

# Home Energy Assessment Report

Owner Name: [Your name]

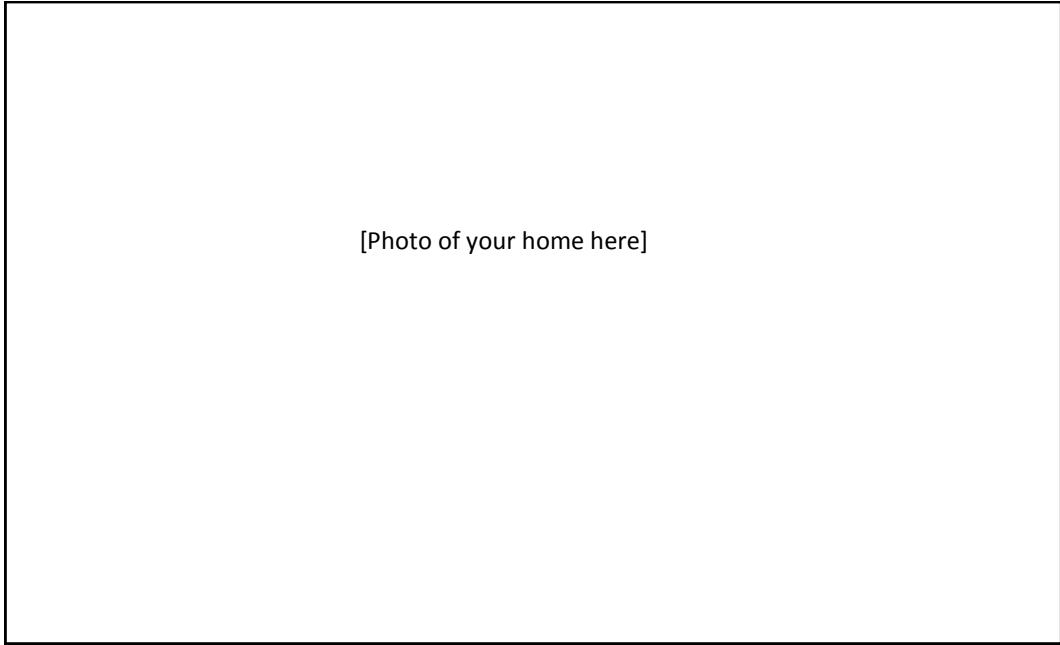
Home Address: [Your address]

Owner Contact Number: [Your phone number]

Assessor Name: Scott Katznelson

Work Completion Date: [date of inspection]

Report Submittal Date: [date of final report]



[Photo of your home here]

## **ASSESSMENT SUMMARY**

This is an older platform-framed building. The origin building was likely a small single-storied home on which a second story was built. Later— in the 1960's apparently—further additions were built, one extending the living space to the south and another to the north extending a bit of living space but primarily designed as a non-conditioned garage.

The walls appear to be well insulated, but the attics have only an older covering of blown cellulose, which has settled to a mere 4 inches. The crawlspace is vented and was once insulated with fiberglass batt, but most of that has fallen down over time. Unfortunately the crawlspace is only about 18 inches high, so installation of further insulation will be difficult. However, as the structure of the original building is sinking—a situation which the client intends to remedy—both insulation and floor air sealing can occur at that time.

The home is heated by electric baseboard only and there is no AC. No combustion appliances are present in the home. Windows are mostly single pane with storms, though a few double-panes windows exist. Especially of note are five louvered windows in the semi-conditioned sunroom.

The home has a high air leakage rate. The optimal air leakage rate, without the need for mechanical ventilation is 0.35 Air Changes per Hour (ACH). This house has a rate of 1.5 ACHn. Air leakage sources include: windows and doors (both from the components themselves and from the framing); from cracks in the walls and ceiling; from bathroom fans; and significantly, from the floor.

The home has demonstrated a significantly high baseload usage, which is likely from the regular use of an electric dryer, and the presence of both a fridge and chest freezer that are high users of electricity. Further to this, the electric water heater exists in an unconditioned space and is not insulated. There is a possibility that some of the baseboard heaters do not properly turn off when not in use.

**Item #**

**RECOMMENDATIONS**

- 1.** Air sealing. The payback for air sealing is huge. Up to \$3000 can be spent on air sealing for a payback within 10 years, so long as the resulting air leakage rate achieved is 4000 CFM50 or better, which should be easily achievable. Areas to focus on are doors and windows; the floor; sealing any and all cracks to the house frame; and putting dampers on all exhaust fans. Also spray foaming the top plates in the attic could alleviate much of the leakage observed from the walls.
- 2.** Insulation should be added to all attic areas (over conditioned spaces), to between R38 and R49. Given the client's intention to create a cathedral ceiling in one part of the house, this then should be insulated to the highest level possible.  
  
