

Shaughnessy Residence

A Case Study of Energy Efficiency Upgrades

Presented on behalf of the homeowner by

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Vancouver Heritage Foundation



Background of Connaught Drive house



Style

Tudor Revival

Date

1929

Architect

Townley & Matheson

Contractor

WJ Read



Heritage Value

Designed by significant architects Fred Townley + Robert Matheson

- During their 55 year partnership also designed iconic buildings such as Point Grey High School, Vancouver City Hall, and the Stock Exchange building on Howe Street
- They designed three houses on the street creating a mini 'Townley & Matheson streetscape'.



Heritage Value

An excellent example of an intact Tudor Revival house

- The front façade is original and what was altered or missing has been restored to the original plans found at the COV archives.
- Design is a good example of the house styles built in 3rd Shaughnessy



Pre-assessment condition of the house



- Current owner is a young family that took possession in March 2008
- At time of purchase the house had a vividly painted exterior that paid little tribute to the traditional Tudor Revival design



Pre-assessment condition of the house



- There was a massive old natural gas boiler encased in asbestos and working on one zone
- The house had no insulation
- The house had its original doors & windows
- Structurally the house was in good condition with few changes to the interior other than a new kitchen



Renovations



The first phase of their work included restoring the front façade of the house to match the original drawings held at the City of Vancouver Archives




Renovations

- Reconfiguration of the basement into usable family space
- New electrical, plumbing, and mechanical that works with the original radiators on the upper floors
- Cosmetic updates to main floor through paint, floor refinishing and soft finishes

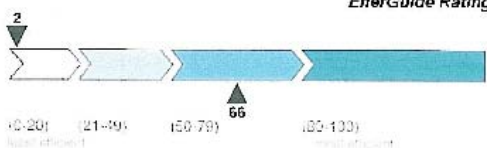


Energy Assessment

 **ecoENERGY**
IN ASSOCIATION WITH

Energy Efficiency Evaluation Report
File number: 7C02D00199

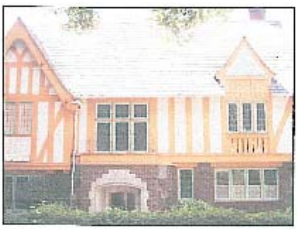
EnerGuide Rating



2 66

(0-20) (21-49) (50-79) (80-100)

House efficiency Potential efficiency



House type: Single detached Heating system: Natural gas Boiler
No. of storeys: two Domestic hot water: Natural gas
No. of RO windows: 55 Air leakage rate @ 50 Pa: 21.58 ACH
PT-mph category: 4714 number of air changes per hour
Air conditioner: No Equivalent Leakage Area: 6416 cm²


The results of your pre-retrofit energy evaluation show that your house rates 2 points on the EnerGuide scale. If you implement all of the recommendations in this report, you could reduce your energy consumption by up to 66% and increase your home's energy efficiency rating to 66 points. The average energy efficiency rating for a house of this age in British Columbia is 4.7, whereas the highest rating achieved by the most energy-efficient houses in this category is 80.

Did you know that when you reduce the amount of energy used in your home, you also reduce the production of greenhouse gases (GHG) such as carbon dioxide? By improving your home's energy efficiency rating to 66 points, you will reduce its GHG emissions by 17.1 tonnes per year!

Remember that you have up to 18 months from the date of this report to complete your renovations and qualify for an ecoENERGY Retrofit - Home grant. So the sooner you start your renovations, the earlier you will see the energy savings. And let's not forget how reduced energy consumption helps protect the environment.

Note: If you notice any discrepancies with the above description of your home, contact your service organization immediately.

