



ENERGY STAR®

Residential New
Construction



Technical Bulletin:

Track A - HVAC Grading by Rater Available for Use with ENERGY STAR Multifamily New Construction Program!

October 5, 2021

Track A - HVAC Grading by Rater is a collection of requirements built upon ANSI / RESNET / ACCA / ICC Standard 310 that can be used to satisfy many of the HVAC design and functional testing components of the ENERGY STAR Multifamily New Construction (MFNC) program.

And now, with the release of updates for Ekotrope, EnergyGauge USA, and REM/Rate, Track A - HVAC Grading by Rater, can be used in the ERI Path to help meet the ENERGY STAR MFNC Energy Rating Index (ERI) Target.

While this new track is available for use, partners are free to continue using the approach that has been available since the MFNC program launched in 2019, which was recently renamed Track B - HVAC Testing by Functional Testing Agent.

Key Benefits of Track A - HVAC Grading by Rater

HVAC grading makes it easier to certify ENERGY STAR MFNC buildings:

- Integrates most ENERGY STAR HVAC requirements into an ERI
- For systems that are eligible for grading, a credentialed HVAC contractor or a Functional Testing Agent is not required
- Rewards proper installation with ERI points and helps meet the 45L tax credit

How to Use Track A - HVAC Grading by Rater

1. **Complete the mandatory training and assessment required by your Home Certification Organization (HCO) or your Multifamily Review Organization (MRO).**

For example, EPA's currently-recognized HCO, RESNET, requires that Raters and RFIs complete online training and an evaluation by a field candidate assessor prior to using ANSI / RESNET / ACCA / ICC Standard 310. In the future, other HCOs may have different requirements. Your MRO may also require this training or have their own requirements.

2. **Identify the systems that are eligible to use Track A – HVAC Grading by Rater.**

ANSI / RESNET / ACCA / ICC Standard 310 is applicable to unitary HVAC Systems including air conditioners and heat pumps up to 65 kBtuh and furnaces up to 125 kBtuh in dwelling units that have their own HVAC system separate from other units. For the MFNC program, HVAC grading may also be completed on these systems where they serve a single common space. Systems that do not meet the

sizing limits or systems that serve multiple dwelling units or common spaces are not eligible for Track A – HVAC Grading by Rater.

3. Follow ANSI / RESNET / ACCA / ICC Standard 310 throughout design & construction for eligible systems serving dwelling units & common spaces.

One required component is the collection of a design report. RESNET has created an ANSI / RESNET / ACCA / ICC Standard 310 HVAC Design Report template, available [here](#) under “Calculators And Tools”. This report has been integrated into Wrightsoft and EnergyGauge USA, and can be completed with the press of a button while performing residential load calculations with these software programs. Efforts are underway to integrate it into RHVAC, as well.

It’s recommended that Raters wait to use this standard until this integration is complete for the program(s) being used by the HVAC designers they work. However, in the interim, Raters can have HVAC designers complete this report manually.

The image displays two screenshots of the ANSI / RESNET / ACCA 310 HVAC Design Report 1.2 form. The left screenshot shows the 'Design Basis & Architectural Scope' section, which includes fields for design description, designer information, software version, and architectural details. The right screenshot shows the 'Equipment Selection' section, which includes a table for selecting equipment (e.g., AC, Furnace, Water Heater) and a section for 'Other Heating Equipment'.

RESNET has also created an ANSI / RESNET / ACCA / ICC Standard 310 Data Tool, also available [here](#) under “Calculators And Tools,” to assist with the design review and field tasks required by the standard.

The image shows a screenshot of the ANSI / RESNET / ACCA 310 Data Tool interface. It features a table with columns for requirements (e.g., 'Did total duct leakage achieve Grade I or II designation?'), user input (Yes/No), and section references (e.g., 6.2.1, 6.2.2.1). A 'Formatting Legend' box is visible, explaining the color coding for user input and calculated values.

