



# ENERGY STAR® Qualified Homes, Version 2.5 (Rev. 04) Prescriptive Path Design Requirements Checklist

HOME ID: _____										
Inspection Guidelines							Plant QC	Builder	Rater	N/A
<b>Home Size</b>										
The conditioned floor area (CFA) is less than or equal to the Benchmark Home <sup>1</sup>							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Cooling Equipment (Where Provided)<sup>2</sup></b>										
<b>Hot Climates</b> (2009 IECC CZs 1, 2, 3) • 14.5 SEER / 12 EER ENERGY STAR qualified AC, <b>OR</b> ; • Heat pump (see Heating Equipment)							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Mixed &amp; Cold Climates</b> (2009 IECC CZs 4, 5, 6, 7, 8) • 13 SEER AC, <b>OR</b> ; • Heat pump (see Heating Equipment)							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Heating Equipment<sup>2</sup></b>										
<b>Hot Climates</b> (2009 IECC CZs 1, 2, 3): • ≥ 80 AFUE gas furnace, <b>OR</b> ; • ≥ 80 AFUE oil furnace, <b>OR</b> ; • ≥ 80 AFUE boiler, <b>OR</b> ; • ≥ 8.2 HSPF / 14.5 SEER / 12 EER air-source heat pump, ENERGY STAR qualified with electric backup or ENERGY STAR qualified dual-fuel backup heating, <b>OR</b> ; • Ground source heat pump, any product type, ENERGY STAR qualified <sup>4</sup>							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Mixed &amp; Cold Climates</b> (2009 IECC CZs 4, 5, 6, 7, 8): • ≥ 90 AFUE gas furnace, ENERGY STAR qualified, <b>OR</b> ; • ≥ 85 AFUE oil furnace, ENERGY STAR qualified, <b>OR</b> ; • ≥ 85 AFUE boiler, ENERGY STAR qualified, <b>OR</b> ; • Air-source heat pump <sup>3</sup> , ENERGY STAR qualified with efficiency as follows: CZ 4: ≥ 8.5 HSPF / 14.5 SEER / 12 EER with electric backup, <b>OR</b> ; CZ 5: ≥ 9.25 HSPF / 14.5 SEER / 12 EER with electric backup, <b>OR</b> ; CZ 6: ≥ 9.5 HSPF / 14.5 SEER / 12 EER with electric backup, <b>OR</b> ; • ≥ 8.2 HSPF / 14.5 SEER / 12 EER ENERGY STAR qualified air-source heat pump with ENERGY STAR qualified dual-fuel backup heating, <b>OR</b> ; • Ground-source heat pump, any product type, ENERGY STAR qualified <sup>4</sup>							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Envelope, Windows &amp; Doors</b>										
<b>Hot Climates</b> (2009 IECC CZs 1, 2, 3): If more than 10 linear feet of ductwork are located in an unconditioned attic, a radiant barrier or ENERGY STAR qualified roof product shall be installed <sup>5</sup>							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceiling, wall, floor and slab insulation levels meet or exceed 2009 IECC levels <sup>6,7,8</sup>							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If home has ≤ 15% window-to-floor area, all windows, doors and skylights are ENERGY STAR qualified <sup>9</sup>							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If home has > 15% window-to-floor area, all windows, doors and skylights meet the adjusted U-Values or SHGCs outlined in note 10							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For homes subject to testing, infiltration rates shall be less than or equal to the following values <sup>11</sup> : <i>Circle one:</i> <b>6 ACH50</b> in CZs 1,2 <b>5 ACH50</b> in CZs 3,4 <b>4 ACH50</b> in CZs 5,6,7 <b>3 ACH50</b> in CZ 8							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Water Heater<sup>12</sup></b>										
<i>Circle one:</i> <b>30 Gal</b> <b>40 Gal</b> <b>50 Gal</b> <b>60 Gal</b> <b>70 Gal</b> <b>80 Gal</b>										
• Gas	0.63 EF	0.61 EF	0.59 EF	0.57 EF	0.55 EF	0.53 EF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Electric	0.94 EF	0.93 EF	0.92 EF	0.91 EF	0.90 EF	0.89 EF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Oil	0.55 EF	0.53 EF	0.51 EF	0.49 EF	0.47 EF	0.45 EF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Thermostat &amp; Ductwork</b>										
Programmable thermostat installed (unless thermostat controls a zone with electric radiant heat, for which a manual thermostat is allowed) <sup>13</sup>							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supply ducts in unconditioned attics have insulation ≥ R-8; all other ducts in unconditioned space have insulation ≥ R-6							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Duct leakage to outdoors is ≤ 4CFM25 per 100 sq. ft. of conditioned floor area <sup>14,15</sup>							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Lighting &amp; Appliances</b>										
ENERGY STAR qualified CFLs, LEDs or pin-based lighting installed in 80% of fixtures in Qualifying Light Fixture Locations <sup>16,17,18</sup>							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Where installed ( <i>check all that apply</i> ), products shall be ENERGY STAR qualified <sup>16</sup> <input type="checkbox"/> Refrigerator <input type="checkbox"/> Dishwasher <input type="checkbox"/> Ceiling Fans <input type="checkbox"/> Exhaust Fans <sup>19</sup>							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plant QC Signature: _____					Inspection Date: _____					
Builder Signature: _____					Inspection Date: _____					
Rater Signature: _____					Inspection Date: _____					



