



# ENERGY STAR Single-Family New Homes

## National Rater Field Checklist, Version 3.1 / 3.2 / 3.3 (Rev. 14)

Home Address: _____		City: _____		State: _____		Permit Date: _____	
Thermal Enclosure System		Must Correct	Builder Verified <sup>1</sup>	Rater Verified <sup>2,3</sup>	N/A <sup>4</sup>		
1. High-Performance Insulation & Fenestration							
1.1 Insulation meets specifications in National Rater Design Review Checklist Item 2.1.		<input type="checkbox"/>	Pre-rock+50 <input type="checkbox"/>	<input type="checkbox"/>	-		
1.2 All insulation achieves Grade I install. per ANSI / RESNET / ICC 301. Alternatives in Footnote 5. <sup>5,6</sup>		<input type="checkbox"/>	Pre-rock+50 <input type="checkbox"/>	<input type="checkbox"/>	-		
1.3 Fenestration meets specifications in National Rater Design Review Checklist Items 2.1 & 2.2.		<input type="checkbox"/>	-	<input type="checkbox"/>	-		
2. Fully-Aligned Air Barriers <sup>7</sup> - At each insulated location below, a complete air barrier is provided that is fully aligned as follows:							
Ceilings: At interior or exterior horizontal surface of ceiling insulation in Climate Zones 1-3; at interior horizontal surface of ceiling insulation in Climate Zones 4-8. Also, at exterior vertical surface of ceiling insulation in all climate zones (e.g., using a wind baffle that extends to the full height of the insulation in every bay or a tabbed baffle in each bay with a soffit vent that prevents wind washing in adjacent bays). <sup>8,9</sup>							
2.1 Dropped ceilings / soffits below unconditioned attics, and all other ceilings.		<input type="checkbox"/>	≤ 50 sq. ft. <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Walls: At exterior vertical surface of wall insulation in all climate zones; also at interior vertical surface of wall insulation in Climate Zones 4-8. <sup>9,10</sup>							
2.2 Walls behind showers, tubs, staircases, and fireplaces.		<input type="checkbox"/>	≤ 50 sq. ft. <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2.3 Attic knee walls and skylight shaft walls. <sup>11</sup>		<input type="checkbox"/>	≤ 50 sq. ft. <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2.4 Walls adjoining porch roofs or garages.		<input type="checkbox"/>	≤ 50 sq. ft. <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2.5 Double-walls and all other exterior walls.		<input type="checkbox"/>	≤ 50 sq. ft. <input type="checkbox"/>	<input type="checkbox"/>	-		
Floors: At exterior vertical surface of floor insulation in all climate zones and, if over unconditioned space, also at interior horizontal surface including supports to ensure alignment. Alternatives in Footnotes 13 & 14. <sup>12,13,14</sup>							
2.6 Floors above garages, floors above unconditioned basements or crawlspaces, and cantilevered floors.		<input type="checkbox"/>	≤ 50 sq. ft. <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2.7 All other floors adjoining unconditioned space (e.g., rim / band joists at exterior wall or at porch roof).		<input type="checkbox"/>	≤ 50 sq. ft. <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Reduced Thermal Bridging – Reduced thermal bridging strategies are not mandatory. However, the following details must be accurately assessed per ANSI / RESNET / ICC 301. <sup>15</sup>							
3.1 Insulated ceilings assessed at the attic edge for variance in R-value and install quality.		<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>		
3.2 Insulation assessed beneath attic platforms and walkways for variance in R-value and install quality.		<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>		
3.3 Attic access panels, drop-down stairs, & whole-house fans assessed for insulated covers.		<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>		
3.4 Above-grade walls separating conditioned from unconditioned space assessed for advanced framing.		<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>		
3.5 Slabs on grade assessed for insulation where walls separate conditioned from unconditioned space.		<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>		
4. Air Sealing							
4.1 Rater has verified each air sealing detail below. In addition, the home must meet Item 4.2. Unless otherwise noted below, “sealed” indicates the use of caulk, foam, or equivalent material.							
4.1.1 Ducts, flues, shafts, plumbing, piping, wiring, exhaust fans, & other penetrations to unconditioned space sealed, with blocking / flashing as needed.		<input type="checkbox"/>	≤ 5 penetrations <input type="checkbox"/>	<input type="checkbox"/>	-		
4.1.2 Attic access panels, drop-down stairs, & whole house fans are gasketed (i.e., not caulked) or equipped with covers that are gasketed.		<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>		
4.1.3 Recessed lighting fixtures adjacent to unconditioned space are ICAT labeled and gasketed.		<input type="checkbox"/>	No Limit <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.1.4 Drywall is sealed to top plate during installation, or from the attic side, at all unconditioned attic / wall interfaces. Drywall adhesive (but not other construction adhesives) is permitted to be used.		<input type="checkbox"/>	No Limit <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.1.5 Rough opening around windows & exterior doors is sealed.		<input type="checkbox"/>	-	<input type="checkbox"/>	-		
4.1.6 Walls that separate attached garages from occupiable space are sealed. In addition, an air barrier is installed and sealed at floor cavities aligned with these walls.		<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>		
4.1.7 Doors adjacent to unconditioned space (e.g., attics, garages, basements) or ambient conditions are made substantially air-tight with weatherstripping or equivalent gasket.		<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>		
4.1.8 Above-grade sill plates adjacent to conditioned space sealed to foundation or sub-floor.		<input type="checkbox"/>	No Limit <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.1.9 In townhouses and duplexes, for fire-rated area separation walls, gap is sealed between the drywall common wall and the structural framing at all exterior boundaries.		<input type="checkbox"/>	No Limit <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4.2 Rater-measured air leakage of Dwelling or Dwelling Unit meets one of the following: <sup>16</sup>							
4.2.1 For all Versions except those noted below: For National v3.2 and CA v3.4: ≤ 4.5 ACH50 For National v3.2 and CA v3.4: ≤ 4.0 ACH50 (see exception in Fn. 17) <sup>17</sup> For National v3.3 and CA v3.5: ≤ 3.5 ACH50 (see exception in Fn. 17) <sup>17</sup>		<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>		
4.2.2 As an alternative, for a Dwelling with ≤ 1,500 sq. ft. of Conditioned Floor Area, a Townhouse, or an attached Dwelling Unit, air leakage is ≤ 0.30 CFM50 per sq. ft. of Dwelling Unit Compartmentalization Boundary area.		<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>		



