

2714 W 12th Ave

HERITAGE ENERGY RETROFIT GRANT CASE STUDY

Building at a Glance

Location – 2714 West 12th Avenue
Size – 209.3 meters squared
Style – Single family detached dwelling
Built – 1929
Purchased – 2011
GHG reductions – 3.01 tonnes/year
Post Retrofit Emissions – 1.4 tonnes/year

Energy Efficiency Retrofits

Installation of 10 storm windows
HVAC - Central Air Source Heat Pump
DHW - Instantaneous Condensing
Natural Gas Water Heater



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Heat Pump Specs

BTU: 17,100

Brand: Daikin

Model: DZ17VSA181AA Variable-Speed, Split System Heat Pump

Air Handler: MBVC1200AA-1 Variable speed ECM Based Air Handler

Operating Temp: -23.3°C to 21.1°C

Heat Pump Installation

The homeowners decided to upgrade their furnace to a heat pump as their furnace had been repaired multiple times and was unreliable. The heat pump was installed in two days during spring and caused minimal disturbance to the homeowners as they were able to remain in their home during the installation, even when the duct work in the basement was changed. They did not have to do electrical upgrades when installing the heat pump

The home's ventilation system was quite dated and currently the heat pump can only heat the main floor but not the two bedrooms upstairs. This is because the upstairs bedrooms were formerly an attic and had no duct work. The basement suite downstairs does not use the heat pump, but it does use the hot water heater.

HERG was the homeowners first retrofit-focused project; however, they had renovated the entire basement suite upon purchasing the home in 2011 and so an electrical upgrade was not needed as part of this project.

One concern that often arises when considering a heat pump is the operational noise. Although the homeowners stated that the heat pump does make some noise, it is not loud enough to be a disturbance. No complaints have been made by nearby neighbors and it cannot be heard from inside the house. Upon reflecting on their former natural gas furnace and current gas water heater, the homeowners shared that the noise from those were much louder than the electric heat pump.

Storm Windows

It was important to the homeowners to retain the character of their heritage house so replacing the windows was never an option. Working with Vintage Woodworks, the homeowners were able to install exterior storm windows on the main floor. Their living room has characterful and large single pane glass windows that now have an increased r-value due to the storm windows.

Additionally, the homeowners have noticed that the storm windows also aid in filtering some of the outside street noise from their busy neighborhood.



Photo Credit: VHF



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In the front room, the large centre panel window is fixed and so the exterior storm window is fixed as well. It can be removed for cleaning or repairs if needed. The two accompanying window panels are fully operational and had their sash cord and weights reattached when the house was first purchased and now also have storm windows installed. The storm windows placed over the operational sashes can be opened to allow for air flow.

These storm windows can remain in place all year long. Historically, storm windows would be put on in the fall and removed in the spring, but more modern designs have made this a less popular option.

Tankless Water Heater

The homeowners had to replace their natural gas hot water tank as it had begun to malfunction and chose an instantaneous condensing water heater based on the recommendations of their contractor. This meant going from a 50-gallon tank to a tankless system.

Tankless systems heat water on-demand using gas or electric coils, rather than maintaining a continually heated tank. This results in savings of 27 to 50 percent in fuel costs over tank-type heaters.* Tankless water heaters are compact and require less space, but conversion from a tanked system can be costly.

Although tankless units heat water on demand, they do have output limits. This means if you are running the dishwasher, doing the laundry, and taking a shower simultaneously, your heater may not be able to produce hot water fast enough. The flow rate for tankless water heaters is measured in gallons per minute of hot water the machine can produce. Therefore, it is important to understand your water demands before deciding on a specific model.

Advantages:

- Improved efficiency, no need to use energy to constantly keep a tank full of hot water
- Longer lifespan, 20 years or more
- Space saving
- Almost zero chance of a catastrophic leak

Disadvantages:

- Expensive upfront equipment and installation costs
- May need to make major changes to the home to convert to a tankless unit
- In some cases, the increased upfront cost may be larger than the long-term saving

*<https://www.thisoldhouse.com/plumbing/21019184/read-this-before-you-buy-a-tankless-water-heater>

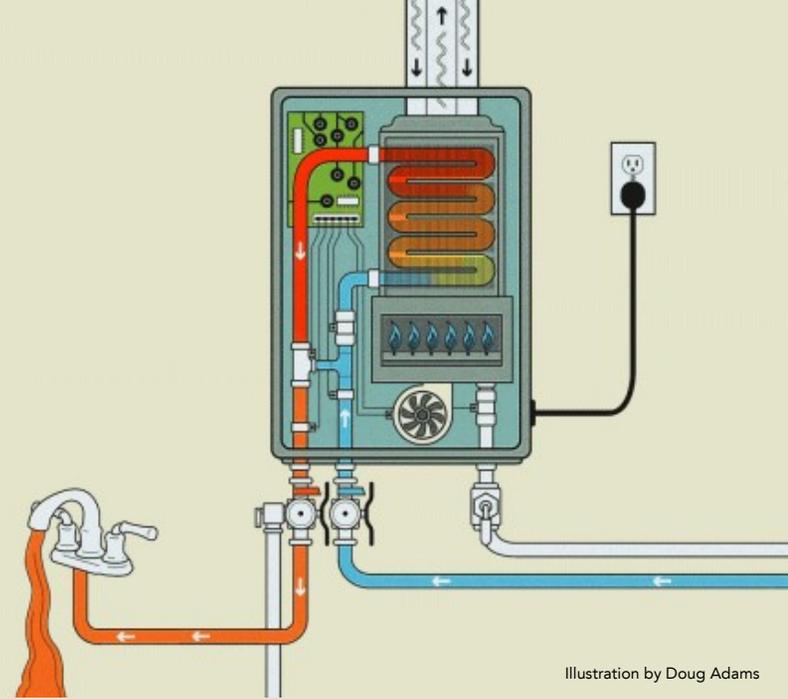


Illustration by Doug Adams



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Any Advice?

The homeowners' advice for anyone interested in starting a retrofit project is to do as much of it at the same time as is feasible. Completing the recommended retrofits together means they function well together. An improved envelope helps a heat pump operate more efficiently, for example. The improved comfort of the home is more obvious when all of the work is done together.

However, this does not mean that they recommend rushing the process. Proper preparation and due diligence is extremely important before undertaking multiple retrofits. They had multiple companies come in and give quotes on the heat pump and water heater before they settled on one.

They feel they were lucky to be able to do it all at once. Financing multiple projects simultaneously may not always be feasible; however, the homeowners took advantage of multiple rebates in order to complete as many energy efficiency retrofits as possible. As a result, the home is running more efficiently with minimal impact on the homeowners' daily lives.



Photo Credit: VHF