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## Notes

- The average-size home with a specific number of bedrooms is termed the "Benchmark Home". The conditioned floor area of a Benchmark Home (CFA Benchmark Home) is determined by selecting the appropriate value from Exhibit 3. For homes with more than 8 bedrooms, the CFA Benchmark Home shall be determined by multiplying 600 sq. ft. times the total number of bedrooms and adding 400 sq. ft.

Example: CFA Benchmark Home for a 10 bedroom home = (600 sq. ft. x 10) + 400 sq. ft. = 6,400 sq. ft.

**Exhibit 3: Benchmark Home Size**

No. of Bedrooms in Home to be Built	1	2	3	4	5	6	7	8
Conditioned Floor Area Benchmark Home	1,000	1,600	2,200	2,800	3,400	4,000	4,600	5,200

A bedroom is defined by RESNET as a room or space 70 sq. ft. or greater size, with egress window and closet, used or intended to be used for sleeping. A "den", "library", or "home office" with a closet, egress window, and 70 sq. ft. or greater size or other similar rooms shall count as a bedroom, but living rooms and foyers shall not.

An egress window, as defined in 2009 IRC section R310, shall refer to any operable window that provides for a means of escape and access for rescue in the event of an emergency. The egress window definition has been summarized for convenience. The egress window shall:

- have a sill height of not more than 44 inches above the floor; AND
- have a minimum net clear opening of 5.7 sq. ft.; AND
- have a minimum net clear opening height of 24 in.; AND
- have a minimum net clear opening width of 20 in.; AND
- be operational from the inside of the room without the use of keys, tools or special knowledge

Calculate the number of bedrooms and the CFA of the home to be built using RESNET standards with the following exceptions: floor area in basements with at least half of the gross surface area of the basement's exterior walls below grade shall not be counted. To determine whether at least half of the basement wall area is below grade, use the gross surface area of the walls that are in contact with either the ground or ambient outdoor air, measured from the basement floor to the bottom of the basement ceiling framing (e.g., the bottom of the joists for the floor above). Note that the exception regarding the floor area in basements is only for the purpose of determining a home's Benchmark Home Size, Size Adjustment Factor, and eligibility to use the Prescriptive Path. The full conditioned floor area, per RESNET's standards, should be used when rating the home (e.g., determining compliance with duct leakage requirements).

