



ENERGY STAR Multifamily New Construction Version 1/1.1/OR-WA 1.2 2020 Rater Quality Assurance Checklist

Project Name: _____ Number of Units: _____ Permit Date: _____
 Building Address: _____ Unit #: _____ City: _____ State: _____

QA Designee responsibilities:

- This checklist is used to document the quality assurance review of the items being verified by the Rater in the dwelling units and common spaces of an ENERGY STAR Multifamily New Construction building.
- One checklist shall be used to document the verification of all applicable items for one dwelling unit and the common space.
- Where more than one dwelling unit in a building is being reviewed, additional checklists shall be used for the additional dwelling units, but the common space only needs to be reviewed once per building.

Action Items / Summary of QA	Yes	No	N/A	
If any Item marked "No" or "Not Verified," an action/explanation summary document shall be attached	<input type="checkbox"/>	-	<input type="checkbox"/>	
Documentation Collection	Yes	No	N/A	
Documentation of Confirmed or Sampled Energy Rating collected, showing that the Energy Rating Index of the rated dwelling unit meets or exceeds the ENERGY STAR ERI Target for the program version applicable at the time of Certification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Documentation collected that demonstrates that all dwelling units in the multifamily building were registered and certified to the same version. Alternatively, the QA Designee can directly verify using the building registry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Rater Design Review Checklist collected, with no Items left blank	<input type="checkbox"/>	<input type="checkbox"/>	-	
Per 1.1, documentation collected that builder or developer had an ENERGY STAR partnership agreement at the time of certification. ¹	<input type="checkbox"/>	<input type="checkbox"/>	-	
Rater Field Checklist collected, with no Items left blank	<input type="checkbox"/>	<input type="checkbox"/>	-	
Per 1.2, 3.5, and/or 3.6, documentation collected on alternative UA calculations, if used for compliance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Per 5b.1, written approval from designer collected, if installed models do not match Design Report.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Per 5.7, documentation collected that Functional Testing Agent(s) held credential required to complete the National HVAC Functional Testing Checklist and were listed on the appropriate online directory at the time of certification.	<input type="checkbox"/>	<input type="checkbox"/>	-	
Per 7.3 and 8.3, documentation collected on the measured ventilation airflows in the common spaces.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Per 12.2, 12.3, and/or 12.7, documentation collected on lighting power density calculations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Per 14.1, for buildings 50,000 ft ² and larger, documentation collected confirming the strategy used to enable the collection of monthly or annual building-level energy consumption data (electricity, natural gas, chilled water, steam, fuel oil, propane, etc.).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Rater Name, Inspection Dates are recorded.	<input type="checkbox"/>	<input type="checkbox"/>	-	
If any Builder Verified Items are used, Builder Employee, Builder Inspection Date and Builder Initials are recorded.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If any LP Verified Items are used, Licensed Professional, LP Inspection Date and LP Initials are recorded.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
HVAC Design Report collected, with no Items left blank	<input type="checkbox"/>	<input type="checkbox"/>	-	
HVAC Functional Testing Checklist collected, with no Items left blank and with all HVAC systems in the building / project fully documented. Exception: Where credentialed HVAC Contractor(s) are completing the National HVAC Functional Testing Checklist, the checklist is not required to be collected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Rater Design Review Checklist				
4. Review of National HVAC Design Report (National HVAC Design Report Item # indicated in parenthesis)	Yes	No	Not Verified ²	N/A
4.2 National HVAC Design Report reviewed by the QA Designee for the following parameters (National HVAC Design Report Item # indicated in parenthesis), limited to the unit plan and equipment serving the dwelling unit being reviewed:				
4.2.2 Cooling season and heating season outdoor design temperatures used in loads (3.4) are within the limits defined at energystar.gov/hvacdesigntemps for the State and County where the building is built, or the designer has provided an allowance from EPA to use alternative values.	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
4.2.3 Number of occupants used in loads (3.6) is within ± 2 of the dwelling unit being reviewed and total occupant gains (3.7) do not exceed 645 Btuh per occupant.	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
4.2.4 Conditioned floor area used in loads (3.8) is between 100 sq. ft. smaller and 300 sq. ft. larger than the dwelling unit being reviewed.	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
4.2.5 Window area used in loads (3.9) is between 15 sq. ft. smaller and 60 sq. ft. larger than the dwelling unit being reviewed, or for dwelling units being reviewed with > 500 sq. ft. of window area, between 3% smaller and 12% larger.	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
4.2.7 Mechanical ventilation used in loads (3.12) is the same as the ventilation design (2.7) for the dwelling unit being reviewed.	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
4.2.8 Non-occupant internal gains (3.13) are less than 3,600 Btuh for the dwelling unit being reviewed.	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>



