ENERGY-SAVING HOMES

A Checklist

Many features about a home can make a difference in the winter and summer comfort of the occupants, and in the amount of energy needed for heating, cooling, and lighting. The following checklist will help you evaluate the energy-saving potential of your present home, or help you determine whether a home you may be buying, building, or remodeling will be economical to operate.

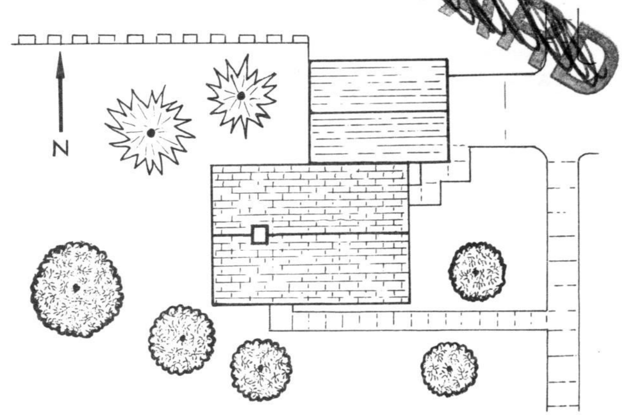
+ Put a plus by each statement that describes your home.

— Put a minus by each statement which does not describe your home.

You will have to decide the relative importance of the "plus" and "minus" characteristics, or whether the "minus" conditions can be altered. Where improvements can be made, the pay-off will be lower energy bills. The primary energy-saving reason for each statement below is printed in italics.

CHECK POINTS:

Siting
House Design
Construction & Insulation
Heating/Cooling Systems
Color and Lighting



Siting

---------- House is on south or southwest slope of hill *[sun hits at angle so greatest solar heat is received through south windows in winter].*

---------- House is protected from winter wind by a hill or placement of garage/carport *[air infiltration and heat loss are reduced when wind velocity is lower].*

---------- House is built into the hillside or partially into the ground *[the relatively constant year-round ground temperature reduces winter heat loss through below-grade walls and provides a cooling effect during summer].*

---------- The long axis of the house runs east and west *[allows more windows on the south to take advantage of winter sun, and south windows can be protected from summer sun by awnings, roof overhang, trees, etc.].*

---------- Large deciduous shade trees are planted on east, southeast, and west of house *[to provide summer shade but allow winter sun to heat house].*

---------- Low evergreen trees and shrubs or a slatted fence are placed on side of house exposed to winter winds *[to provide a wind break and reduce air infiltration. Avoid high evergreens on southeast, south and southwest, as they block winter sun from house].*

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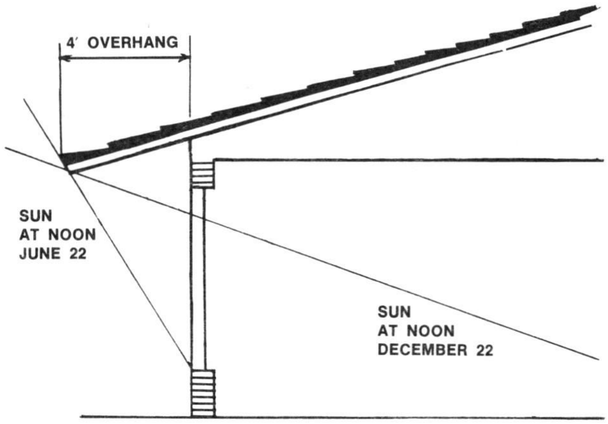


House Design

---------- Shape of house is a slight rectangle *[long rectangles, L-shapes, H-shapes, T-shapes, and U-shapes provide more outside wall surface for heat loss]*.

---------- Main roof ridge runs east and west *[for better summer cooling and to provide a more desirable location for a solar heat collector in the future.]*

---------- House has one or more common walls with other dwelling units *[as townhouse, duplex, or other type where heat loss is greatly reduced]*.

---------- Entry halls for front and back doors can be closed off to form "vestibules" *[thus reducing flow of cold air to inside and warm air to outside]*.

