



ENERGY STAR®

Residential New
Construction



Technical Bulletin:

Track A - HVAC Grading Now Available for Use!

October 5, 2021

Track A - HVAC Grading 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 commissioning components of the ENERGY STAR Single-Family New Homes program.

And now, with the release of updates for Ekotrope, EnergyGauge USA, and REM/Rate, Track A - HVAC Grading, can now be used.

While this new track is available for use, partners are free to continue using Track B - HVAC Credential. Track B is a collection of requirements built upon the use of a credentialed HVAC contractor. While the name "Track B - HVAC Credential" is new, this is the familiar set of requirements that partners have been using to date.

Key Benefits of Track A - HVAC Grading

HVAC grading makes it easier to certify ENERGY STAR single-family new homes:

- Integrates most ENERGY STAR HVAC requirements into a standard energy rating
- Does not require the use of a credentialed HVAC contractor
- Does not require the contractor to complete the HVAC Commissioning Checklist
- Rewards proper installation with ERI points and helps meet the 45L tax credit

How to Use Track A - HVAC Grading

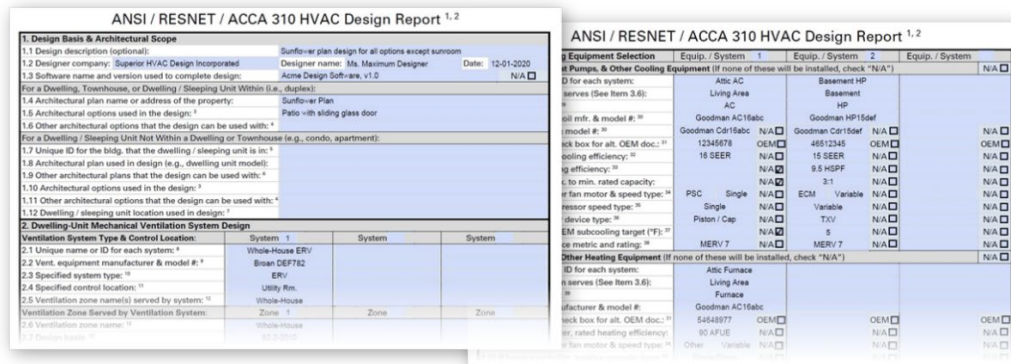
1. Complete the mandatory training and assessment required by your Home Certification Organization (HCO).

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.

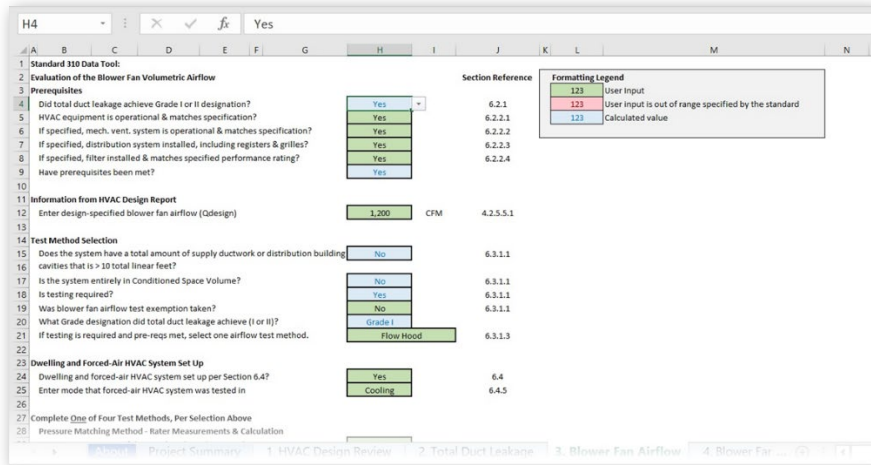
2. Follow ANSI / RESNET / ACCA / ICC Standard 310 over the course of the energy rating.

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 has been integrated into Wrightsoft and EnergyGauge USA, and can be completed with the press of a button. Efforts are underway to integrate this into RHVAC, as well.

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, in the interim, Raters can have designers complete this report manually.



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.



In addition to following ANSI / RESNET / ACCA / ICC Standard 310 over the course of the energy rating, there are three additional tasks required for ENERGY STAR certification while using Track A - HVAC Grading:

3. Collect the ENERGY STAR 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 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 & Units ¹**


1. Design Basis		Verified ⁵	N/A
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}		Verified ⁵	N/A
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"/>	<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 both fans; otherwise, check "N/A")			
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"/>	<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"/>	<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"/>	<input type="checkbox"/>	
Air Inlet Location: (Complete this section if system has a specified L or inlet location; otherwise check "N/A") ¹⁴	<input type="checkbox"/>		
¹⁵ 10 Inlet(s) pull ventilation air directly from outdoors and not from attic, crawlspace, garage, or adjacent dwelling unit	<input type="checkbox"/>		

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, in the interim, Raters can have designers complete this supplement manually or have them complete the current ENERGY STAR National HVAC Design Report, which contains the essential information they'll need.

