

# ENERGY RETROFIT OF HOME

## A CLIMATE SOLUTION

Buildings are a major contributor to greenhouse gas emissions when they are heated or cooled by fossil fuels like natural gas. The goal was to stop using fossil fuels to operate the home, reducing its' greenhouse gas emissions. Retrofitting all existing buildings could reduce greenhouse gas emissions by about half, depending on local climate.

This 1967 home had both a natural gas furnace and gas water heater prior to the retrofit. All other appliances were electric. In 2019, the owner purchased an electric car and began converting the home to an all-electric, solar-powered home that powers heat pumps, a car, a battery-operated lawn mower and other equipment.

The graph on the reverse shows the KWHs used as both electricity and natural gas (in KWH equivalents) during summer in 2018 prior to the retrofit compared with the same months in 2020 following the retrofit once solar electric generation began.

Electric usage in 2020 is a fourth (25%) of usage for the same months prior to the energy retrofit, due to the efficiency of heat pump technology as well as Weatherization measures including: air sealing, interior storm windows and super-insulation of the attic over a thermal barrier.

### **The retrofit includes:**

- Solar PV rooftop panels (3KW) with optional access to solar electricity if grid power is off.
- Natural gas disconnected
- Heat pump (mini-split) heats and cools the 1200 sq ft home
- Heat pump electric water heater
- INDOW windows (an interior acrylic storm window) prevents drafts around windows
- Chimney shaft closed and sealed at attic floor level
- Attic floor air-sealed with 1 inch of spray foam and super-insulated with fiberglass batts to R-67
- ERV (energy recovery ventilator) – for continuous microfiltered ventilation,

### **WHY RETROFIT?**

Utility cost savings will repay the initial investment in 15 years, or sooner if rates increase in the future.

This retrofitted home is super-comfortable, uses little energy to maintain temperature and keeps out smoke, pollen and other pollutants.

Operation of this home no longer emits the greenhouse gases produced by heating and cooling with natural gas, benefitting the future of our planet.

## USED 75% FEWER KWHs IN SUMMER AFTER ENERGY RETROFIT TO ALL-ELECTRIC, SOLAR-POWERED HOME