Similarly, floor insulation is recommended but only if or when client's intention to fix and replace the floor occurs. The addition of a vapor barrier can also occur at this time.
- 3.** While generally window replacement is not necessarily cost-effective, in this home it is recommended for all windows that are not already double-paned. The payback for this is estimated to be about 12—14 years. For the louvered windows, this payback period is more like 6 years.
- 4.** Both the fridge and the chest freezer are recommended for replacement. The payback for each should be in the region of 6—7 years.
- 5.** There is no real improvement possible in replacing the dryer. However it is recommended to use it as little as possible. Clothes lines are slightly more labor intensive but use no energy. Try cleaning the lint from inside the machine and in the vent.
- 6.** Similarly, replacing the water heater is not recommended at this time. However, wrapping it in at least an R8 insulating jacket and also wrapping the exposed water lines should pay back the cost and effort within less than a year. Reducing the temperature of the storage tank to 120' will also add to savings. One further way to save on water heater costs is to install low-flow showerheads and faucet aerators. Also, the water heater should be drained at least once a year.
- 7.** A more costly update is to replace all the baseboard heaters with a ducted heat pump unit. Using a figure of \$6000 for labor and material, a heat pump is estimated to pay for itself in savings in about 15 years.
- 8.** Any light bulbs that are still the incandescent type should be replaced with CFL bulbs. Replacing T12 fluorescent bulbs is cost-effective only if no labor cost is involved.

**Item #**

**RECOMMENDATIONS**

- 9.** The attic hatch should be air sealed and insulated. It will likely be necessary to build a new frame for the hatch in order to make a good seal possible.
- 10.** The drywall covering the old attic access (or window) between the garage and the master bedroom, should be properly insulated and sealed.
- 11.** Moisture issues in the home may be alleviated by the use of a vapor barrier throughout the crawlspace. However access is very difficult.

It is highly recommended that exhaust fans be used regularly to pull excess moisture particularly from the bathrooms and kitchens. Newer low-sone fans and automatic timer switches are recommended.

For problem areas like closets, a vent installed in the closet door or wall can help circulate the dead air and alleviate at least some of this issue.

## Diagnostic Results

Whole House Air Leakage Rate (CFM50)	6600
ACH <sub>N</sub>	1.5
Total Duct Leakage (CFM25)	N/A
Duct Leakage to the Outside (CFM25)	N/A
Water Heater CAZ Depressurization (Pa)	N/A
Water Heater Draft (Pa)	N/A
Furnace CAZ Dep. (Pa)	N/A
Furnace Draft (Pa)	N/A
Water Heater CO Reading (PPM)	N/A
Furnace CO Reading (PPM)	N/A
Outdoor Temperature (F)	45'
Refrigerator Metered Result (Kwh/yr)	1474

## Assessment Detailed Report

Louvered windows should definitely be replaced with double-glazed, low E windows. The energy model of the home also recommends changing out all of the currently existing single paned windows.



Insulation levels are inadequate in the attics and should be improved with blown cellulose or fiberglass up to a minimum of 12”.



The Attic hatch on the second floor, and the one in the southern addition should both be air sealed and insulated up to R38. This can be done either with fiberglass batt or rigid insulating sheathing.



The crawlspace is very difficult to access. However client intends to rip up the floor to make repairs to the foundation. At this time, both a vapor barrier and insulation up to R19 are recommended.



## Assessment Detailed Report

Air leakage was observed at any location in which there was a crack or space open to the frame of the house. Examples are pictured here, and in the next two photos. Not pictures, but significant was gaps in the master bedroom closet and behind the kitchen counters.



A gap in the kitchen paneling allows air to escape



Window and door trim throughout the house are allowing significant air leakage. Pulling the trim off and filling with a two-part foam designed for doors and windows is recommended.



This old hatch, as viewed from above the garage, indicates a spot that must be insulated and sealed. Opposite this hatch is the master bedroom.





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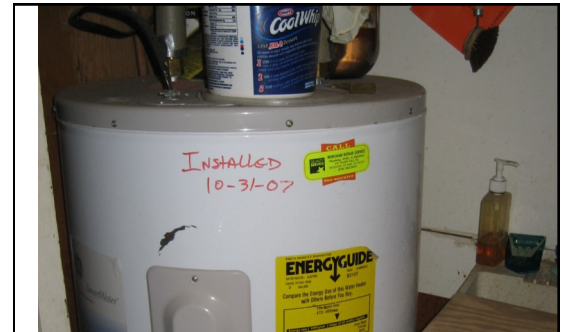
This Kenmore chest freezer is about 30 years old and is estimated to use about 1700 KWh/year. Comparatively, a new energy star freezer should use about 350 KWh/year.

This is similarly true for the fridge also, although it is only about 5 years old.



The water heater does not need to be replaced. However it should be wrapped with an insulating blanket, and all accessible pipes—both hot and cold, but hot in particular—should be insulated.

Additionally, the temperature can be reduced to 120' F for added savings, with no loss of comfort.



On the chance that baseboard heaters are not fully turning off, they can most easily be disabled at the breaker box during the non-heating seasons.

