

SOCIAL & ECONOMIC BENEFITS OF WOOD BUILDINGS

Roy-Lawrence Residence, Québec. Photography: Chevalier Morales Architectes

BACKGROUND

A building that is a good choice for the environment can often address broader social needs and offer higher economic value. People prefer to live, work, study and play in a well-designed and visually appealing building – and this is more likely to extend its life and make it a better investment. It also sends a signal that the building owner is environmentally responsible and cares about the well-being of occupants.

WHAT YOU NEED TO KNOW

Benefits of natural elements

A study by FPInnovations found that people are happier, healthier and more productive when they are connected to nature.¹ The use of natural elements in a built environment – including daylight, plants, nature soundscapes and natural materials such as wood – creates a more positive space for any activity. It reduces stress and improves productivity and concentration.

In health care facilities, the presence of natural materials is associated with faster recovery times, lower pain perception and positive dispositions. This benefits not only the patients, but visitors and health professionals as well.

Keeping occupants comfortable and productive

A comfortable indoor environment affects the health and well-being of occupants. Good interior air quality reduces exposure to pollutants and provides moderated humidity levels. Bare wood is hypo-allergenic because it is non-toxic, and its smooth surfaces prevent the buildup of particles which can occur on other surfaces and finishes. Wood absorbs or releases moisture to maintain equilibrium with the indoor environment. This can result

in an increase in humidity when the air is dry, and a reduction when the indoor air contains moisture. Wood is

an excellent choice when acoustics are a design consideration. Its unique cellular structure can help to dampen sound vibrations. This is especially important in home and office environments where unwanted noise can cause stress or interfere with activities. Wood is often the material of choice where quality acoustics are important, such as concert halls and auditoriums.

Minimize heating and cooling needs

The most energy-efficient buildings are made with materials that resist heat flow, and are constructed with accuracy to make the best use of insulation and air barriers. Wood has millions of tiny air pockets, making it a natural thermal insulator. It loses less heat through conduction than other building materials. Wood-frame construction techniques support a wide range of insulation options and low-energy design solutions.



One Kids Place, North Bay ON

Photo Credit: Mitchell Architects Inc. (Photo by Richard Johnson)



BC Passive House Plant, Pemberton BC

Photo Credit: Ema Peter

Passive House is a rigorous, voluntary standard for energy efficiency in buildings to reduce the energy use and enhance overall performance. It results in ultra-low energy buildings that require little energy for space heating or cooling.

Passive House level performance of buildings require up to 90 percent less heating and cooling energy than conventional buildings. Applicable to almost any building type or design, the Passive House high-performance building standard is the only internationally recognized, proven, science-based energy standard in construction. Certification ensures that designers and consultants are expertly qualified to design buildings to meet the standard.

The benefits of employing Passive House standards include fine-tuned control over indoor air quality and temperature with simple to use durable systems, making them extremely quiet and comfortable throughout the changing seasons. The reductions in operating costs quickly make up any additional costs associated with construction, and the reduced carbon emissions provide priceless peace of mind.

In a Passive House building the primary goal is to achieve a superbly well-insulated and tightly sealed building envelope, then introduce fresh air via a very high-efficiency heat recovery ventilation system. Renewable energy technologies can be used on Passive Houses and are often installed if the budget permits.

Improve efficiency and reduce costs

Wood buildings deliver higher economic benefits because they can be designed to be flexible and adaptable. Buildings are sometimes demolished before they reach

their expected lifespan because of changing land values and user needs. Construction using wood products can extend the life of a structure by making it easier to adapt to changing needs.

Wood products are also lighter and easier to work with, providing the potential for lower construction costs, such as reduced size of foundation substructures and tight tolerances of manufactured and preassembled components. Brock Commons Tallwood House is an 18-storey wood hybrid student residence at the University of British Columbia. The structure was completed less than 70 days after the prefabricated components were delivered to the site.² A short time lapse video is posted on [YouTube](#).

End-of-life considerations

Once a building has reached the end of its service life, the potential environmental impact of its disposal must be considered. Designing for disassembly and adaptability can be critical in end-of-life scenarios that allow for recovery of materials and avoidance of disposal to landfill. End-of-life alternatives such as reuse, recycling and energy recovery often lead to lower GHG emissions. Many wood products are often reused, recycled or recovered for energy.³

FOR MORE INFORMATION

- [FPInnovations Wood and Human Health](#)
- [FPInnovations Wood as a Restorative Material in Healthcare Environments 2015](#)
- [reThink Wood](#)
- [naturally:wood](#)

¹FPInnovations. *Wood as a Restorative Material in Healthcare Environments*. 2015.

²UBC News. *Structure of UBC's tall wood building now complete*. September 15, 2016.

³Dovetail Partners *The Current State of Wood Reuse and Recycling in North America and Recommendations for Improvements*. May 2013.

