

# GREEN BUILDING FACT SHEET

## LIFE CYCLE OF WOOD PRODUCTS

### BACKGROUND

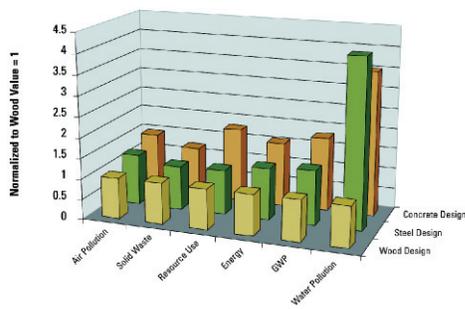
Life Cycle Assessment (LCA) is a “performance-based” approach to assessing the impacts that building materials have on the environment. LCA quantifies the overall effect an individual product, building assembly, or whole-building has on specific environment indicators over its lifetime. This includes all activities from material extraction/harvesting, through manufacturing, transportation, installation, use, maintenance, and final disposal/re-use.

LCA has shown that wood products offer clear environmental advantages over other building products. The tools used to evaluate LCA are continuously improving and allow users to make informed choices based on the latest data for commercial processes and their environmental impacts. LCA has existed in various forms since the early 1960s. The protocol for completing LCA was standardized by the International Organization for Standardization (ISO) in the late 1990s.

### ISSUE

Where LCA tools are used to assess environmental impacts, they provide quantifiable measures compared to the primarily subjective “points” that are currently provided in most green building rating programs.

LCA is used to assess the environmental impact of materials relative to one another, by evaluating, for example, CO<sub>2</sub> emission (global warming indicator), embodied energy, air and water pollutant criteria, and land use impacts.



Embodied Effects Relative to the Wood Design across all Measures



### WHAT YOU NEED TO KNOW

Currently available LCA tools such as BEES (Building for Environmental and Economic Sustainability) and the ATHENA Environmental Impact Estimator (EIE) help builders make informed environmental decisions. BEES evaluates the environmental performance of individual products whereas the EIE addresses primarily whole building design.

The Athena Institute ([www.athenasmi.ca](http://www.athenasmi.ca)) has developed an easy to use, instructive LCA EcoCalculator for building assemblies. The calculator can be used as a means for achieving LCA points in Green Globes and the NAHB Guidelines.

The graph shown compares the environmental impact of a typical wood-frame house to that of similar houses built out of steel and concrete (poured into insulated forms). It sets out total embodied and operating energy consumed over a 20-year period for each building type.

Compared to wood, steel and concrete embody and consume 12% and 20% more energy, emit 15% and 29% more greenhouse gases, release 10% and 12% more pollutants into the air and generate 300% and 225% more water pollutants.

### FOR MORE INFORMATION

The Consortium for Research on Renewable Industrial Materials (CORRIM) has recently published a study using LCA comparing the environmental attributes of homes framed with wood, concrete and steel. A summary of the study can be found at [http://www.corrim.org/reports/pdfs/FPJ\\_Sept2004.pdf](http://www.corrim.org/reports/pdfs/FPJ_Sept2004.pdf)