

# Fact Sheet

## Improving your traditional windows

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### Some things to consider...

Improving existing windows is almost always more cost effective and environmentally friendly than replacing them, since modern windows are often made of environmentally harmful materials like vinyl or aluminum. These materials require a lot of energy to manufacture and are difficult to recycle.

Producing one kilogram of vinyl and one kilogram of aluminum is 28 and 90 times more energy intensive than producing one kilogram of timber.

Despite “lifetime warranties” offered by manufacturers, vinyl frames have a life expectancy of 20–25 years and do not offer the option of repair.

In contrast, wood windows and wood storm windows not only offer long life, they can be maintained and repaired by the homeowner.

### For more information, contact Heritage Branch:

PO Box 9818 STN PROV GOVT  
Victoria, BC V8W 9W3

E: [heritage@gov.bc.ca](mailto:heritage@gov.bc.ca)

T: 250 356-1432

F: 250 356-2842

[www.for.gov.bc.ca/heritage](http://www.for.gov.bc.ca/heritage)



To upgrade the energy efficiency of your windows, consider repairing, retrofitting or resealing your windows. All windows require maintenance and repairs to keep them in good working order. Even new windows can become inefficient if neglected. Every year, hardware should be cleaned, tightened and lubricated, and any cracked glazing should be replaced.

To determine what kind of upgrades your windows need, inspect them for ease of operation, faulty hardware, loose joints, glazing defects, warping, worn weather-stripping, mould or rot.

Aspects of traditional designs which take into account natural airflow, heat retention and cooling mean that some historic buildings actually outperform modern buildings. Numerous green rehabilitations of historic buildings also prove that where building energy performance is lacking, it can be improved in a way that is sensitive to historic fabric.

**How do I know if my windows have air leaks?** Find air leaks by holding a thin piece of plastic or tissue near your windows on a cold or windy day. Movement of the material will indicate where leaks are. You can also hire a certified energy advisor to conduct a more comprehensive blower door test. Minimal repairs, such as caulking and sealing cracks and fissures, will help to minimize air leaks in windows and keep cold air out in the winter.

**How do I improve the thermal resistance of my windows?** Augment your existing windows with exterior or interior storm windows. Storm windows can be quite attractive as well as removable, so you don't have to worry about compromising any of the character defining features of your building. You can also add a second layer by installing energy panels or Low-Emissive (Low-E) glass.



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## How Can I Reduce My Heating Bill?

Supplement or replace your heating system with alternative technologies. Since the technologies featured here are reversible, you can improve your building's energy efficiency without permanently compromising any of its character defining features. Simple changes include installing a programmable thermostat to help regulate temperature in your home, as well as insulating your hot water tank and the pipe that runs from your tank.

## Air Source Heat Pump

**How it works:** Uses the outside air to extract and transfer heat from an internal coolant pumped throughout the system, much like a refrigerator. This system can be retrofitted into an existing ducted furnace system, and can also be used as an air conditioner in the summer. Operating noise can be an issue.

## Earth Energy System

**How it works:** Extracts heat from a relatively constant temperature source deep below the ground. A refrigerant is pumped through buried or (if you have a body of water on your property) submerged tubes where it is heated by the surrounding earth and used for space and water heating. This system offers year-round functionality with no aesthetic impact, but can be expensive to install. This option is a good alternative for large properties.

## Drain Water Heat Recovery

**How it works:** Extracts heat from warm drain waste water (i.e. shower water) and preheats the cold water entering the domestic hot water heating system. This system is inexpensive, reliable, and requires no maintenance, however it requires access to two meters of drain pipe for installation, as well as a plumbing permit to install.

## Water Heating Solar Panels

**How it works:** Panels use the sun's energy to heat the fluid in the solar storage tank. This system heats domestic water as well as a water heater. While it can often supply all the hot water needed in the summer, it is not effective in winter months, and is typically used to augment other heading systems. Panels are a common retrofit to existing buildings, although care should be taken to minimize aesthetic impact.

## Tankless Water Heater

**How it works:** Water is heated as it flows through a heat exchanger coil. No water is retained internally except for what is in the coil. This system is inexpensive, compact, acts as a booster if combined with another heating system, and it offers unlimited hot water supply. On the downside, it can be difficult to install as a retrofit.

Consult a **Certified Energy Advisor (CEA)** to determine what is appropriate for your needs and to learn about government grants available to homeowners. More information on CEAs is available in the fact sheet Working with your Certified Energy Advisor, posted online at [www.for.gov.bc.ca/heritage/library.htm](http://www.for.gov.bc.ca/heritage/library.htm).