

# ENERGY STAR<sup>®</sup>

## Residential New Construction Programs

### Historical Document

This document is provided for reference because it has been superseded by a more recent Version or Revision. Please find current program documents on the [Program Requirements](#) webpage.

Use of older Versions and Revisions, such as this document, are typically limited to homes and buildings with a permit date (or, for manufactured homes, a production date) prior to a specified date. Consult the [Implementation Timeline](#) table to assess whether a home or apartment is still eligible to be certified using this document.

For questions or more information, contact us at [energystarhome@energystar.gov](mailto:energystarhome@energystar.gov).



# ENERGY STAR Single-Family New Homes Caribbean & Pacific Rater Field Checklist, Version 3 (Rev. 12)

Requirements specific to the "Caribbean" shall be met in Puerto Rico and the U.S Virgin Islands. Requirements specific to the "Pacific" shall be met in Guam, Hawaii, and the Northern Mariana Islands.						
Home Address: _____		City: _____		State: _____		Permit Date: _____
HVAC System <sup>1</sup> (National HVAC Design Report Item # indicated in parenthesis)				Must Correct	Rater Verified <sup>2</sup>	N/A <sup>3</sup>
<b>1. Heating &amp; Cooling Equipment <sup>4</sup></b>						
1.1 HVAC manufacturer & model number on installed equipment matches either of the following (check box): <sup>5</sup> <input type="checkbox"/> National HVAC Design Report (4.3, 4.4, & 4.17) <input type="checkbox"/> Written approval received from designer				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2 External static pressure measured by Rater at contractor-provided test locations and documented below: <sup>6</sup> Return-Side External Static Pressure: _____ IWC    Supply-Side External Static Pressure: _____ IWC				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.3 Permitted, but not required: National HVAC Commissioning Checklist collected, with no items left blank.				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2. Duct Quality Installation</b> - Applies to Heating, Cooling, Ventilation, Exhaust, & Pressure Balancing Ducts, Unless Noted in Footnote						
2.1 Ductwork installed without kinks, sharp bends, compressions, or excessive coiled flexible ductwork. <sup>7</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2 Bedrooms pressure-balanced (e.g., using transfer grills, 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. See Footnote 8 for test configuration and an alternative compliance option. <sup>4, 8</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.3 All supply and return ducts in unconditioned space, including connections to trunk ducts, are insulated to $\geq R-6$ <sup>9</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.4 Rater-measured total duct leakage meets one of the following two options. See Footnote 11 for alternative: <sup>4, 10, 11</sup>						
2.4.1 Rough-in: 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>12</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.4.2 Final: The greater of $\leq 8$ CFM25 per 100 sq. ft. of CFA or $\leq 80$ CFM25, with the air handler & all ducts, bldg. cavities used as ducts, duct boots, & register grilles atop the finished surface (e.g., drywall, floor) installed. <sup>13</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.5 Rater-measured duct leakage to outdoors the greater of $\leq 4$ CFM25 per 100 sq. ft. of CFA or $\leq 40$ CFM25 <sup>4, 10, 14</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3. Dwelling Unit Mechanical Ventilation Systems ("Vent System") <sup>15</sup> &amp; Inlets in Return Duct <sup>16</sup></b>						
3.1 Rater-measured ventilation rate is within either $\pm 15$ CFM or $\pm 15\%$ of design value (2.3). <sup>17</sup>				<input type="checkbox"/>	<input type="checkbox"/>	-
3.2 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>18</sup>				<input type="checkbox"/>	<input type="checkbox"/>	-
3.3 For any outdoor air inlet connected to a ducted return of the HVAC system (Complete if present; otherwise check "N/A"): <sup>16</sup>						<input type="checkbox"/>
3.3.1 Controls automatically restrict airflow using a motorized damper during vent. off-cycle and occupant override. <sup>19</sup>				<input type="checkbox"/>	<input type="checkbox"/>	-
3.3.2 Rater-measured vent. rate is $\leq 15$ CFM or 15% above design value at highest HVAC fan speed. Alt. in Fn. 20. <sup>20</sup>				<input type="checkbox"/>	<input type="checkbox"/>	-
3.4 System fan rated $\leq 3$ sones if intermittent and $\leq 1$ sone if continuous, or exempted. <sup>21</sup>				<input type="checkbox"/>	<input type="checkbox"/>	-
3.5 If Vent System controller operates the HVAC fan, then HVAC fan operation is intermittent and either the fan type is ECM / ICM (4.7) or the controls will reduce the run-time by accounting for HVAC system heating or cooling hours. <sup>22</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.6 Bathroom fans are ENERGY STAR certified if used as part of the Vent System. <sup>23</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.7 Air inlet location (Complete if ventilation air inlet location was specified (2.12, 2.13); otherwise check "N/A"): <sup>24, 25</sup>				-	-	<input type="checkbox"/>
3.7.1 Inlet pulls ventilation air directly from outdoors and not from attic, crawlspace, garage, or adjacent dwelling unit.				<input type="checkbox"/>	<input type="checkbox"/>	-
3.7.2 Inlet is $\geq 2$ ft. above grade or roof deck; $\geq 10$ ft. of stretched-string distance from known contamination sources (e.g., stack, vent, exhaust, vehicles) not exiting the roof, and $\geq 3$ ft. distance from dryer exhausts and sources exiting the roof.				<input type="checkbox"/>	<input type="checkbox"/>	-
3.7.3 Inlet is provided with rodent / insect screen with $\leq 0.5$ inch mesh.				<input type="checkbox"/>	<input type="checkbox"/>	-
<b>4. 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>17, 26</sup>						
Location		Continuous Rate	Intermittent Rate <sup>27</sup>			