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4.2.9 Sensible & total heat gain are documented (3.14, 3.16) for the orientation of the dwelling unit being reviewed.	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
4.2.10 Cooling sizing % (4.18) is within the cooling sizing limit (4.19) selected by the HVAC designer for the dwelling unit being reviewed.	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
Rater Field Checklist				
Thermal Enclosure System				
1. High-Performance Fenestration & Insulation	Yes	No	Not Verified²	N/A
1.2 Insulation in dwelling units meets or exceeds levels specified in Item 3.1 of the Rater Design Review Checklist.				
3.1.2 Installed ceiling and floor insulation levels meet or exceed values from the "Group R" column in the 2009 IECC Commercial chapter.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2 Insulation in common spaces meets or exceeds levels specified in Item 3.2 of the Rater Design Review Checklist. ³				
3.2.1 Installed ceiling and floor insulation levels meet or exceed ENERGY STAR MF Reference Design requirements.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.3 All visible insulation achieves Grade I install. per ANSI / RESNET / ICC Std. 301. See alternatives in Footnote 6 of the Rater Field Checklist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.5 Heated plenums in unconditioned space or ambient conditions meet the following requirements:				
1.5.1 Sides of plenum are an air barrier and insulated to $\geq R-3ci$ in CZ 1-4; $\geq R-5ci$ in CZ 5-6; $\geq R-7.5ci$ in CZ 7; $\geq R-9.5ci$ in CZ 8, AND ;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.5.2 Insulation at top of plenum meets or exceeds the R-value for mass floors from the "All Other" column of Table 502.2(1) of 2009 IECC, AND ;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.5.3 Bottom of plenum has at least R-13 insulation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.6 Garages with space heating meet the following requirements:				
1.6.1 Insulation on above grade walls and walls on the first story below grade $\geq R-5ci$ in CZ 5-6; $\geq R-7.5ci$ in CZ 7; $\geq R-9.5ci$ in CZ 8, AND ;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.6.2 Garage ceiling insulation meets or exceeds the R-value for mass floors from the "All Other" column of Table 502.2(1) of 2009 IECC.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Reduced Thermal Bridging	Yes	No	Not Verified²	N/A
The following items must be verified in the dwelling unit being reviewed and 50% of common spaces where the condition is present:				
3.1 For insulated ceilings with attic space above (i.e., non-cathedralized), Grade I insulation extends to the inside face of the exterior wall below and is $\geq R-21$ in CZ 1-5; $\geq R-30$ in CZ 6-8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.2 For insulated ceilings with attic space above, attic access panels and drop-down stairs insulated $\geq R-10$ or equipped with durable $\geq R-10$ cover.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3 Insulation beneath attic platforms (e.g., HVAC platforms, walkways) $\geq R-21$ in CZ 1-5; $\geq R-30$ in CZ 6-8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Air Sealing (Unless otherwise noted below, "sealed" indicates the use of caulk, foam, or equivalent material)	Yes	No	Not Verified²	N/A
The following items must be verified in the dwelling unit being reviewed and 50% of common spaces where the condition is present, to reduce air leakage to exterior, adjacent buildings, or unconditioned spaces:				
4.1 Bathroom & kitchen exhaust fans that penetrate unconditioned space sealed, with blocking / flashing as needed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.2 Recessed lighting fixtures adjacent to unconditioned space ICAT labeled and gasketed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.7 Doors adjacent to unconditioned space (e.g., attics, garages, basements) or ambient conditions made substantially air-tight with doorsweep and weatherstripping or equivalent gasket.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.8 Attic access panels, roof hatches and drop-down stairs are gasketed (i.e., not caulked) or equipped with durable covers that are gasketed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The following items must be additionally verified in the dwelling unit being reviewed:				
4.9 Doors serving as a unit entrance from a corridor/stairwell made substantially air-tight with doorsweep and weatherstripping or equivalent gasket.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.10 Measured compartmentalization is no greater than 0.30 CFM50 per square feet of dwelling unit enclosure area, following procedures in ANSI / RESNET / ICC Std. 380.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.10.1 For dwelling units with forced air distribution systems without ducted returns and located in a closet adjacent to unconditioned space, the measured pressure difference between the space containing the air handler and the conditioned space during the compartmentalization test is no greater than 5 Pa.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HVAC System				
5. Heating & Cooling Equipment	Yes	No	Not Verified²	N/A



