



# Case Study: Toussaint–Ingram Residence

By Cam Burns



## Carbondale couple cuts residential energy bills and increase home comfort

Some of the simplest—and most affordable—energy upgrades in a Carbondale residence are achieving a level of comfort thought impossible when the owners bought the home in 2011.

By painting, air-sealing, adding insulation, and replacing old, broken windows, Nicolette Toussaint and her husband Mason Ingram have seen a “dramatic improvement in comfort” compared the dark and frigid home they bought three years ago.

Toussaint, an interior designer and green home design specialist, and Ingram had previously renovated two homes in San Francisco, and they chose their 1983 Carbondale home specifically as a “greening up” project. “When we first viewed the house, it looked dark,” Toussaint wrote. “It felt drafty. It was early fall, but cold seeped through the floor. After spot-



Mason Ingram and Nicolette Toussaint outside their Carbondale home.  
Photo by Cam Burns

### The Upgrades

- Painted walls white
- Removed objects blocking natural light entering the house
- Air-sealed around coving
- Batt insulation and moisture barrier under the floor
- New windows

ting electric floorboard heaters in every room, we requested the seller’s utility bills—and found that they were spending in excess of \$250 a month for electricity.”

But it also boasted a few characteristics Toussaint and Ingram were looking for: no stairs (because of Ingram’s knees), walls that actually contained insulation (unlike their San Francisco homes), walking distance of public transportation, and, its major axis was oriented east–west, just what one needs for good lighting, and eventually, for solar panels.

“I wanted a house that had (or could have) good natural light, that could be thermally comfortable, and would be sustainable in terms of en-

### Lessons Learned

- Sometimes the most effective energy upgrades are extremely “low-tech” (like painting your interior walls white)
- Warm and cool air leak downwards as well as upwards
- Thermal imaging is incredibly valuable in finding warm and cool air leaks



Before and after images of the dining room wall in the Toussaint-Ingram residence in Carbondale. Photos by Nicolette Toussaint



ergy, finances, and aging,” Toussaint later wrote.

Because they were on a tight budget, Toussaint and Ingram decided that a living room skylight, new double-paned windows and solar panels would have wait. Instead, they commissioned thermal imaging inside the home and identified leaky gaps in the structure.

“They always tell you it’s fully insulated,” Ingram said. “Then you take the infrared camera and lo and behold there doesn’t seem to be any insulation around the doors or windows.”

Before they moved in, they hired local contractor Tim Rafaelson to add foam and batt insulation and a moisture barrier to the crawl space under the uninsulated floor. Rafaelson also suggested replacing the coving along the floors and around windows. Rafaelson insulated and weather-stripped where the thermal images showed heat escaping—around light fixtures, trim and beams, and where there were gaps—increasing the R value from 30 to 38.

The couple also repainted the Navy blue wall white. “The difference was immediate and dramatic,” Toussaint wrote. “We no longer needed artificial lighting during the day.”

Toussaint also sealed the water pipe penetration holes in the bathrooms.

Toussaint and Ingram spent \$350 for the energy audit and thermal imaging, and \$7,181 to replace the coving and add the moisture barrier, insulation and weather stripping. Unfortunately, the couple didn’t know about rebates available for energy upgrades.

In the summer of 2013, Toussaint and Ingram replaced all the single-paned windows in the home with double pane models with the exception of one bathroom window. During a chance meeting with a CLEER energy coach, Toussaint learned that the new windows were eligible for rebates, and CLEER—via the Garfield Clean Energy Challenge—provided a rebate of \$500. The retrofit was necessary regardless of the couple’s goals of saving energy—they were old and broken and often required opening and closing from the outside. “It was really bad,” Toussaint said.

The assorted fixes have had a profound effect. On a hot August 2013 day, Ingram sat comfortably in his living room and explained: “I get up around 5:30 each morning, and the temperature in the house is around 65 degrees. I fix tea, then shut the doors and windows, which we leave open to let the cool night air in.”

“And,” he said pointing at a thermometer on the mantel, “that thermometer doesn’t move more than 2 or

3 degrees. And it can get 40 degrees warmer outside.”

Winter offers a similar story. No more cold drafts and toes. The insulation that keeps summer heat out keeps winter warmth in.

The couple’s home heating is both gas and electric. In June, July, and August of 2012, their natural gas bills were \$38.34, \$26.23, and \$27.29. During the same period in 2013, gas bills were \$31.16, \$23.54, and \$21.38—a roughly 20 percent drop. The couple paid \$51.27, \$39.73 and \$44.84 in electric bills for June, July, and August of 2012. For the same three months in 2013, they had energy bills of \$38.98, \$36.11 and \$36.69—again, a roughly 20 percent drop and a far cry from the \$250 a month the previous owners were spending solely on electricity. But the most important outcome is the more comfortable home.

“Nicolette and Mason offer a great example of the simple things a family can do to reduce energy use and save money,” said CLEER energy coach Maisa Metcalf.

Toussaint and Ingram hope to add solar panels to the roof of the home and then maybe some other energy-saving amenities like a solartube in her art room. But for now, they’re just glad the house is comfortable.

“It’s so much better,” she said.

You can read more about Toussaint’s green-building work, check out her “Living in Comfort and Joy” blog at <http://nicolettet.wordpress.com>.

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