4.1 Kitchen	Airflow	$\geq 5$ ACH, based on kitchen volume <sup>28, 29</sup>	$\geq 100$ CFM and, if not integrated with range, also $\geq 5$ ACH based on kitchen volume <sup>28, 29, 30</sup>	<input type="checkbox"/>	<input type="checkbox"/>	-
	Sound	Recommended: $\leq 1$ sone	Recommended: $\leq 3$ sones			
4.2 Bathroom <sup>31</sup>	Airflow	$\geq 20$ CFM	$\geq 50$ CFM	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Sound	Required: $\leq 1$ sone	Recommended: $\leq 3$ sones			
<b>5. Filtration <sup>4</sup></b>						
5.1 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>32</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.2 Filter access panel includes gasket or comparable sealing mechanism and fits snugly against the exposed edge of filter when closed to prevent bypass. <sup>33</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6. Combustion Appliances</b>						
6.1 Furnaces, boilers, & water heaters are mechanically drafted or direct-vented. Alternatives in Footnote 36. <sup>34, 35, 36</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.2 Fireplaces are mechanically drafted or direct-vented. Alternatives in Footnote 37. <sup>34, 35, 37</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.3 No unvented combustion appliances other than cooking ranges or ovens are located inside the home's pressure boundary. Alternative in Footnote 38. <sup>34, 38, 39</sup>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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7. Thermal Comfort System	Must Correct	Rater Verified <sup>2</sup>	N/A <sup>3</sup>
7.1 Operable apertures provided that meet the specifications of the Caribbean & Pacific Rater Design Review Checklist as follows:			
7.1.1 Area, placement, & function is as specified in Items 4.1.1 through 4.1.3.	<input type="checkbox"/>	<input type="checkbox"/>	-
7.1.2 Wing walls present if specified in Item 4.1.3.	<input type="checkbox"/>	<input type="checkbox"/>	-
7.1.3 Insect screens provided per specifications in Item 4.1.4.	<input type="checkbox"/>	<input type="checkbox"/>	-
7.1.4 Integral devices capable of holding components open provided per specifications in Item 4.1.5.	<input type="checkbox"/>	<input type="checkbox"/>	-
7.1.5 Mechanically-attached door stop or similar device provided per specifications in Item 4.1.6.	<input type="checkbox"/>	<input type="checkbox"/>	-
7.2a <u>For homes in the Pacific</u> : Solar gain through windows reduced per specs. in Item 4.2a.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.2b <u>For homes in the Caribbean</u> : Solar gain through windows reduced per specs. in Item 4.2b.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.3a <u>For homes in the Pacific</u> : Ceiling fan junction boxes installed per specs. in Item 4.3a.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.3b <u>For homes in the Caribbean</u> : Ceiling fans (i.e., not just a junction box) installed per specs. in Item 4.3b.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>8. Air Sealing</b> (Unless otherwise noted below, "sealed" indicates the use of caulk, foam, or equivalent material) Only required for homes in the Caribbean, otherwise check "N/A"			<input type="checkbox"/> N/A
8.1 Ducts, flues, shafts, plumbing, piping, wiring, exhaust fans, & other penetrations to unconditioned space sealed, with blocking / flashing as needed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.2 Rough opening around windows & exterior doors sealed. <sup>40</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.3 Walls that separate attached garages from occupiable space sealed and, also, an air barrier installed and sealed at floor cavities aligned with these walls.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.4 Doors adjacent to unconditioned space (e.g., attics, garages, basements, unconditioned living space) or ambient conditions made substantially air-tight with weatherstripping or equivalent gasket.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9. Solar Water Heating System</b> - Only required for homes in the Caribbean, otherwise check "N/A"			<input type="checkbox"/> N/A
9.1 If system is installed in order to comply with Measure A of the Caribbean Program Requirements, system is Solar Rating & Certification Corporation (SRCC) OG-300 certified and has a Solar Fraction $\geq$ 87%. If system was rated without a backup water heater, then backup water has not been installed. <sup>41</sup>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10. Mini-Split HVAC System Pre-Installation Details</b> - Only required for homes in the Caribbean, otherwise check "N/A"			<input type="checkbox"/> N/A
10.1 For a home to be certified in the Caribbean, if a mini-split HVAC system will <u>not</u> be installed in the bedrooms at the time of certification, then the following details shall be included so that a mini-split HVAC system may be installed more easily after certification. If a mini-split HVAC system will be installed at the time of certification, then check "N/A". <span style="float: right;"><input type="checkbox"/> N/A</span>			
10.1.1 A wall-mounted junction box installed at code height within the designated area for the condensing unit along with electrical conduit from the junction box to the main electric panel board for the dwelling.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.1.2 A 3" pipe sleeve installed through the exterior wall, for future power, communication, and refrigerant line connections between the area designated for the condensing unit and fan-coil units.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.1.3 If the designated location of the wall-mounted mini-split fan-coil units is on an interior wall, then a 1" condensate drain line installed with a point of connection at the fan-coil units and that terminates in storm water lines or outdoors, and insulated with 1/2" thick elastomeric or equivalent insulation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rater Name: _____ Rater Pre-Drywall Inspection Date: _____ Rater Initials: _____			
Rater Name: _____ Rater Final Inspection Date: _____ Rater Initials: _____			