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5.1 HVAC manufacturer & model number on installed equipment in the building matches either of the following. ⁴ <input type="checkbox"/> National HVAC Design Report <input type="checkbox"/> Written approval received from designer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
5.5 Heating and cooling equipment serving common spaces, but <u>not</u> serving dwelling units, meet the efficiency levels specified in Exhibit X of the Rater Field Checklist. See Exhibit X for restrictions on electric resistance heating. ⁴	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Equipment Controls	Yes	No	Not Verified²	N/A
5.8 All heating and cooling systems serving the dwelling unit have thermostatic controls within the dwelling unit which are not located on exterior walls.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.9 Stair and elevator shaft vents equipped with motorized dampers that are capable of being automatically closed during normal building operation and are interlocked to open as required by fire and smoke detection systems. Dampers are verified to be closed at the time of inspection.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.10 Freeze protection systems, such as heat tracing of piping and heat exchangers, including self-regulating heat tracing, and garage / plenum heaters include automatic controls that are verified to shut off the systems when pipe wall or garage / plenum temperatures are above 40°F.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.10.1 Where heat tracing is installed for freeze-protection, controls must be based on pipe wall temperature and a minimum of R-3 pipe insulation is also required.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.11 Snow- and ice-melting systems include automatic controls that are verified to shut off the systems when the pavement temperature is above 50°F and no precipitation is falling, and an automatic or manual control is installed that is verified to shut off system when the outdoor temperature is above 40°F, so that the potential for snow or ice accumulation is negligible.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hydronic Distribution				
5.12 For hydronic distribution systems, all terminal heating and cooling distribution equipment are separated from the riser or distribution loop by a control valve or terminal distribution pump, so that heated or cooled fluid is not delivered to the dwelling unit distribution equipment when there is no call from the thermostat.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.13 In the dwelling unit being reviewed, terminal units in hydronic distribution systems are equipped with pressure independent balancing valves or pressure independent control valves.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.15 For circulating pumps serving hydronic heating or cooling systems with three-phase motors, 1 horse-power or larger, motors meet or exceed efficiency standards for NEMA Premium™ motors. If 5 horse-power or larger, also installed with variable frequency drives.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Duct Quality Installation	Yes	No	Not Verified²	N/A
6.1 In the dwelling unit being reviewed, ductwork installed without kinks, sharp bends, compressions, or excessive coiled flexible ductwork.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.2 Bedrooms with a design supply airflow ≥ 150 CFM (per Item 5.2 on the National HVAC Design Report) pressure-balanced (e.g., using transfer grilles, jump ducts, dedicated return ducts, undercut doors) to achieve a Rater-measured pressure differential ≥ -5 Pa and $\leq +5$ Pa with respect to the main body of the dwelling unit when all air handlers are operating. See Footnote 46 of Rater Field Checklist for test configuration.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.3 In the dwelling unit being reviewed, all visible supply and return ducts in unconditioned space, including connections to trunk ducts, are insulated to $\geq R-6$.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.4 Measured total duct leakage in dwelling unit being reviewed meets one of the following two options:				
6.4.1 <u>Rough-in</u> : Tested per allowances below, with the air handler & all ducts, building cavities used as ducts, & duct boots installed. In addition, verified <u>all</u> duct boots sealed to finished surface, at final. <u>No ducted returns</u> : The greater of ≤ 3 CFM25 per 100 sq. ft. of CFA or ≤ 30 CFM. Additionally, the Rater-measured pressure difference between the space containing the air handler and the conditioned space, with the air handler running at high speed, is ≤ 5 Pa. For systems > 1 ton, increase by 1 Pa per half ton. <u>One or two ducted returns</u> : The greater of ≤ 4 CFM25 per 100 sq. ft. of CFA or ≤ 40 CFM. <u>Three or more ducted returns</u> : The greater of ≤ 6 CFM25 per 100 sq. ft. of CFA or ≤ 60 CFM.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.4.2 <u>Final</u> : Tested per allowances below, with the air handler & all ducts, building cavities used as ducts, duct boots, & register grilles atop the finished surface (e.g., drywall, floor) installed. <u>No ducted returns</u> : The greater of ≤ 6 CFM25 per 100 sq. ft. of CFA or ≤ 60 CFM. Additionally, the measured pressure difference between the space containing the air handler and the conditioned space, with the air handler running at high speed is ≤ 5 Pa. For systems > 1 ton, increase by 1 Pa per half ton. <u>One or two ducted returns</u> : The greater of ≤ 8 CFM25 per 100 sq. ft. of CFA or ≤ 80 CFM. <u>Three or more ducted returns</u> : The greater of ≤ 12 CFM25 per 100 sq. ft. of CFA or ≤ 120 CFM.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.5 Townhouses only: Measured duct leakage to the outside the greater of ≤ 4 CFM25 per 100 sq. ft. of CFA or ≤ 40 CFM25.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.7 Duct leakage of central exhaust system that serves four or more dwelling units, serving the dwelling unit being reviewed meets one of the following two options:				
6.7.1 <u>Rough-in</u> : Tested including horizontal run outs, trunks, branches, and take-offs up to, but not including, the grilles where the leakage does not exceed 25% of exhaust fan flow.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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6.7.2 Final: Tested inclusive of all ductwork between the fan and the grilles where the leakage does not exceed 30% of exhaust fan flow.									
7. Dwelling-Unit & Common Space Mechanical Ventilation System (National HVAC Design Report Item # indicated in parenthesis)				Yes	No	Not Verified²	N/A		
7.1 Ventilation manufacturer & model number on installed equipment in the building matches either of the following (check box): ⁴ <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"/>		
7.2 Measured ventilation rate is within either ± 15 CFM or $\pm 15\%$ of dwelling unit design values (2.7), and meets or exceeds rates required by ASHRAE 62.2-2010.				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7.3 Measured ventilation rate is within either ± 15 CFM or $\pm 15\%$ of common space design values (2.9), and meets or exceeds rates required by ASHRAE 62.1-2010. ⁵				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7.4 Townhouses only: A readily-accessible ventilation override control installed and also labeled if its function is not obvious (e.g., a label is required for a standalone wall switch, but not for a switch that's on the ventilation equipment).				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7.5 No outdoor air intakes connected to return side of the dwelling unit HVAC system, unless controls are installed to operate intermittently & automatically based on a timer and to restrict intake when not in use (e.g., motorized damper).				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7.9 If central exhaust fans, ≤ 1 HP, are installed as part of the dwelling-unit mechanical ventilation system, the lesser of 5 or 20% of the installed fans are verified as direct-drive, ECM, with variable speed controllers. If > 1 HP, the lesser of 5 or 20% of the fans are installed with NEMA TM Premium Motors.				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7.10 Air inlet locations (Complete if air inlet locations were installed (2.22, 2.23); otherwise check "N/A"):				-	-	-	<input type="checkbox"/>		
7.10.1 Inlet(s) pull ventilation air directly from outdoors and not from attic, crawlspace, garage, or adjacent dwelling unit.				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-		
7.10.2 Inlet(s) are ≥ 2 ft. above grade or roof deck; ≥ 10 ft. of stretched-string distance from known contamination sources not exiting the roof, and ≥ 3 ft. distance from dryer exhausts and sources exiting the roof.				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-		
8. Local Mechanical Exhaust (National HVAC Design Report Item # indicated in parenthesis)									
Dwelling Unit Mechanical exhaust - In each dwelling unit kitchen and bathroom, a system is installed that exhausts directly to the outdoors and meets one of the following measured airflow standards:									
Location		Continuous Rate		Intermittent Rate		Yes	No	Not Verified²	N/A
8.1 Kitchen	Airflow	≥ 5 ACH, based on kitchen volume	≥ 100 CFM and, if not integrated with range, also ≥ 5 ACH based on kitchen volume	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.2 Bathroom	Airflow	≥ 20 CFM	≥ 50 CFM	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Common Space Mechanical Exhaust									
8.3 Measured exhaust rates are \geq ASHRAE 62.1 rates (2c). ⁵				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8.4 Where a garage exhaust ventilation system is installed, it is equipped with controls that sense CO and NO ₂ .				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9. Filtration				Yes	No	Not Verified²	N/A		
9.1 In the dwelling unit being reviewed, the ducted mechanical system serving that dwelling unit has a location for the filter that facilitates access and regular service by the occupant or building owner.				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9.1.1 Filter access panel includes gasket and fits snugly against the exposed edge of filter when closed to prevent bypass.				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9.1.2 All return air and mechanically supplied outdoor air passes through filter prior to conditioning.				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10. Combustion Appliances				Yes	No	Not Verified²	N/A		
10.1 Furnaces, boilers, and water heaters located within the building's pressure boundary are mechanically drafted or direct-vented. If mechanically drafted, the minimum volume of combustion air required for safe operation by the manufacturer and/or code shall be met or exceeded and make-up air sources must be mechanically closed when the combustion appliance is not in operation. See alternatives in Footnote 70 of Rater Field Checklist. ⁴				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10.2 In the dwelling unit being reviewed and all applicable common spaces, fireplaces located within the building's pressure boundary are direct-vented.				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10.3 In the dwelling unit being reviewed and all applicable common spaces, no unvented combustion appliances other than cooking ranges or ovens are located inside the building's pressure boundary. For cooking ranges and ovens, local mechanical exhaust per Rater Field Checklist Item 8.1 requirements must be met.				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Other									



