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It's tough to beat a rehab when it comes to green, study says

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A new study from the Preservation Green Lab says in most cases there are more environment benefits in renovating a building than constructing a new energy efficient building.

Patrice Frey, director of sustainability at the National Trust for Historic Preservation, said green building experts have suspected for years that reusing buildings was a better option, and this report supports that.

The study used life-cycle analysis to measure six different types of buildings in four climatically diverse cities: Portland, Phoenix, Chicago and Atlanta. The study considered the role of geography, energy performance, electricity grid-mix, building type and lifespan in evaluating the environmental effects and carbon emissions.

Preservation Green Lab is a Seattle-based think tank and the sustainability advocacy arm of the National Trust for Historic Preservation. Partners in the study included the Cascadia Green Building Council, Skanska, Green Building Services and Quantis. Funding came from The Summit Foundation.

Frey said the team wanted to understand how reusing a building with average performance would stack up against a new energy efficient building. She said many people assume the energy efficiency of new green buildings compensates for the negative climate impacts of construction.

The report says it takes between 10 and 80 years for a new, energy efficient building to compensate for the climate impacts of its construction. On average, Frey said, it takes between 20 and 30 years for a new building to overcome those impacts.

The study also found the benefits of reusing an existing building are reduced or even negated if teams use too many new materials in a renovation.

Frey said the study shows designers need better tools to see how material choices affect carbon emissions throughout a building's life.

"The study makes clear that building reuse offers a viable strategy for reducing climate emissions," Frey said, "and also suggests designers need better tools at their disposal."

The study said carbon emissions saved by renovating buildings are substantial when scaled across a city. For example, the study says Portland is likely to demolish 1 percent of its residential and commercial building stock in the next 10 years. If those structures were retrofitted and reused the report says that would reduce about 231,000 metric tons of carbon, or 15 percent of Multnomah County's total carbon reduction targets over the next decade.

Beth Heider, senior vice president for Skanska USA Building and national board chair-elect of the U.S. Green Building Council, said more people are getting interested in the sustainable aspects of existing buildings. Heider said 653 million square feet of new construction has been LEED certified since 2000, and 687 million square feet of existing buildings have been LEED certified since 2008. But she said that is only about 1 percent of the country's existing buildings.

"Even with its meteoric rise and adoption today — eclipsing new buildings in terms of number of square feet certified — there's a lot of work to do," Heider said.

Heider said she hopes the study will push building owners to consider other options.

Jason McLennan, CEO of the Cascadia Green Building Council, said many green building decisions are made based on assumptions or an emotional response to a problem. It helps, he said, to have scientific evidence that looks at the lifecycle cost of design and construction decisions. "The notion that you need a blank slate to create a green building is clearly incorrect."

He said projects that are net-zero energy or meet the Living Building Challenges may have a different value than buildings considered in the study because they are more sustainable.

To read the study, visit http://bit.ly/Tjhk.

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