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

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### Background

Toronto has an abundance of older, pre-WW II double-brick construction homes with no insulation and yet there is still opportunity to improve the energy efficiency of such structures. Jennifer Smith knew she had to go beyond decorating to address her cold rooms and improve the energy efficiency of her home to help lower energy bills and make her house more comfortable.

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.

Jennifer's house is a two-storey home built in the late 1920's of double-brick on the main floor and wood framing on the second floor. It is approximately 1250 sq. ft., including the basement, and is heated with a low-efficiency gas furnace. Although half the basement is insulated, only R6 batts between 2 x 2 strapping was used. Fortunately the attic had been increased to an R24 value – still below the current R40 standard.



Neighbouring housing in the Leslieville area.

### The Problem

As with many houses of this period, there were comfort issues with drafts and uneven temperatures between floors throughout the house due to a lack of proper insulation and the original construction techniques.

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.

Despite the lack of space between the brick walls on the main floor in which to add foam insulation, there were other areas to insulate, which provided Jennifer with 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.

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 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.

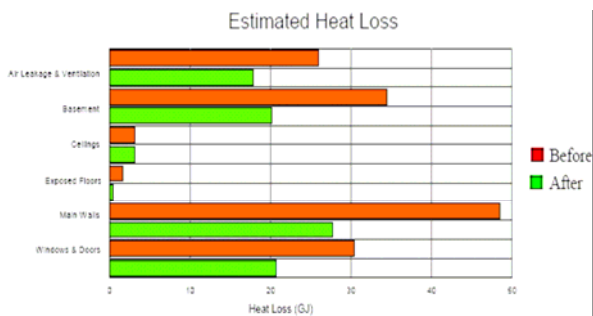


A certified Green\$aver Advisor conducts blower door test

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 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 the Smith 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 a new mid-efficiency furnace be installed and that insulation be added to the attic and second floor walls in each room. The front bedroom had a 3-foot overhanging floor, where insulation was also added. Finally new windows and doors were recommended but were not as important in reducing immediate energy losses.

Finally Green\$aver prepared a work plan to rectify the situation and perform the necessary improvements. The exposed front wall and floor received upgraded insulation to an R30 level while the attic was upgraded to R44. While the new mid-efficiency furnace started to make the house more comfortable, four new low –e argon-filled windows were also installed. 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 will be dramatic and will include:

- A savings of 52% of the natural gas usage (with currently completed work, there is already 25% savings) and 2% of the electricity usage for a total annual savings of 44% of their energy bills.
- A marked increase in the comfort levels in the house with fewer drafts and warmer rooms throughout the house.
- Significant increase in the future resale value due to the type of improvements made.

*It is so much warmer; I should have consulted Green\$aver sooner. I learned so much and the changes I made have really made a big difference.*