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HVAC System <sup>18</sup>				Must Correct	Rater Verified <sup>2,3</sup>	N/A <sup>4</sup>
5. Heating & Cooling Equipment - Complete Track A - HVAC Grading <sup>19</sup> or Track B - HVAC Credential <sup>20</sup>						
Track A	5a.1 Blower fan volumetric airflow is Grade I or II per ANSI / RESNET / ACCA / ICC 310.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5a.2 Blower fan watt draw is Grade I or II per ANSI / RESNET / ACCA / ICC 310.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5a.3 Refrigerant charge is Grade I per ANSI / RESNET / ACCA / ICC 310. See Footnote 21 for exemptions. <sup>21</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Track B	5b.1 HVAC manufacturer & model number on installed equipment matches either of the following (check box): <sup>22</sup> <input type="checkbox"/> National HVAC Design Report <input type="checkbox"/> Written approval received from designer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5b.2 External static pressure measured by Rater at contractor-provided test locations and documented below: <sup>23</sup> Return-Side External Static Pressure: _____ IWC Supply-Side External Static Pressure: _____ IWC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5b.3 Permitted, but not required: National HVAC Commissioning Checklist collected, with no items left blank.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6. Duct Quality Installation</b> (Applies to Heating, Cooling, Ventilation, Exhaust, & Pressure Balancing Ducts, Unless Noted in Footnote)						
6.1 Ductwork installed without kinks, sharp bends, compressions, or excessive coiled flexible ductwork. <sup>24</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.2 Bedrooms pressure-balanced (e.g., using transfer grilles, jump ducts, dedicated return ducts, undercut doors) to achieve a Rater-measured pressure differential $\geq -3$ Pa and $\leq +3$ Pa with respect to the main body of the house when all air handlers are operating. Test configuration and an alternative compliance option in Footnote 25. <sup>25</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.3 All supply and return ducts in unconditioned space, including connections to trunk ducts, are insulated to $\geq R-6$ . <sup>26</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.4 Rater-measured total duct leakage meets one of the following two options. Alternative in Footnote 28: <sup>27, 28, 29</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.4.1 <u>Rough-in</u> : The greater of $\leq 4$ CFM25 per 100 sq. ft. of CFA or $\leq 40$ CFM25, with air handler & all ducts, building cavities used as ducts, & duct boots installed. All duct boots sealed to finished surface, Rater-verified at final. <sup>30</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.4.2 <u>Final</u> : The greater of $\leq 8$ CFM25 per 100 sq. ft. of CFA or $\leq 80$ CFM25, with the air handler & all ducts, building cavities used as ducts, duct boots, & register grilles atop the finished surface (e.g., drywall, floor) installed. <sup>31</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.5 Rater-measured duct leakage to outdoors the greater of $\leq 4$ CFM25 per 100 sq. ft. of CFA or $\leq 40$ CFM25. <sup>27, 32</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7. Dwelling Unit Mechanical Ventilation Systems ("Vent System") <sup>33</sup> &amp; Inlets in Return Duct <sup>34</sup></b>						
7.1 Rater-measured ventilation rate is within either $\pm 15$ CFM or $\pm 15\%$ of design report value. <sup>35</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.2 A readily-accessible ventilation override control installed and also labeled if its function is not obvious (e.g., a label is required for a toggle wall switch, but not for a switch that's on the ventilation equipment). <sup>36</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.3 For any outdoor air inlet connected to a ducted return of the HVAC system (Complete if present; otherwise check "N/A"): <sup>34</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.3.1 Controls automatically restrict airflow using a motorized damper during vent. off-cycle and occupant override. <sup>37</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.3.2 Rater-measured vent. rate is $\leq 15$ CFM or 15% above design value at highest HVAC fan speed. Alt. in Fn. 38. <sup>38</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.4 System fan rated $\leq 3$ sones if intermittent and $\leq 1$ sone if continuous, or exempted. <sup>39</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.5 If Vent System controller operates the HVAC fan, then HVAC fan operation is intermittent and either the fan type is ECM / ICM or the controls will reduce the run-time by accounting for HVAC system heating or cooling hours. <sup>40</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.6 Bathroom fans are ENERGY STAR certified if used as part of the Vent System. <sup>41</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.7 Air inlet location (Complete if ventilation air inlet location was specified on design report; otherwise check "N/A"): <sup>42, 43</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.7.1 Inlet pulls ventilation air directly from outdoors and not from attic, crawlspace, garage, or adjacent dwelling unit.				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.7.2 Inlet is $\geq 2$ ft. above grade or roof deck; $\geq 10$ ft. of stretched-string distance from known contamination sources not exiting the roof, and $\geq 3$ ft. distance from dryer exhausts and sources exiting the roof. <sup>44</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.7.3 Inlet is provided with rodent / insect screen with $\leq 0.5$ in. mesh.				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>8. Local Mechanical Exhaust</b> – In each kitchen and bathroom, a system is installed that exhausts directly to the outdoors and meets one of the following Rater-measured airflow and manufacturer-rated sound level standards: <sup>35, 45</sup>						
<b>Location</b>		<b>Continuous Rate</b>		<b>Intermittent Rate <sup>46</sup></b>		
8.1 Kitchen	Airflow	$\geq 5$ ACH, based on kitchen volume <sup>47, 48</sup>		$\geq 100$ CFM and, if not integrated with range, also $\geq 5$ ACH based on kitchen volume <sup>47, 48, 49</sup>		
	Sound	Recommended: $\leq 1$ sone		Recommended: $\leq 3$ sones		
8.2 Bathroom	Airflow	$\geq 20$ CFM		$\geq 50$ CFM		
	Sound	Required: $\leq 1$ sone		Recommended: $\leq 3$ sones		
<b>9. Filtration</b>						
9.1 MERV 6+ filter(s) installed in each ducted mech. system, designed so all return and mechanically supplied outdoor air passes through filter(s) prior to conditioning, and located to facilitate occupant access & regular service. <sup>50</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.2 Filter access panel includes gasket and fits snugly against exposed edge of filter when closed to prevent bypass. <sup>51</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10. Combustion Appliances</b>						
10.1 Furnaces, boilers, & water heaters are mechanically drafted or direct-vented. Alternatives in Footnote 54. <sup>52, 53, 54</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.2 Fireplaces are mechanically drafted or direct-vented. Alternatives in Footnote 55. <sup>52, 53, 55</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.3 No unvented combustion appliances other than cooking ranges or ovens are located inside the home's pressure boundary. Alternative in Footnote 57. <sup>52, 56, 57</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rater Name: _____		Rater Pre-Drywall Inspection Date <sup>58</sup> : _____		Rater Initials: _____		Photo of Rater <sup>3</sup> <input type="checkbox"/>
Rater Name: _____		Rater Final Inspection Date <sup>59</sup> : _____		Rater Initials: _____		Photo of Rater <sup>3</sup> <input type="checkbox"/>
Builder Employee: _____		Builder Inspection Date: _____		Builder Initials: _____		