Service Organization: Sage Energy Solutions Ltd
Telephone: 604-495-5757
Date of evaluation: June 23, 2008
Date of report: August 12, 2008

Certified Energy Advisor: Sage Davies


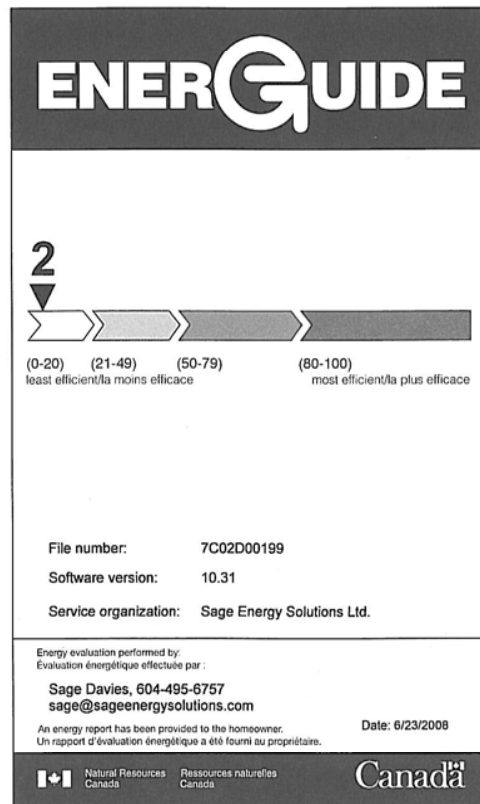
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- The motivation for the assessment was two fold:

- Comfort
- Monetary savings



Energy Assessment



Please affix this label to the electrical panel or in the vicinity of the electrical panel so that it is easily visible. Thank you.

Merci d'apposer cette étiquette sur la boîte électrique ou bien en évidence près de celle-ci.

M27-01-2399E

- The environmental assessment gave the house a score of 2 out of 100.
- The average rating for this age of house is 47.
- With energy upgrades the assessor estimated the house could attain a rating of 66.



Energy Upgrades Recommended by the Assessor

| | | |
|--|------------------|--|
| Replace heating system with Energy Star boiler | Incentive \$600 | Potential rating improvement is 19 points |
| Insulate the walls | Incentive \$1499 | Potential rating improvement is 17.3 points |
| Replace 29 of 36 windows and 7 exterior doors with Energy Star windows | Incentive \$1080 | Potential rating improvement is 15.4 points |
| Improve air tightness of the house | Incentive \$150 | Potential rating improvement is 8.7 points. |
| Insulate basement and crawl space insulation | Incentive \$500 | Potential rating improvement is 7.1 points |
| Insulate the attic to R-40 | Incentive \$400 | Potential rating improvement is 3.9 points |
| Insulate exposed floors (eg. floors over garage) to R-20 | Incentive \$150 | Potential rating improvement is 1.7 points |
| Replace hot water system with instantaneous gas water heater | Incentive \$250 | Potential rating improvement of .6 points |
| Replace 5 toilets with low or dual flush. Incentive \$250 | Incentive \$250 | Can receive incentive, but receives no rating improvement points |

Total Grants Available for recommended Upgrades

\$4879



Upgrades made by the homeowner



- Installed radiant heat under main floor original wood floors. This was cost efficient in part because the basement was being renovated
- Installed 6 zones (potential to increase to 8 with further attic renovations) so that heat can be directed to areas of the house being used
- Installed an insulated, high efficiency, Energy Star boiler



Upgrades made by the homeowner



- Added weather stripping to some exterior doors, including garage door
- Insulated exposed floor over the garage and insulated the attic to R-40
- Installed Air source Heat pump for cooling
- Insulated the walls from the inside with blown-in cellulose insulation



Upgrades not undertaken but recommended by assessor

- Replacement of lead pane windows
- Replacement of exterior doors
- Not all air tightness measures including installing a vapour barrier



Rebates Received for Work Done

Live Smart BC \$690

- Attic Insulation \$190
- Exterior Wall Insulation \$400
- Air Tightness \$100

Federal EcoEnergy Retrofit \$2815



Post-assessment condition of the house



- A post upgrade assessment has not yet been completed.
- The owner is contemplating installing original storm windows or other heritage friendly alternative to new windows and doors.



Cost of work and cost savings

- A complete cost breakdown of work is not available from the homeowners
- The entire mechanical system invoice was \$140,000 - this included new city water line, and replacement of all plumbing pipes in 6 bathrooms
- Cost of new boiler was \$60,000 of the total \$140,000 mechanical
- Owners moved back into the house in March 2011 and therefore have not yet lived in the house for a winter
- A comparison of two gas bills pre & post upgrades is:
September 2010 = \$
September 2011 = \$



The Connaught Drive house today



- Restored to its former glory but as a far more energy efficient home!
- Questions?

