

## About.com Home Renovations

### Top 6 Priorities for Green Renovations

Green Remodeling Ideas from Architect Nils Finne

By [Murrye Bernard](#), About.com Contributing Writer

Architect Nils Finne of [FINNE Architects](#)<sup>1</sup> shares a few successful design strategies that he has implemented in green renovation projects: "If it's a renovation, I make a big point about the fact that it is inherently sustainable because you're preserving an existing building rather than consuming new, energy-intensive materials. You are keeping and giving new life to a piece of the environment that's already there."

#### 1. Insulation



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The smart strategies aren't always glamorous, like [choosing the right insulation](#)<sup>3</sup>. We recently spent over three weeks with a contractor going back and forth on various insulation strategies. The impact on the energy use of the house is significant. There are spray-in foams, closed cell insulation, open cell insulation, traditional rigid insulation, and a new product from Germany called Vacupor® that gets R-30 per inch, which is astounding. If you have a tight space in a wall, and you need to get maximum insulation and you are down to one inch, you can do it! The big revolution is in spray-in foams because they create a much tighter building envelope and allow you to reduce air exfiltration, which can account for up to 30% of a house's energy loss.

The sealing of the envelope is tremendously important. We are looking hybrid strategies where we are using two inches of the closed cell insulation and filling out the rest with either open cell or batt insulation. We are generally going for or exceeding the maximum Department of Energy recommendations for the building envelope. We are usually 20-30% higher than the building code, and in some cases even higher.

#### 2. Ground Source Heating

Another strategy that we use a lot is ground source heating. We have an average ground temperature of 50 degrees in the Northwest, which doesn't vary with weather conditions. We don't have a lot of sun in the winter, so the ground source heating system makes huge amounts of sense. We have also installed GSH in a project in Massachusetts, where it makes even more sense because the ground temperature can vary drastically from the air temperature in winter months, so you can reduce your dependence on forced air heating systems by enormous amounts. The technology is relatively simple; you drill wells and install a heat exchanger. The system has a much shorter payback cycle than photovoltaics.

#### 3. Pre-Wiring for Photovoltaics

We are generally pre-wiring for photovoltaics because we don't know what's around the corner, and if all the sudden technology improves, then panels could become much more affordable. Later, if a client considers installing panels on the roof, they can bring the wiring down through conduits without disrupting interior finishes. It's also important to set up panels for reverse metering, so that when the panels are running you can power back on the grid rather than trying to store the energy. Pre-wiring for photovoltaics is a smart and inexpensive move.

#### 4. Natural Lighting

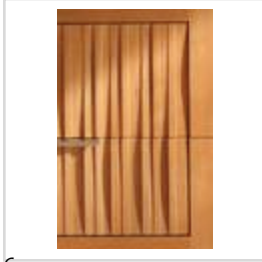


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[Natural lighting](#)<sup>5</sup> is also another important element of any sustainable strategy. In many of our completed projects, the lights are not on during the day at all, zero--that's what I call reducing energy consumption! Bringing the beauty of natural light into a house is part of that same strategy, it's all integral. But there is a cost to all this glass, particularly if it is filled with highly insulating argon gas. In many of our projects, windows are the highest line-items in a budget, but I argue for that one strenuously because of all the reasons I mentioned--it's extremely important.

## 5. Sustainable Wood



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Generally, on the exteriors of our projects, we use natural wood. Wood is a carbon sink and it has a very low initial energy consumption or cost, since it's not a manufactured product that creates industrial waste. I am amused by all of the manufactured products that look like wood but aren't. They say they are green, but how can they actually be as green as a piece of wood?

In terms of [FSC certification](#)<sup>7</sup>, there are alternatives. You can talk to the vendor or lumber supplier about their practices and find out if they are participating in extensive reforestation. The FSC creates another hoop that you must jump through, and FSC-certified wood costs 15-17% more than a lot of other woods that are still sustainably harvested.

## 6. Radiant Heating

We use a lot of [radiant heat](#)<sup>8</sup>, which is one of the most energy-efficient heating systems. Once the thermal mass is heated up, which is generally made of gypcrete or concrete, the water runs through at about 82 degrees to heat your house. If you combine that with a ground source system, then you have a very energy-efficient system. It's non-allergenic because you're not blowing air around and moving dust.

Along the same lines, we use all [low VOC](#)<sup>9</sup> finishes. There is a paint company called [Devine](#)<sup>10</sup> out of Portland, Oregon that I like to use. We try to source everything locally to avoid paying for enormous amounts of fuel to be consumed to ship products to where we are. [Bamboo flooring](#)<sup>11</sup> is very trendy, but it is shipped from China—how smart is that?

View a [slideshow of work by FINNE Architects](#)<sup>12</sup>...

Read more about [Nils Finne's philosophies on sustainability](#)<sup>13</sup>...

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