

paragraph 502.2 of the 1993 CABO Model Energy Code;

(4) An area of exterior doors of 40 square feet and with the door U-value at 0.20.

(5) Vertical fenestration area equal to—

(i) For detached homes, 18% of the floor area of directly conditioned space;

(ii) For attached homes, $F \times 18\%$ of the floor area of directly conditioned space where:

$F = (\text{exposed wall area}) / (\text{exposed wall area} + \text{common wall area}) \geq .56$

(6) Vertical fenestration distributed—

(i) For detached homes, equally in each of the four cardinal directions, north, south, east and west; and

(ii) For attached homes, equally in each of the four cardinal directions, north, south, east and west, which if necessary may assume fenestration in common walls;

(7) A frame factor equal to 27% of the gross fenestration area calculated under paragraph (a)(5) of this section;

(8) The glazed area of the fenestration with a shading coefficient (SC) of 0.70 assumed during the cooling season, which represents the combined SC of the glazing and the use of nonwhite draperies and with a SC of 0.88 representing the SC of the glazing only assumed at all other times;

(9) No external shading assumed at any time;

(10) The same energy sources for heating, cooling and water heating used in the rated home;

(11) The same type of HVAC system(s) as the rated home except that if the rating is for any electrically heated home, the reference home HVAC system is an air source heat pump;

(12) The efficiencies of HVAC systems set forth in Table 2;

(13) The heating and cooling system efficiencies proportionally adjusted for sections of ductwork located outside or inside conditioned space, with adjustment based on the configuration of the ductwork in the rated home and using the values set forth in Table 3 and Equation 2;

TABLE 3.—FORCED AIR AND HYDRONIC DISTRIBUTION SYSTEM LOSS FACTORS

Within conditioned space	Out-side conditioned space	Unconditioned basement
Forced Air Systems—Duct Location		
Heating 1.00	0.72	0.80
Cooling 1.00	0.72	0.80
Hydronic Systems—Piping Location		
1.00	0.95	0.95

Equation 2

Adjusted Efficiency = Equipment Efficiency \times Distribution Loss Factor

(14) The energy factor for the water heater set forth in Table 4 for the size used in the rated house;

TABLE 2

Type	Units	Rating
Heating Equipment:		
Gas or Oil Warm Air Furnace.	AFUE	0.78
Gas Boiler (water)	AFUE	0.80
Gas Boiler (steam)	AFUE	0.75
Oil Boiler (water or steam).	AFUE	0.80
Air Source Heat Pump:		
(split system)	HSPF	6.80
(package system)	HSPF	6.60
Cooling Equipment:		
Central Air Conditioner:		
(split system)	SEER	10.00
(package system)	SEER	9.70
Heat Pump:		
(split system)	SEER	10.00
(package system)	SEER	9.70

TABLE 4

Water heating		Rated storage capacity (gallons)			
Type	Unit	30 gal	40 gal	50 gal	60 gal
Gas	EF	0.56	0.54	0.53	0.51
Oil	EF	0.53	0.53	0.50	0.48
Electric	EF	0.91	0.90	0.88	0.87

¹ EF=Energy Factor.

(15) A seasonal average air leakage rate of 0.67 air changes per hour;

(16) An internal mass of 8 pounds per square foot of floor area and a structural mass of 3.5 pounds per square foot of floor area; and

(17) No heat capacitance associated with solar storage mass within the thermal envelope of the rated home.

(b) For walls of attached homes, the U-value calculation set forth under paragraph (a)(3) of this section is completed using the fenestration area calculated as F in paragraph (a)(5)(ii) of this section and the actual area of walls that experience heat loss or gain. Common walls that separate homes are not included in this calculation.

§ 437.104 Minimum rated features.

(a) Each HERS provider shall complete the annual purchased energy

consumption estimates for heating, cooling and water heating set forth in § 437.100 of these guidelines using the energy loss and gain associated with the minimum features set forth in Table 5.

(b) For existing homes, the envelope thermal characteristics of building elements 1 through 7 set forth in Table 5 are determined by site observation.

(c) If data for the minimum rated features set forth in paragraph (b) of this section can not be obtained by observation or without destructive disassembly of the home, each HERS provider shall use default values. The default values are determined from the following sources listed in the preferential order of use—

(1) for manufactured homes, available manufacturer's data;

(2) current and historical local building practices; or

(3) current and historical local building codes.

(d) Default values set forth in paragraph (c) of this section will be established or approved by the accrediting body and consistent for each HERS provider operating within a state.

(e) For existing homes, the determination of air leakage and duct leakage values set forth as building elements 10 and 11 in Table 5 are determined by data collected on site using the following procedures listed in preferential order of use:

(1) current on-site diagnostic test data; or

(2) observations of the condition of the building and duct system made by the HERS provider. Based on these observations values used will be;

(i) for air leakage, 0.67 air changes per hour or greater with the minimum value