

## **Executive Summary: Third-Party Study Proves Western Red Cedar is Most Environmentally Friendly Choice for Siding and Decking**

### **Overview of LCA and why it is important**

Consumers of building materials, whether professional architects, engineers and specifiers, or home owners, are increasingly concerned about their environmental “footprint.” They are particular about products they choose and factor environmental considerations into the decision-making process.

Unfortunately, getting the “whole picture” about a product’s environmental impact can be challenging. Most manufacturers only promote a selective criterion of attributes. Sure, a product may be biodegradable or contain recycled content. However, this does not address other key considerations like energy consumed in manufacture, emissions and impact on global warming. Accessing and comparing like information about alternative products is another challenge.

A Life Cycle Assessment or LCA (also known as life cycle analysis, ecobalance, and cradle-to-grave analysis) quantifies environmental impacts of materials in a side-by-side comparison. LCA measures cradle-to-grave environmental impact through complex analysis of a range of measurables such as resource, water and energy use, emissions, transportation, and waste created. Extraction, manufacture, transportation, consumption or use, and end-of-life disposal practices are examined to create a scorecard against which objective comparisons can be made. Testing is done on a third-party basis, providing consumers reliable data.

### **Overview this study**

Western Red Cedar Lumber Association (WRCLA) members determined commissioning a third-party LCA of siding and decking products was the only credible way to provide consumers with reliable environmental performance information. To place the study results in sharper perspective, a parallel study of alternative products including brick and fiber cement siding as well as composite decking products was also commissioned.

Forintek, Canada’s leading forest products research organization, conducted the study in accordance with international standards in the ISO 14040/44 series, which requires that all products be treated equally and be of similar quality. Study results were presented for peer review to independent third-party organizations to ensure ISO standards compliance.

For Western Red Cedar products, the study was based on data obtained from a representative cross section of cedar mills in British Columbia and Washington state in 2007. Secondary publicly available data were used to develop life cycle inventories (LCIs) for clay brick, fiber cement and vinyl siding. Cradle-to-grave LCIs for wood-plastic composite decking made with either virgin or reprocessed plastic were also developed using secondary data sources as well as information collected from experts in the petrochemical and wood-plastic composite fields.

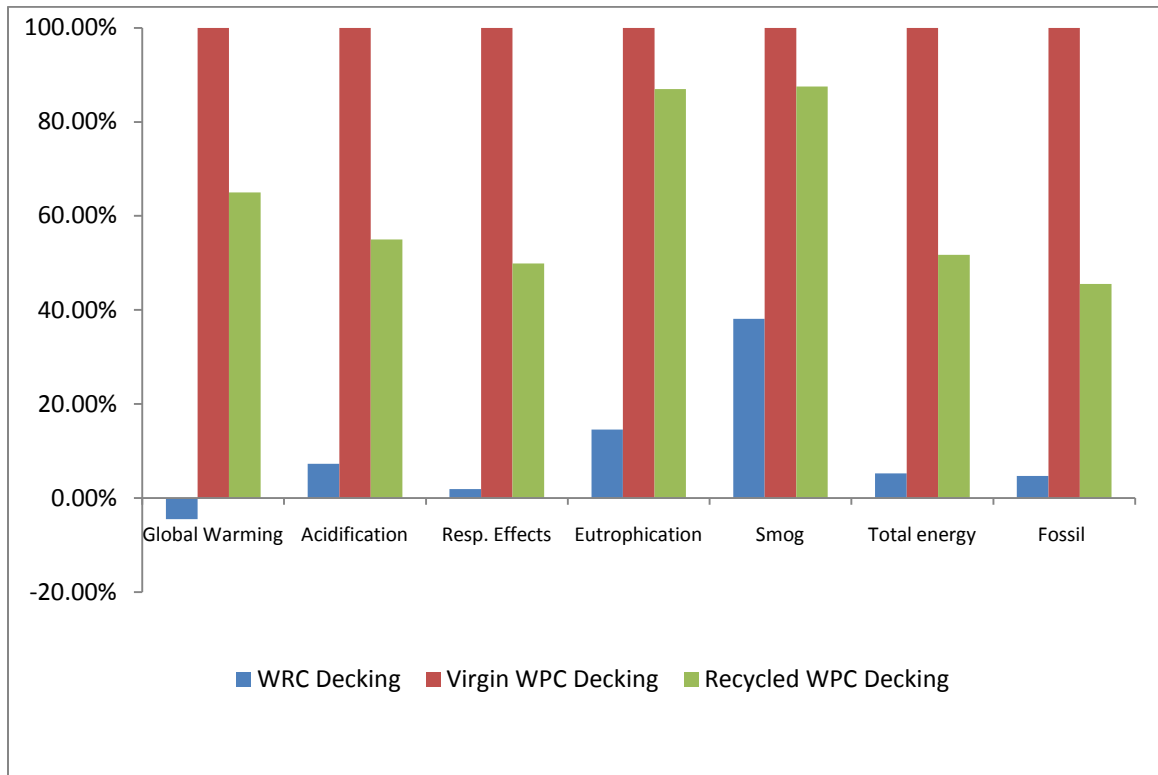
In order to evaluate the environmental impacts of the life-cycle stages of product alternatives, the life cycle was modeled as four distinct life-cycle stages: resource extraction and manufacturing, transportation to customer, installation and use, and end-of-life disposition. This approach helps identify where environmental contributions occur within the life cycle of each product system.

