Home Performance with ENERGY STAR®

YOUR HOME ASSESSMENT

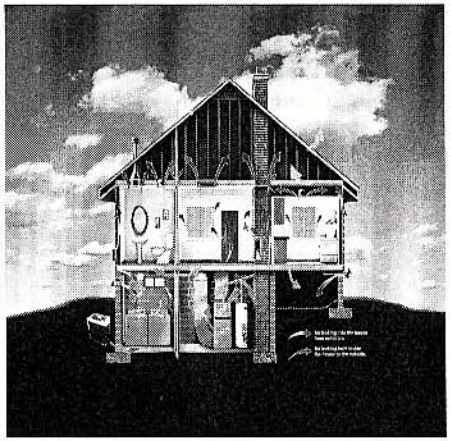
About Home Performance with ENERGY STAR®

New Yorkers are spending more money than ever to heat and cool their homes. Many homeowners are not getting the comfort they are paying for. Many homes suffer from cold spots, rooms that are too hot or too cold, ice dams, drafts, building rot, and mold and mildew problems. They may all be common signs that the house is not properly insulated or that the heating system is improperly balanced, or that moist air in the house is not being effectively controlled. Many homes are simply heating the outdoors.

Now there's something you can do about it. The Home Performance with ENERGY STAR initiative is sponsored by the New York State Energy Research and Development Authority (NYSERDA) as part of the New York Energy $mart (SM) Program. Contractors participating in this initiative have successfully completed a comprehensive skills evaluation in home performance diagnostics. Each participating contractor has earned certification through the Building Performance Institute (BPI), a nationally recognized organization for building science technology that sets the standards for assessing and improving the energy performance of homes.

About Your Home's Assessment

Your Home Assessment is customized to identify the particular needs of your home based on our analysis. The information that your Contractor gathered has been entered into a computer software package that helps your Contractor determine the most cost-effective measures you can take to make your house more efficient and comfortable. This report outlines that analysis, prioritizes recommended home repairs and helps you determine the best improvements for your home.



BUILDING INFORMATION

Address:
Ithaca NY 14850

Total Floor Area: 4,500 Sq.Ft.

Heated Floor Area: 3,600 Sq.Ft.

Year built: 1910

PREPARED FOR

Name: Shawn Reeves

Phone: 607-216-7289

Email:

Date: 12/14/2009

PREPARED BY

Name: Chad Brazo

Address:

Phone:

Fax:

E-mail:

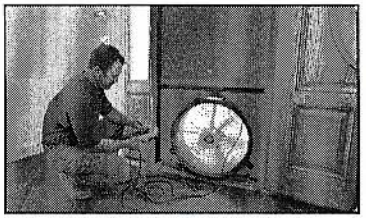
YOUR ASSESSMENT

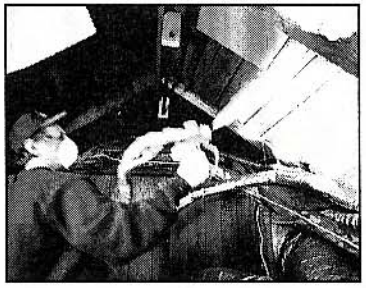
Blower Door Tests & Air Leakage

Everyone assumes that a home is built with enough insulation to help keep warm air inside during the winter, and outside in the summer. But the truth is that not all insulation performs the same, and insulation is only half the solution to making sure that your home performs at its best and to your satisfaction.

The second part of the solution to creating a better living environment is reducing uncontrolled air leakage. Typically, as much as 25% of your heating and cooling dollars escape through unseen cracks and gaps in your home, which are usually found in attics, basements, duct systems, and around floors, doors, and windows. If you combine all the holes and gaps in a typical house, it can be like leaving a window or door wide open year-round. In addition, sealing air leaks also helps prevent moisture from entering the attic and walls, which protects your home from structural or insulation damage.

Your certified Home Performance Contractor has assessed the air loss in your home using a "blower door test," an effective and accurate method to expertly measure and identify areas where air is escaping. You probably saw it being used during the site visit. The test provides some key information about your home. "Shell Leakage" indicates the measurement of air leaking into your home. The "Building Air Tightness Limit" indicates how much air should be entering your home to help ensure that you have sufficient fresh air even when the windows are closed. If you have too much air infiltration, your Contractor will provide recommended measures to the seal air leaks. If the test indicates that your house is tight, your Contractor may recommend mechanical ventilation to assist in the removal of potential indoor air pollutants.





