
A Riverdale Home Dramatically Improves its Comfort and Value while Lowering Bills and Environmental Impact

Background

Like so many Torontonians, the Mercer family loved their old house but they knew that when contemplating renovations they had to tackle improving the energy efficiency of their home to help lower their energy bills and make their house more comfortable.

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

The house is a two-storey, all-brick home built in the 1920's. It is approximately 1650 sq. ft. including the basement. It is heated with a mid-efficiency gas furnace. The insulation in the attic is only 4 to 6 inches although 62% of the basement is insulated.



Similar housing in the Riverdale neighbourhood.

The Problem

As with many houses of this period, there were comfort issues with drafts and uneven temperatures between floors throughout the house.

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

The family had the opportunity to not only save money but to also reduce their energy consumption. This would mean a reduction in the carbon dioxide gases being generated and an improvement in their greenhouse gas emissions.

In the long-term, the family had plans to make better use of the basement and convert the attic into living space – features that would increase the potential resale value of their 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 GreenSaver 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.

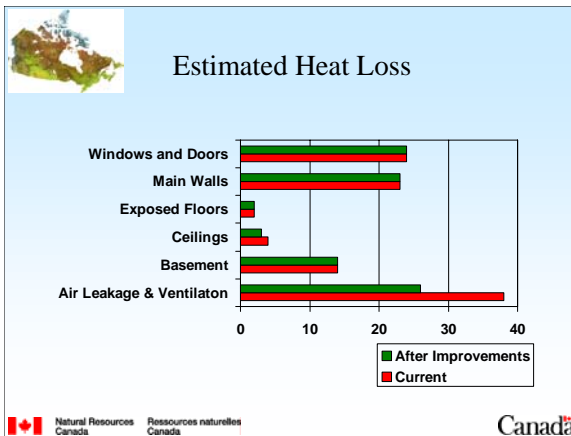


A certified Green\$aver Advisor conducts blower door test

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 was provided to the homeowner that clearly identified the best improvements and provided recommendations and an action plan for the necessary retrofits.



Report showing possible energy efficiency improvements

In the Mercer 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 the mid-efficiency furnace be replaced with a higher efficiency unit. Replacing and adding more insulation, especially in the attic and the basement, and sealing would prevent the air leaks. Eventually replacing old windows and doors rounded off the recommendations but were not as important in reducing energy loss immediately.

Finally Green\$aver prepared a work plan to rectify the situation and perform the necessary improvements. It included replacement of the furnace with a high efficiency hydronics system, insulation of the basement to R13, most of the main walls in the house and the attic area up to the R40 standard recommended. Blower door guided draft proofing to precisely pinpoint and seal the air leaks was 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 58% of the natural gas usage and 3% of the electricity usage
- A marked increase in the comfort levels in the house with fewer drafts
- Significant increase in the future resale value due to the type of improvements made.

It was exciting to raise the energy efficiency rating for our house by 25 points. It was worthwhile to know where and what changes would definitely make a difference. Thanks, Green\$aver!