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### Footnotes

1. At the discretion of the Rater, the builder may verify up to five of the indicated Checklist Items. When this allowance is used for Items marked "Pre-rock + 50", up to 500 sq. ft. of wall areas that have drywall installed prior to general installation of drywall (i.e., "pre-rock" areas such as walls behind tubs or staircases), plus an additional 50 sq. ft., may be builder verified; when marked "50 sq. ft.", up to 50 sq. ft. of area may be verified by the builder; and when marked "5 penetrations", up to five penetrations may be builder verified. The remaining items and areas (i.e., all the applicable area other than what the builder verifies) must be visually verified on-site by the Rater or, for applicable minimum rated features, verified using an alternative on-site inspection protocol defined by ANSI / RESNET / ICC 301 (e.g., for slab insulation or continuous exterior wall insulation). When exercised, the builder's responsibility will be formally acknowledged by the builder signing off on the checklist for the item(s) that they verified. However, if a quality assurance review indicates that Items have not been successfully completed, the Rater will be responsible for facilitating corrective action.
2. All items shall be verified for each certified home and sampling protocols shall not be used. The term 'Rater' refers to the person(s) completing the third-party verification required for certification. The person(s) shall: a) be a Certified Rater or Approved Inspector, as defined by ANSI / RESNET / ICC 301, or an equivalent designation as determined by a Home Certification Organization (HCO); and, b) have attended and successfully completed an EPA-recognized training class. See [www.energystar.gov/newhomestraining](http://www.energystar.gov/newhomestraining).
3. Where indicated by a camera icon (📷) next to a "Rater Verified" checkbox, the Rater is required to capture at least one photo per item during their inspection as a representative example of the installed strategy used to meet the applicable program requirement. For items involving one or more performance tests (e.g., pressure differential at multiple bedrooms), the Rater must capture a photo of each recorded test result or a report generated by automated software that communicates with the testing device showing the test result. Photos are not required for non-applicable items marked "N/A."  