### **Summary of decking and siding findings**

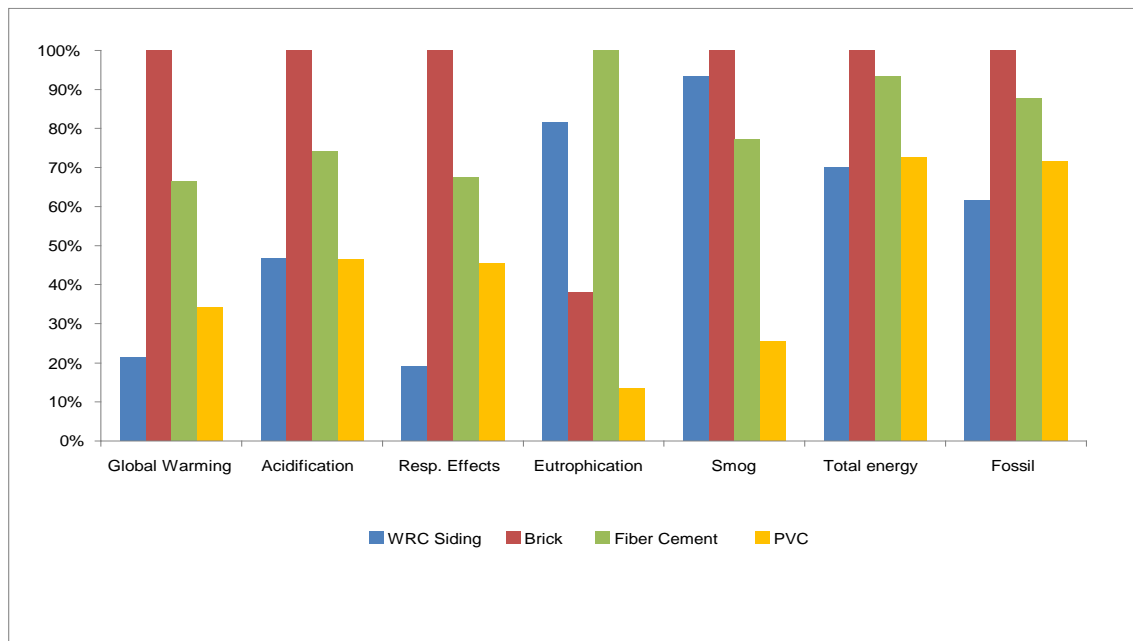
The following statements and graphs summarize the LCA results of the study for decking and siding products, giving consumers a reliable basis for comparison. Environmental impact measures applied consistently to each product were: total primary energy on a cumulative demand basis, global warming potential, acidification potential, aquatic eutrophication potential, ozone depletion, smog formation potential, and human particulate (respiratory) effects.

- Western Red Cedar decking substantially outperformed composite decking in each of the seven criteria tested and was by far the product with the least environmental impact when compared with both virgin and recycled wood-plastic composite decking products.
- Even after subjecting the cedar decking results to a “worst case” scenario in which Western Red Cedar required the replacement of 20% of boards in normal service and periodic application of coatings, the environmental impact results remained strongly favorable to Western Red Cedar over a “best case” scenario for composite decking.
- Western Red Cedar siding had the best overall performance when compared to vinyl, fiber-cement and brick; it received top marks in five of seven impact criteria, including “global warming potential.”
- Total life energy of Western Red Cedar siding can be further improved by altering end-of-life disposal practices away from the assumed practice of 100% landfill, to a mix of reuse, energy recovery and landfilling. This practice, already reality in many communities, results in cedar siding becoming a net “carbon sink;” other products tested remained green house gas contributors.
- Cedar siding impact on smog and eutrophication – the criteria in which it was not the leader – can be traced directly to the use of paint, not the natural characteristics of cedar. Use of high quality paints and stains (some of which carry length performance warranties) or the use of the new water borne coatings would have a very positive impact on results.

**LCIA comparison of decking products\*\***



**LCIA comparison of siding products**



\*\* (Please note, In each set of bars, the product with the highest impact in that category is the benchmark (100%) and the other products are shown as a percentage relative to the benchmark. These are percentage values against a benchmark and not absolute values.)