---------- Main living area has as few partitions as possible *[for best heat distribution]*.

---------- Bedroom wing can be closed off *[so heating and air conditioning can be reduced when not needed during the day]*.

---------- South windows have a four-foot retractable overhang or awning, deciduous vines or trees *[for shading from summer sun, but removable so that winter sun can be admitted]*.

---------- East and west windows are kept to a minimum or else provided with shade trees and tall shrubs or fences, awnings, tinted glass, or other shading devices *[to keep out early morning and late afternoon sun in the summer]*.

---------- Amount of window area is no more than 10-15 percent of floor area *[there is more heat loss through glass, even double glazing, than through an insulated wall. NOTE: The uniform building code requires that each habitable room used for dining, recreation, or sleeping on every floor, including basement, must have at least one door to outside or one operable window of not less than 5 square feet with no dimension less than 22 inches, and located no higher than 48 inches from the floor]*.

---------- Operable windows are placed so that cooling air can travel through the house in summer and escape at the high point of interior space *[example: an operable window in an upstairs hallway will draw off warm air from the inside]*.

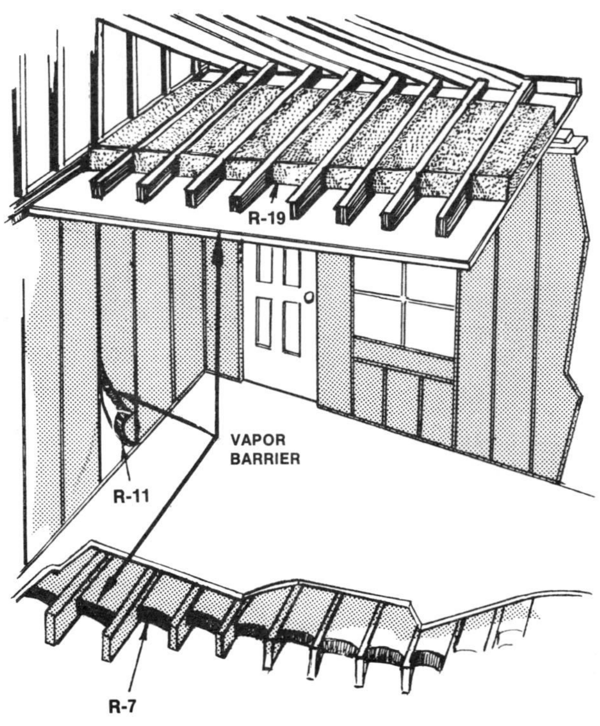
---------- Attic ventilators are placed so air is drawn from cooler, shady side of house and exhausted as high as possible *[example: vents under overhang plus ridge roof vents]*.

---------- Chimney for fireplace is placed on an inside rather than outside wall *[so heat is lost to inside of house]*.

---------- Fireplace is designed to heat the room (such as a circulating type with glass fire screen) and has an outside air intake for combustion of wood fuel *[to prevent furnace-heated air from going up chimney]*.

---------- Plumbing fixtures are located close to water heater(s) *[to reduce heat loss in water from tank to point of use]*.

---------- Stair wells to second floor or basement have solid doors at top or bottom *[to prevent "chimney" effect and loss of heat to upper area]*.



Construction and Insulation

.... Insulated glass or storm windows are used to reduce heat loss through window area *[Oregon building code requires insulated glass for new construction in all central and eastern counties, and in western counties if total glass exceeds 25 percent of wall area or the "degree days" exceed 5,000].*

.... Storm doors are on all exterior doors *[storm doors will reduce heat loss through exterior doors by about 35 to 40 percent].*

.... Insulation above ceiling is rated at least R-19 *[this requires from six to eight inches of mineral wool, fiberglass, or cellulose insulation. If adding insulation, look for R-rating printed on type of insulation selected].*

.... Insulation in walls is rated at least R-11 *[this requires three to three and one-half inches of mineral wool, fiberglass, or cellulose blanket insulation].*