At each inspection (i.e., pre-drywall and final), the Rater is required to capture at least one geo-tagged and time-stamped photo of themselves in front of the dwelling unit. It is recommended, but not required, for the other photos to also be geotagged and timestamped.

In addition to the photos and test results specified above, the Rater must capture all photos required by the on-site inspection protocols in Normative Appendix B of ANSI / RESNET / ICC 301.
4. The column titled "N/A," which denotes items that are "not applicable," should be used when the checklist Item is not present in the home or conflicts with local requirements.
5. Three alternatives are provided: a) Grade II cavity insulation is permitted to be used for assemblies that contain a layer of continuous, air impermeable insulation  $\geq$  R-3 in Climate Zones 1 to 4,  $\geq$  R-5 in Climate Zones 5 to 8; <sup>9</sup> b) Grade II batts are permitted to be used in floors if they fill the full width and depth of the floor cavity, even when compression occurs due to excess insulation, as long as the R-value of the batts has been appropriately assessed based on manufacturer guidance and the only defect preventing the insulation from achieving Grade I is the compression caused by the excess insulation; c) CMU block wall assemblies with Grade III insulation filling the cores are permitted to be used in homes permitted prior to 01/01/26, to provide an opportunity for standards bodies to consider a protocol that may allow such assemblies to achieve Grade I.
6. Ensure compliance with this requirement using ANSI / RESNET / ICC 301 including all Addenda and Normative Appendices, with new versions and Addenda implemented according to the schedule defined by the HCO that the home is being certified under, with approved exceptions listed at [www.energystar.gov/ERIEExceptions](http://www.energystar.gov/ERIEExceptions).
7. For purposes of this Checklist, an air barrier is defined as any durable solid material that blocks air flow between conditioned space and unconditioned space, including necessary sealing to block excessive air flow at edges and seams and adequate support to resist positive and negative pressures without displacement or damage. The EPA recommends, but does not require, rigid air barriers.  

Open-cell or closed-cell foam shall have a finished thickness  $\geq$  5.5 in. or 1.5 in., respectively, to qualify as an air barrier unless the manufacturer indicates otherwise.

If flexible air barriers such as house wrap are used, they shall be fully sealed at all seams and edges and supported using fasteners with caps or heads  $\geq$  1 in. diameter unless otherwise indicated by the manufacturer. Flexible air barriers shall not be made of kraft paper, paper-based products, or other materials that are easily torn. If polyethylene is used, its thickness shall be  $\geq$  6 mil.
8. All insulated ceiling surfaces, regardless of slope (e.g., cathedral ceilings, tray ceilings, conditioned attic roof decks, flat ceilings, sloped ceilings), must meet the requirements for ceilings.
9. For all Versions except National v3.2 and National v3.3, the 2009 IECC Climate Zone designations are applicable, as defined and illustrated in [Section R301](#) of the code. For National v3.2 and National v3.3, the 2021 IECC Climate Zone designations are applicable, as defined and illustrated in [Section R301](#) of the code. Note that some locations have shifted to a different Climate Zone in the 2021 IECC compared to prior editions.
10. All insulated vertical surfaces are considered walls (e.g., above and below grade exterior walls, knee walls) and must meet the air barrier requirements for walls. The following exceptions apply: air barriers recommended, but not required, in adiabatic walls in multifamily dwellings; and, in Climate Zones 4 through 8, an air barrier at the interior vertical surface of insulation is recommended but not required in basement walls or crawlspace walls. <sup>9</sup> For the purpose of these exceptions, a basement or crawlspace is a space for which  $\geq$  40% of the total gross wall area is below-grade.
11. Exterior air barriers are not required for attic knee walls that are  $\leq$  24 in. in height if an interior air barrier is provided and insulation extends in all directions from the top of this interior air barrier into unconditioned space at the following levels: CZ 1-5:  $\geq$  R-21; CZ 6-8:  $\geq$  R-30. <sup>9</sup>
12. The EPA highly recommends, but does not require, an air barrier at the interior vertical surface of floor insulation in Climate Zones 4-8. <sup>9</sup>
13. Examples of supports necessary for permanent contact include staves for batt insulation or netting for blown-in insulation. Alternatively, supports are not required if batts fill the full depth of the floor cavity, even when compression occurs due to excess insulation, as long as the R-value of the batts has been appropriately assessed based on manufacturer guidance and the only defect preventing the insulation from achieving the required installation grade is the compression caused by the excess insulation.