In addition to following ANSI / RESNET / ACCA / ICC Standard 310 over the course of design and construction, there are three additional tasks required when choosing Track A - HVAC Grading by Rater:

4. Collect the ENERGY STAR MFNC HVAC Design Supplement.

While most of the design documentation requirements are satisfied by the new ANSI / RESNET / ACCA / ICC Standard 310 HVAC Design Report, ENERGY STAR requires several additional design elements related to the ventilation system and HVAC sizing. These are reported on the design report supplement.

ENERGY STAR Single-Family New Homes, All Versions (Rev. 11)
ENERGY STAR Multifamily New Construction, All Versions (Rev. 02)
National HVAC Design Supplement to Std. 310 for Dwellings & Units¹

1. Design Basis	
1.1 Design description (optional):	
1.2 Designer company:	Designer name: Date:
2. Dwelling Unit Mechanical Ventilation System Design ("Vent System") & Inlets in Return Duct ^{2, 3, 4}	
Airflow:	
2.1 Ventilation airflow design rate & run-time for each Vent System meets ASHRAE 62.2-2010 or later edition. ⁶	<input type="checkbox"/>
2.2 Access point is specified for Rater to measure ventilation airflow rate and inspect any motorized / shutoff dampers. ^{4, 7}	<input type="checkbox"/>
System Controls	
2.3 Specified controls for each Vent System allow it to operate automatically, without occupant intervention.	<input type="checkbox"/>
2.4 Specified controls for each Vent System include a readily-accessible override & a label has also been specified 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 vent. equip.). ⁸	<input type="checkbox"/>
2.5 For any outdoor air inlet designed to connect to a ducted return of the HVAC system, specified controls automatically restrict airflow using a motorized damper during ventilation off-cycle and occupant override. ^{4, 9}	<input type="checkbox"/>
Sound: 2.6 Specified fan of each Vent System is rated ≤ 3 sones if intermittent and ≤ 1 sone if continuous, or exempted. ¹⁰	<input type="checkbox"/>
Efficiency: (Complete if Vent System controller operates HVAC fan or Vent System uses bath fans; otherwise, check "N/A")	<input type="checkbox"/>
2.7 If Vent System controller operates the HVAC fan, then HVAC fan operation is intermittent and either fan type in HVAC design report is ECM or controls will reduce the run-time by accounting for HVAC system heating or cooling hours. ¹¹	<input type="checkbox"/>
2.8 If bathroom fans are specified as part of any Vent System, then they are ENERGY STAR certified. ¹²	<input type="checkbox"/>
2.9 MFNC Only: ¹³ If central exhaust fans are specified as part of the Vent System, then if ≤ 1 HP, they are direct-drive, ECM, with variable speed controllers; and if > 1 HP, they are specified with NEMA Premium™ Motors or equivalent.	<input type="checkbox"/>
Air Inlet Location: (Complete this section if system has a specified, & inlet location; otherwise check "N/A") ¹⁴	<input type="checkbox"/>
2.10 Inlets pull ventilation air directly from outdoors and not from attic, crawlspace, garage, or adjacent dwelling unit	

This template has been created and will be integrated into HVAC design programs, as well. Wrightsoft is targeting Q4 2021, EnergyGauge USA is targeting Q2 2022, and RHVAC is assessing their timeline. It's recommended that Raters wait to use the standard until this integration is complete for the program(s) being used by the designers they work with. However, Raters can have HVAC designers complete this supplement manually or have them complete the current ENERGY STAR National HVAC Design Report, which contains the same information.

