

Homeowners face daunting choices as federal programs aim to promote energy efficiency

JOHN LORINC

TORONTO

SPECIAL TO THE GLOBE AND MAIL

PUBLISHED 1 HOUR AGOUPDATED JUNE 4, 2021

FOR SUBSCRIBERS

[Open this photo in gallery](#)



Eve Wyatt controls the climate from a panel installed in her home in Toronto on May 27, 2021.

CHRISTOPHER KATSAROV/THE GLOBE AND MAIL

For the past decade or so, Eve Wyatt, a retired public transit engineer who lives in the east-end Toronto neighbourhood known as The Pocket, has been systematically chipping away at the little defects that made her older working-class home energy inefficient. She added insulation, new windows, a solar hot water heater and a tankless water heater.

“There is always maintenance to do, fresh caulking in a few places for air sealing,” she says. “And our basement has not been insulated. That would make a big difference to both air leakage and heat loss, but would have to be part of a bigger project with other improvements, and we are not ready for that just now.”

Ms. Wyatt, in fact, is part of a network of Pocket homeowners who have banded together to make energy-efficiency improvements to their dwellings. But they, too, have bumped up against practical and financial limits, such as

figuring out what to do with century-old walls made from two layers of brick and crumbling mortar. “In a lot of these houses,” says architect Paul Dowsett, who first organized the group, “we can’t effectively add insulation.”

[Open this photo in gallery](#)



Ms. Wyatt next to the heat pump unit installed outside her home.

CHRISTOPHER KATSAROV/THE GLOBE AND MAIL

For environmentally conscious homeowners, however, the calculus will change soon as the federal government launches what it calls a “deep retrofit” program, featuring free energy audits and interest-free loans of up to \$40,000. The measures were introduced in the fall economic statement and the April budget.

Ottawa has signalled its plans to allocate \$4.4-billion to this climate-change initiative over the next five years. The program will include dedicated funds for low-income homeowners, co-ops and affordable housing providers. While the program is meant to launch this summer, Canada Mortgage and Housing Corp. officials declined to provide further details.

[Overbidding on a home? Here are 4 things that could go wrong](#)

[House hunters move north to escape crazy real estate market](#)

The government this week also launched a \$2.6-billion fund for grants (as opposed to loans) worth up to \$5,000 for home energy improvements, such as furnace or window upgrades. In late May, Natural Resources Minister Seamus O'Regan announced \$10-million to hire and train about 2,000 energy “advisers,” who will direct homeowners looking to make improvements that qualify for the grants.

In some regions, the loan offer layers on top of provincial or municipal programs, some of which include significant rebates on equipment or windows (see sidebar). While renovations right now are expensive, these enriched incentives

hold out the potential for homeowners to make a substantial dent in their energy costs and their house-related greenhouse gas emissions.

The phrase “deep retrofit” comes from the green building world, and signals that more involved projects have to be carefully planned and staged to derive the maximum benefit, both financially and from a climate perspective. “You have to think of a building as a system,” says [Monte Paulsen](#), a passive house specialist with RDH Building Science in Vancouver. Both the government and homeowners, he adds, should be aiming for ambitious, measurable targets.

Mr. Paulsen says it’s critical to begin with the low-hanging fruit instead of investing heavily in elaborate or showy technologies such as rooftop solar-power systems, or energy-storage devices. Herewith, some advice on how to think about deep retrofits:

SWEATING THE DETAILS:

A larger-scale retrofit program should begin with seemingly minor fixes that can reduce energy consumption and heat loss. These include heat recovery devices for drains, LED lightbulbs, smart thermostats, and low-flow fixtures on taps and shower heads. “There’s a lot you can do with efficiency improvements,” says Shoshana Saxe, a professor of civil engineering at the University of Toronto. “The first thing is to consume less.”

STORY CONTINUES BELOW ADVERTISEMENT

INSULATION:

For many homes, a no-brainer, as insulation can be pumped into gaps in exterior walls or attics and crawl spaces. To reduce so-called “embodied” carbon – meaning carbon associated with the production of synthetic building materials – it’s worth investigating alternatives to spray-foam or pink insulation, such as cellulose, mineral wool or even straw.

