Do • It • Yourself Home Energy Audit

An energy audit endeavors to answer two questions: 1) How much energy is the house losing to the outside, 2) What portion of that loss is due to which features of your house. From those we can figure out where we can best put our efforts and money to improve the energy performance of the building.

The Midcoast Green Collaborative offers reduced cost energy audits to the Midcoast community (for these you can call, mail, email, see our website, or talk to someone in our booth at the Midcoast Sustainable Living Expo). We use a variety of equipment, including a blower door for measuring air leaks (and we are collecting donations towards an infrared camera). However, you can do a simplified version yourself in a few hours with tools you probably already have. Note: This is specific to Midcoast Maine, these numbers won't necessarily work for other regions.

Use Energy Bills for question 1

Gather all your fuel bills for as long a period as you can. Add up the following:

Gallons of #2 fuel oil	_____	x 139,000	_____
Kilowatt hours of electricity	_____	x 3,400	_____
Gallons of propane	_____	x 92,000	_____
Gallons of kerosene	_____	x 134,000	_____
Cords of hardwood	_____	x 20,000,000	_____
Cords of softwood	_____	x 15,000,000	_____
Tons of wood pellets or Biobricks	_____	x 16,000,000	_____
		Total	_____
		divided by the number of years	_____
		your total BTU per year	_____

Measure your house for question 2

Measure all the surfaces in your house which touch the outside. Add up the square footage (length x height in feet) for each construction types:

Basement Ceiling (No insulation)	_____	x 30,000	_____
Basement Ceiling (4” fiberglass insulation)	_____	x 5,700	_____
Basement Ceiling (8” fiberglass insulation)	_____	x 3,200	_____
Slab on grade (No insulation)	_____	x 45,000	_____
Slab on grade (2” foam board insulation)	_____	x 4,000	_____
Slab on grade (4” foam board insulation)	_____	x 2,100	_____
Stick construction 2 x 4 (No insulation)	_____	x 43,000	_____
Stick construction 2 x 4 (insulated)	_____	x 16,000	_____
Stick 2 x 6 (insulated)	_____	x 11,000	_____
Attic 2 x 8 (fully insulated)	_____	x 8,100	_____
Attic 2 x 10 (fully insulated)	_____	x 6,600	_____
Attic 2 x 10 (plus 10” blanket)	_____	x 2,800	_____
Structural Insulated Panels (SIP) 4.5” thick	_____	x 13,000	_____
Structural Insulated Panels (SIP) 6.5” thick	_____	x 9,600	_____
Structural Insulated Panels 10.5” thick	_____	x 5,800	_____
Larsen Truss or Double Wall 12” thick	_____	x 4,000	_____

Wood door	_____	x 59,000	_____
Steel door or Fiberglass door (foam insulation)	_____	x 15,000	_____
Single Pane window	_____	x 150,000	_____
Double Pane window	_____	x 88,000	_____
Double pane standard lo-e window	_____	x 76,000	_____
Double pane high solar lo-e window	_____	x 77,000	_____
Double pane argon gas std. lo-e window	_____	x 63,000	_____
Triple pane high efficiency window	_____	x 32,000	_____
Bug screens in windows during winter	_____	x 10,000	_____

Total house measurement BTU per year _____

Solar gains through windows

Measure windows (and doors with glass) that get sun in the winter:

Single Pane window (South facing)	_____	x -95,000	_____
Single Pane window (facing other directions)	_____	x -62,000	_____
Double Pane window (South)	_____	x -83,000	_____
Double Pane window (other)	_____	x -54,000	_____
Double pane standard lo-e window (South)	_____	x -66,000	_____
Double pane standard lo-e window (other)	_____	x -43,000	_____
Double pane high solar lo-e window (South)	_____	x -79,000	_____
Double pane high solar lo-e window (other)	_____	x -51,000	_____
Triple pane high efficiency window (South)	_____	x -60,000	_____
Triple pane high efficiency window (other)	_____	x -39,000	_____

Total solar gains BTU per year _____

Estimate your air leakage: (based on humidity)

Average Relative Humidity (in winter)

RH%	**Factor**
20%	7,500,000
30%	4,700,000
40%	3,200,000
50%	2,300,000
60%	1,900,000
70%	1,600,000

Water added to house: gallons / week

Occupants _____	x 4 =	_____
House plant watering		_____
Humidifier		_____
Dehumidifier	-	_____
Other sources		_____
	Total	_____

x Humidity Factor = _____ BTU / year

Grand Total of all question 2 measurements, BTU per year _____

This number should be roughly near the number you got for question 1. Of course, these numbers are very rough, but they can give you an idea about where you can s tart applying your money and energy in order to improve the energy usage in your house.