Speaking

Dean Gamble

Technical Manager

ENERGY STAR Certified Homes Program

Poll Question #1

- Who's on the call today:
  A. Rater or Provider
  B. Builder or developer
  C. HVAC designer or contractor
  D. Utility program
  E. Other

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Poll Question #2

- For those involved with residential new construction, are you:
  A. Certifying some or all of your projects to ENERGY STAR
  B. Not certifying any projects, but doing ERI ratings
  C. Neither doing ENERGY STAR nor doing ERI ratings

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ENERGY STAR + HVAC Grading

November 5, 2020

Introduction

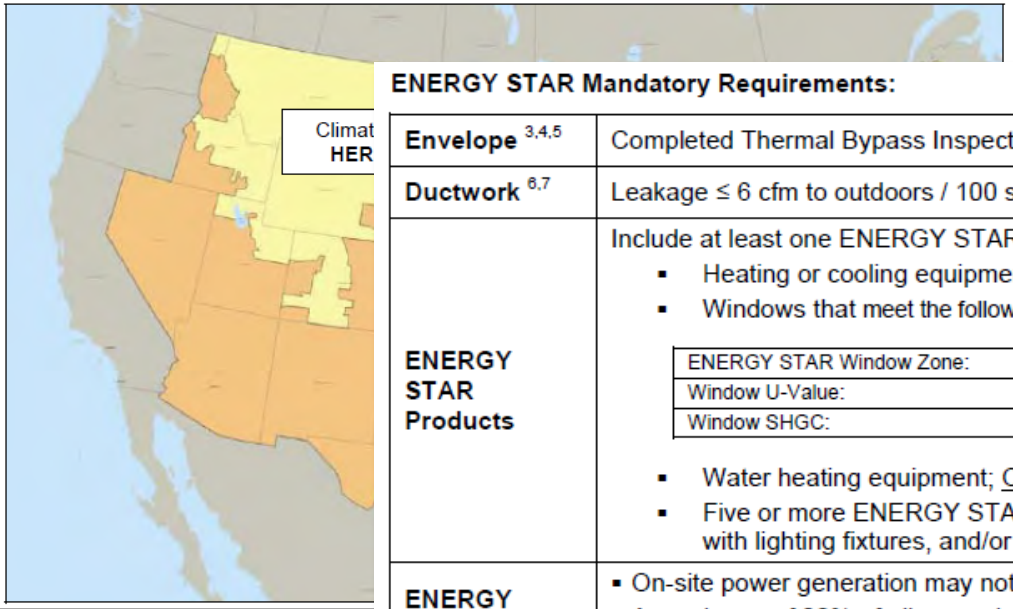
ENERGY STAR Version 2

ENERGY STAR Qualified Homes National Performance Path Notes

ENERGY STAR Performance Requirements:

To qualify as ENERGY STAR, a home must meet the minimum requirements specified below and be verified and field-tested in accordance with the RESNET Standards by a RESNET-accredited Provider. Note that compliance with these guidelines is not intended to imply compliance with all local code requirements that may be applicable to the home to be built.[1]

Maximum HERS Index Required to Earn the ENERGY STAR[2]



ENERGY STAR Mandatory Requirements:

Envelope [3,4,5]	Completed Thermal Bypass Inspection Checklist
Ductwork [6,7]	Leakage ≤ 6 cfm to outdoors / 100 sq. ft.
ENERGY STAR Products	Include at least one ENERGY STAR qualified product category: ▪ Heating or cooling equipment [8,9]; OR ▪ Windows that meet the following eligibility requirements [10]; OR

ENERGY STAR Window Zone:	Southern	South / Central	North / Central	Northern
Window U-Value:	≤ 0.65	≤ 0.40	≤ 0.40	≤ 0.35
Window SHGC:	≤ 0.40	≤ 0.40	≤ 0.55	Any

	▪ Water heating equipment; OR ▪ Five or more ENERGY STAR qualified light fixtures [11,12], appliances [13], ceiling fans equipped with lighting fixtures, and/or ventilation fans [14]
ENERGY STAR Scoring Exceptions	▪ On-site power generation may not be used to achieve the HERS Index required to qualify the home. ▪ A maximum of 20% of all screw-in light bulb sockets in the home may use compact fluorescent lamps (CFLs) to achieve the HERS index required to qualify the home. CFLs used for this purpose must be ENERGY STAR qualified.

