

# Timber Frames Are Green



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## LEED and HEALTHY BUILT HOMES



Building green can save you money. The word green is often abused and over used by entities which have no plausible claim to do so. The most honest definition of the new word green in buildings includes efficiency, durability, and sustainability.

LEED and HERS are two competing national certification programs for the design, construction, and operation of high performance green buildings. Both programs look at the plans for a building on paper before the building process and rate them accordingly. Both require third party observation during the building process, have an extensive check list for the third party to observe and check off such as use of Energy Star appliances, low flow plumbing fixtures, and blower tests after construction to test air "leakiness" of the building and duct work. Both concentrate on building efficient, durable, and sustainable structures.

Currently many manufacturers of various materials call themselves green because perhaps a part of the producing plant recycles trash. Others assume the title arbitrarily because their product is bamboo flooring and bamboo is sustainable or reproducible. Or the factory has recently switched to fluorescent lighting, cutting electric bills, but has done nothing about its inadequate insulation or its antiquated heating system. These examples are called greenwashing, and they are ubiquitous.

The carbon footprint of an item is the amount of CO<sub>2</sub> (from burned fossil fuel) produced in the manufacture, delivery, use over its lifetime, and safe disposal of that item. This becomes quite complicated to determine accurately for a single item, and overwhelming for the number of products making up an entire house. If something must be shipped around the world, much more energy is required than if it is locally produced. (Look at bamboo flooring from Indonesia and granite countertops from India). Also, one must consider the waste in the manufacturing process, toxic byproducts, cost to reproduce and replace after its useful lifetime, costs of disposal, and its contribution to maintaining landfills.

This brings us to employing common sense. Ideally, we should look at the totality of products which make up a building, their beneficial and harmful qualities, their sustainability (are we using them up, or can we reproduce them at a regular interval at an acceptable cost?), their durability (how long will the building and components last?), and the efficiency (what will it cost over the life of the building to heat, cool, and power it?).

LEED and HERS are both directed at producing buildings which utilize these three criteria.

Timber frame buildings with Structural Insulated Panels or SIPS are inherently efficient from the beginning. They commonly cost one half as much to heat and cool as equally R-rated stick built structures with fiberglass batts between studs. SIPS have been used for some eighty years in the food refrigeration industry. The SIPS we use are made from Styrofoam (approved for food containers by the FDA) and oriented strand board, made with formaldehyde free glue. Sips do cost more initially, but usually pay for the difference in 5-6 years in reduced heating and cooling costs.

difference in 5-6 years in reduced heating and cooling costs. Rather than just give lip service to these goals, we at Cabin Creek Timber Frames actually put our money into it. Unfortunately, no provision was made in LEED or HERS for buildings built before the programs' inception. We have been building extremely efficient buildings since 1996. We have kept records of energy cost for a house we built in Western North Carolina in 2005 which enjoys timber frame and SIPS. It is 2800 square feet, and to heat, cool and power cost \$85 per month until incandescent bulbs were replaced with fluorescent bulbs, bringing the cost down to \$75 per month. Although we are unable to get it certified due to government bureaucracy, the blower tests and actual cost of energy placed its efficiency or energy usage at 59% of the projected reference house.

A recent engineering study compared our complex, both office (SIPS and timber frame) and beamery (metal building), 9250 square feet, using energy use data over the past two years, with an imaginary complex, same size, minimum code requirements, using an all electric heating system. We heat the entire complex with a detached wood burning boiler using waste wood from our operation to heat hot water for our radiant floor system. The results show our actual complex uses 43% of the energy used by the standard building. The other 57% or approximately \$9000 saving is not being spent on Middle Eastern Oil. Waste wood is carbon neutral as it would become CO<sub>2</sub> whether it burns or decays in a landfill.

For a more detailed article on the house mentioned above and the office and beamery please click [here](#).

From a practical standpoint, it makes good financial sense to spend the extra money initially required to build a more efficient building in light of the decreased costs of operating and the rising costs of energy.

Cabin Creek Timber Frames can work with the homeowner, the general contractor, and either LEED or HERS to build your efficient, durable and sustainable home, get it certified, and obtain federal, state, and sometimes municipal tax credits for even more savings.

CABIN CREEK TIMBER FRAMES

828-369-5899

6624 Georgia Road Franklin, NC 28734

[www.cabincreektimberframes.com](http://www.cabincreektimberframes.com)

[jbell@cabincreektimberframes.com](mailto:jbell@cabincreektimberframes.com)

Links:

[Sips.org](http://Sips.org)

[Suretight.com](http://Suretight.com)

Hers or Home Energy Rating System [www.energy.ca.gov/HERS/index.html](http://www.energy.ca.gov/HERS/index.html)

[www.healthybuilthomes.org](http://www.healthybuilthomes.org)

Energy Star [www.energystar.gov](http://www.energystar.gov)

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