- Where ENERGY STAR qualified heating or cooling systems are required, all installed equipment of that system type must be ENERGY STAR qualified. For ENERGY STAR Qualified Product Criteria, see [www.energystar.gov/index.cfm?c=products.pr\\_find\\_es\\_products](http://www.energystar.gov/index.cfm?c=products.pr_find_es_products).
- The required efficiency for air source heat pumps in CZs 4, 5 and 6 exceed the ENERGY STAR minimum of 8.2 HSPF. Air source heat pumps with electric resistance backup heating cannot be used in homes qualified in CZs 7 and 8 using the Prescriptive Path.
- The following efficiency levels shall be used based on ground-source heat pump product type:
  - Closed Loop Water-to-Air: ≥ 3.5 COP / 16.1 EER
  - Open Loop Water-to-Air: ≥ 3.8 COP / 18.2 EER
  - Direct Geo-Exchange (DGX): ≥ 3.6 COP / 16 EER
  - Closed Loop Water-to-Water: ≥ 3.0 COP / 15.1 EER
  - Open Loop Water-to-Water: ≥ 3.4 COP / 19.1 EER
- Any radiant barrier with a minimum initial reflectance of 0.90 and a maximum initial remittance of 0.10 meet the requirement for a radiant barrier. For ENERGY STAR Qualified Roof Product Criteria, see [www.energystar.gov/index.cfm?c=roof\\_prods.pr\\_crit\\_roof\\_products](http://www.energystar.gov/index.cfm?c=roof_prods.pr_crit_roof_products)
- Insulation levels in a home shall meet or exceed the component insulation requirements in the 2009 IECC – Table 402.1.1 (see page 4.13). The following exceptions apply:
  - Steel-frame ceilings, walls, and floors shall meet the insulation requirements of the 2009 IECC – Table 402.2.5. In CZ 1 and 2, the continuous insulation requirements in this table shall be allowed to be reduced to R-3 for steel-frame walls with studs spaced at 24" on center. This exception shall not apply if the alternative calculations in d) are used;
  - For ceilings with attic spaces, R-30 shall satisfy the requirement for R-38 and R-38 shall satisfy the requirement for R-49 wherever the full height of uncompressed insulation at the lower R-value extends over the wall top plate at the eaves. This exemption shall not apply if the alternative calculations in d) are used;
  - For ceilings without attic spaces, R-30 shall satisfy the requirement for any required value above R-30 if the design of the roof/ceiling assembly does not provide sufficient space for the required insulation value. This exemption shall be limited to 500 square ft. or 20% of the total insulated ceiling area, whichever is less. This exemption shall not apply if the alternative calculations in d) are used;
  - An alternative equivalent U-factor or total UA calculation may also be used to demonstrate compliance, as follows:

An assembly with a U-factor equal or less than specified in 2009 IECC – Table 402.1.3 complies (see page 4.13).



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A total building thermal envelope UA that is less than or equal to the total UA resulting from the U-factors in Table 402.1.3 also complies. The insulation levels of all non-fenestration components (i.e., ceilings, walls, floors, and slabs) can be traded off using the UA approach. Note that fenestration products (i.e., windows, skylights, doors) shall not be included in this calculation. Also, note that while ceiling and slab insulation can be included in trade-off calculations, the R-value must meet or exceed the minimum values listed in items 4.1 through 4.3 of the Thermal Enclosure System checklist to provide an effective thermal break, regardless of the UA tradeoffs calculated. The UA calculation shall be done using a method consistent with the ASHRAE Handbook of Fundamentals and shall include the thermal bridging effects of framing materials. The calculation for a steel-frame envelope assembly shall use the ASHRAE zone method or a method providing equivalent results, and not a series-parallel path calculation method.

7. Consistent with the 2009 IECC, slab edge insulation is only required for slab-on-grade floors with a floor surface less than 12 inches below grade. Slab insulation shall extend to the top of the slab to provide a complete thermal break. If the top edge of the insulation is installed between the exterior wall and the edge of the interior slab, it shall be permitted to be cut at a 45-degree angle away from the exterior wall.
8. Insulation shall be verified by a Rater to achieve Grade I installation as defined in the RESNET Standards, except for ceiling, wall, and floor assemblies with continuous rigid insulation sheathing. For such homes, Grade II installation is acceptable for the cavity insulation only if the rigid insulation sheathing meets or exceeds the following levels: R-3 in CZs 1 to 4; R-5 in CZs 5 to 8.
9. All windows, doors, and skylights shall meet or exceed ENERGY STAR Program Requirements for Residential Windows, Doors, and Skylights – Version 5.0 as outlined at [www.energystar.gov/windows](http://www.energystar.gov/windows).