Stopping Air leaks

Once air leaks are detected, a variety of materials are used to eliminate air passages in attics, basements, and living spaces. The materials used in air sealing include sealant foams, rigid baffles, caulking, weather-stripping, and foam board insulation. When leaks are properly sealed, less air escapes into your attic, or passes through walls, floors, and vent stacks, or is drawn into your basement. This procedure also helps prevent moisture problems, including peeling paint and structural damage in walls and building cavities. For this reason, air sealing must accompany most attic insulation work.

YOUR HOME'S RESULTS

Air Leakage

Blower door test has indicated that your building shell leakage is 4400 CFM50. The current industry standard is 2226.42 CFM50.

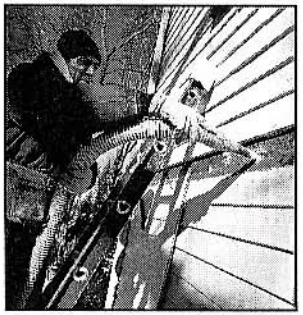
YOUR ASSESSMENT

Insulation

Insulation decreases your energy usage by slowing heat loss and is most effective when installed in conjunction with air sealing. Insulation also acts as a sound buffer, so you can enjoy a quieter home.

Several insulation types are available.

- Cellulose insulation is an excellent insulator made out of recycled newsprint treated with a fire retardant. It provides excellent coverage, filling in gaps often left between insulation batts and ceiling or wall joists.
- Foam insulation can be one of several products, generally spray polyurethane or spray polyisocyanurate. These are environmentally safe synthetic foams that fill gaps and holes, have excellent insulation values and block air movement.
- Fiberglass batts are the most common form of insulation. The batts must be installed very carefully to avoid leaving gaps that become leakage paths for air.



YOUR HOME'S RESULTS

Insulation

CEILING
Wood 2x6 frame, fiberglass insulation, R-19 with area of 900 square feet, adjacent to vented attic.

RIM JOIST
Wood 2x10 frame, none insulation, R-3 with area of 96 square feet, adjacent to outdoors.

SLAB BELOW GRADE
Wood 2x8 frame, none insulation, R-2 with area of 900 square feet, adjacent to ground.

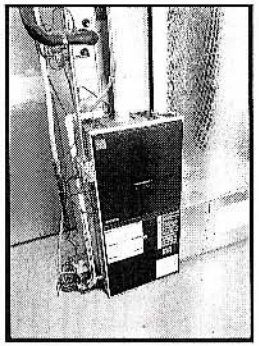
SLOPED ROOF
Wood 2x8 frame, none insulation, R-2 with area of 993 square feet, adjacent to outdoors.

WALL
Concrete 4" frame, none insulation, R-0 with area of 720 square feet, adjacent to ground.
Concrete 4" frame, none insulation, R-0 with area of 120 square feet, adjacent to outdoors.
Wood 2x6 frame, uninsulated, R-6 with area of 2,880 square feet, adjacent to outdoors.

YOUR ASSESSMENT

Heating and Cooling Systems

About half of your home's energy costs are for heating and cooling. That's why maximizing its efficiency is important. One way to maximize performance on an existing system is through periodic maintenance, including cleaning and tuning. Oil systems should have maintenance performed annually, while gas-fired systems should be checked and serviced every two years. If your system is more than 10 years old, it may be time to replace the system with a high-efficiency and correctly sized system. New gas-fired systems should have an Annual Fuel Utilization Efficiency (AFUE) rating of at least 90%, while the minimum efficiency for oil furnaces and all types of hot water boilers is 84% AFUE. If you are considering a new system, ask for one with the ENERGY STAR label for optimum efficiency. If your Contractor recommends that your system be replaced, the assessment summary at the end of this report will include the system's estimated cost, annual savings and payback (the projected number of years it takes for the fuel savings to pay for the system).



Hydronic Heating System

Hot water boilers distribute heat through a system of pipes and radiators or baseboard heaters. Hot water usually requires a pump to circulate the water through the home and then return it to the boiler to be reheated. Insulating these pipes can often be cost effective and is especially important when these pipes are located in cold areas such as crawl spaces, attics and drafty basements.

Pipe insulation is available in a variety of materials. Foam sleeves are the most common, however, fiberglass sleeves may be required if pipes are exposed to higher temperatures. The insulation sleeves should be cut to fit with special attention to joints, especially elbows. The insulation should be clamped or taped every two feet to secure them in place.

YOUR HOME'S RESULTS

Heating and Cooling Systems

Main Heating System

Your main heating system is a boiler with hot water distribution. It was manufactured in 1950.
The efficiency of this boiler is 78 %. The fuel is natural gas.
Your distribution system efficiency is 100%.

