

Reduce, reuse, recycle that building

By the Manitoba Culture, Heritage, Tourism and Sport, Historic Resources Branch

There has been a lot of talk lately about carbon footprints. Buildings are responsible for about half of the greenhouse gas emissions in North America and there is much discussion about how new green or sustainable buildings can reduce a municipality's environmental impact.

However, your community probably already has a lot of green buildings. Some may have been there for 100 years or more. These buildings don't have fashionable features, such as green roofs and high-tech smart climate control, but they have a lot to offer a community looking to soften its footprint on the earth. Saving and reusing old buildings is an excellent investment in a sustainable future.

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It takes a lot of energy to put up a building. Construction starts with extracting resources by mining or logging, then processing the raw materials and assembling them into a new building. Add in a lot of transportation and huge quantities of other resources used in refining and manufacturing. By-products of these processes include polluted air and water and lots of waste – some of it toxic.

When we tear down an old building, all of the energy that went into its production (called embodied energy) goes to waste, because we don't have that building any more. Even more energy goes into demolishing it before the whole process begins again with a new, green building.

Many modern building materials, such as vinyl, are both energy intensive and toxic in production, impossible to reuse or recycle and poisonous when they burn or break down. To make matters worse, their lifespan is much shorter than that of the traditional materials,

such as wood, brick and stone, they replace. All too often, “maintenance free” means a material can't be maintained or repaired. Right from the start, you can see that you throw away a lot if you decide to replace an old building.

There is a common belief that old buildings consume so much energy, that it makes sense to put up a green building that will use less energy and water. An energy efficient new building can use remarkably few resources, but energy-saving features can be retrofitted into older buildings, too. Features, such as geothermal heating and cooling, green roofs, solar panels, greywater recovery and other technologies can help make an old building very efficient.

Buildings constructed before 1920 were designed with efficient characteristics of their own. As a group, they are more energy efficient than anything built until the current century, yet many of their features are considered new by today's green building movement. Thick masonry walls help keep buildings cool in summer by absorbing the sun's heat during the day and radiating it slowly back overnight. Buildings from the era before cheap electric light and air conditioning typically have lots of natural light, with windows that open and transoms over their interior doors for natural ventilation.

Often these features have been disabled over time. Ceilings have been lowered and windows made smaller and inoperable. More lights are added to compensate for the reduced window openings. The building heats up and air conditioning is needed. Over time, a building that once lit and cooled itself naturally has become an energy hog. The lights are on all day and it goes directly from heating to cooling in spring because the windows don't open. The good news is that these features can be reversed and the building brought back to its original efficiency.

Saving an old building is energy efficient in other ways, too. Pre-World War II buildings typically stand in densely built, walkable town centres, with easy access to businesses, services and amenities.

Compare a 1920s office or industrial building with a modern business park. Everyone has to drive to this new facility, so it needs a big parking lot. In fact, *Environmental Building News* has calculated that employees travelling between home and work to a building like this consume almost one-third more energy than the building itself uses. To build on a new site, it is very likely that green space – farm-



The recent rehabilitation of the Birks Building in Winnipeg, built over a century ago, saved the equivalent of over 1,500 tonnes of carbon dioxide over demolishing and rebuilding. The energy required to operate the renovated building is very similar to the energy use of a new building.



Early Manitoba towns were compact and easy to get around on foot. Typical of main street commercial development, the buildings in the Town of Hartney (pictured above) featured apartments on the second floor. We can maintain density and combat urban sprawl today by making good use of the many commercial buildings that still stand.

land or natural habitat – might be destroyed and expensive infrastructure, such as roads and utilities, must be extended.

The old building is accessible on foot or by bicycle or, in larger communities, by public transportation. Even extensive rehabilitation won't involve cutting down trees or filling in wetlands. Tenants support local businesses when they shop and eat nearby. If the building's original function is obsolete, its flexible spaces can be used for other purposes, such as shopping, community spaces, apartments or condominiums.

Some older buildings also have other special characteristics. They're the ones with heritage value. They lend the community visual qualities that can't be replicated and a unique sense of place that keeps people coming back.

Many communities are starting to recognize the value of their heritage buildings as an authentic part of their identity. They also talk about preserving them, so our children can connect with their history. Preserving these old buildings is now more important than ever before – for our children and the planet we share.

For more information and downloadable publications on the environmental benefits of preserving heritage buildings, visit the Historic Places Initiative website at: www.historicplaces.ca/protect-proteger/pro_.aspx.

Obtain copies of publications such as *Energy and Waste Conservation*, *Climate Change*, and *Durability and Energy Efficiency* by calling the Historic Resources Branch of Manitoba Culture, Heritage, Tourism and Sport at 204-945-2981. 🌿

Wood Windows rule:

Few people know that old wooden windows can be repaired fairly easily. A well-maintained, single-pane wooden window, with a storm window and good weather stripping and sealing, is just as efficient as a new double-glazed sealed unit. Wood windows can also be maintained almost forever, while most new windows need to be replaced every 10 to 20 years – costing thousands of dollars and ending up in the landfill every time. As you can see, there is more than one good reason to save your beautiful old windows.

Just the facts:

- A typical 4,650 sq. metre commercial building contains embodied energy equivalent to over 2.4 million litres of gasoline.
- Demolishing that building would fill 26 boxcars with debris. Used construction material makes up 20% of the material in Canadian landfills.
- Replacing the building with one of equal size would release as much carbon into the atmosphere as driving a car 4.5 million kilometres.

Efficiency plus

It's more efficient to keep an old building than to replace it, even with a green-engineered new one. It would take a new, green, commercial building anywhere from 35 to 65 years to save, through efficient operation, the amount of energy that is wasted in demolishing an old one to make way for it (see http://www.illinoishistory.gov/PS/presentations/Embodied_Energy.htm). Since very few new buildings are intended to last that long, it would have been more beneficial to have kept the old one. It might easily have lasted another century or more. As a bonus, rehabilitating old buildings generates significantly more money for the local economy than new construction does, because it concentrates spending on labour, not on new materials.



Wetlands can make a difference in your municipality.

Wetlands maintain healthy watersheds by filtering and removing impurities providing clean water sources. Wetlands also moderate the effects of downstream flooding, drought, erosion and climate change.

Call Ducks in Brandon at 1-866-251-DUCK or visit ducks.ca for more information on how wetlands can help you.



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