ENERGY STAR Version 3

ENERGY STAR Qualified Homes
Water Management System Builder Checklist[1,2,3]

Home Address: _____ City: _____ State: _____

Inspection Guidelines	Must Correct	Builder Approved	N/A
1. Water-Managed Site and Foundation			
1.1 Patio slabs, walks, and driveways sloped ≥ 0.25 in. per ft. away from home to edge of surface or 10 ft., whichever is less.[4]	☐	☐	☐
1.2 Final grade is, or is scheduled by builder to be, sloped ≥ 0.5 in. per ft. away from home for ≥ 10 ft. and back-fill tamped to prevent settling[4]	☐	☐	☐
1.3 Capillary break beneath all concrete slabs using either:[5]			
1.3.1 4 in. bed of ≥ 0.5 in. clean aggregate covered with ≥6 mil polytethylene sheeting lapped 6-12 in. or ≥1" extruded polystyrene insulation with taped joints, in direct contact with concrete slab above, OR;	☐	☐	☐
1.3.2 4 in. uniform layer of sand overlaid with geotextile drainage matting and covered with sheeting or ≥1" extruded polystyrene insulation with taped joints.	☐	☐	☐
1.4 Capillary break for all crawlspace floors using either:[5]			
1.4.1 Concrete slab over ≥6 mil polyethylene sheeting, lapped 6-12 in., OR;	☐	☐	☐
1.4.2 ≥6 mil polyethylene sheeting, lapped 6-12 in. and attached to bottom of walls and piers with furring strips or equivalent.	☐	☐	☐
1.5 Exterior surface of below-grade walls finished as follows: • For poured concrete, concrete masonry, and insulated concrete forms, finish with damp-proofing coating • For wood framed walls, finish with polyethylene and adhesive or other equivalent waterproofing	☐	☐	☐
1.6 Permeability of materials used on interior surface of below-grade exterior walls >0.1[7]	☐	☐	☐
1.7 Sump pump covers mechanically attached with full gasket seal or equivalent	☐	☐	☐
1.8 Drain tile surrounded with clean gravel and fabric filter[8]	☐	☐	☐
2. Water-Managed Wall Assembly			
2.1 Flashing at bottom of exterior walls with weep holes included for masonry veneer and weep screed for stucco cladding systems, or equivalent drainage system	☐	☐	☐
2.2 Fully sealed continuous drainage plane behind exterior cladding that laps over flashing in Section 2.1[9]	☐	☐	☐
2.3 Window and door openings fully flashed[10]	☐	☐	☐
3. Water-Managed Roof Assembly			
3.1 Step and kick-out flashing at all roof-wall intersections, extending ≥ 4" on wall surface above roof deck and integrated with drainage plane above[11]	☐	☐	☐
3.2 Gutters & downspouts empty to lateral piping that deposits water on sloping finish grade ≥ 5 ft. from foundation or to underground catchment system ≥ 10 ft. from foundation[12]	☐	☐	☐
3.3 Self-sealing bituminous membrane or equivalent at all valleys and roof deck penetrations	☐	☐	☐
3.4 In 2009 IECC Climate Zones 5 and higher, self-sealing bituminous membrane or equivalent over sheathing at eaves, extending > 2 ft. up roof deck from wall plane	☐	☐	☐
4. Water-Managed Building Materials			
4.1 Wall-to-wall carpet *not* installed within 2.5 feet of toilets, tubs, and showers	☐	☐	☐
4.2 Cement board or equivalent moisture-resistant backing material installed on walls behind tub and shower enclosures composed of tile or panel assemblies with caulked joints. Paper-faced backerboard shall not be used.[13]	☐	☐	☐
4.3 In Warm-Humid climates, permeability rating of materials used on interior side of exterior walls is > 0.1 except at shower and tub walls	☐	☐	☐
4.4 Building materials with visible signs of water damage or mold *not* installed	☐	☐	☐
4.5 Interior walls *not* enclosed (e.g., with drywall) if either the framing members or insulation products have high moisture content[14]	☐	☐	☐

