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Energy $ense

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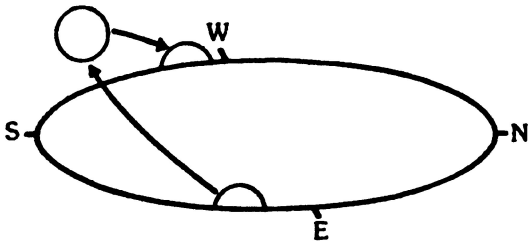
Checklist to Determine Energy Efficiency of a Home

After rent or mortgage payments, energy costs usually take up the largest portion of the housing budget. Depending on the climate, energy expenses (which include space heating and electricity) average from $1,000 to $2,000 a year. Therefore, if you are purchasing a new home, it is important to select a home that is energy efficient. An energy efficient home can save you thousands of dollars in long term energy costs.

The questions and answers found in this fact sheet will help you make an informed decision about purchasing an energy efficient home. If you cannot answer most of these questions, you will need to hire an energy auditor. A list of certified energy auditors is available from the Utah Office of Energy Services hot line (800-662-3633). Furnace dealers, heating contractors, and insulation contractors also perform energy audits. Regardless of who does the energy audit, make sure you obtain a complete energy audit and accompany the auditor during the inspection so you understand the results of the inspection.



Site Selection & Orientation

YES NO

☐ ☐ Is the home oriented for protection from excessive sunlight and wind?

☐ ☐ Is the home placed on the site so that the long or main axis of the house runs east and west, with roof overhangs to take advantage of solar gain in the winter, and protect the house from excessive heat gain in the summer?

YES NO

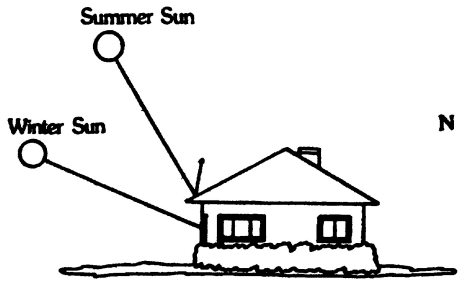
☐ ☐ To gain maximum benefits from free solar heat in the winter, are there windows on the south side of the house?

☐ ☐ Are there operable windows placed to allow summer breezes, from prevailing winds, to cool the house?

☐ ☐ Are windows on the north side at a minimum? Depending on the energy efficiency, windows on the north side invite heat loss from the cold northern winds.

☐ ☐ If the house does not have an overhang on the west, is there a limited number of windows facing west? Windows facing west that are not shielded in some way, receive direct afternoon summer sunlight and also cold winter winds that increase heat loss.

☐ ☐ Are unheated areas and the garage on the sides of the house that receive most winter winds? These areas can serve as buffers from cold winter winds.



Shading & Screening

YES NO

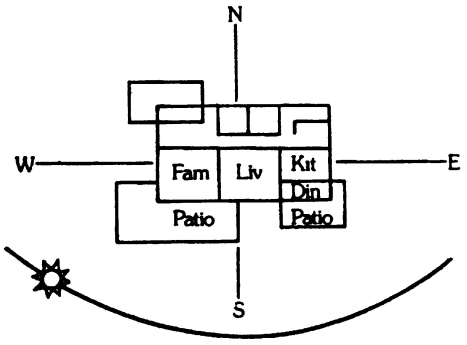
☐ ☐ Is the roof overhang, including rain gutter, at least 30 inches to provide shading from direct sunlight? Since the sun's arc is low in the winter and high in the summer, the overhang should shade the windows from the high summer sunlight but still permit the sunlight to warm the house in the winter.

YES NO

☐ ☐ Does the house have other shading and screening devices, such as wooden trellises, louvered overhangs, awnings, horizontal and vertical louvered panels, adjustable shutters for windows and doors, masonry grills, or extended porches?

☐ ☐ Does the house have deciduous (leaf bearing) trees on the south, east, and west sides? Deciduous trees on the south, east, and west sides of the house provide summer shade and when they shed their leaves, they let the sunlight warm the house in the winter.

☐ ☐ Does the house have windbreaks such as evergreens, shrubs, and tall wooden fences, which can protect the house from wind?



Design

YES NO

☐ ☐ Do the main living areas (kitchen, dining, and living room) have an open design?

☐ ☐ Are the rooms used frequently during daylight hours oriented to the south to reduce the need for artificial lighting?

☐ ☐ Can bedroom areas or other unused rooms be closed off or zone-controlled to reduce heating and air-conditioning when not in use?

☐ ☐ Are the living areas on the southern and eastern portions of the home and the sleeping areas on the northern side? Southern and eastern portions of the home should be used for the living areas and the sleeping areas should be on the north.

