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# BUILDING GREEN

BY ROCKY LANDSVERK



Photos courtesy of Brian Moore Log Homes

*This 8,000-square-foot log home in Mammoth Lakes, California, will set a new standard in green construction.*



*An installer uses lamb's wool to insulate the log grooves.*

## Seeing Green in California

*Innovative new techniques  
add up to a new green  
building standard for this  
Mammoth Lakes home*

# S

teve Lobodzinski, a doctor and engineer, helped build the first artificial heart. He applied some of that same creativity when he built his new home in Mammoth Lakes, California.

Lobodzinski is a professor of electrical and biomedical engineering at California State University-Long Beach and an adjunct professor of medicine at Harbor-UCLA Medical Center. He's putting his education and ingenuity to full use with an 8,000-square-foot log home that he hopes sets a new standard for green building.

From lamb's wool insulation to a radiant heating system he invented himself, Lobodzinski wants to demonstrate that it is possible to live in grand fashion and still be "green." So he had Brian Moore of Brian Moore Log Homes help him build one of the greenest homes in the country.

"People in the U.S. like to build the same way as they have for 50 years," Lobodzinski says. "I wanted to challenge that, and I wanted to prove it to everyone that you could indeed build an energy-efficient house in Mammoth Lakes, which has about 300 sun-days a year. This

## Smart savings

What goes into a green home? Here are a few of the energy-saving highlights of the Lobodzinski/Brian Moore Log Homes green home:

- Geothermal heating and cooling
- Solar circuit for hot water (solar will provide 60-70 percent of the home's hot-water needs, for domestic hot water and radiant in-floor heating)
- Ductless heating and ventilation system
- 95 percent efficient heat-exchanger system for radiant heat
- Propane fireplaces
- Tankless condensing boiler/water heater (95% efficient)
- EnergyStar appliances
- Double-log insulation (each log has two insulation gaskets with sheep's wool in between)
- Low-E, insulated windows
- Exterior basement insulation (4 inches below grade) and 2-inches of extruded foam insulation above grade
- Exhaust fresh-air ventilation system with heat exchangers
- Solid wood doors and windows (no particle-board materials or similar that contain chemicals like formaldehyde)
- Flood-free and vented basement design (ducts take hot air from the vaulted ceilings and bring it down to the basement for circulation)
- Metal roofing with reflective paint (reflects about 30 percent of the solar heat)
- Bionic radiant in-floor heating system that comprises grooved rigid insulated base lined with galvanized sheet metal that greatly improves efficiency, developed by Lobodzinski
- Dimensionally stable carbonized solid wood planks suitable for radiant heated floors
- Water-based natural resin stains for exterior and interior walls
- All natural materials in the interior, and no carpeting
- On-site water run-off capture
- Eco-stone porous paving system



will be the very first energy-efficient house in Mammoth Lakes.

“The log-home lifestyle embodies harmony with nature. People can improve the health of their home and reduce their impact on the environment with new design and construction techniques, giving them an even closer connection with the natural surroundings.”

Building with whole logs offers some opportunities. Logs have thermal mass — their thickness allows them to hold a mostly constant temperature. “It takes a long time for temperatures outside a log home to change the temperature inside,” Lobodzinski says. “The heating and cooling equipment does



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**Above:** The log shell consists of courses of western red cedar logs, known for their insulation properties. **Top Right:** A contractor checks the specs of the home during a construction break.



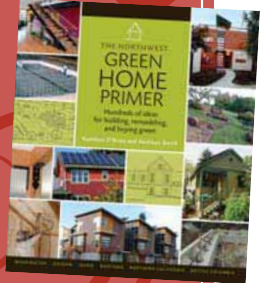
not have to run as often.”

Western cedar was his building material of choice. “It has a very specific cellular structure,” Lobodzinski says. “There’s a lot of air trapped. It’s a very soft wood. The cedar has more air cells in it than any other species of wood.”

Perhaps the most stable of softwood species, the low density of western red cedar gives it an insulation value superior to most other species, according to the Western Red Cedar Lumber Association ([www.wrcla.org](http://www.wrcla.org)). The tree produces long lengths of

## Green Home Primer

Tips to achieve affordable energy-efficient green homes, both old and new, are in the book *The NW Green Home Primer: Hundreds of Ideas for Building, Remodeling, and Buying Green* by Kathleen O’Brien and Kathleen Smith (Timber Press). The book includes checklists, strategies, and lists of resources and illustrated with photos and diagrams. [www.timberpress.com](http://www.timberpress.com)



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timber with true, straight grain, is free from pitch, is weather-resistant, and its heartwood has natural decay resistance.

Green construction with logs is a little more challenging than traditional stick-built construction. "Building log homes is not like building stick homes because each log has a unique character and irregular taper and diameter," Lobodzinski says. "You have to overcome challenges in log-to-stud framing, running chases for plumbing and drilling passages for electrical wiring."