10. All decorative glass and skylight window areas count toward the total window area to above-grade conditioned floor area (WFA) ratio. For homes that have a WFA ratio >15%, the following additional requirements apply:

- a. In CZs 1, 2 and 3, an improved window SHGC is required and is determined by:

$$\text{Improved SHGC} = [0.15 / \text{WFA}] \times [\text{ENERGY STAR SHGC}]$$

Where the ENERGY STAR SHGC is the minimum required SHGC in Exhibit 1, ENERGY STAR Reference Design, for the Climate Zone where the home will be built.

- b. In CZs 4, 5, 6, 7 and 8, an improved window U-Value is required and is determined by:

$$\text{Improved U-Value} = [0.15 / \text{WFA}] \times [\text{ENERGY STAR U-Value}]$$

Where the ENERGY STAR U-Value is the maximum allowable U-Value in Exhibit 1, ENERGY STAR Reference Design, for the Climate Zone where the home will be built.

11. This test is subject to the one (1) in every seven (7) sampling protocol, but must be completed for the first two (2) homes built by the builder and the three (3) required certification homes for a plant. Envelope leakage shall be determined by a Rater using a RESNET-approved testing protocol.
12. To determine domestic hot water (DHW) EF requirements for additional tank sizes, use the following equations:  
Gas DHW EF  $\geq 0.69 - (0.002 \times \text{Tank Gallon Capacity})$   
Electric DHW EF  $\geq 0.97 - (0.001 \times \text{Tank Gallon Capacity})$   
Oil DHW EF  $\geq 0.61 - (0.002 \times \text{Tank Gallon Capacity})$   
The minimum efficiency for instantaneous water heaters shall be determined using the above equations and assuming a 1 gallon capacity.  
Water heater systems that are integrated with a space-heating boiler may be used in place of a stand-alone system. However, an integrated indirect storage system shall be used rather than an integrated tankless coil system.
13. For homes with heat pumps, the thermostat shall have “Adaptive Recovery” technology to prevent the excessive use of electric backup heating.
14. Duct leakage shall be determined and documented by a Rater using a RESNET-approved testing protocol only after all components of the system have been installed (e.g., air handler and register grilles). Leakage limits shall be assessed on a per-system, rather than per-home, basis. Testing of duct leakage to the outside can be waived if all ducts and air handling equipment are located within the home’s air and thermal barriers AND envelope leakage has been tested to be less than or equal to half of the Prescriptive Path infiltration limit for the Climate Zone where the home is to be built.
15. For all homes that have less than 1,200 sq. ft. of conditioned floor area (CFA), measured duct leakage to outdoors shall be  $\leq 5$  CFM25 per 100 sq. ft. of CFA.

16. For ENERGY STAR Qualified Product Criteria, see [www.energystar.gov/index.cfm?c=products.pr\\_find\\_es\\_products](http://www.energystar.gov/index.cfm?c=products.pr_find_es_products).

17. The ENERGY STAR Advanced Lighting Package (ALP), which requires a minimum of 60% ENERGY STAR qualified hard-wired fixtures and 100% ENERGY STAR qualified ceiling fans, where installed, may also be used to comply with the lighting requirements. For more information, see [www.energystar.gov/index.cfm?c=bldrs\\_lenders\\_raters.ALP\\_Builder](http://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.ALP_Builder).

18. Qualifying Light Fixture Locations are those light fixtures located in kitchens, dining rooms, living rooms, family rooms/dens, bathrooms, hallways, stairways, entrances, bedrooms, garage, utility rooms, home offices and all outdoor fixtures mounted on a building or pole. This excludes plug-in lamps, closets, unfinished basements and landscape lighting.
19. All exhaust fans shall be ENERGY STAR qualified, except in half bathrooms. A half bathroom is any bathroom that does not contain a bathtub, shower, spa, or similar source of moisture.