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14. Alternatively, an air barrier is permitted to be installed at the exterior horizontal surface of the floor insulation if the insulation is installed in contact with this air barrier, the exterior vertical surfaces of the floor cavity are also insulated, and air barriers are included at the exterior vertical surfaces of this insulation.
15. Reduced thermal bridging strategies, while not mandatory, will improve the comfort and efficiency of a home and help meet the ENERGY STAR ERI Target or equivalent performance target, as well as the thermal backstop in Item 1.1. The EPA recommends, but does not require, that builders include selected details on plans to ensure proper implementation during construction.
16. Air leakage shall be measured and documented by a Rater using ANSI / RESNET / ICC 380 including all Addenda and Normative Appendices, with new versions and Addenda implemented according to the schedule defined by the HCO that the home is being certified under.
17. For homes that are permitted before 01/01/2027 and certified using National v3.3, an air leakage limit of  $\leq 4.0$  ACH50 applies; if permitted before 01/01/2027 and certified using CA v3.4 or CA v3.5, an air leakage limit of  $\leq 4.5$  ACH50 applies.
18. This Checklist is designed to meet ASHRAE 62.2-2010 or later, and ANSI / ACCA's 5 QI-2015 protocol, thereby improving the performance of HVAC equipment in new homes when compared to homes built to minimum code. However, these features alone cannot prevent all ventilation, indoor air quality, and HVAC problems, (e.g., those caused by a lack of maintenance by occupants). Therefore, this Checklist is not a guarantee of proper ventilation, indoor air quality, or HVAC performance.
19. Track A – HVAC Grading shall use ANSI / RESNET / ACCA / ICC 310 including all Addenda and Normative Appendices, with new versions and Addenda implemented according to the schedule defined by the HCO that the home is being certified under.
20. For Track A, the Items in Section 5a are applicable to all unitary HVAC Systems including air conditioners and heat pumps up to 65 kBtuh and furnaces up to 125 kBtuh. All applicable systems shall comply with 5a.1 through 5a.3 for the home to be certified.  
For Track B, the Items in Section 5b are applicable to split air conditioners, unitary air conditioners, air-source heat pumps, and water-source (i.e., geothermal) heat pumps up to 65 kBtuh with forced-air distribution systems (i.e., ducts) and to furnaces up to 225 kBtuh with forced-air distribution systems (i.e., ducts). All applicable systems shall comply with 5b.1 and 5b.2 for the home to be certified.  
If, based on the selected Track, the Items in Section 5 are not applicable to any systems in the home, the Rater shall mark 'N/A'.
21. If the non-invasive procedure in ANSI / RESNET / ACCA / ICC 310 is not permitted to be used during the final inspection of a home (i.e., due to the equipment type or to outdoor air temperatures that do not meet the requirements of the non-invasive method), then the home is permitted to be certified with a default refrigerant charge designation of Grade III. Note that in these circumstances, the weigh-in method procedure in ANSI / RESNET / ACCA / ICC 310 may still be used to pursue a Grade I designation.
22. If installed equipment does not match the National HVAC Design Report, then prior to certification the Rater shall obtain written approval from the designer (e.g., email, updated National HVAC Design Report) confirming that the installed equipment meets the requirements of the National HVAC Design Report. In addition, if "N/A" was selected for Item 1.2 of the National Rater Design Review Checklist, then the Rater shall verify that all installed equipment is an exempted type per Footnote 13 of that Checklist or, if not an exempted type, shall re-review the National Rater Design Review Checklist to ensure compliance with all requirements (e.g., contractor credential, full completion of HVAC Design Report, HVAC design tolerances).  
In cases where the condenser unit is installed after the time of inspection by the Rater, the HVAC manufacturer and model numbers on installed equipment can be documented through the use of photographs provided by the HVAC Contractor after installation is complete.
23. The Rater shall measure and record the external static pressure in the return-side and supply-side of the system using the contractor-provided test locations. However, at this time, the Rater need not assess whether these values are within a specific range to certify the home.
24. Kinks are to be avoided and are caused when ducts are bent across sharp corners such as framing members. Sharp bends are to be avoided and occur when the radius of the turn in the duct is less than one duct diameter. Compression is to be avoided and occurs when flexible ducts in unconditioned space are installed in cavities smaller than the outer duct diameter and ducts in conditioned space are installed in cavities smaller than inner duct diameter. Ducts shall not include coils or loops except to the extent needed for acoustical control.
25. Item 6.2 does not apply to ventilation ducts, exhaust ducts, or non-ducted systems. For an HVAC system with a multi-speed fan, the highest design fan speed shall be used when verifying this requirement. For an HVAC system with multiple zones, this requirement shall be verified with all zones calling for heating or cooling simultaneously; additional testing of individual zones is not required. When verifying this requirement, doors separating bedrooms from the main body of the house (e.g., a door between a bedroom and a hallway) shall be closed and doors to rooms that can only be entered from the bedroom (e.g., a closet, a bathroom) shall be open. As an alternative to the  $\pm 3$  Pa limit, a Rater-measured pressure differential  $\geq -5$  Pa and  $\leq +5$  Pa is permitted to be used for bedrooms with a design airflow  $\geq 150$  CFM. The Rater-measured pressure shall be rounded to the nearest whole number to assess compliance.
26. Item 6.3 does not apply to ducts that are a part of local mechanical exhaust and exhaust-only dwelling unit mechanical ventilation systems. The EPA recommends, but does not require, that all metal ductwork not encompassed by Section 6 (e.g., exhaust ducts, duct boots, ducts in conditioned space) also be insulated and that insulation be sealed to duct boots to prevent condensation.
27. Items 6.4 and 6.5 generally apply to the ducts of space heating, space cooling, and dwelling unit mechanical ventilation systems.  
However, visual inspection is permitted in lieu of testing for a dwelling unit mechanical ventilation system not connected to the space heating or space cooling system, regardless of the number of dwelling units it serves. In such cases, a Rater shall visually verify that all seams and connections are sealed with mastic or metal tape and all duct boots are sealed to floor, wall, or ceiling using caulk, foam, or mastic tape.  
For duct systems requiring testing, duct leakage shall be determined and documented by a Rater using ANSI / RESNET / ICC 380 including all Addenda and Normative Appendices, with new versions and Addenda implemented according to the schedule defined by the HCO that the home is being certified under. Leakage limits shall be assessed on a per-system, rather than per-home, basis.
28. For a duct system with three or more returns, the total Rater-measured duct leakage is permitted to be the greater of  $\leq 6$  CFM25 per 100 sq. ft. of CFA or  $\leq 60$  CFM25 at 'rough-in' or the greater of  $\leq 12$  CFM25 per 100 sq. ft. of CFA or  $\leq 120$  CFM25 at 'final'.
29. Note that compliance with Item 6.4.1 or 6.4.2 in conjunction with Section 3a of the National Rater Design Review Checklist automatically achieves Grade I total duct leakage per ANSI / RESNET / ACCA / ICC 310.