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11. Domestic Hot Water	Yes	No	Not Verified ²	N/A
11.2 For hot water equipment serving common spaces but not dwelling units nor shared laundry: where rated in EF or UEF, meet the efficiency levels specified in the ENERGY STAR Multifamily Reference Design. Where rated in thermal efficiency, meet or exceed 85% Et.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.3 For in-unit storage water heaters, AHRI Certificate confirms the presence of a heat trap.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.4 Where visible in the dwelling unit, DHW piping is insulated with a minimum of R-3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
11.5 Measured delivery temperatures at faucets and showerheads do not exceed 125°F.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
12. Lighting	Yes	No	Not Verified ²	N/A
12.1 Common Space Lighting Controls:				
12.1.1 At least 50% of common spaces (including shared garages), except the building lobby and where automatic shutoff would endanger the safety of occupants, have occupancy sensors or automatic bi-level lighting controls installed and operation has been verified.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.2 Common Space Lighting Power Density Maximum (except garages):				
12.2.1 Rater-provided lighting power density calculations for the combined common spaces do not exceed ASHRAE 90.1-2007 allowances for those combined spaces, using the Space-by-Space or Building Area Method. For at least 50% of common spaces, the fixture counts, fixture wattage, and approximate square footage are confirmed. See Rater Field Checklist Footnote 68 for allowances.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.3 Shared garages: Rater-provided lighting power density calculations do not exceed 0.24 W/ft ² . The fixture counts, fixture wattage, and approximate square footage are confirmed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.4 Exterior lighting controls: Fixtures, including parking lot fixtures, must include automatic switching on timers or photocell controls except fixtures intended for 24-hour operation, required for security, or located on dwelling unit balconies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.5 In at least 50% of all exterior and common spaces, lighting fixtures meet the efficiency requirements in the ENERGY STAR Multifamily Reference Design, except fixtures located on dwelling unit balconies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Appliances, Ceiling Fans, and Plumbing Fixtures	Yes	No	Not Verified ²	N/A
13.2 Installed appliances and plumbing fixtures in at least 50% of common spaces, and not included in the ERI model, meet the criteria in the ENERGY STAR Multifamily Reference Design.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Whole Building Energy Consumption Data Acquisition Strategy	Yes	No	Not Verified ²	N/A
14.1 For buildings 50,000 ft ² and larger, if the strategy involves a meter or other item installed at the location, this device has been confirmed as a strategy that enables the collection of monthly or annual building-level energy consumption data (electricity, natural gas, chilled water, steam, fuel oil, propane, etc.).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