ENERGY STAR
National HVAC Design Supplement to Std. 310 for Common Spaces & Central Systems¹
ENERGY STAR Multifamily New Construction, Version 1 / 1.1 / 1.2 (Rev. 02)

HVAC Designer Responsibilities:


- This Supplement shall be used for MFNC buildings where "Track A – HVAC Grading by Rater" is used for all dwelling unit HVAC systems.
- Complete one Supplement for Common Spaces and Central Systems for each building. This Supplement includes system design for all hydronic systems, common space heating and cooling systems that are not using HVAC Grading, and common space and central ventilation requirements not covered under ANSI / RESNET / ACCA 310 or the National HVAC Design Supplement to Std. 310 for Dwellings & Units. For projects with multiple buildings, one Supplement per building or per project is permitted.¹
- Obtain efficiency features (e.g., window performance, insulation levels, and infiltration rate) from the builder, architect, or Rater.²
- Provide the completed Supplement to the Rater and the person / company completing the National HVAC Functional Testing Checklist.³

1. Design Overview	
1.1 Designer name:	Designer company: Date:
1.2 Select which party you are providing these design services to: <input type="checkbox"/> Builder / Developer <input type="checkbox"/> FT Agent <input type="checkbox"/> MEP / Credentialed HVAC contractor	
1.3 Name of company you are providing these design services to (if different than Item 1.1):	
1.4 Project address:	City: State: Zip code:
2a. Common Space Mechanical Ventilation Design ("Vent System")³ & Inlets in Return Duct^{4, 5, 6}	
Airflow:	
2.1 Common space outdoor airflow design rate meet the requirements of Section 6 of ASHRAE 62.1 ⁸ <input type="checkbox"/> 2010 <input type="checkbox"/> 2013, without exceeding 2013 rates by more than 50%	<input type="checkbox"/>
List common space for which 62.1 ventilation rates were calculated in the spaces to the right: ^{4, 7}	
2.2 Ventilation airflow rate required by ASHRAE 62.1:	
2.3 Ventilation airflow rate designed:	
Common Space System Type & Controls:⁷	
List Ventilation System ID in the spaces to the right: ⁸	
2.4 Specified system type (e.g., supply, exhaust, balanced, ERV, HRV):	

For Multifamily projects, if all dwelling unit systems are using HVAC grading, there is an abbreviated version of the MFNC Design Report to just cover central hydronic distribution requirements (such as water-loop heat pumps on a shared loop), central ventilation requirements, and common space systems that are not using HVAC Grading. This is the "National HVAC Design Supplement to Std. 310 for Common Spaces & Central Systems," pictured above. If not all dwelling-unit systems are graded, project teams should fill out the National MFNC HVAC Design Report for any systems that are not covered by HVAC grading.

5. Complete the first page of the ENERGY STAR MFNC National Rater Design Review Checklist.

Most design review requirements for ENERGY STAR will be satisfied by the ANSI / RESNET / ACCA / ICC Standard 310 design review. The two additional requirements for ENERGY STAR are shown in the highlighted fields below. They simply require the Rater to verify that all required documentation was collected and completed and that the cooling sizing limits have been met.

