



Seastar Communities Redding, California



Zero Energy Homes No More Electric Bills

Well, not quite. But “zero-energy homes” keep them low.

Zero Energy Homes Can Cut Utility Bills in Half

Seastar Communities has opened the first standard Zero Energy Neighborhood (ZEN) of its kind in the Redding area, *Sonata*, designed to save homebuyers up to 50 percent on utility costs. By partnering with some of the industry’s leading experts in energy efficiency including Redding Electric Utility, ConSol, and the Department of Energy’s Building America Program, Seastar Communities is able to cut buyers’ utility bills in half. Near “Zero Energy Neighborhoods” (ZEN) combine innovative construction with renewable energy systems (i.e. solar electricity) and energy-efficient appliances to create a home that is not only energy-efficient, but produces its own electricity.

The homes at *Sonata* are certified as both an Earth Advantage® and ComfortWise® home, which means the homes exceed the current California Title 24 energy cooling requirements—some of the most stringent in the nation—by 50 percent and are at least 20% more energy-efficient than a home built to standard practices. In addition, the homes will receive a Home Energy Rating that independently verifies their energy-efficiency.

Zero Energy Homes provide multiple benefits - energy efficiency, healthier indoor air, environmental responsibility and resource efficiency. This means lower energy bills for the homeowner and reduced energy demand on hot summer days when electricity is most utilized.

Each *Sonata* home is designed with cutting edge energy technologies that are independently inspected for quality and performance. Specific energy efficiency

features include: a 2 kW AC solar electric home power system, a tankless water heater, a mechanically-engineered heating and air conditioning system, spectrally selective glass windows, tightly-sealed air ducts, Blown-in-Blanket insulation, radiant barrier roof sheathing, highly efficient 14 SEER/12 EER air conditioner and fluorescent lighting.

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

Key Energy Efficiency Features

Air Sealing	<p><u>Caulking and sealing measures</u> Caulking/sealing minimizes air flow through cracks and holes in walls, ceiling, and floor.</p>
Insulation	<p><u>Blown-in-Blanket System (BiBS)</u> Special fabric is stapled and drawn tight across any cavity that needs to be insulated to hold the insulation in place and prevent settling. The insulation is inserted with a hose through which the fiberglass is blown. An R-value of 15 is achieved in 2X4 cavities like walls and an R-value of 38 can be achieved in attics and ceiling cavities that are 2X6.</p> <p>R-15 wall insulation R-38 attic insulation</p> <p><u>Regular Batts</u> R-30 Floor (Above garage) R-6 ducts buried in attic insulation Placing ducts under loose-fill attic insulation reduces conductive heat gains in the summer and heat loss during the winter.</p> <p><u>Radiant barrier roof sheathing</u> Radiant barrier insulation systems reflect radiant heat energy instead of trying to absorb it. A layer of foil, facing an airspace is installed underneath the roof decking in the attic and can reduce energy consumption up to 35% during peak hours.</p>
Windows	<p><u>Spectrally selective glass high performance windows</u> Spectrally selective glass has a nearly invisible coating that blocks sunlight's infrared rays, allowing the sun to shine through the window without heating up the house in the summer and without letting the heat out in the winter, and it lessens fabric fade.</p> <p><u>U-factor:</u> 0.34 sliders; 0.34 fixed; 0.27 patio door. <u>SHGC:</u> 0.32 sliders; 0.32 fixed; 0.21 patio door.</p>
Heating	<p><u>0.90 AFUE furnace</u> The higher the Annual Fuel Utilization Efficiency (AFUE), the less gas the furnace consumes.</p>
Cooling	<p><u>14 SEER Air Conditioner w/ TXV</u> Seasonal Energy Efficiency Ratio (SEER) is a number that rates the efficiency of air conditioners. The higher the SEER rating, the more efficient a unit is and the less it will cost to operate. A Thermostatic Expansion Valve (TXV) meters the flow of refrigerant to the indoor/evaporator coil of your AC making it more efficient.</p>
Lighting	<p><u>Fluorescent lighting</u> A fluorescent bulb produces less heat and is four to six times more efficient than incandescent bulbs. A 15-watt fluorescent bulb produces the same amount of light as a 60-watt incandescent bulb.</p>
Water Heating	<p><u>Tankless Noritz water heater</u> A tankless water heater has no holding tank. Instead, it heats water instantaneously, as it is needed, in a heat exchanger.</p> <p><u>PEX parallel piping</u> PEX flexible piping is able to withstand high and low temperatures, is highly resistant to chemicals, is quieter than rigid piping, and resists scale buildup and corrosion.</p>
Photovoltaics (PV)	<p><u>2 kW AC roof-integrated solar electric system</u> PVs harness the energy from the sun's light and converts it into clean, quiet electricity which is channeled to the electric utility and is credited towards the home owner's account.</p>

Sonata Estimated Utility Cost Comparison



Project Information

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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 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 backward when they produce more electricity than they consume.

DOE selected six 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. ConSol serves as the team leader for one of the teams, Building Industry Research Alliance (BIRA).

