tile system

## Project Information

ConSol  
<http://www.consol.ws/>  
Phone: 209-474-8446

Morrison Homes at Lakeside  
<http://www.morrisonhomes.com/Community.asp?CommunityID=406>  
Phone: 916-683-5922

## Zero Energy Home Contacts

Lew Pratsch  
U.S. Department of Energy  
1000 Independence Ave. SW  
Washington, DC 20585  
Phone: 202-586-1512  
[Lew.Pratsch@hq.doe.gov](mailto:Lew.Pratsch@hq.doe.gov)

Tim Merrigan  
National Renewable Energy Laboratory  
1617 Cole Boulevard  
Golden, CO 80401  
Phone: 303-384-7349  
[tim\\_merrigan@nrel.gov](mailto:tim_merrigan@nrel.gov)

## Photo Credits

Cover—PIX10855;  
Cover inset—PIX10871



Produced for the  
U.S. Department of Energy  
by the National Renewable  
Energy Laboratory,  
a DOE national laboratory

DOE/GO-102003-1832  
December 2003