

Wood

a better
way
to build

Wood: A Good Choice for Energy Efficiency and the Environment

Today, building green is good business. As a building material, wood offers many environmental benefits that matter to communities across the country. It is the only major building material that is renewable and sustainable.¹ Compared with concrete and steel, wood products help to increase a building's energy efficiency and minimize the energy consumed throughout the life of the product. Using wood also helps keep carbon out of the atmosphere, helping to mitigate climate change. Trees store carbon dioxide as they grow. After harvest, wood products continue to store much of this carbon. These benefits continue when wood is reclaimed to manufacture other products.

Wood. It's a better way to build.



- **Wood is better for the environment** in terms of greenhouse gas emissions, air and water pollution, and other impacts. Steel and concrete consume 12% and 20% more energy, emit 15% and 29% more greenhouse gases and release 10% and 12% more pollutants into the air, and generate 300% and 225% more water pollutants than wood.²
- **Using wood helps to sustain our forests and increases our carbon storage potential** by helping to ensure that it is affordable for forest owners to continue sustainably managing their forestland.⁶

EXAMPLES:

- **Wood helps reduce energy consumption** across the life cycle of growth, harvest, transport, manufacture and construction compared to other structural building products according to life cycle assessment (LCA).³
- **Wood can improve energy efficiency.** An excellent insulator, wood has a cellular structure that allows for air pockets, helping to slow the conductivity of heat.⁴
- **Wood products store carbon**, helping to mitigate climate change while also providing a good alternative for materials that require large amounts of fossil fuels to produce.⁵
- Constructing a wall using kiln-dried wood studs, oriented strand board (OSB) sheathing, and vinyl siding instead of concrete with an exterior stucco coating results in 15 pounds of avoided CO₂ emissions for every square foot of wall area.⁷
- Using engineered wood I-joists with an OSB sub-floor rather than steel joists and OSB sub-flooring results in 22 pounds of avoided CO₂ emissions for every square foot of floor area.⁸



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CASE STUDY

El Dorado High School,
El Dorado, Arkansas

One of the first schools in Arkansas to make extensive use of wood, El Dorado High School was constructed with 153,265 cubic feet of lumber, panels and engineered wood, which stores 3,660 metric tons of carbon. By using wood instead of more fossil-fuel-intensive materials like steel and concrete, the building's designers avoided 7,780 metric tons of carbon emissions—equivalent to keeping 2,100 cars off the road for a year, or operating a single-family home for 970 years.⁹



RESOURCES:

Tackle Climate Change – Use Wood. Published in 2010 by the British Columbia Forestry Climate Change Working Group and California Forestry Association. Available for free download in book or video format at <http://www.woodworks.org/why-wood/sustainable-design/carbon-footprint/>

Science Supporting the Economic and Environmental Benefits of Using Wood and Wood Products in Green Building Construction. General Technical Report FPL-GTR-206, U.S. Department of Agriculture, Forest Service, Forest Products Laboratory. http://www.fpl.fs.fed.us/documnts/fplgtr/fpl_gtr206.pdf.

Carbon calculators—to help building designers quantify the environmental benefits of wood buildings: <http://www.woodworks.org/design-tools/online-calculators/>

WoodWorks fact sheet on energy efficiency: <http://woodworks.org/why-wood/sustainable-design/energy-efficiency/>

American Wood Council fact sheet on life cycle of building products: http://awc.org/pdf/GBFactSheets/life_cycle.pdf

American Wood Council fact sheet on wood and carbon footprint: http://awc.org/pdf/GBFactSheets/Wood_Products_And_Carbon.pdf

¹ <http://www.woodworks.org/why-wood/sustainable-design/>

² American Wood Council, Green Building Fact Sheet.

³ "Sustainable Forestry in North America," information sheet WW-010. <http://woodworks.org/education-publications/information-sheets/>

⁴ British Columbia Forestry Climate Change Working Group and California Forestry Association: *Tackle Climate Change—Use Wood*. 2010. p. 22-23.

⁵ Ibid.

⁶ Ibid.

⁷ Lippke, B. and Edmonds, L. *Environmental Improvement Opportunities for Alternative Wall and Floor Design*. 2009. CORRIM Phase II Research Report, Fact Sheet 6 (converted from kilograms).

⁸ Ibid.

⁹ El Dorado High School case study, U.S. WoodWorks, <http://woodworks.org/publications/case-studies-design-examples/>

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