But some older brick homes are difficult to insulate. Recladding the exterior with Styrofoam panels and stucco, for example, can be extremely expensive, while adding insulation to the inside of exterior walls can reduce floor space in already cramped rooms.

Insulation projects should go hand-in-hand with the eradication of drafts that come through ill-fitting windows, electrical sockets, door jams and so on. Yet improving air tightness and insulation necessitates the installation of energy- or heat-recovery ventilation devices to prevent condensation and mould, including inside walls, says [Peter Sundberg](#), executive director of City Green Solutions in Victoria. The result, he adds, is quieter interior spaces with improved air quality. “These are things that people don’t associate with energy efficiency.”

The eventual decision to purchase a high-efficiency furnace or an air-source heat pump (see sidebar) should come only after insulation and air-tightness investments are complete, Mr. Sundberg says, so owners are buying the smallest unit necessary to heat the available space.

WINDOWS:

A big-ticket item, and therefore well suited for a larger-scale program. Replacing older single-pane glass windows with double- or even triple-pane models made with low-conductivity frames – e.g., vinyl, fibreglass or foam-filled aluminum – can significantly improve heat loss. The costs can run from a few thousand dollars to more than \$30,000 in high-price markets. Still, Mr. Sundberg says, “there are lots of great reasons for doing windows.”

While a \$40,000 interest-free loan can finance a fairly ambitious retrofit, Mr. Dowsett, who runs the design firm Sustainable, is mindful of the scale of the problem if the government’s broad goal of carbon reduction is to be met. By most estimates, buildings emit about 50 per cent of all greenhouse gases, and there are millions across Canada. The City of Toronto alone has 421,000 houses, while the federal government’s budget estimates that the entire \$4.4-billion program will reach about 200,000 houses across Canada.

“We don’t need a few people to be perfectly sustainable [with their projects],” he says. “We need a whole lot of people to be imperfectly sustainable.”

Fuel Switching

In provinces with plenty of clean electricity and natural gas grids in urban areas, an emerging strategy for reducing carbon is to switch from a gas-fired furnace to an “air-source heat pump” that runs on electricity. In the City of Toronto, natural gas consumption in buildings produces half of all carbon emissions, according to a 2018 assessment.

Heat pumps, which draw in and compress ambient heat in outside air even on colder days, are widely used in Europe and are making inroads in North America, especially in rural regions where propane, a costly fuel, is used for home heating.

Eve Wyatt, as part of her decarbonization efforts, invested in a hybrid system – an air-source heat pump and a high-efficiency gas furnace – when her old furnace died recently. The heat pump replaces the air conditioner, and can also supply warm air to the house as long as the outside temperature is above -4 C, below which point the gas furnace kicks in.

The system cost about \$8,800, she says, and has reduced her gas consumption by 59 per cent. “The additional cost of moving to an electric heat pump can typically be offset by undertaking energy efficiency retrofits at the same time,” she says. “In our case, we had already done a lot of insulating before the heat pump installation, and our combined annual gas and electric bills were under \$1,200 per year.” The heat pump added about \$35 to her monthly energy bill. “For me, it’s worth it.”

Energy contractor Brendon Aldridge, who owns Dr. HVAC, in Brampton, Ont., says he’s seeing more interest from consumers who want to reduce their natural gas consumption by investing in a hybrid heat-pump system, even though their energy costs may rise somewhat. Some higher-end models, he says, can be programmed to switch back and forth as temperatures fluctuate.

Mr. Aldridge expects that increases in carbon pricing, from the current \$50/tonne to \$170 by the end of the decade, will drive up gas bills, gradually making such investments more financially attractive. Ms. Wyatt points out there are no rebates for heat pumps as is the case for high-efficiency furnaces.

Enbridge officials estimate that legislated increases in carbon pricing will raise the cost of natural gas to an average 2,500-square-foot home by about \$790 a year by 2030.