

Proposal to City of Burlington

Preamble

This proposal focuses on carbon reduction through residential deep energy retrofits. Simply put, carbon emissions can be reduced by up to 95% by replacing fossil fuel equipment with clean Ontario electrically powered ones. The concerns expressed in the Plan that energy reductions have to be financially viable are unfounded. Any reduction in carbon is good at whatever the cost.

Fortunately, costs to switch will also be paid back by energy savings in most cases. Interestingly, those with the lowest carbon footprint are experiencing the highest energy costs: electric baseboard heated homes. But they can reduce their operating costs and carbon production by 50% with minimal outlay that is paid back within the lifetime of the equipment.

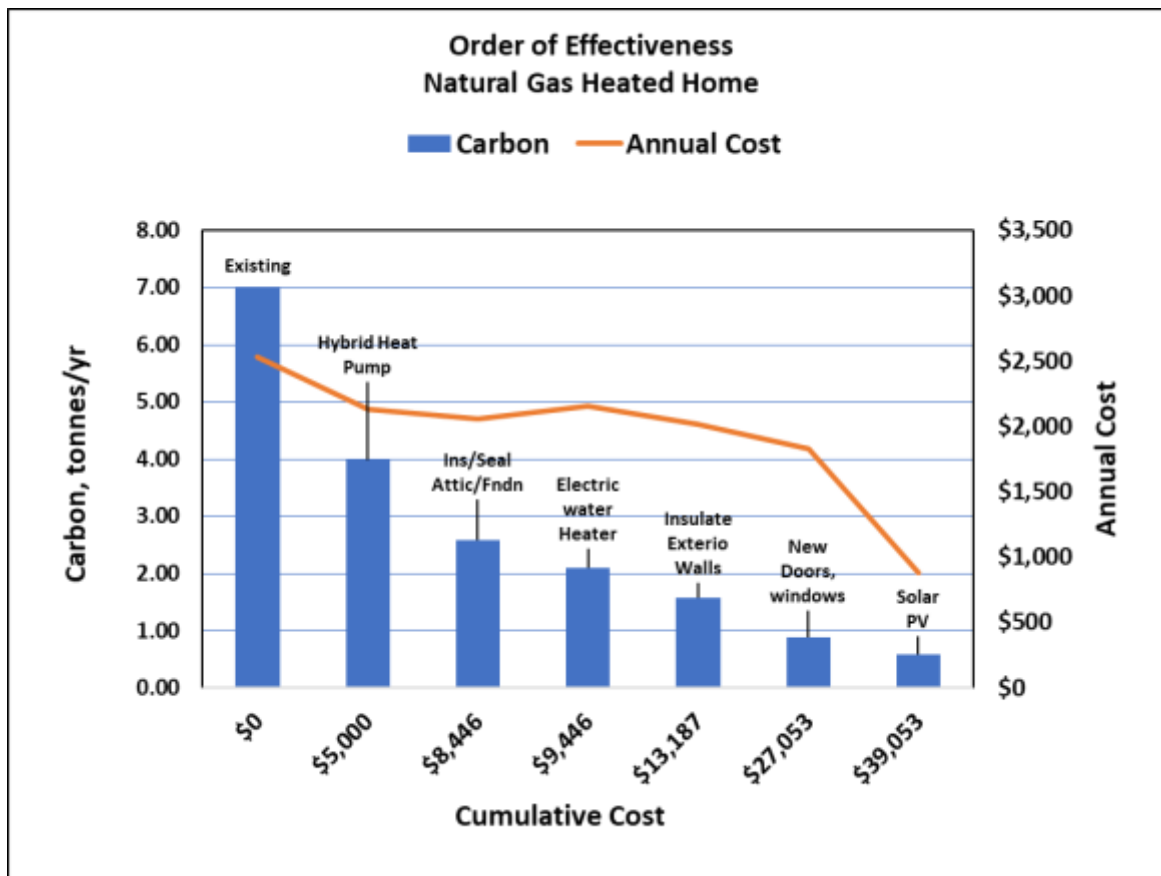
The majority of homes use natural gas for space heating, water heating, clothes drying and cooking. They are the biggest polluters. At some point, all these appliances have to be replaced with little if no “payback”. Going from an 80% to 95% efficient furnace would save the average user about \$150 a year for a 30 year payback and hardly any reduction in carbon. By switching to an electrical appliance instead of a fossil fuel one, the cost is a little more but the energy costs are decreasing as time goes on due to carbon taxes on fossil fuels. The payback is then similar but the carbon savings are huge. But if you have a newer furnace, you can keep it and add a hybrid heat pump to give heating and cooling and sell your A/C unit. The math works out much better and you save almost as much carbon.

So why wait?