.... Insulation under floor over unheated crawl spaces is rated at least R-7 *[this requires two to three inches of mineral wool, fiberglass or cellulose blanket or rigid polystyrene insulation].*

.... Moisture barrier has been laid over ground in crawl space *[unprotected ground disseminates moisture which is absorbed by building structure and insulation].*

.... Vapor barrier has been installed on warm (room) side of all insulation *[unprotected insulation will absorb moisture, thus losing its insulation capacity and also subjecting building structure to moisture damage].*

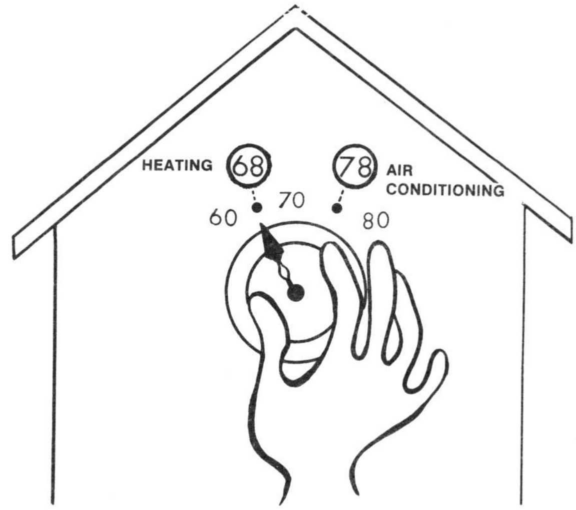
.... Attic and gable areas are adequately ventilated with at least one square foot eave inlet and one square foot gable outlet for each 300 square feet ceiling area *[vents allow escape of unwanted moisture from attic in winter and lessen attic heat build-up in summer].*

.... Unheated crawl space is ventilated by openings in foundation having net areas of at least one and one-half square feet for each 25 linear feet of exterior wall to dissipate moisture vapor *[covering ground area with moisture barrier also helps reduce moisture buildup].*

.... Weatherstripping is installed around jambs of all doors and operable windows *[heat losses due to infiltration can increase heating costs by sizeable amounts].*

.... Caulking around all door and window frames is in good condition to reduce infiltration heat loss *[caulking normally dries out with time and needs replacing].*

.... Sill sealer/filler has been put around top of foundation wall below sill plate *[to reduce infiltration into basement area].*



Heating/Cooling System

.... Thermostat is located on an inside room partition *[thermostats on exterior walls, near windows, near heat-generating appliances, in drafts, or in sunlight may not react to actual room temperature, hence will not keep room temperature within limits desired].*

.... Heating controls are designed for zoned heating *[permits heating of lightly used areas only as needed].*

.... Ventilators in kitchen, bath, and laundry fit tightly, are weatherstripped, and have positive closure shutters *[ventilators without shutters allow excessive backdrafts of cold air into home].*

.... Ventilators are controlled by timer switch *[operating of exhaust fans for longer periods of time than needed to remove moisture, odor, or smoke is wasteful of heated air].*

.... Heating ducts are wrapped with insulation except where they pass through heated rooms *[metal ducts in unheated crawl spaces, basements, and attics radiate excessive heat to such areas].*

.... Home with vaulted ceilings has a forced air heating system that has a continuously operating fan *[to keep warm air at ceiling circulated through the house].*

.... Heating system is properly sized to needs of home *[oversized equipment operates in short cycles giving lowered efficiency and higher energy consumption; undersized equipment will not maintain desired temperature during cold extremes].*