 **National Rater Design Review Checklist**¹
ENERGY STAR Multifamily New Construction, Version 1 / 1.1 / 1.2 (Rev. 02)


If pursuing Track A – HVAC Grading by Rater, complete this page.³

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

1. Partnership Status	Must Correct	Rater Verified
1.1 Rater has verified and documented that builder or developer has an ENERGY STAR partnership agreement using www.energystar.gov/partnersocalif . Builder name: _____ Developer name: _____	<input type="checkbox"/>	<input type="checkbox"/>
1.2 ASHRAE Only: Rater has verified that modeler is listed in the online directory using www.energystar.gov/ASHRAEdirectory . Modeler name: _____ (Not required for projects in California)	<input type="checkbox"/>	<input type="checkbox"/>
2. High-Performance Fenestration		
2.1 Dwelling units:		
2.1.1 Prescriptive: Specified fenestration meets or exceeds ENERGY STAR MF Reference Design requirements. ⁵	<input type="checkbox"/>	<input type="checkbox"/>
2.1.2 ERI and ASHRAE only: Specified fenestration meets or exceeds 2009 IECC residential requirements. ⁵	<input type="checkbox"/>	<input type="checkbox"/>
2.2 Common space: ²		
2.2.1 ERI and Prescriptive: Specified fenestration meets or exceeds ENERGY STAR MF Reference Design requirements. ⁵	<input type="checkbox"/>	<input type="checkbox"/>
2.2.2 ASHRAE only: Specified fenestration meets or exceeds 2009 IECC commercial requirements. ⁵	<input type="checkbox"/>	<input type="checkbox"/>
3. High-Performance Insulation		
3.1 Dwelling unit:		
3.1.1 Prescriptive: Specified ceiling ⁶ , wall ⁷ , floor, and slab-on-grade insulation levels meet or exceed ENERGY STAR MF Reference Design requirements. ^{8, 9, 10}	<input type="checkbox"/>	<input type="checkbox"/>
3.1.2 ERI and ASHRAE only: Specified ceiling ⁶ , wall ⁷ , floor, and slab-on-grade insulation levels meet or exceed values from the "Group R" column in the 2009 IECC Commercial chapter. ^{8, 9, 10}	<input type="checkbox"/>	<input type="checkbox"/>
3.2 Common space: ²		
3.2.1 ERI and Prescriptive: Specified ceiling ⁶ , wall ⁷ , floor, and slab-on-grade insulation levels meet or exceed ENERGY STAR MF Reference Design requirements. ^{8, 9, 10}	<input type="checkbox"/>	<input type="checkbox"/>
3.2.2 ASHRAE only: Specified ceiling ⁶ , wall ⁷ , floor, and slab-on-grade insulation levels meet or exceed values from the "All Other" column in the 2009 IECC Commercial chapter. ^{8, 9, 10}	<input type="checkbox"/>	<input type="checkbox"/>
4a. Review of ANSI / RESNET / ACCA Std. 310 HVAC Design Report with ENERGY STAR MFNC Supplement		
4a.1 HVAC design report(s) compliant with ANSI / RESNET / ACCA Std. 310 representing all applicable systems, with the ENERGY STAR MFNC supplement, collected for records, with no items left blank.	<input type="checkbox"/>	<input type="checkbox"/>
4a.2 ANSI / RESNET / ACCA Std. 310 Rater Design Review Checklist completed for applicable housing type, with all items marked, "Rater Verified".	<input type="checkbox"/>	<input type="checkbox"/>
4a.3 Prescriptive Path: Dwelling Unit Mechanical Ventilation is <150% of ASHRAE 62.2-2013 requirements. ¹¹	<input type="checkbox"/>	<input type="checkbox"/>
4a.4 Total occupant gains do not exceed 645 Btuh per occupant. ¹²	<input type="checkbox"/>	<input type="checkbox"/>

6. Complete Sections 5a.1 through 5a.3 of the ENERGY STAR MFNC National Rater Field Checklist.

While any airflow, watt draw, and refrigerant grade is acceptable for an energy rating, these items specify minimum grades that must be achieved for ENERGY STAR certification.