Backup Heating System

None

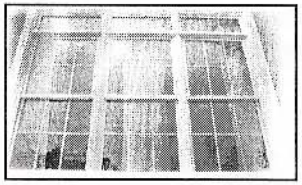
Cooling System

None

YOUR ASSESSMENT

Windows and Doors

It's important to have well-insulated, high performance windows and doors. You'll see and feel the difference through improved comfort, reduced condensation and lower utility costs. Look for the ENERGY STAR label to identify the most efficient windows, skylights, and sliding glass doors. A window's insulating ability is measured by its U-value. Since heat flows from warm to cold in the winter, heat flows from your home interior through the windows to the colder exterior. The reverse occurs in the summer.



Health and Safety Inspection

Your Building Performance Contractor has been trained to inspect and test combustion appliances such as heating equipment, ovens and water heaters, for proper performance to ensure safe operation. This comprehensive evaluation includes measurement of carbon monoxide produced by the appliance and an evaluation to ensure that potentially dangerous combustion gases are not introduced into the home. Certified Home Performance Contractors test for any combustion safety problems before and after performing any insulation and/or air sealing measures.

YOUR HOME'S RESULTS

Windows and Doors

Your house has the following windows:

Double pane clear window. Quantity: 35

Your house has the following doors:

Solid core flush door with metal storm door and estimated R-Value of 3.60. Quantity: 3

HEALTH AND SAFETY INSPECTION

The following measurements were performed in your home:

1. Location: Hot Water Heater
   Measurement Type: Carbon Monoxide (Worst Case)
   Measured Value: 14.0 PPM
   Problem Description:

2. Location: Hot Water Heater
   Measurement Type: Flue Draft
   Measured Value: -11.0 Pascal
   Problem Description:

3. Location: Oven - Vented
   Measurement Type: Carbon Monoxide (Worst Case)
   Measured Value: 4.0 PPM
   Problem Description:

4. Location: Primary Heating System
   Measurement Type: Carbon Dioxide
   Measured Value: 4.8 PPM
   Problem Description:

Health and Safety Inspection - Continued

5. Location: Primary Heating System
   Measurement Type: Carbon Monoxide (Worst Case)
   Measured Value: 14.0 PPM
   Problem Description:

6. Location: Primary Heating System
   Measurement Type: Efficiency
   Measured Value: 78.0 %
   Problem Description:

7. Location: Primary Heating System
   Measurement Type: Flue Draft
   Measured Value: -8.0 Pascal
   Problem Description:

8. Location: Primary Heating System
   Measurement Type: Temperature
   Measured Value: 329.0 Fahrenheit
   Problem Description:

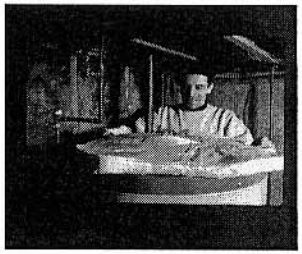
The following observations were made during a visual inspection of your home:

None.

YOUR ASSESSMENT

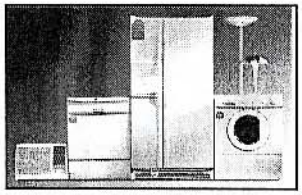
Water Heaters

Typical improvements of domestic hot water system include insulating an existing tank, replacing the existing tank with a more efficient model using the same fuel, or replacing the existing tank with another fuel source, usually natural gas or a heat pump water heater. If your hot water pipes are not insulated in a cold basement, your Home Performance Contractor will often recommend insulating, the first six feet of pipe.



Appliances

When it's time to buy or replace your home appliances, be sure to ask for models with the ENERGY STAR label. These appliances use up to 50% less energy than conventional models, saving you money on utility bills while reducing air pollution. For example, ENERGY STAR labeled clothes washers use up to 60% less energy and 36% less water. In one year, that's more water than the average person drinks in a lifetime. Many dishwashers that carry the ENERGY STAR label are built with innovative technology to clean better while using less energy and water. And, today's ENERGY STAR labeled refrigerators use half the energy of a 10-year old conventional refrigerator.



YOUR HOME'S RESULTS

Domestic Hot Water System

Your water heater was manufactured in 1998. Its fuel is natural gas. It has a rated volume of 40 gallons and a rated input capacity of 40,000 Btu/Hr. The heater is located in a conditioned space and is set at 130 F.