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30. Cabinets (e.g., kitchen, bath, multimedia) or ducts that connect duct boots to toe-kick registers are not required to be in place during the 'rough-in' test.
31. Registers atop carpets are permitted to be removed and the face of the duct boot temporarily sealed during testing. In such cases, the Rater shall visually verify that the boot has been durably sealed to the subfloor (e.g., using duct mastic or caulk) to prevent leakage during normal operation.
32. Testing of duct leakage to the outdoors can be waived in accordance with the 2nd or 3rd alternative of ANSI / RESNET / ICC 301, Table 4.2.2 (1), footnote (w). Alternatively, testing of duct leakage to outdoors can be waived in accordance with Section 5.5.2 of ANSI / RESNET / ICC 380 if total duct leakage, at rough-in or final, is  $\leq 4$  CFM25 per 100 sq. ft. of conditioned floor area or 40 CFM25, whichever is larger. Guidance to assist partners with these alternatives, including modeling inputs, is available at <http://www.energystar.gov/newhomesguidance>.
33. As defined by ANSI / RESNET / ICC 301-2019, a Dwelling Unit Mechanical Ventilation System is a ventilation system consisting of powered ventilation equipment such as motor-driven fans and blowers and related mechanical components such as ducts, inlets, dampers, filters and associated control devices that provides dwelling-unit ventilation at a known or measured airflow rate.
34. Item 7.3 applies to any outdoor air inlet connected to a ducted return of the dwelling unit HVAC system, regardless of its intended purpose (e.g., for ventilation air, make-up air, combustion air). This Item does not apply to HVAC systems without a ducted return.
35. The Dwelling Unit Mechanical Ventilation System air flows and local exhaust air flows shall be determined and documented by a Rater using ANSI / RESNET / ICC 380 including all Addenda and Normative Appendices, with new versions and Addenda implemented according to the schedule defined by the HCO that the home is being certified under. To facilitate testing the air flow of a microwave-integrated exhaust fan, Raters are permitted to tape off all air inlets except at the bottom. However, no correction factors shall be applied to the measured air flow to account for the increased airflow restriction. Designers are permitted to provide multiple combinations of a design ventilation airflow rate, run-time per cycle, and cycle time. When multiple combinations are provided, the Rater shall first assess the run-time setting of the installed system and use that to determine the corresponding design ventilation rate. The Rater-measured ventilation rate must fall within the program-specified tolerance relative to that design ventilation rate.
36. For an attached dwelling unit, excluding units in dwellings (i.e., duplex) and townhomes, the override control is not required to be readily accessible to the occupant. However, in such cases, the EPA recommends but does not require that the control be readily accessible to others (e.g., building maintenance staff) in lieu of the occupant.
37. For example, if an outdoor air inlet connected to a ducted return is used as a dedicated source of outdoor air for an exhaust ventilation system (e.g., bath fan), the outdoor airflow must be automatically restricted when the exhaust fan is not running and in the event of an override of the exhaust ventilation system.
38. When assessing the ventilation rate, the highest HVAC fan speed applicable to ventilation mode shall be used (e.g., if the inlet only opens when the HVAC is in 'fan-only' mode, then test in this mode). If the inlet has a motorized damper that only opens when the local mechanical kitchen exhaust is turned on, then testing is not required.  