For instance, to make this house air-tight, Brian Moore Log Homes installed double gaskets with a course of sheep's wool (from [www.GoodShepherdWool.com](http://www.GoodShepherdWool.com)) that can expand within the grooves of the logs, so as the logs press against each other, the seal is extremely tight. Sheep's wool is not only an effective insulator, it's obviously more renewable than fiberglass insulation.

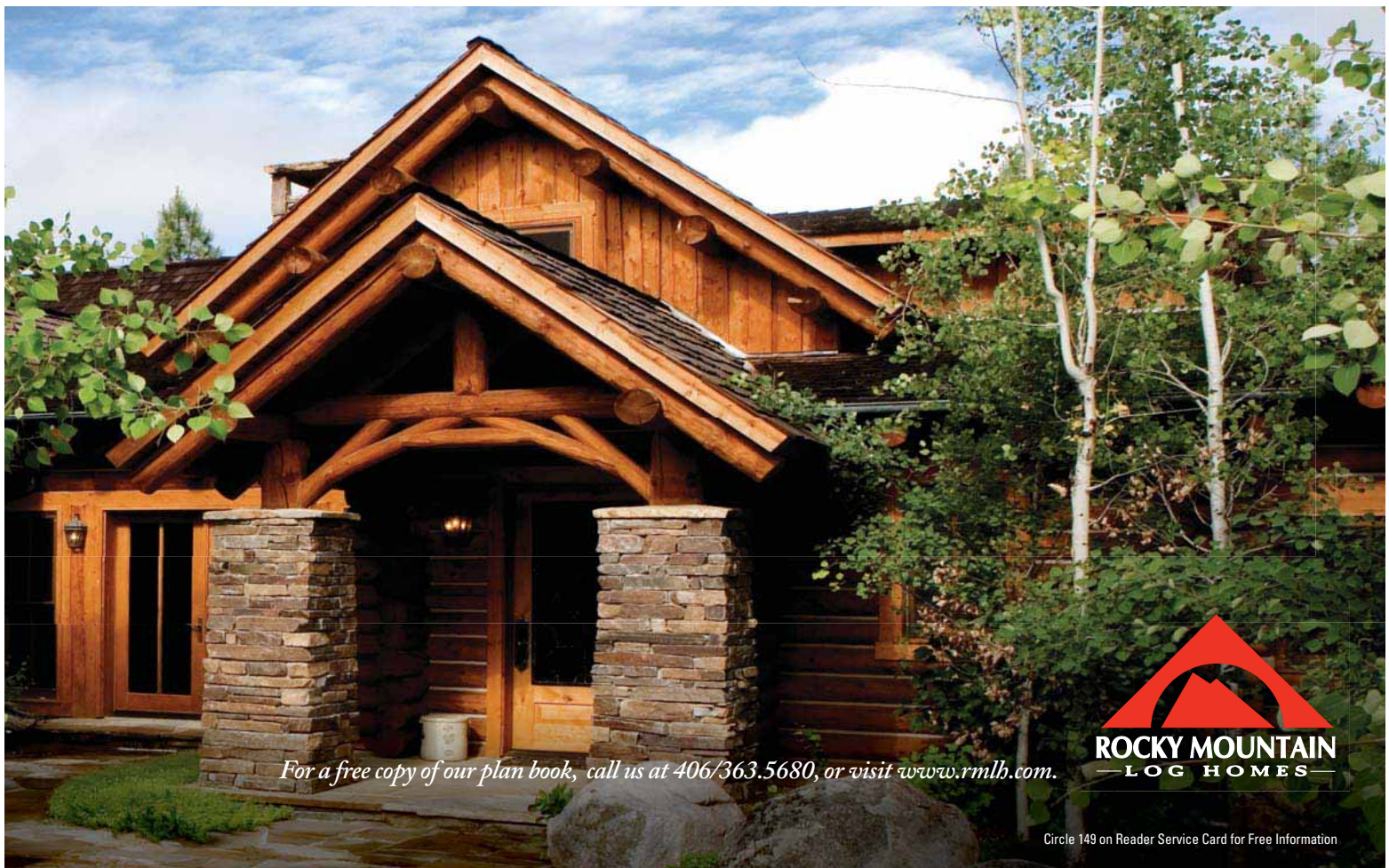
The logs for this home came from forests approved by the Sustainable Forestry Initiative ([www.sfiprogram.org](http://www.sfiprogram.org)), which requires reforestation, soil conservation and the protection of water quality and bio-diversity. *CWH*

## EcoSmart Fire

EcoSmart Fire, an environmentally open fireplace, is flue-free and doesn't require any utility connection for fuel supply. The fire runs on denatured ethanol, runs clean, and is low-maintenance. EcoSmart Fire, [www.ecosmartfire.com](http://www.ecosmartfire.com).



*Lobodzinski improved the typical radiant heating with a rigid base and galvanized sheet metal in his Mammoth Lakes home.*



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