☐ ☐ Is the house planned for energy efficiency? A simple rule governs overall energy-efficient design: A house should have a minimum of outside surface exposed. A square floor plan provides the least exterior surface, therefore loses less heat during the winter more than an oblong or spread-out design.

☐ ☐ Is the house partially below ground? A two-story house or a house with the lower level built partially below ground will cost less to heat or cool per square foot than a sprawling, one-story ranch style house.

YES NO

☐ ☐ Is the thermostat located on an inside room partition or wall so as to react to actual room temperature without influence from sunlight, drafts, or appliances?

Inches of Insulation Needed to Achieve Specific "R-Values"

Type	R-11	R-19	R-30	R-38	R-49
Mineral Fiber or Batts	3.2-3.7	5.7-6.2	9-9.2	11.5-12	15.15.2
Fiberglass Loose or Blown	4-5.2	7-8.7	11-14	14-17.7	18-23
Rockwool Loose or Blown	3.5	6.2	9.7	12.2	16
Cellulosic Fiber Loose or Blown	3.7	6.5	10.5	13	17
Expanded and extruded Polystryrene Foam Bead Board	2.6-3.1	4.5-5.3	7.1-8.3	9.0-10.6	11.7-13.1
Polyisocy-anurate (Poly Iso)	1.9-1.5	3.2-2.7	5.1-4.2	6.5-5.3	8.3-6.9

Insulation

YES NO

☐ ☐ Is there a vapor barrier under the sheetrock on the inside wall? You may have to ask on this one. There may be differences for different types of insulation.

☐ ☐ Are there proper amounts of insulation in the ceiling and attic? In cold climates, the minimum recommended insulation for the ceiling and attic is R-38.

☐ ☐ Is the insulation in the attic evenly installed with no holes or gaps except around vents and some recessed light fixtures?

☐ ☐ Is the attic access insulated and weatherized?

☐ ☐ Are there proper amounts of insulation in the walls? In cold climates, the minimum recommended insulation for walls is R-19. To see if there is insulation in the walls, turn off the power and remove the cover from an electric outlet on an exterior wall. Using a plastic probe, check for insulation. This will only tell that there is insulation in the walls, not how much.

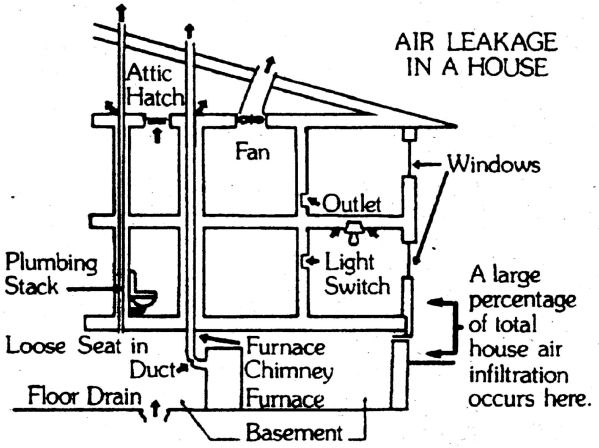
YES NO

☐ ☐ Are there proper amounts of insulation in the floors and crawl spaces? In cold climates, the minimum recommended insulation for the floors over unheated spaces and crawl spaces is R-19 (not vented). For vented crawl spaces the recommendation is R-30.

☐ ☐ Is the rim joist insulated where the floor joists end at the top of the basement wall?

☐ ☐ Are the sill plates insulated, sealed, or caulked to reduce infiltration?

☐ ☐ Are the heating ducts and hot water pipes that pass through unheated and heated areas sealed and insulated? Heat loss from the duct system can be as much as 15 to 25 percent of the heating and cooling bill.



Infiltration

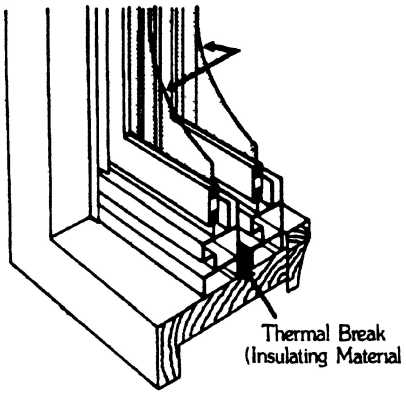
YES NO

☐ ☐ Are the outlets, fixtures, and switch plates properly insulated so that you cannot feel air movement?

☐ ☐ If there is a fireplace, does the fireplace damper fit tightly so that you cannot see light or a gap around the closed damper?

☐ ☐ Do kitchen, bath, and laundry exhaust fans have positive-closure dampers?

☐ ☐ Is the attic ventilated using soffet, and roof vents?



