



TOWARDS NET ZERO RENOS



CASE STUDY



The house was heated with a mid-efficiency natural gas furnace, and had no cooling. This is the Homeowners retirement home and they want to make upgrades that will reduce utility bills and increase comfort.

PROJECT PRIORITIES

- Heating and Cooling Mechanicals

RENOVATOR: Homeowner Organized

ENERGY ADVISOR/ SERVICE ORGANIZATION:
Shawn Sales

TARGET: TNZR Roadmap

ENERGY REDUCTION: 24.6%

YEAR BUILT: 1991

YEAR RETROFIT COMPLETED: 2015

LOCATION: Parksville, British Columbia

HOUSE TYPE: Single Detached

SIZE: 2794 sq.ft.

CLIMATE: Zone 4, 2568 HDD

UPGRADES INCLUDE

Cooling & Heat Pumps

Space Heating



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NET ZERO PLAN

BEFORE

ENERGY CONSUMPTION

97 GJ/year

COMFORT

The winter season was cooler than expected in the home and the heating system didn't always keep up.

BUILDING CONDITION

Good condition. The home is part of a Strata and is due for window replacement. 6.5 ACH.

RENEWABLES

None

WALL INSULATION

R12 Batt

CEILING INSULATION

R24 Batt

FOUNDATION INSULATION

None

WINDOWS

M5-P (U-val=3.39, SHGC=0.72)

VENTILATION

None

HEATING

80.0% AFUE furnace

COOLING

None

HEAT LOSS & GAIN

HL: 28224 Btu/h, HG: 19978 Btu/h

HOT WATER

0.55 EF natural gas conventional tank

AFTER

73 GJ/year

The addition of a heat pump paired with a condensing furnace has made the home more comfortable.

With the home having replaced the heating/cooling system, the home is comfortable in all seasons. 6.9 ACH.

No Change

No Change

No Change

No Change

No Change

No Change

96.0% AFUE furnace

3.92 COP air source heat pump, ENERGY STAR® certified

No Change

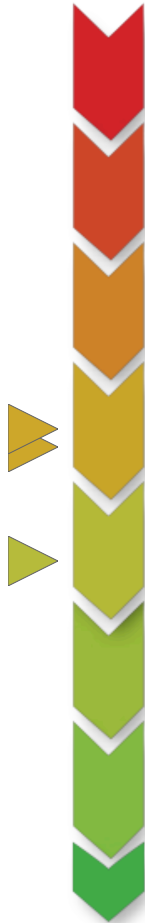
No Change



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ANNUAL ENERGY USE

Typical New Home
98 GJ/
year
Before Retrofit
97 GJ/
year
After Retrofit
73 GJ/
year



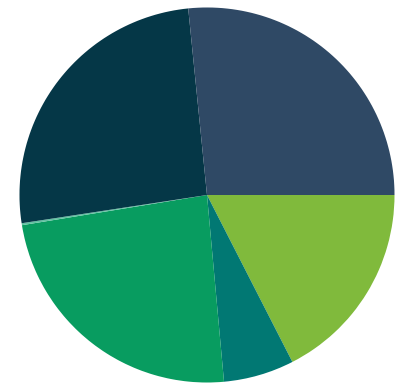
ENERGY CONSUMPTION BREAKDOWN

BEFORE RENOVATION



■ Space Heating
■ Other Electrical
■ Water Heating

AFTER RENOVATION



■ Light and appliances
■ Ventilation
■ Space Cooling

AS BUILT ENERGY PERFORMANCE

ANNUAL ENERGY SAVINGS	24.6%
GREENHOUSE GAS SAVINGS	-2.03 Tonnes
ESTIMATED COST SAVINGS	\$-399.42/y



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WHY ARE WE RETROFITTING OUR HOME?

The home isn't as comfortable as the homeowner would like. The main concern was heating and cooling. The home couldn't keep temperature in the winter and was too hot in the summer. The addition of a condensing furnace and a heat pump will fix this issue.

WHAT LESSONS DID WE LEARN?

Challenges when dealing with a Strata are upgrades that require permission and upgrades that aren't all owed at all. For example the heat pump required permission and solar panels were not permitted.

WHAT ELSE NEEDS TO BE DONE TO GET TO NET ZERO?

The home still needs solar panels, added insulation to the crawlspace and attic, replacing windows, and adding an HRV.



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PHOTO GALLERY - BEFORE





TOWARDS NET ZERO RENOS



PHOTO GALLERY - AFTER