Appliances

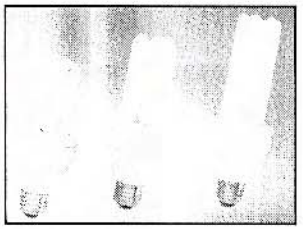
You have the following appliances in your home:

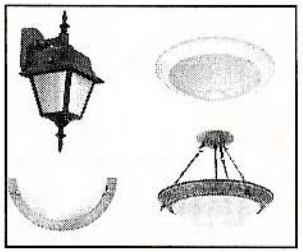
Color TV, typical usage with estimated annual electricity usage of 110 kWh. Quantity:1
Color TV, typical usage2 with estimated annual electricity usage of 110 kWh. Quantity:1
Computer, typical usage with estimated annual electricity usage of 130 kWh. Quantity:1
Dishwasher, typical 2000 model with estimated annual electricity usage of 370 kWh and annual hot water usage of 2,652 gallons. Quantity:1
Drip coffee machine with estimated annual electricity usage of 300 kWh. Quantity:1
Microwave with estimated annual electricity usage of 120 kWh. Quantity:1
Range, gas, no pilot with estimated annual electricity usage of 0 kWh, annual natural gas usage of 146 Therm. Quantity:1
Refrigerator-auto def top freezer, 1990 model with estimated annual electricity usage of 884 kWh. Quantity:1
Toaster oven with estimated annual electricity usage of 210 kWh. Quantity:1

YOUR ASSESSMENT

Lighting

When replacing light bulbs or installing new light fixtures, you'll save time and money when you choose models that have earned the ENERGY STAR. According to the EPA, today's ENERGY STAR labeled lights equal or surpass the quality of light found in conventional incandescent bulbs, using 75% less energy and lasting 10 times longer. You'll save on energy bills plus the cost and trouble of constantly replacing bulbs.





YOUR HOME'S RESULTS

Lighting

You have the following lighting fixtures in your home:

60 60-Watt fixtures.

YOUR SUMMARY

This report addresses the key recommendations for improving the comfort, safety and efficiency of your home. You should use it as a guide for deciding what work you want to have done. Remember, your Home Performance Contractor is ready to complete these projects promptly, and the work is guaranteed.

Selected Packages

Measure Description	Non-energy benefits	Package1	Package2	Package3
○ Side Wall Insulation: Upgrade 2,880 square feet of existing wall to Gyp Bd, 2x6 16" OC, 5.5" Cellulose, 1" XPS, Siding, R-23	○ Improve comfort, increase value of building.	$ 5,472		
○ Attic Insulation : Upgrade 900 square feet of existing ceiling to Gyp Bd, 2x6 16" OC, 6" Fiberglass, 8" Cellulose, R-46	○ Improve comfort, increase value of building.	$ 1,350		
○ Rim Joist: Reduce overall air leakage of heated area from 4400 CFM50 to 3500 CFM50.	○ Reduce drafts.	$ 600		
○ Boiler: Install new natural gas 199,000 Btu/hr boiler with efficiency of 95.0 %.	○ Increased equity.	$ 8,000		
○ Rinnai: Install new natural gas 1 gallon 199999 Btu/Hr hot water heater with energy factor of 0.83 and recovery efficiency of 85.0 %.	○ Increase value of building.	$ 3,000		
Total Installed Cost		$ 18,422		
Annual Energy Cost Savings		$ 1,445		
Annual KWh Savings, KWh		0		
Total Energy Savings, MMBtu		85.0		
Simple annual payback, years		12.7		
Savings to Investment Ratio		1.7		

The following fuel prices were used to estimate annual energy cost savings, payback and savings to investment ratio:

○ Natural gas: 1.7000 $/Therm

○ Electricity: 0.1500 $/kWh

YOUR SUMMARY

Home Performance with ENERGY STAR is sponsored by the New York State Energy Research and Development Authority (NYSERDA) and developed under the New York Energy $martSM Program to help New Yorkers save money, energy and the environment.

Homeowner Financing Incentive
Selected Package _____
Total Amount _____
Eligible Measures at ___%_____ with Home Performance with ENERGY START Financing
Additional Measures at ___%_____
Monthly Payment of _____ for _____ term.
-or-
Cash Back _____

Common House Problems
That Cause High Energy Costs and Sacrifice Comfort

Many homes have these common problems which may go undetected by the homeowner. The problems are color coded in the diagram below.

Problem: Inadequate Insulation Levels
Effects: Warm and cool air escapes, causing heating and cooling equipment to work harder than necessary
Ice damming may occur, leading to roof and ceiling leaks
Freezing pipes

Problem: Air Leakage
Effects: Drafts and cool spots
Overworking of heating and cooling equipment
Moisture problems leading to peeling paint, mold, mildew or structural damage in walls and attic
Inadequate air exchange causing unhealthy air quality, high humidity or dryness

Problem: Duct Leakage
Effects: Uneven distribution of warm or cool air
Uncomfortable room temperatures
Poor heating and cooling equipment performance

Problem: Improperly Vented Appliances
Effects: Dangerous carbon monoxide fumes can enter the living space when gas or oil-fired appliances are not vented properly. This is known as backdrafting and often occurs with poorly vented heating systems, stoves, water heaters and clothes dryers.