QA Designee: _____ Rater RTIN #: _____

Status of dwelling unit at time of inspection (e.g., under construction, occupied): _____ Date of Inspection: _____

Rater Company Name: _____ Confirmed as ENERGY STAR Partner

Pre-Drywall Inspection
 Rater Name: _____ Rater RTIN #: _____ Inspection Date: _____ MFNC Training Complete

Final Inspection
 Rater Name: _____ Rater RTIN #: _____ Inspection Date: _____ MFNC Training Complete

Note: Additional checklist items may be inspected for quality insurance and included in the additional checklist items report.

Additional Checklist Items - Use this space to list additional Items reviewed (attach additional pages, if needed)						
Checklist Name	Item #	Notes	Yes	No	Not Verified ²	N/A
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Footnotes:

1. Where documentation is not available, and active partnership cannot be verified, contact energystarhomes@energystar.gov to confirm.
2. Where the checklist item cannot be verified because it is not visible, not accessible, cannot be tested, or other extenuating circumstances, the QAD shall mark the box in the column "Not Verified," and include an explanation in an attached document.
3. While the QAD is not required to verify compliance with the insulation requirements in each common space, the QAD is required to review the ceiling insulation in at least one common space and floor insulation in at least one common space, if applicable.
4. For Items 5.1, 5.5, 7.1, and 10.1 while the QAD is not required to verify compliance for each HVAC and ventilation system installed in the building, the QAD shall verify compliance for the systems serving the dwelling unit being reviewed and in addition, the QAD shall verify compliance for a minimum of two systems that provide heating and/or cooling to a common space, and two systems that provide ventilation to a common space.
5. For Items 7.3 and 8.3, while the QAD is not required to verify compliance with the ventilation requirements in each common space, the QAD is required to review the Rater-provided common space ventilation test results for compliance. The QAD is then required to directly measure ventilation airflows for the lesser of 5 or 20% of the reported values.