ARCTIC ENERGY ALLIANCE

October 2019

Case Study | ENERGY EFFICIENT RENOVATIONS

Private home

Yellowknife

Background

The owners of a home in Yellowknife are expected to save more than $4,800 a year on energy bills because of energy-efficient renovations. Before starting the renovations, the homeowners had the Arctic Energy Alliance complete an EnerGuide home evaluation, which measures the energy used by a house and identifies areas for improvement.

The pre-renovated home was expected to use about 428 GJ of energy a year under standard operating conditions. Following the evaluation, the homeowners:

- replaced the oil furnaces with high-efficiency propane furnaces
- replaced the oil-fired hot water tank with a tankless propane water heater
- added insulation to a portion of the main wall
- replaced all windows with triple-pane vinyl windows
- replaced all doors with polyurethane-filled steel doors
- sealed drafts to reduce the air leakage by 10 percent
- installed a wood stove

The new furnaces, water heater, windows and doors were all ENERGY STAR® certified.

After the renovations were completed, the follow-up EnergGuide evaluation found that the house would expect to use roughly 304 GJ of energy a year—a savings of 29%.

Estimated annual savings

House Component	Renovation Details	Annual Energy Savings (GJ)	Annual Cost Savings
Air tightness	10% improvement *(Air changes per hour decreased from 5.06 to 4.53)*	16	$900
Doors	Polyurethane-filled steel doors	14	$460
Heating system	96% AFUE condensing propane furnaces *(from 83% EF oil furnaces)*	38	$1,300
Wall insulation	R8 semi-rigid insulation added to wall section	5.3	$450
Water heater	0.91 EF tankless propane water heater *(from 0.54 EF oil-fired tank)*	12	$450
Windows	Triple-pane vinyl windows	36	$1,300

Based on EnerGuide standard house conditions and 2018 fuel prices in Yellowknife.

In addition, the wood stove installed in the home should help save $900 per year if used about half the time.