The focus should not be on studying homes to death to select the best things to do in which order and then doing more follow up confirmation studies. It should be to offer the most effective solution at costs that occupants can afford. In order, they are: energy conservation, attic insulation, basement insulation, air sealing, more efficient appliances, space heat pump, electric or heat pump water heater, energy recovery ventilator and solar pv. Although helpful, replacing windows and doors and adding exterior insulation to walls is generally unwise financially for the resultant carbon reduction achieved.

Proposal

It is proposed that the City start by addressing the “low hanging fruit”. The most effective way to reduce carbon at no additional cost is to add a hybrid heat pump and conduct air sealing to an older natural gas heated home. The graph below shows the most effective order of achieving a deep retrofit. Financing over a 15 year period pays for the first half and then the next 15 year period can deal with the remainder. Exterior wall insulation and new doors and windows have been included despite the comment made earlier. This is because the research used was by CMCH which included these elements. It is proposed that an Energy Recovery Ventilator be used instead of these items. Research is needed to confirm the details.



Implementation of the Solutions

Programs to assist homeowners reduce energy and carbon have been available in Canada for several decades. These programs have not been very effective due to low uptake. The new Oakville Community Energy Plan has an excellent discussion on why they don't work. A summary of the points follows.

"1. Energy Retrofits

The current energy efficiency retrofit market for home and building owners and contractors is relatively unattractive. Historically, market uptake of retrofit programs has been low in Canada. From the perspective of the contractor, the effort to prepare customized retrofit proposals is high and the closing rate is low.

Low volumes and the fact that every project is specific to each household means that material and labour costs are expensive and performance guarantees are risky.

From the home and building owners' perspective, obtaining understandable bids from various contractors is burdensome. They are responsible for finding their own sources of funding based on their individual credit rating.

Finally, with low market uptake, retrofit costs typically exceed the value of energy savings, even over many years."

The authors propose solutions that include:

“Offering standardized energy retrofits to homes and buildings at high volumes, with the priority market for the first five years being homes, addresses these challenges. Contractors benefit from increased project predictability, improved margins and vastly higher project volumes. Home and building owners benefit from a simplified transaction, guaranteed pricing, lower cost pre-financed retrofits and a simple billing and payment mechanism.

Property-assessed financing has the distinct advantage of tying the efficiency investment to the property and not the owner, mitigating the risk to the home or building owner that their payback period is longer than the time they remain (or intend to remain) in the home or building. Provincial Local Improvement Charges (LIC) regulations were amended in 2012 to enable voluntary energy and water efficiency upgrades of private homes and buildings, allowing Ontario municipalities to provide long-term, low-cost financing for residential, commercial and industrial building energy and water conservation retrofits. This is done through a special assessment that is added to the property tax bill and paid by owners over a period. Attractive interest rates and borrowing terms can be achieved for home and building owners while reducing or eliminating their up-front capital costs.”

And their recommendations are:

“ • Create a Retrofit Entity to:

- o offer quality-controlled standardized retrofits by property type and age*
- o deliver by partnering with local contractors*
- o offer property-assessed financing to homeowners to encourage uptake*
- o attract third-party financing*

- Require energy performance labels when homes and buildings are rented (see Strategic Objective 1C for details)*
- Encourage Sheridan to develop supporting workforce programs”*

We are ready to provide the above in Burlington but with a simpler approach. This is in compliance with the statement in Program 2 Deep Energy Retrofit “ City’s Role: Implementing agency to deliver program or partner/collaborate with a 3rd party to deliver program.” We have “package” solutions that avoid the complexity of customized designs for each homeowner. We would do the hand-holding under the umbrella of Burlington Hydro. Our financing is conventional without having to create a Local Improvement Charge program.

Together with staff and Burlington Hydro, we would identify the best candidates for the program. This would involve a screening tool that looks at house layout, electrical service, solar orientation, shading and attic/basement details. Data are already available from the Community Energy Plan that is confidential on an address specific basis but can be used to identify general locations.

Advertising on social media, the City web site, Burlington Hydro mailings and door to door canvassing would enable candidates who meet the initial screening requirements to complete an application for a site assessment. This would be done through existing qualified energy advisors.

Costs for supply and installation of acceptable systems would be prepared and reviewed. A final selection would be made and appropriate contracts prepared. All requirements of condominium

corporations, WSIB, building code and electrical code would be confirmed. The work would be overseen by the City Building Department and completed within the timelines stipulated. Conformance testing and inspections would be completed and any deficiencies corrected before any payment is made.

A representative number of homes would be evaluated by comparing before and after energy use to confirm the reductions achieved.

The above is considered the low hanging fruit due to the availability of funding.

Conclusion

The above is a cost effective way to immediately start to reduce carbon in residential homes.

It is requested that council arrange a time to discuss this proposal in a workshop that would require two to three hours.

James Feilders, P. Eng.

Jade Environmental Services