Builder Employee: _____

Builder Signature: _____ Date: _____

Builder has completed Builder checklist in its entirety[15]

Rater Signature: _____ Date: _____

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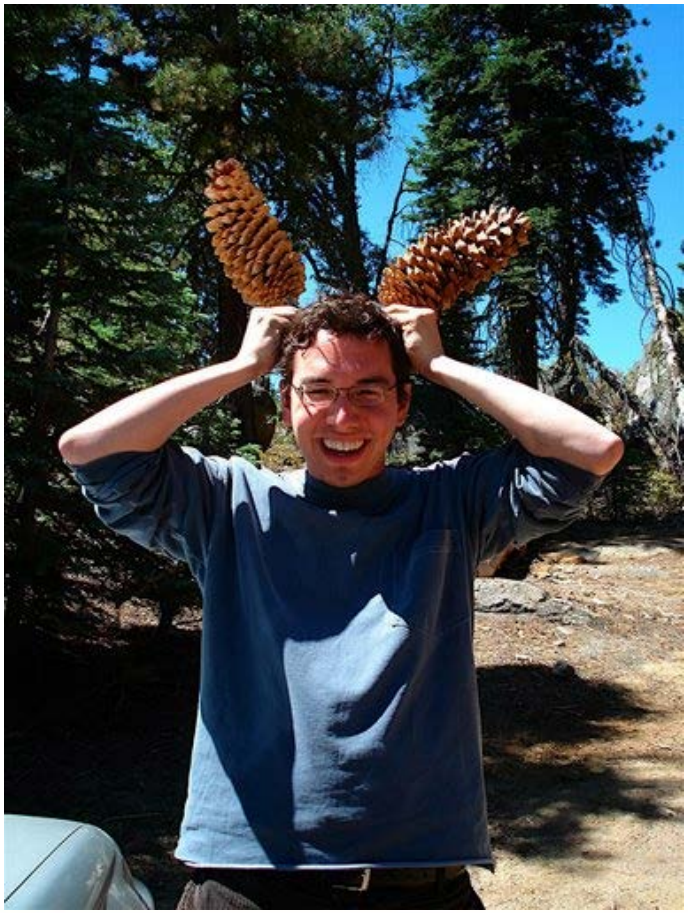
Version 3 Was a Big Lift

2010



2020

Version 3 Was a Big Lift

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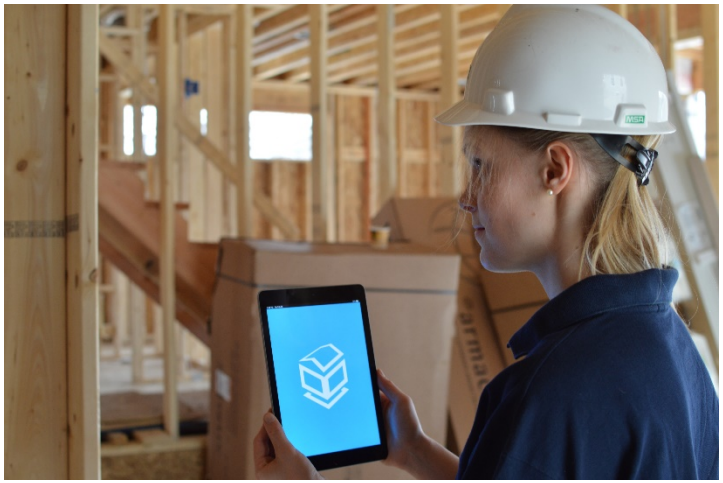
Version 3 Was a Big Lift



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But how far we've come..