4. Complete the first page of the ENERGY STAR 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.

OMB Control Number: 2060-0586
Expiration Date: 01-31-2024
EPA Form Number: 5900-429




**ENERGY STAR Single-Family New Homes
National Rater Design Review Checklist, Version 3 / 3.1 (Rev. 11)**

If pursuing Track A - HVAC Grading, complete this page. ¹

Home Address: _____ City: _____ State: _____ Permit Date: _____		Must Correct	Rater ² Verified
1. Partnership Status			
1.1 Rater has verified and documented that builder has an ENERGY STAR partnership agreement using energystar.gov/partnerlocator . ³		<input type="checkbox"/>	<input type="checkbox"/>
2. High-Performance Fenestration			
2.1 Specified fenestration meets or exceeds 2009 IECC requirements. ⁴		<input type="checkbox"/>	<input type="checkbox"/>
3. High-Performance Insulation			
3.1 Specified ceiling, wall, floor, and slab insulation levels comply with one of the following options:			
3.1.1 Meets or exceeds 2009 IECC levels ^{5,6,7} OR;		<input type="checkbox"/>	<input type="checkbox"/>
3.1.2 Achieves ≤ 133% of the total UA resulting from the U-factors in 2009 IECC Table 402.1.3, per guidance in Footnote 5d, AND specified home infiltration does not exceed the following: ^{6,7}		<input type="checkbox"/>	<input type="checkbox"/>
3 ACH50 in CZs 1, 2 2.5 ACH50 in CZs 3, 4 2 ACH50 in CZs 5, 6, 7 1.5 ACH50 in CZ 8			
4a. Review of ANSI / RESNET / ACCA Std. 310 HVAC Design Report with ENERGY STAR Supplement			
4a.1 HVAC design report compliant with ANSI / RESNET / ACCA Std. 310, with the ENERGY STAR 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 Cooling sizing % is within the cooling sizing limit selected by the HVAC designer.		<input type="checkbox"/>	<input type="checkbox"/>
Rater Name: _____ Date of Review: _____			
Rater Signature: _____ Rate / Company Name: _____			

5. Complete Sections 5a.1 through 5a.3 of the ENERGY STAR 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.



ENERGY STAR Single-Family New Homes
National Rater Field Checklist, Version 3 / 3.1 (Rev. 11)

	Must Correct	Rater Verified ²	N/A ³
HVAC System ³¹			
5. Heating & Cooling Equipment - Complete Track A - HVAC Grading ³² or Track B - HVAC Credential			
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"/>
Track A 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 33 for exemptions. ³³	<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): ³⁴	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> National HVAC Design Report <input type="checkbox"/> Written approval received from designer			
5b.2 External static pressure measured by Rater at contractor-provided test locations and documented below: ³⁵	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Return-Side External Static Pressure: IWC Supply-Side External Static Pressure: IWC			
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"/>
6. Duct Quality Installation (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. ³⁶	<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 ≥ -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 37. ³⁷	<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 $\geq R-6$. ³⁸	<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 40: ^{39, 40, 41}			
6.4.1 Rough-in: The greater of ≤ 4 CFM25 per 100 sq. ft. of CFA or ≤ 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. ⁴²	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.4.2 Final: The greater of ≤ 8 CFM25 per 100 sq. ft. of CFA or ≤ 80 CFM25, with the air handler & all ducts, building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overview of Track A vs. Track B within ENERGY STAR

Below is a summary of how Track A and Track B compare in the Single-Family New Homes program. To reiterate, Track B is what partners have been using to date.

Single-Family New Homes	Track A: HVAC Grading	Track B: HVAC Credential
HVAC designer completes..	..Std. 310 Design Report + ENERGY STAR Supplement	..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..	[n/a]	..HVAC contractor is credentialed
HVAC contractor installs..	..equipment	..equipment and completes ES HVAC Commissioning 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	..total duct leakage limits, static pressure, permitted to collect ES HVAC Commissioning Checklist

Additional Resources

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

- [HVAC Grading Factsheet: Builders](#)
- [HVAC Grading Factsheet: Raters](#)
- [HVAC Grading Factsheet: HVAC contractors](#)
- [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
energystarhomes@energystar.gov

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