Windows/Doors

YES NO

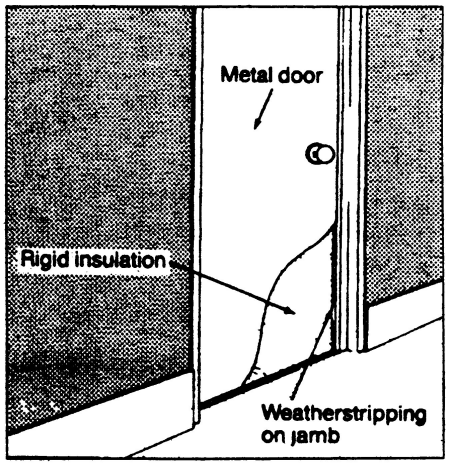
☐ ☐ Are the window and door frames caulked on the inside and weatherstripped?

☐ ☐ Are the windows made of high quality double pane glass? Double pane insulating glass should be used throughout the house.

☐ ☐ Do the windows have low-emissivity (Low-E) coatings and are they gas filled?

☐ ☐ Are the window frames quality construction? Window frames and their quality construction and installation are as important as the insulating value of the glass. Wood and vinyl frames offer the best insulating value today.

☐ ☐ Is the entrance door protected from the cold outside air by an air-lock or vestible?



YES NO

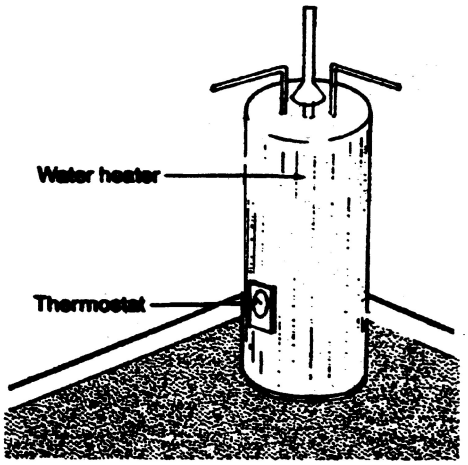
☐ ☐ Are the exterior doors insulated and weatherstripped? Be sure the weatherstripping is in place and that it stops air infiltration into the house. Just by placing your hand around the door, you may be able to feel the air coming into the house.

☐ ☐ Are the exterior doors made out of steel or fiberglass and insulated?

Heating and Cooling Systems

YES NO

- ☐ ☐ Is the heating system energy efficient? Find the brand and model number on the furnace, then check with the dealer or manufacturer for A.F.U.E. rating.
- ☐ ☐ Is there a clock thermostat for central heating and air conditioning?
- ☐ ☐ Are there individual room controls for electric resistance heat?
- ☐ ☐ Are there outside combustion air intakes for furnaces and fireplaces?
- ☐ ☐ Are all heating elements operating properly? After the thermostat is turned up 5 degrees, hot water and steam radiators should provide heat within 15 minutes and all forced or gravity hot-air registers should provide heat in 5 minutes.
- ☐ ☐ Is the fireplace designed to heat living areas, and does it have an outside air intake for wood fuel combustion to prevent furnace-heated air from going up the chimney?



Hot Water System

YES NO

- ☐ ☐ Is the water heater close to areas of major use? By placing the water heater close to where water will be used, heat loss through the pipes is minimized.
- ☐ ☐ Is the water heater energy efficient? See if the energy efficient label is still on the water heater. You can also check efficiency by noting the fuel type, brand, model, then compare water heater to other models at the retail store.
- ☐ ☐ Are the hot water pipes wrapped with insulation?
- ☐ ☐ Do the shower heads have flow restrictors to save on hot water? Flow restrictors can cut the flow of water by 40 to 60 percent.

Kitchens

YES NO

- ☐ ☐ Are the appliances energy efficient? Energy efficiency can vary considerable among appliances of similar size and features. Compare dollar figures found on energy labels with other appliances in the retail store.
- ☐ ☐ Are the cabinets, countertops, and floors light colored? Light colors reflect more light and thus reduce the artificial illumination requirement.
- ☐ ☐ Are fluorescent tubes used to light the kitchen? Fluorescent lighting is more energy efficient than incandescent lighting.
- ☐ ☐ Is the refrigerator placed in the coolest part of the kitchen, well away from the range, oven, direct sunlight, or a heating vent?

Financial

YES NO

- ☐ ☐ Is the home energy efficient? If the house you plan to purchase is energy efficient, you may qualify for an "Energy Efficient Mortgage" or special financial incentives. Ask your lender about them.

This fact sheet was prepared with the support of the Utah Community & Economic Development Office of Energy Services. However, any opinions, findings, or recommendations expressed herein are those of the authors and do not necessarily reflect the views of the Office of Energy Services.

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