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## Footnotes

1. 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.
2. 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. 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.
4. Homes certified through the Caribbean Program Requirements, Version 3, are exempt from Section 1, Items 2.2, 2.4, and 2.5; and Section 5 of this checklist.
5. 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 Caribbean & Pacific Rater Design Review Checklist, then the Rater shall verify that all installed equipment is an exempted type per Footnote 5 of that Checklist or, if not an exempted type, shall re-review the Caribbean & Pacific 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.
6. 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.
7. 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.
8. Item 2.2 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.
9. Item 2.3 does not apply to ducts that are a part of local mechanical exhaust and exhaust-only dwelling unit mechanical ventilation systems. EPA recommends, but does not require, that all metal ductwork not encompassed by Section 2 (e.g., exhaust ducts, duct boots, ducts in conditioned space) also be insulated and that insulation be sealed to duct boots to prevent condensation.
10. Items 2.4 and 2.5 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.
11. 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'.
12. 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.
13. 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.
14. 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>.
15. 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.
16. Item 3.3 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.
17. 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.



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18. 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, EPA recommends but does not require that the control be readily accessible to others (e.g., building maintenance staff) in lieu of the occupant.
19. 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.
20. 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.
21. 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.
22. Note that the 'fan-on' setting of a thermostat would not be an acceptable controller because it would continuously operate the HVAC fan.
23. Bathroom fans with a rated flow rate  $\geq$  500 CFM are exempted from the requirement to be ENERGY STAR certified.
24. Ventilation air inlets that are only visible via rooftop access are exempted from Item 3.7 and the Rater shall mark "N/A". The outlet and inlet of balanced ventilation systems shall meet these spacing requirements unless manufacturer instructions indicate that a smaller distance may be used. However, if this occurs the manufacturer's instructions shall be collected for documentation purposes.
25. Without proper maintenance, ventilation air inlet screens often become filled with debris. Therefore, EPA recommends, but does not require, that these ventilation air inlets be located so as to facilitate access and regular service by the owner.
26. Continuous bathroom local mechanical exhaust fans shall be rated for sound at no less than the airflow rate in Item 4.2. 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 4.1 and 4.2. 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.
27. 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.
28. 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.
29. 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 4.1, 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.
30. 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.
31. For dwellings and dwelling units in the Caribbean, a local mechanical exhaust fan is not required in a bathroom that has operable window area totaling a minimum of 12% of the floor area specified for that bathroom. Components contributing to the operable window area must be able to be opened without the use of ladders or special tools. Operable area shall be based on the free unobstructed area through the windows. Obstructions that can be removed from the windows by the occupant without tools or special knowledge, such as blinds, shades, or operable shutters shall not be included when calculating the unobstructed area. For the purposes of this checklist Item, 90% of the nominal window area of jalousie windows shall be permitted to be used as the free unobstructed area.
32. 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. While filters are recommended for mini-split systems, HRV's, and ERV's, these systems, ducted or not, typically do not have MERV-rated filters available for use and are, therefore, also exempted under this version of the requirements. 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



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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.

33. 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.
34. 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.
35. 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.
36. 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), and A4 (Depressurization Test for the Combustion Appliance Zone), and verified that the equipment meets the limits defined within.
37. 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 21 for the definition of "habitable spaces".
38. 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.
39. 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.
40. A continuous stucco cladding system sealed to windows and doors is permitted to be used in lieu of sealing rough openings with caulk or foam.
41. Solar fraction shall be determined using the [ICC-SRCC OG-300 Solar Water Heating System Certification Program's](#) annual solar fraction rating ( $SF_A$ ) for the rating location closest to the home and for the SRCC OG-300 Draw Pattern. A solar water heater system with a Solar Fraction  $\geq 87\%$  that has no backup water heater is permitted to be used. For the OG-300 directory, visit <https://solar-rating.org/directories/certified-companies/>.