



Case Study: Toussaint–Ingram Residence

By Nicolette Toussaint



Carbondale Homeowner Explores the Simplest—and Most Important—Energy Upgrades First

As Mark Twain famously put it, “the coldest winter I ever spent was a summer in San Francisco.” During my years there, I often needed to flee during summer, seeking sun to overcome the blues and the chill that rolled wetly in with the fog each evening. When I returned home in 2011, I was looking forward to Colorado’s 300 annual days of sunshine, but I was intimidated by the idea of snow—something I hadn’t seen or shoveled for years.

To my surprise, I’m feeling warmer and sunnier here in Colorado than I ever felt in California. The change is due mostly to wise home design and energy decisions—with a nod to the wonderful, dry climate of the Roaring Fork Valley.

In October 2011, my husband Mason Ingram and I bought a 1500-square-foot house in Carbondale. Because I had studied interior design



*Nicolette Toussaint shows off the insulation added by contractor Tim Rafaelson under her floor.
Photos by Cam Burns*

The Upgrades

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

and earned a green building certification, my home-buying checklist contained some very specific items. I wanted a house that had (or could have) good natural light, that could be thermally comfortable, and would be sustainable in terms of energy, finances, and aging.

We had renovated two homes in San Francisco, so we brought experienced eyes to the purchase. Compared to our previous homes—built in 1906 and 1929—the “new” house was modern. Built in 1983, it had some great sustainability features:

1. The walls actually contained insulation;
2. virtually every room featured a ceiling fan;
3. it had only two interior

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 Nicollette Toussaint

steps, an accessibility consideration important for my husband's knees; 4. it was within walking distance of public transportation; and, 5. its major axis was east-west, just what one needs for good lighting, and eventually, for solar panels.

But when we first visited the house, it looked dark. It felt drafty. It was early fall, but cold seeped through the floor. After spotting 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.

I was sure that I could solve the lighting and heating problems, but my job-hunt and Mason's Social Security dictated a modest budget. So after we commissioned thermal imaging and I created a three-dimensional computer model of the interior to review the lighting, we decided that a living room skylight, new double-paned windows, and solar panels would have to wait. We put several relatively low-cost/high-payback items on the "do it now" list.

First on the list was repainting the inside. When I posted the first interior photos online, one of my designer friends asked, "Were the people who owned this place colorblind?" She was reacting to the lime green entrance, black interior doors and curtains, dark brown trim and a large, navy blue wall in the dining room.

That wall could give anyone the blues. It sat adjacent to the patio doors on the home's south wall—our major source of interior light. The dark surface sucked the light out of both the dining room and the open, adjacent living room.

We repainted the entire interior a warm white—the color is Sherwin Williams's "downey"—and placed a large Talavera mirror on the dining room wall. We then removed a hanging pot rack that blocked natural light.

The difference was immediate and dramatic; we no longer needed artificial lighting during the day.

Interestingly, a white wall will reflect as much light as a mirror. The reflectiveness of a surface is calibrated by instruments that measure its "albedo." When no light is reflected, a surface looks black and has an albedo of zero. When all available light is reflected, the surface has an albedo of one. Both mirrors and white walls have an albedo of around one.

Prior to our move-in, our contractor, Tim Rafaelson, added foam and batt insulation and a moisture barrier to the crawl space under the uninsulated floor. Tim also recommended replacing the coving along the floors and around windows. I was dubious. But when he asked me to put my hand next to the old trim, I felt the draft. Tim 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.

Finally, I crawled under the bathroom vanities and sealed the overly large holes that allowed the water pipes—and a freezing knee-height draft—to enter the house.

We spent \$350 for our energy audit, plus \$7,181 to replace the coving, add the moisture barrier, insulation, and weather stripping. We received \$800 in rebates from CLEER, and have experienced a dramatic improvement in comfort.

Our floors are no longer cold underfoot and even during snowy days, we are able to avoid using the electric baseboard heaters most of the time. Because the house is well sealed, the Waterford 40,000 BTU gas heater in the open-plan living room sufficed for most of the winter.

It's a work in progress—we still have that long-term list—but we're very happy with our sunny, snug home in Carbondale. It's my Colorado demonstration project, and I'm looking forward to using my design skills to make homes here places of comfort and joy for their owners.

Nicolette Toussaint grew up in Denver. She writes a popular interior design, arts and sustainability blog – Living in Comfort and Joy. It is named after her interior design consulting business, Comfort and Joy Home Design.

Garfield Clean Energy/CLEER
520 S. Third St., Ste. 29
Carbondale CO 81623
970-704-9200
info@cleanenergyeconomy.net
www.cleanenergyeconomy.net
www.garfieldcleanenergy.org