When required, the ventilation airflow through the inlet shall be measured and documented by a Rater using ANSI / RESNET / ICC 380 including all Addenda and Normative Appendices, with new versions and Addenda implemented according to the schedule defined by the HCO that the home is being certified under. As an alternative, measurement of the outdoor airflow can be waived if a Constant Airflow Regulating (CAR) damper with a manufacturer-specified maximum flow rate no higher than 15 CFM or 15% above the ventilation design value is installed on the inlet.
39. Dwelling Unit Mechanical Ventilation System fans shall be rated for sound at no less than the airflow rate in Item 2.3 of the National HVAC Design Report. Fans exempted from this requirement include HVAC air handler fans, remote-mounted fans, and intermittent fans rated  $\geq 400$  CFM. To be considered for this exemption, a remote-mounted fan must be mounted outside the habitable spaces, bathrooms, toilets, and hallways and there shall be  $\geq 4$  ft. ductwork between the fan and intake grill. Per ASHRAE 62.2-2010, habitable spaces are intended for continual human occupancy; such space generally includes areas used for living, sleeping, dining, and cooking but does not generally include bathrooms, toilets, hallways, storage areas, closets, or utility rooms.
40. Note that the 'fan-on' setting of a thermostat would not be an acceptable controller because it would continuously operate the HVAC fan.
41. Bathroom fans with a rated flow rate  $\geq 500$  CFM are exempted from the requirement to be ENERGY STAR certified.
42. Without proper maintenance, ventilation air inlet screens often become filled with debris. Therefore, the EPA recommends, but does not require, that these ventilation air inlets be located so as to facilitate access and regular service by the occupant. Ventilation air inlets that are only visible via rooftop access are exempted from Item 7.7 and the Rater shall mark "N/A".
43. Two alternatives to the required 10 ft. distance are provided: 1) inlets providing outdoor air to a dwelling unit are permitted to be  $\geq 5$  ft. of stretched-string distance from outlets of both exhaust dwelling unit mechanical ventilation systems and local mechanical exhaust systems, and 2) the outlet and inlet of ERV's and HRV's may use a smaller distance if allowed by the manufacturer of the system. If the second alternative is used, the manufacturer's instructions shall be collected for documentation purposes.
44. Known contamination sources include, but are not limited to, stacks, vents, exhausts, and vehicles.
45. Continuous bathroom local mechanical exhaust fans shall be rated for sound at no less than the airflow rate in Item 8.2. Intermittent bathroom and both intermittent and continuous kitchen local mechanical exhaust fans are recommended, but not required, to be rated for sound at no less than the airflow rate in Items 8.1 and 8.2. Per ASHRAE 62.2-2010, an exhaust system is one or more fans that remove air from the building, causing outdoor air to enter by ventilation inlets or normal leakage paths through the building envelope (e.g., bath exhaust fans, range hoods, clothes dryers). Per ASHRAE 62.2-2010, a bathroom is any room containing a bathtub, shower, spa, or similar source of moisture.
46. An intermittent mechanical exhaust system, where provided, shall be designed to operate as needed by the occupant. Control devices shall not impede occupant control in intermittent systems.
47. Kitchen volume shall be determined by drawing the smallest possible rectangle on the floor plan that encompasses all cabinets, pantries, islands, peninsulas, ranges / ovens, and the kitchen exhaust fan, and multiplying by the average ceiling height for this area. In addition, the continuous kitchen exhaust rate shall be  $\geq 25$  CFM, per 2009 IRC Table M1507.3, regardless of the rate calculated using the kitchen volume. Cabinet volume shall be included in the kitchen volume.