 **National Rater Field Checklist**¹
ENERGY STAR Multifamily New Construction, Version 1 / 1.1 / 1.2 (Rev. 02)

4. Air Sealing (Unless otherwise noted below, "sealed" indicates the use of caulk, foam, or equivalent material.)	Must Correct	Builder Verified ²	Rater Verified ³	N/A ⁴
The following items must be verified in dwelling units and common spaces to reduce air leakage to exterior, adjacent buildings, or unconditioned spaces.				
4.1 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"/>	-
4.2 Recessed lighting fixtures adjacent to unconditioned space ICAT labeled and gasketed. Also, if in insulated ceiling without attic above, exterior surface of fixture insulated to ≥ R-10 in CZ 4-8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.3 Continuous top plate or blocking is at top of walls adjoining unconditioned space including at balloonframed parapets, and sealed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.4 Drywall sealed to top plate at all unconditioned attic / wall interfaces using caulk, foam, drywall adhesive (but not other construction adhesives), or equivalent material. Either apply sealant directly between drywall and top plate or to the seam between the two from the attic above.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.5 Rough opening around windows & exterior doors sealed. ²³	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
4.6 Assemblies that separate attached garages from occupiable space sealed and, also, an air barrier installed, sealed, and aligned with these assemblies. ²⁴	<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. ¹⁸	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The following items must be additionally verified in dwelling units, to reduce air leakage between conditioned spaces.				
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 Rater-measured compartmentalization is no greater than 0.30 CFM50 per square foot of dwelling unit enclosure area, following procedures in ANSI / RESNET / ICC Std. 380. ²⁵	<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 Rater-measured pressure difference between the space containing the air handler and the conditioned space during the compartmentalization test is no greater than 5 Pa. ²⁶	<input type="checkbox"/>	-	<input type="checkbox"/>	
HVAC System ²⁷				
5. Heating & Cooling Eqpt. Complete Track A - HVAC Grading by Rater OR Track B - HVAC Testing by FT Agent ²⁸	Must Correct	Rater Verified ⁴	N/A ⁴	
Track A ²⁹ 5a.1 Blower fan volumetric airflow is Grade I or II per ANSI / RESNET / ACCA Std. 310	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5a.2 Blower fan watt draw is Grade I or II per ANSI / RESNET / ACCA Std. 310	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5a.3 Refrigerant charge is Grade I per ANSI / RESNET / ACCA Std. 310. See Footnote 40 for exemptions. ⁴⁰	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5b.1 HVAC manufacturer & model number on installed equipment matches either of the following (check box): ⁴¹	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

7. Optional: Rater complete Section 5 of the ENERGY STAR MFNC HVAC Functional Testing Checklist.

While not required for Track A, a Functional Testing Agent or a Rater must still complete Section 5 of the FT Checklist, which is the functional testing of the graded HVAC system. A Rater can complete this verification in concert with the HVAC grading tests and then a Functional Testing Agent is not needed for the systems that are undergoing HVAC grading.

Overview of Track A vs. Track B within ENERGY STAR

Below is a summary of how Track A and Track B compare in the Multifamily New Construction program. To reiterate, Track B is what has existed in the MFNC program to date.

Multifamily New Construction	Track A: HVAC Grading by Rater	Track B: HVAC Testing by FT Agent
HVAC designer completes..	..Std. 310 Design Report + ENERGY STAR Supplement(s)	..ENERGY STAR HVAC Design Report
Rater reviews design report per..	..Std. 310 Data Tool + ENERGY STAR Design Review Checklist	..ENERGY STAR Design Review Checklist
Rater verifies..	..Functional Testing Agent is credentialed, for any central / commercial equipment	..Functional Testing Agent is credentialed
HVAC contractor installs..	..equipment	..equipment & FT Agent completes Functional Testing Checklist
Rater verifies..	..Grade I total duct leakage, Grade I / II blower fan airflow, Grade I / II blower fan watt draw, Grade I refrigerant charge when the non-invasive method is able to be used Optional: Functional Testing	..total duct leakage limits, static pressure, required to collect FT Checklist if FT Agent is not a credentialed contractor Optional: Functional Testing

Additional Resources

Use [ENERGY STAR's HVAC grading factsheets](#): Educate your stakeholders using targeted factsheets. The following factsheets are available:

- [MFNC HVAC Grading Factsheet: Builders](#)
- [MFNC HVAC Grading Factsheet: Raters](#)
- [MFNC HVAC Grading Factsheet: HVAC contractors](#)
- [MFNC HVAC Grading Factsheet: HVAC designers](#)

Watch the "[ENERGY STAR + HVAC Grading](#)" webinar: Review this session held on 11/5/2020. Contact us at energystarhomes@energystar.gov to request a recording.

Review **Standard 310**: Find more information on ANSI / RESNET / ACCA / ICC Standard 310 on [RESNET's RESNET-ANSI American National Standards page](#).

Complete Training: For Raters for whom RESNET is their HCO, complete the required training modules through the [RESNET Portal](#).

View Instructional Videos: View optional instructional videos on measuring airflow, not prepared by EPA, on [The](#)

[Energy Conservatory's HVAC Air Flow and Pressure Measurement Training page.](#)

View past [ENERGY STAR Residential New Construction technical bulletins.](#)

Best regards,

The ENERGY STAR Residential New Construction team

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