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Design-Build

Designers target carbon-neutral buildings

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The past five years have seen interest in sustainable or so-called “green” building practices explode, with the Canada Green Building Council now boasting more than 1,400 members. Though sustainable building practices are hardly the norm, being included in projects largely as features rather than best practice, the volume of projects registered for LEED (Leadership in Energy and Environmental Design) certification continues to rise. Since 2002, the volume of projects in the U.S. has doubled, and a similar phenomenon is taking place in Canada.

But Peter Busby, managing director of the architecture firm Busby Perkins Will in Vancouver, reminded participants in the recent conference of the Canadian Design-Build Institute in Vancouver that buildings remain significant contributors to the greenhouse gas emissions considered to be the root of climate change.

Annually, construction activities are responsible for 20 per cent of greenhouse gas production through the manufacture, distribution and use of building materials, while building operations contribute a further 15 per cent of total emissions.

All told, more efficient construction and property management practices could reduce North America’s greenhouse gas emissions by upwards of 40 per cent.

Small wonder, then, that with rising awareness of green building practices, designers are now setting their sights on carbon-neutral buildings, buildings that emit no greenhouse gases at all.

The simplest way of achieving this is by avoiding the use of fossil fuels and other combustible materials for energy production.

There are no carbon-neutral buildings in North America at the moment, but Busby said there is growing interest among municipalities and the building industry in programs that promise to achieve dramatic reductions in carbon emissions.



Peter Busby

On May 4, for example, the U.S. Department of Energy supported the signing of a memorandum by the U.S. Green Building Council, the American Institute of Architects and other organizations embracing the goal of producing only carbon-neutral buildings by 2030.

The Royal Architectural Institute of Canada has also embraced what's become known as the 2030 challenge.

While the West Coast has a reputation for thinking green, Busby said achieving carbon neutrality here will be more difficult than in areas with greater volumes of sunshine and wind.

Harnessing solar energy through photovoltaic panels, for example, doesn't make sense in B.C. because cheap hydro power and a relative lack of sunlight adds up to a 100-year payback time. The costs can be recouped in half the time elsewhere.

Other projects are responding to climate change through designs that anticipate what future conditions will be like, Busby said.

The Living with Lakes Centre at Laurentian University in Sudbury, for example, has installed a ground-source heat pump tailored to anticipated energy requirements in 2030, by which time climate change is expected to increase cooling requirements in summer and reduce energy loads in winter compared to current levels.

"I think you'll see buildings engage in that way in the built environment more and more," Busby said. "We're starting to think of buildings not as entities in themselves, but as having relationships with the ecologies around them."
