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Audit Date: 3/7/2011

Focus on Energy's Home Performance with ENERGY STAR® Program is designed to help owners of existing residential properties (1 - 3 units) make their homes more comfortable, safe, durable, and energy efficient. Program allies can recommend solutions and install materials to solve housing related problems such as high energy bills, comfort issues, ice dams, condensation, drafts, etc. Home Performance with ENERGY STAR is a network of housing consultants, energy efficiency retrofit contractors, heating contractors, and remodelers working together to provide homeowners with improvement services that best meet their individual needs.

For more information on this and other Focus on Energy programs, call 800.762.7077 or visit www.focusonenergy.com.

Homeowner concerns / issues:

- High Energy Bills
- Drafty Rooms
- Moisture
- Ice Dams



ABOUT THIS REPORT

Your in-home evaluation was conducted on 3/7/2011. During the inspection, I evaluated your home's structural elements, heating/cooling equipment, and energy consuming appliances. The information gathered during the home inspection provided input data to benchmark the energy use of your home and develop a strategic plan for the most effective way to reduce that energy usage. The attached report details the proposed improvement measures including expected savings for your home. If you have any questions about your home's energy performance, please contact me. Implementing these recommendations will reduce your energy bills and make your home more comfortable and more valuable. It's important to note that savings estimates provided are approximations to help you prioritize changes. The estimations should not be taken as firm commitments.

BUILDING

Floor Area: 1200

Year Built: 1948

Heating System: Furnace - Condensing, Ducted

Air Conditioning: Ducted Split AC

Heating Fuel: Natural Gas

Hot Water Fuel: Natural Gas

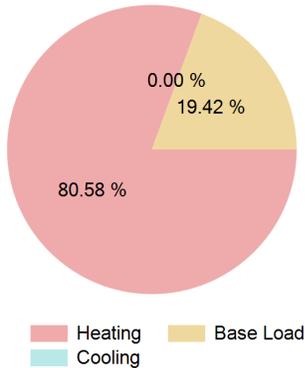
Number of Occupants:2

HOW YOUR HOME USES ENERGY

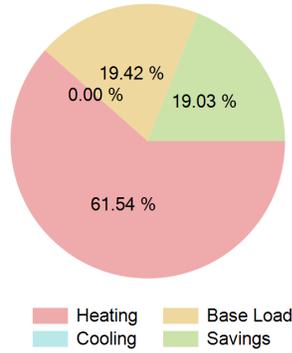
Fuel Type	Use	Cost	Savings
Electricity	13,083 kWh	\$1,177	\$7
Natural Gas	1,016 therms	\$1,382	\$346
	Total Cost	\$2,559	\$352



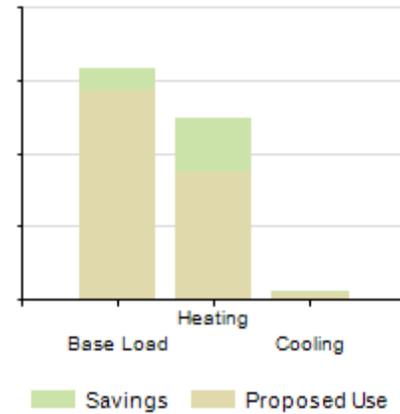
Current Energy Use



Proposed Energy Use



Use Comparison



Heating usage includes all energy used to heat your home, similarly for cooling. They are both weather dependent. Base load is the energy use that is independent of the weather. This includes uses like appliances and lighting as well as hot water. This chart shows how your home is currently using energy among these different end uses.

Each improvement affects the energy profile of your house in different ways. Insulation will improve both heating and cooling while replacing a refrigerator will only improve the base-load. This chart indicates the proposed energy usage of your house with all the recommended improvements installed to indicate from where your savings will come.

SUMMARY OF RECOMMENDED IMPROVEMENTS

Proposed Improvement	Annual Savings	Payback Years	SIR
Air Sealing	\$365	2.7	5.5
Attic Knee Wall Insulation	\$10	3	8.0
Attic Insulation	\$10	12	2.3
Water Heater Improvement	\$15	17.6	1.5



Combustion Safety:

- It is recommended that all homes have one carbon monoxide detector per floor level. Replace detectors every 5 years. This is the average lifespan of a detector.
- Lack of system maintenance can cause carbon monoxide to be produced.
- Chimneys and metal flue pipes for heating systems and water heaters need to be correctly sized, configured, and maintained in good condition to vent combustion gases properly.
- Chimney vented appliances can spill exhaust gases into the home under certain conditions. The consultant performs tests to determine if this potential exists.
- Power or direct vented furnaces and water heaters are a much safer. They typically incorporate fans to assist the venting of exhaust gases.
- Gas cooking appliances also produce carbon monoxide. Range hoods for gas stoves need to be vented to the exterior

Building Air Tightness:

- The blower door measures the relative air-tightness of the home and helps to identify air-sealing opportunities. The “CFM50” number refers to air flow at a standard test pressure (approximately equal to a 22 MPH wind blowing on all sides of the home.)
- Air sealing can provide substantial energy savings and increased occupant comfort.
- Attic air leakage is the primary cause of ice damming and deterioration of roof sheathing
Insulation does not stop air leakage. Air seal attic air leaks before insulating.

Moisture and Ventilation:

- Excess humidity can lead to condensation problems and mold growth.
- Exhaust fan use helps to maintain the home’s relative humidity in a range that will tend to minimize moisture problems (35% or lower in winter).
- Higher quality fans are quieter and more energy efficient.
- Exhaust fans need to be vented to the exterior with straight, smooth, short duct runs. Ducts in unconditioned space should be insulated.