- More familiar with the HVAC design and installation process
- Have stronger relationships with HVAC contractors
- Have seen total duct leakage drop
- Integrated HVAC design & commissioning into your business

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A World Divided

Energy Rating

Bridging Two Worlds Through Revisions

Reduced Rater tasks by 1/3

Autocompletion of HVAC Design Report

Removed collection of two checklists

HVAC Grading

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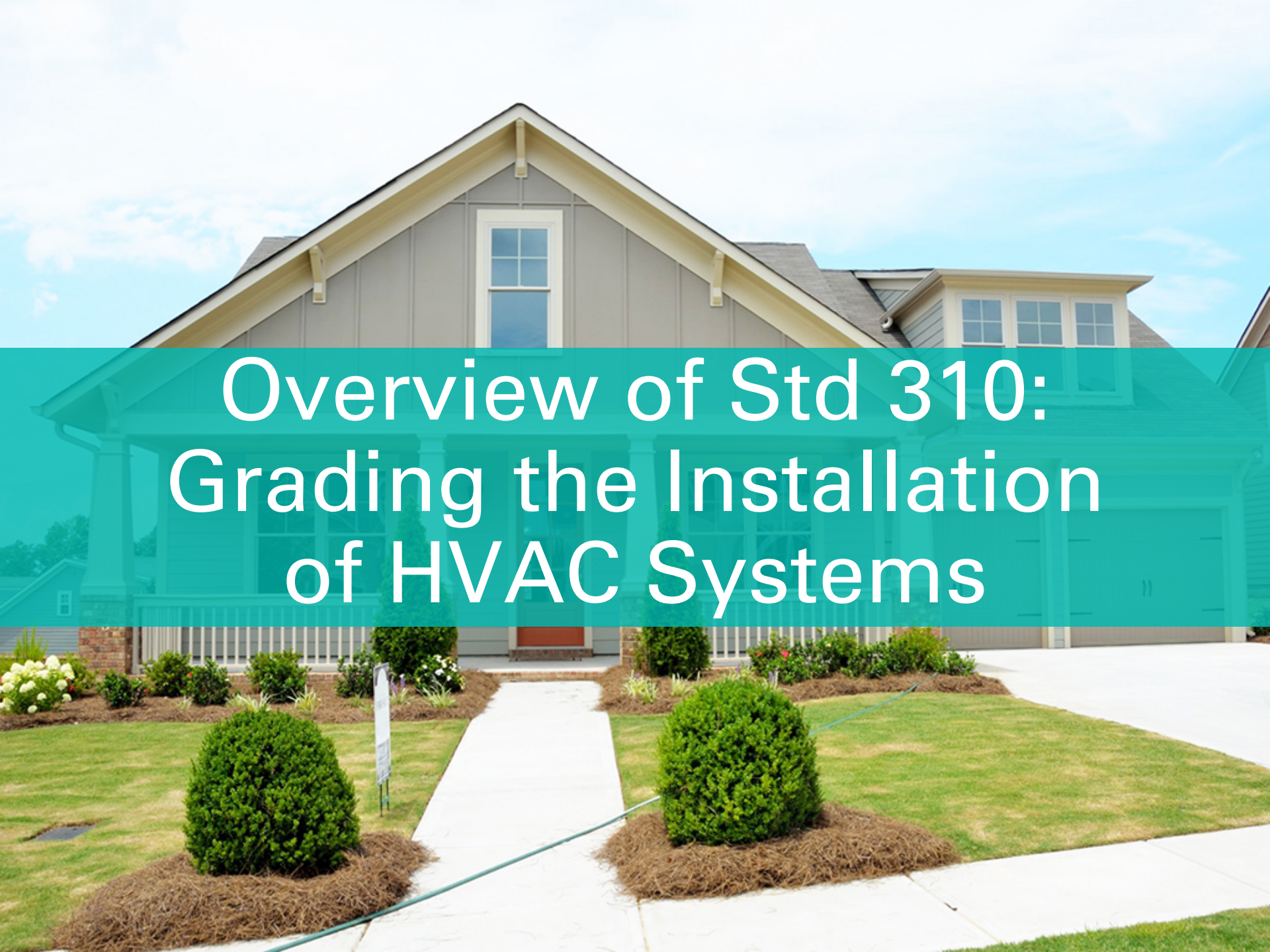
A Whole New World
(Or, a New Whole World)