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48. Homes shall meet this Item. Alternatively, the prescriptive duct sizing requirements in Table 5.3 of ASHRAE 62.2-2010 or later are permitted to be used for kitchen exhaust fans based upon the rated airflow of the fan at 0.25 IWC. If the rated airflow is unknown,  $\geq 6$  in. smooth duct shall be used, with a rectangular to round duct transition as needed. Guidance to assist partners with these alternatives is available at <http://www.energystar.gov/newhomesguidance>. As an alternative to Item 8.1, homes are permitted to use a continuous kitchen exhaust rate of 25 CFM per 2009 IRC Table M1507.3, if they are either a) Phius or PHI certified, or b) provide both dwelling unit ventilation and local mechanical kitchen exhaust using a balanced system, and have a Rater-verified whole-building infiltration rate  $\leq 1.0$  ACH50 or  $\leq 0.05$  CFM50 per sq. ft. of Enclosure Area, and a Rater-verified dwelling unit compartmentalization rate  $\leq 0.30$  CFM50 per sq. ft. of Enclosure Area if multiple dwelling units are present in the building. 'Enclosure Area' is defined as the area of the surfaces that bound the volume being pressurized / depressurized during the test.
49. All intermittent kitchen exhaust fans must be capable of exhausting at least 100 CFM. In addition, if the fan is not part of a vented range hood or appliance-range hood combination (i.e., if the fan is not integrated with the range), then it must also be capable of exhausting  $\geq 5$  ACH, based on the kitchen volume.
50. Based upon ASHRAE 62.2-2010, ducted mechanical systems are those that supply air to an occupiable space with a total amount of supply ductwork exceeding 10 ft. in length and through a thermal conditioning component, except for evaporative coolers. Systems that do not meet this definition are exempt from this requirement. Filters are recommended, but not required, for mini-split systems, HRV's and ERV's. The EPA also recommends, but does not require, filtering air inlets to minimize outdoor particles entering the home. HVAC filters located in the attic shall be considered accessible to the occupant if either 1) drop-down stairs, a pull-down ladder, or door provide access to attic and a permanently installed walkway has been provided between the attic access location and the filter or 2) the filter location enables arm-length access from a portable ladder without the need to step into the attic and the height of the ceiling access panel or the bottom of the wall access panel where access is provided is  $\leq 12$  ft.
51. Sealing mechanisms comparable to a gasket are also permitted to be used. The filter media box (i.e., the component in the HVAC system that houses the filter) may be either site-fabricated by the installer or pre-fabricated by the manufacturer to meet this requirement. These requirements only apply when the filter is installed in a filter media box located in the HVAC system, not when the filter is installed flush with the return grill.
52. The pressure boundary is the primary enclosure boundary separating indoor and outdoor air. For example, a volume that has more leakage to outside than to conditioned space would be outside the pressure boundary.
53. Per the 2009 International Mechanical Code, a direct-vent appliance is one that is constructed and installed so that all air for combustion is derived from the outdoor atmosphere and all flue gases are discharged to the outside atmosphere; a mechanical draft system is a venting system designed to remove flue or vent gases by mechanical means consisting of an induced draft portion under non-positive static pressure or a forced draft portion under positive static pressure; and a natural draft system is a venting system designed to remove flue or vent gases under nonpositive static vent pressure entirely by natural draft.
54. This item only applies to furnaces, boilers, and water heaters located within the home's pressure boundary. Naturally drafted equipment is allowed within the home's pressure boundary in Climate Zones 1-3 if the Rater has followed ANSI / ACCA 12 QH-2014, Section 3.2.2, Appendix A Sections A2.2.6, A3 (Carbon Monoxide Test), A4 (Depressurization Test for the Combustion Appliance Zone), and verified that the equipment meets the limits defined within.<sup>9</sup>
55. This item only applies to fireplaces located within the home's pressure boundary. Naturally drafted fireplaces are allowed within the home's pressure boundary if the Rater has verified that the total net rated exhaust flow of the two largest exhaust fans (excluding summer cooling fans) is  $\leq 15$  CFM per 100 sq. ft. of occupiable space when at full capacity. If the net exhaust flow exceeds the allowable limit, it shall be reduced or compensating outdoor airflow provided. Per ASHRAE 62.2-2010, the term "net rated exhaust flow" is defined as flow through an exhaust fan minus the compensating outdoor airflow through any supply fan that is interlocked to the exhaust fan. Per ASHRAE 62.2-2010, the term "occupiable space" is defined as any enclosed space inside the pressure boundary and intended for human activities, including, but not limited to, all habitable spaces, toilets, closets, halls, storage and utility areas, and laundry areas. See Footnote 39 for the definition of "habitable spaces".
56. The minimum volume of combustion air required for safe operation by the manufacturer and / or code shall be met or exceeded. Also, in accordance with the National Fuel Gas Code, ANSI Z223.1 / NFPA54, unvented room heaters shall not be installed in bathrooms or bedrooms.
57. Alternatively, unvented combustion appliances other than cooking ranges or ovens are permitted to be located inside the home's pressure boundary if the Rater has followed ANSI/ACCA 12 QH-2014, Section 3.2.2, Appendix A Sections A2.2.6, A3, and A4, and verified the equipment meets the limits defined within.
58. Any Item that will be concealed by drywall (e.g., wall insulation) must be verified during the pre-drywall inspection. If drywall is installed prior to the inspection, then it must be entirely removed to fully verify all Items. It is not sufficient to remove only portions of drywall to inspect a subset of areas. Furthermore, it is not acceptable to complete a Sample Rating on a home that has missed the pre-drywall inspection. Additional information is available in the [Technical Bulletin: Pre-Drywall Inspection Is Always Required](#).
59. Some Items can typically only be verified at a later stage of construction than when the pre-drywall inspection occurs (e.g., bath fan airflow). Any Item that has not been verified during the pre-drywall inspection must be verified prior to or during the final inspection.

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