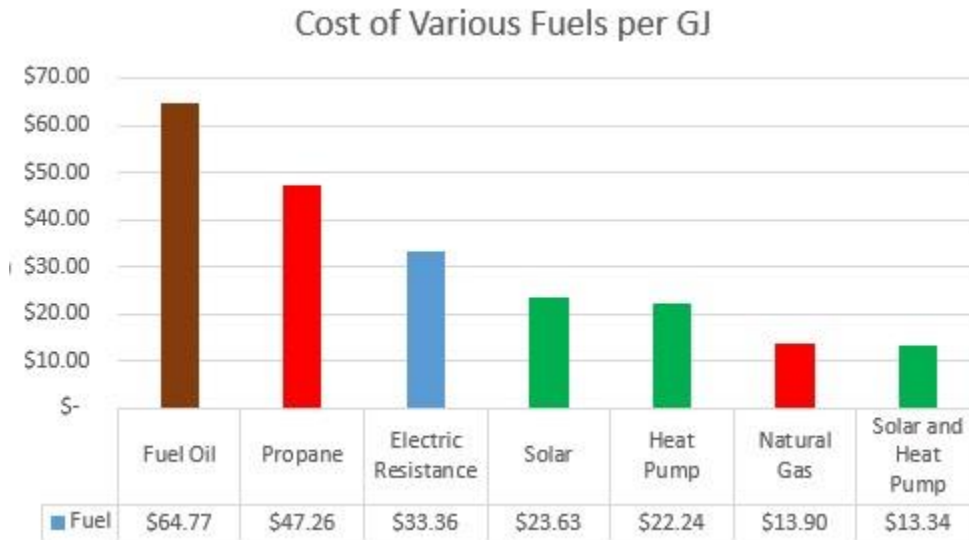




Relative Costs of Common Fuels

Last month I posted the impacts of GHGs for various fuels relative to natural gas for residential Ontario properties. Today, I post a similar post about the relative costs of various fuels. These are posted in dollars per GigaJoule (GJ).



It's a useful metric to do a comparison between fuel costs but also as a useful metric if you have an NRCan Energy Audit done. The results of the upgrade report will show the number of GJs saved per year for each measure. You can use these figures to calculate your annual savings per measure in dollars.

Note that not only is fuel oil highly polluting (see last month's post on the relative impacts of GHGs for various fuels) but it is expensive and there is a third issue with it. If it spills it requires very expensive environmental clean ups. It happens often enough (horror stories of tanks leaking, operators filling the wrong ports, etc.). A house cannot be sold when it's contaminated with fuel oil and if it gets under the foundation the costs can rise to the hundreds of thousands of dollars to clean up. Plus, insurance charges more for houses with fuel oil heating.

Here is a scan of a part of the NRCan energy audit report (the upgrade report) where it indicates the energy savings for a house (this house's full report is on our website at <https://www.buildingsciencetrust.com/building-planning-process> at the bottom right of the webpage).



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7. Add a renewable energy system

- ❑ Install a photovoltaic system designed to deliver 14869.6 kilowatt-hours per year.

This upgrade could reduce the energy consumption of your house by 55 gigajoules per year.

In this case the energy audit reports 55 GJs of electrical energy generation are possible per year for this house. If we use the cost of \$23.63 per GJ as the average cost of grid supplied energy the solar panels would save our homeowner about \$1,300.00 a year. A solar contractor has prepared a budget for us to advise how much 55 GJ of solar generation would cost. About \$18,200.00 So this would have about a 14-year payback. Solar panels last over 25 years so the 11 year (25-14) lifetime savings would be about \$14,300.00 for the homeowner. Note that currently NRCan allows a \$5,000.00 subsidy for solar panels which would result in a 10-year payback and lifetime savings of \$19,500.00. Pretty good if you're going to be in your house for at 10 years and outstanding if you're going to be there for 25 years.

A similar analysis can be done for the attic insulation (3 GJs) which saves on natural gas energy. So using the cost of natural gas fuel (\$13.90), we see that the improved attic insulation would save a modest \$42.00 per year. Not insignificant but will also add comfort to the house.



2. Insulate attic

- ❑ Increase the insulation value of your attic (Ceiling01) by RSI 5.11 (R-29.0).

This upgrade could reduce the energy consumption of your house by 3 gigajoules per year.

Likewise, payback and lifetime savings analysis can be done for all the other common measures (heat pumps, drain water heat recovery, windows, doors etc) analysis. We do these for you and put them in a concise report with a plan (when to do each measure and get the value of the remaining life out of your component) to show you how to move your house to Net Zero (a house that generates as much energy as it uses in a year).

Yours very truly,

Building Science Trust

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