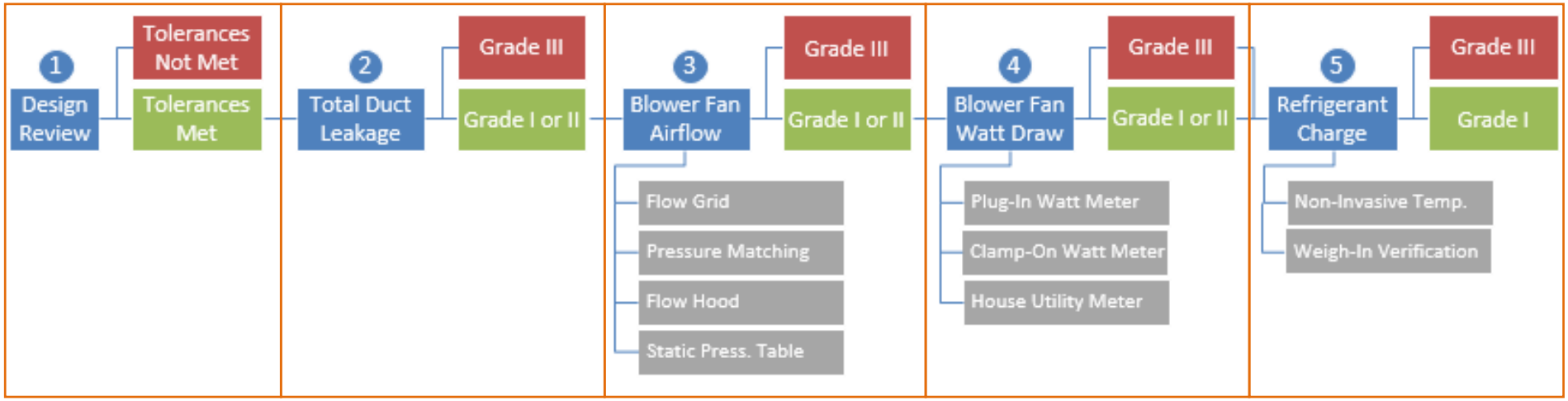
Energy Rating



Overview of Std 310: Grading the Installation of HVAC Systems

Std. 310: Standard for Grading the Installation of HVAC Systems

- Applicable to forced-air HVAC systems: furnaces, AC's, heat pumps..
- ..that serve one- and two-family dwellings, townhouses, and dwelling / sleeping units with their own HVAC system.



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Task 1: Design Review

Task 1: Evaluate the design

1. Rater collects design documentation for the dwelling with the HVAC system being tested.
2. Rater reviews design documentation for completeness and compares it to the dwelling. Key features must fall within defined tolerances. For example:

Floor Area	Indoor Design Temps	Insulation Levels
Window Area	Outdoor Design Temps	Infiltration Rate
# Occupants	Window SHGC	Ventilation Rate

3. If tolerances are met, proceed to next task. Otherwise stop here.

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Task 2: Total Duct Leakage

Task 2: Evaluate total duct leakage

1. Rater measures total duct leakage according to Std. 380, evaluates the results, and assigns a grade:

Grade	Test Stage	# Returns	Total Leakage Limit (CFM per 100 ft^2 or Total CFM)
I	Rough-In	< 3	4 or 40 total
		≥ 3	6 or 60 total
	Final	< 3	8 or 80 total
		≥ 3	12 or 120 total
II	Rough-In	< 3	6 or 60 total
		≥ 3	8 or 80 total
	Final	< 3	10 or 100 total
		≥ 3	14 or 140 total
III	N/A	N/A	No Limit

2. If Grade I or II is achieved, proceed to next task. Otherwise stop here.

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Task 3: Blower Fan Airflow

Task 3: Evaluate Blower Fan Airflow

- Raters measure the total volumetric airflow going through the blower fan using one of four test methods:
  A. Flow Hood
  B. Flow Grid
  C. Pressure Matching
  D. OEM Static Pressure Table

- This is just a single measurement. It is not measuring the airflow from each register and summing those.

- The result is compared to the design airflow. The closer the better. This difference is used to assign Grade I, II, or III.

- If Grade I or II is achieved, proceed to next task. Otherwise stop here.

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Task 4: Blower Fan Watt Draw

Task 4: Evaluate Blower Fan Watt Draw

- