
An Annex Home Dramatically Improves its Comfort and Value while Lowering Bills and Environmental Impact

Background

Before the 1900's homes were mostly uninsulated so it's no wonder many are drafty and their owners have difficulty getting the interior temperature above 16 degrees in winter. That is, unless they have renovated with energy conservation in mind. Even in her small, nearly 900 sq. ft. two-storey home, Geri-Ellen Brick realized there was opportunity to improve the energy efficiency and make her home more comfortable.

Green\$aver is Toronto's only independent, non-profit corporation, dedicated to environmental home energy efficiency. In addition to performing energy and electrical audits, Green\$aver also provides specialized services for air sealing, draft proofing and insulation. In addition to helping homeowners protect the environment, Green\$aver helps them to achieve energy efficiency, cut annual heating costs and increase the resale value of their homes.

Geri-Ellen's wood-framed house has no insulation although a small area of the attic registered R12. The basement had been drywalled several years ago, however, no insulation was added and the two crawl spaces at the front and rear of her house have been walled-off and were no longer accessible. The high-efficiency gas furnace was only a few years old but it had not been properly installed resulting in cycling issues that made it unreliable.



Neighbouring housing in the Annex area.

The Problem

For Geri-Ellen, the draftiness and cold floors were of primary concern. During the audit process it was found that the duct and floor joist leading to the master bedroom were open to the neighbour's house and the foundation was shifting.

In addition, the homeowner was concerned about the rising cost of energy that would result in an increase in the cost of heating her home.

The age and design of this row house had shared empty wall cavities that ran from the basement to the attic and channeled heat loss regularly. Geri-Ellen had the opportunity to not only save money but to also reduce energy consumption. This would also mean a reduction in the carbon dioxide gases being generated and an improvement in greenhouse gas emissions. Furthermore, addressing energy efficiency issues now meant an increase in the potential resale value of her house in the future.

The current trend in North America is an increase of 5 to 10% in resale values for homes in which energy efficiency improvements have been made. A common rule-of-thumb seems to be that house resale values increase by \$20 for every dollar decrease in annual fuel costs that were realized after energy efficiency improvements. For an average house in Toronto, with a resale value of around \$350,000, these trends translate into a potential increase of \$17,000 to \$35,000 in value.

The Solution

A certified Green\$aver energy auditor first did a detailed energy assessment of the house over the course of more than an hour using sophisticated measuring equipment and instruments. This first step is essential to pinpoint the most affected areas of the house that need upgrading and renovation. Since every house is slightly different, a customized list of recommended changes is created. To proceed with renovations without first analyzing the problem in a comprehensive manner can often result in a poor cost benefit ratio that translates into increased, often unnecessary, expenses.

The energy audit generally includes a walk through the house and inspection of the heating and hot water boiler equipment, measuring with various devices like the blower door registering energy transfers, and analysis of the building "envelope" since a house operates as a system.

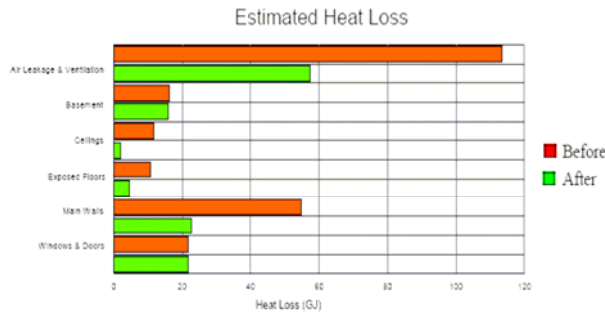


A certified Green\$aver Advisor conducts blower door test

The blower door test slightly depressurizes the house, allowing Green\$aver's expert to immediately detect sources of air leaks and drafts.

Another key area examined was the amount and quality of insulation throughout the house...in the walls, the attic, the basement...to determine its effectiveness.

The results are then entered into a computer program and a model gives a custom estimate for each house of the potential savings that could be realized if various energy efficiency improvements were implemented. A final report is provided to the homeowner that clearly identified the best improvements and provides recommendations and an action plan for the necessary retrofits.



Report showing possible energy efficiency improvements

In this Ulster St. house, the audit indicated a need to reduce the drafts and air leakages in order to improve the comfort of the home and decrease energy bills. It was recommended that in addition to siding and foam board insulation be added to the exterior of the house, that cellulose insulation be blown inside the interior wall cavities, raising her R-level internally to that of a new home. Extensive draftproofing – more than 50% -- was recommended to stop ventilation leaks and address the large holes in the headers of each floor level that connected to the neighbour's house.

Finally Green\$aver prepared a work plan to rectify the situation and perform the necessary improvements. The attic insulation was upgraded to an R40 and a bath extension was added. Ten per cent of the walls, inside and outside, were insulated. An R5 level was achieved outside. Blower door guided draft proofing to precisely pinpoint and seal the air leaks was also undertaken. (Green\$aver is the only organization to offer this in the Toronto area and has trained retrofit crews to help in a timely manner with minimal disruption to the residents).

The Benefits

The benefits for retrofitting this house were dramatic and included:

- A savings of 48% of the natural gas usage and 6% of the electricity usage for a total annual savings of 42% of their energy bills.
- A marked increase in the comfort levels in the house with fewer drafts and warmer rooms throughout the house.
- More than a 20 point improvement in the energy efficiency rating of her home.
- Significant increase in the future resale value due to the type of improvements made.

"I didn't need a space heater all last winter and I didn't need to turn my furnace on until much later in the season this year! Plus, I will be saving hundreds of dollars a year on my heating bill! And being an old hippie I also like that I am doing my part to help the environment."



- Geri-Ellen Brick, Toronto