Building Shell:

- Is there an area outside the boundary of the home that is unintentionally heated and/or cooled?
- Properly installed thermal insulation helps to reduce heat loss through the building shell.
- Windows and doors are part of the building shell.
- Continuous thermal sheathing also insulates over wall studs.

Mechanical Equipment:

- Mechanical equipment efficiency, size and condition can impact home energy consumption.
- Replacing mechanical equipment that is inefficient or in poor condition with properly sized, energy efficient equipment, often provides significant savings
- Setting back the thermostat by 5 degrees for an 8 hour period saves approximately 1%.

ATTIC KNEE WALL INSULATION

Improve 30 sq. ft. of attic knee wall insulation from 0 inches to 3.5 + 1 Foamboard inches

Detailed Improvement Properties

Existing Knee Wall Insulation Level	0
Proposed Knee Wall Insulation Level	3.5 + 1 Foamboard

Workscope: Shared wall between attic and bedroom wall is not insulated. Insulation will be added at the same time as attic insulation

AIR SEALING

Reduce the house air leakage from 2800 CFM50 to 2000 CFM50.

Detailed Improvement Properties

Proposed Infiltration (CFM50)	2000
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Non-Energy Benefits: Reduce drafts.

Workscope: Air sealing controls air, heat and moisture movement through the home

WATER HEATER IMPROVEMENT

Replace existing Natural Gas Storage Water Heater with new Natural Gas Storage Water Heater.

Detailed Improvement Properties

Proposed DHW Equipment	Storage Water Heater
Proposed DHW Equipment Efficiency	76
Proposed DHW Equipment Energy Factor	0.64
Proposed DHW Equipment Fuel	Natural Gas
Proposed DHW Equipment Manufacturer	any
Proposed DHW Equipment Model	

Non-Energy Benefits: Increase value of building.

Workscope: While water heater does draft now, the insulation and air sealing improvements will cause water heater to fail. Unit needs to be replaced



ATTIC INSULATION

Improve 200 sq. ft. of attic floor insulation from 3 inches to 6 inches.

Detailed Improvement Properties

Existing Attic Insulation Depth	3
Proposed depth of Attic Insulation in inches	6

Non-Energy Benefits: Improve comfort, increase value of building.

Workscope: Densely packed cellulose or fiberglass will be installed under the existing attic floor.



EVALUATION REPORT



Rewards and Follow-up:

Depending on which improvements you choose to complete, you may be eligible for a number of program rewards. Be sure to keep invoices and receipts for any improvements you make. I will need to attach a copy of these to your reward form. Once the work is completed I will return, at no additional charge, to complete a post-improvement inspection and to fill out the reward paperwork.

If there is anything I can do to be of assistance to you in proceeding with making the recommended improvements, please don't hesitate to call.

Additional Comments:

These improvements will qualify you for \$625 in Focus on Energy Rewards. I will process the paperwork for you upon completion of the improvements.

Please call with any questions.



EVALUATION REPORT



Insulation is in poor shape abut roof shows little sign of damage from ice damming. Insulation will be removed and replaced with densely packed fiberglass or cellulose after air sealing below the floor. The combination of air sealing and increased insulation will prevent ice damming



Short wall, or kneewall between attic and bedrooms is poorly insulated and not insulated in other areas. Air sealing and adding insulation will increase comfort and energy savings.



Water heater is currently venting properly, but as building infiltration is reduced the water will fail draft. recommend replacing with a power vented water heater



Opportunity for air sealing around plumbing stack where a large opening is visible from attic all the way to the basement.



Mechanical Ventilation Equipment				
Location	Measured Flow (CFM)	Recommended Flow (CFM)	Vented to Exterior (Yes/No)	Actions
Bathroom	50	50	Yes	Pass

Tests and Measurements

Blower Door Test Results

Method	BPILegacy
Building Pressure (Pa)	50
Fan Pressure (Pa)	0
Fan Ring Used	A Ring
Building Leakage (CFM50)	2850
Building Airflow Standard	0
Result	Pass
Action	

Stoves

Fuel	Electricity
Carbon Monoxide (ppm)	0
Vent Out	false
Action	

Ambient CO

Kitchen (ppm)	0
Living Room (ppm)	0
Other (ppm)	0

Distribution System Air Flow

Test Results	Pass
Action	

Combustion Appliance Zones

Zone Description	Default Zone
Baseline Depressurization (Pa)	0
Worst Case Depressurization (Pa)	0
Net Depressurization (Pa)	0
CAZ Limit (Pa)	0
CO Ambient (ppm)	0
CAZ Result	Pass
Action	None

Natural Condition Tests

Equipment	Spillage	CO (ppm)	Flue Draft (Pa)
PrimaryHeating	Pass	0	0
SecondaryHeating	Pass	0	0
DHW	Pass	0	0
Other	Pass	0	0



Worst Case Tests

Equipment	Spillage	CO (ppm)	Flue Draft (Pa)
PrimaryHeating	Pass	0	0
SecondaryHeating	Pass	0	0
DHW	Pass	0	0
Other	Pass	0	0

Flue Inspection

Equipment	Result	Action
PrimaryHeating	Pass	
SecondaryHeating	Pass	
DHW	Pass	
Other	Pass	

Duct Leakage

Test	DuctBlaster
Result (CFM25)	1
Pressure Pan Avg (Pa) Test In	0
Pressure Pan Avg (Pa) Test Out	0

Ventilation

Primary Heating Vent Type	
DHW Vent Type	Orphan natural draft water heater (including outside chimneys)
Gas Leaks Detected	false
Gas Leak Notes	
Gas Dryer Flue	
Dryer Vent	Electric
Dryer Vent Action	
Other Health & Safety Issues	