



TOWARDS NET ZERO RENOS



CASE STUDY



This bungalow was built in the 1956. MDSF was added to most of the basement prior to the project. The attic had wood chips and fibreglass, and the exterior of the home has old stucco. The furnace and DHW were aging with pilot lights burning year round. The walls have R-8 batts, and a leakage rate of almost 4 ACH.

PROJECT PRIORITIES

- Tighter envelope – the attic showed excessive leakage in the pre-retrofit inspection
- Upgraded mechanicals – inefficient furnace, DHW and AC
- Exterior insulation – low insulation and upgraded siding needed
- Greater comfort – HO's were not the most comfortable in their home

RENOVATOR: Curtis Andreas - A1 Contracting

ENERGY ADVISOR/SERVICE ORGANIZATION:
Rene Kreutzwieser - NRG

TARGET: Net Zero Home Renovation

ENERGY REDUCTION: 50.3%

YEAR BUILT: 1956

YEAR RETROFIT COMPLETED: 2026

LOCATION: Saskatoon, Saskatchewan

HOUSE TYPE: Single Detached

SIZE: 2189 sq.ft.

CLIMATE: Zone 7a, 5695 HDD

UPGRADES INCLUDE

Airtightness

Air Source Heating & Cooling Heat Pumps

Water Heater

Principle Ventilation

Ceiling Insulation

Siding



TOWARDS NET ZERO RENOS



NET ZERO PLAN

BEFORE

AFTER

ENERGY CONSUMPTION

169 GJ/year

84 GJ/year

COMFORT

Lacking.

Improved.

BUILDING CONDITION

Mid. 3.9 ACH.

Not very changed, the attic is more sealed now so less moisture will get into it from below. 1.7 ACH.

RENEWABLES

None

No Change

WALL INSULATION

R-8

No Change

CEILING INSULATION

R-28

R-69

FOUNDATION INSULATION

R-18 (33%), R-0 (67%)

No Change

WINDOWS

Triple glazed (U-val=1.2)

No Change

VENTILATION

None

80.0% SRE HRV

HEATING

80.0% AFUE gas furnace

Dual-fuel 11.6 HSPF air source heat pump & 98% AFUE gas furnace

COOLING

10 SEER A/C

18.23 SEER air source heat pump

HEAT LOSS & GAIN

HL: 12.58 kW, HG: 11.85 kW

HL: 8.96 kW, HG: 1.75 kW

HOT WATER

0.55 EF gas boiler

0.94 EF gas boiler



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WHY ARE WE RETROFITTING OUR HOME?

To decrease energy usage, increase comfort. There were moisture issues on windows and towels not drying. Warmer regions of the home in the summer and cooler ones in the winter. The exterior needs a facelift.

WHAT LESSONS DID WE LEARN?

Budget is a limiting factor, as well as availability of Net Zero contractors who have time to take on a project. Time availability can be tricky to juggle for all parties involved. It's important to consider lots of options and get different opinions, we thought we were going to increase the heel height of the roof for a while to achieve what was needed.

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

The exterior of the home still needs to be upgraded. The plan is to add 2" of polyiso and 2" of EPS to the exterior and new siding, which should also hopefully make the home as tight as is needed. Solar power would also need to be added.