

Insulation

Making Your Older Home More Comfortable

Adding insulation is one of the first steps a homeowner should consider to enhance not only the energy performance but also the overall livability of their heritage home. Older buildings often lack adequate insulation and remedying this can make a big difference and even improve the energy performance of the house.

Insulation effectiveness is evaluated in terms of R-value, which measures the resistance of material to heat transfer. A high R-value means that the material does a good job at keeping heat in and cold out. To improve R-values, a homeowner can either install new insulation or top-up existing insulation. For best results, start with the attic, then look at the basement and exterior walls.

Important Considerations

The best course of action depends on your home's construction. Pre-1960s houses were built using very different building methods than today, allowing for some movement of air to keep the structure dry, while modern homes tend to be tightly sealed. Some houses, like those built with balloon framing, may be better left uninsulated because of the potential for creating issues with moisture.

The good news is that many older homes can be insulated safely and effectively as long as this is done with an understanding of the house's design.



Photo Credit: VHF

While there are many different insulation types, not all are appropriate for heritage homes. Some areas in the home, such as the interior of the attic, are usually easy to access while the exterior walls of a house are more challenging.



Photo Credit: VHF

Top Three Ways To Improve

01 Attic

One of the most cost effective ways to improve insulation, adding insulation in the attic is the first priority. It can lead to dramatic savings with minimal impact on the heritage fabric of a home. Warm air in a home rises and escapes through the roof if the attic is not properly insulated. The insulation can be the loose-fill or batt type. To minimize any retention of moisture, select breathable material for batt-type insulation and ensure that the attic is properly vented.

02 Basement, Foundation, and Exposed Floors

The stack effect means that colder air enters through the base of the house. Properly insulating sites of entry like the basement, foundation walls and exposed floors can prevent this from happening.

Unfortunately, some basements have issues with moisture and may be unsuited to interior insulation. In this case, you may discuss the possibility of alternative solutions with a professional, such as adding insulation on the exterior or insulating between the first floor joists. Similarly, address any other floors above an uninsulated area, such as those over a porch. The overall idea is to insulate wherever cold air can potentially enter from below.

03 Exterior Walls

Heat loss through exterior walls can be reduced by adding insulation in the wall cavity. This should only be done by a professional insulation company with expertise in this type of insulation. Only loose-fill cellulose insulation should be used. The insulation is injected through small openings on the interior or exterior. The openings are patched up and repainted. This approach can improve the R-value while keeping the existing walls, exterior cladding and interior finishes intact.

Wall insulation is a lower priority than the other areas outlined above. The process of adding insulation to exterior walls must be done to a high standard, and should only be considered if other higher priority areas have been addressed.



Photo Credit: VHF

Loose-fill Cellulose Insulation

In the Heritage Energy Retrofit Grant program, participants are required to use loose-fill cellulose insulation if adding insulation to exterior walls. This method minimizes any alteration to the home's heritage fabric such as original lath and plaster walls and is most compatible with maintaining breathability of the building envelope. Loose-fill cellulose has a typical R-value of anywhere from 3.0 to 3.7, a performance comparable to most other insulation types. It also has the added bonus of often containing a high percentage of post-consumer recycled material.



Photo Credit: VHF

Getting Results

Proper roof insulation alone has the potential to cut the GHG emissions of older homes by 25%. By adding insulation to multiple sites in the home, past Heritage Energy Retrofit Grant participants have been able to reduce their GHG emissions by as much as 50%. Homes without any previous insulation achieve the most dramatic results but insulation top-ups can also result in improved performance.

Proper air sealing and the addition of insulation go hand in hand to improve the energy efficiency and comfort of an older home. By improving overall heat retention, a homeowner is able to better understand their actual heating needs.

These essential retrofits pave the way for further upgrades such as changing over your heating system to a cleaner energy source or more efficient device



Photo Credit: VHF

Further Readings

Canadian Mortgage and Housing Corporation: Insulating Your House
<https://betterhomesbc.ca/wp-content/uploads/2017/08/CMHC-Insulation.pdf>

BC Hydro: Best Practice Guide Air Sealing and Insulation Retrofits
<https://www.bchousing.org/research-centre/library/residential-design-construction/best-practices-air-sealing-insulation-retrofits>

Region of Waterloo: Practical Conservation Guide for Heritage Properties – Insulation.
https://www.regionofwaterloo.ca/en/resources/Practical_Guide_Insulation_2017-access.pdf

Windows, Shutters & Doors
<https://www.regionofwaterloo.ca/en/exploring-the-region/resources/Documents/PracticalGuideWindowsShuttersDoors-access.pdf>