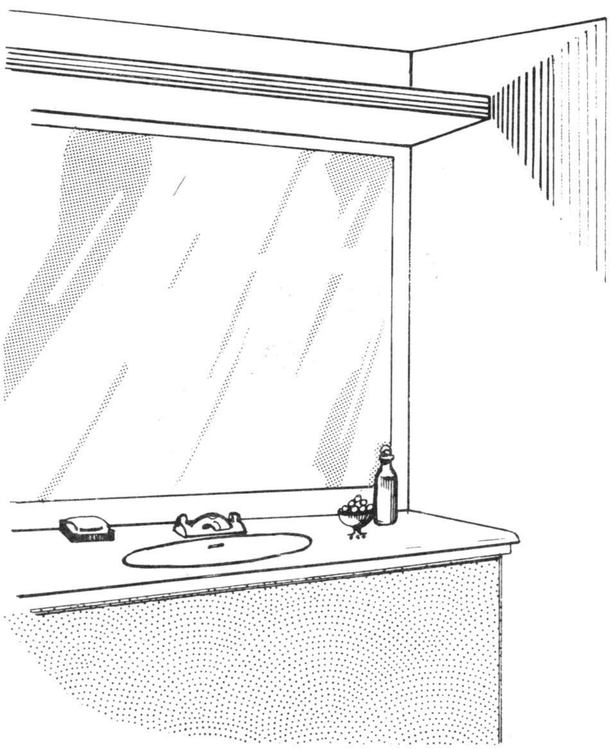
.... Hot air type furnace is located as centrally as possible in house *[to reduce lengths of both hot and cold air ducts to shortest possible dimension].*

.... Furnace design and location permits easy access to air filters *[clogged filters reduce efficiency].*

.... Hot water pipes are wrapped with insulation *[to reduce heat loss].*

---------- Water heater is located in a heated space *[even a well-insulated heater loses more heat when placed in an unheated area]*.

---------- Forced air heating system incorporates a dual speed fan permitting continuous low-volume air flow when furnace is not heating, increased air flow when furnace operates *[continuous air flow provides more uniform heating, greater comfort, and more efficient energy utilization. The furnace can be operated on "fan only" for summer circulation. Filters can be used for continuous air cleaning]*.



Color and Lighting

---------- Outside walls and roof are a light color where summer heat is more of a problem than winter cold *[light colors reflect, dark colors absorb heat]*.

---------- Interior wall and ceiling colors are light tints or white *[so both daylight and artificial light are reflected more than absorbed]*.

---------- Floor covering is medium to light in color *[so light reflectance will save on amount of artificial light needed]*.

---------- Fluorescent lighting is used where low background illumination is desired, such as valance, cornice, or cove lighting around walls *[to gain three to four times the light per watt in comparison to incandescent bulbs]*.

---------- Fluorescent lighting is used in kitchen in an extended soffit or ceiling panels *[to provide light for working surfaces without shadows]*.

---------- Fluorescent lighting is used under kitchen cabinets to light the countertop work area *[concentrates light on areas of work, but ceiling fixture also needed for general lighting and to see inside upper cabinets]*.

---------- Fluorescent lighting is used in bathroom in a canopy structure over the lavatory with deluxe warm white for good skin color *[for general room illumination and also good lighting of mirror area]*.

---------- Fluorescent lighting is used in the laundry area in an extended soffit or ceiling panel over the washer and dryer *[provides adequate light where tasks are performed]*.

---------- Incandescent fixtures with movable mounts are used to provide direct lighting on areas where specific tasks are performed *[to make good use of the less efficient incandescent bulbs]*.

---------- All light fixtures are located so they can be easily cleaned *[dust on bulbs and tubes reduces illumination]*.

Recommended Reading

Pratt, Elise, "Energy-Wasting Mistakes We Can't Afford to Keep Making," *House & Home,* February 1974, pp. 83-87.

National Association of Home Builders, "The Builder's Guide to Energy Conservation," 1974, 63 pp. Send $3.50 to Oregon Association of Home Builders, P. O. Box 135, Salem, Or. 97308.

Small Homes Council, "Living With the Energy Crisis," Circular C1.5, July 30, 1973. Send 25¢ to Office of Publication, 1002 W. Green St., Urbana, Ill. 61801.

Federal Energy Administration, "Tips for Energy Savers," 1975, U.S. Government Printing Office, Washington, D. C.

'Conserve Energy Now'

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