

# Lee Residence a Part of This Year's Solar Home Tour

By Julie Hayes, Solar Week Coordinator

:: At Home Series ::  
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The Center for ReSource Conservation (CRC) is an environmental nonprofit whose mission is to empower Boulder County residents to conserve natural resources through its energy, water & waste diversion programs. Today the CRC serves 20,000 residents annually.



Marshall, Sarah, & Kirsten Lee

Most of us come in contact with hundreds of synthetic surfaces and materials daily and for the most part, we don't think about it. These synthetics, everything from the carpet to your toothbrush, are slowly but constantly degrading and releasing particles, often harmful ones, into the air.

When Sarah and Marshall Lee's cats started dying from respiratory cancers and related diseases, the most apparent cause were these very synthetics, specifically flame-retardants used on carpets and upholstery. These "canaries in the coal mine" signaled to them the need to remodel their home with natural and sustainable materials.



"Our green renovation was a better investment than the stock market."

-Homeowner Marshall Lee



After moving into an old home in the perfect location, they started the process with a REAP (Residential Energy Action Program) energy audit from the Center for ReSource Conservation. This home visit by home energy professionals included a blower-door test. After sealing all the windows and doors, auditors seal the front door with a curious contraption that includes a large nylon sheet, a large fan and a pressure-sensing device – a 'blower door.'

The fan blows air out of the house, creating a difference in pressure between the inside and outside of the house. This differential allows the device to calculate a ratio of natural air changes per hour (nACH), or how much air might leak out or into your home in an hour. "It was a real eye-opener" says Sarah Lee of the blower door test. "We learned that we were having air leak from places that we didn't even imagine."

What a blower door test does for air sealing, an infrared camera does for insulation – that is, make problem areas obvious. This is commonly lauded as the most fun part of the energy audit. Areas of the home exterior that provide little resistance to heat loss are illustrated for homeowners in full color. With this information and detailed attention to the home, a prioritized list of energy improvements is determined for the homeowners.

With this list in hand, the Lees decided to add additional attic insulation before moving in to the home. They chose to spend time living in the home getting to know its 'quirks' before making more substantial changes. Like test-driving a car or going on a first date, this turned out to be an important first step, one that Sarah Lee recommends to other homeowners looking to improve home energy performance. "Had we not lived in it, we might not have discovered that our master bathroom was 48 degrees in the winter time and in need of more insulation," she notes.

Armed with high-speed internet and robust curiosity, the Lees also began to educate themselves, moving from 'novice' to 'expert' green homeowners. No contractor they found could advise on every home system they had, so they became experts themselves.

Empowered with information and familiar with their home, the Lees then implemented a variety of different green and renewable technologies to create their dream green home. These eventually included a photovoltaic (PV) system, geothermal heating and cooling, solar thermal domestic hot water, energy efficient windows, CFL and LED lighting, an induction cooktop, and ENERGY STAR appliances.

Indoor finishes and accents of sustainably-sourced or reused materials and low or no VOCs (volatile organic compound; refers to materials that vaporize to release air-borne toxins under normal conditions) were implemented in many creative ways all over the house. The final touch to the renovation was a complete xeriscape of the yard.

"In the end, it was definitely worth it. Now that it's done we love it," says Sarah Lee. "Our green renovation was a better investment than the stock market," adds her husband, Marshall Lee.



To tour the Lee Residence and others like it, join us for the 14th Annual CRC Tour of Solar and Green Homes on Saturday September 26. The tour includes many new and retrofitted net-zero energy use homes (like the Lee's), and dozens of innovative green solutions for homes.

The tour kicks off Solar Week, which includes green building seminars and the inaugural 'Ask an Expert' event produced by the Boulder Green Building Guild in which homeowners can bring specific green building projects to experts for advice.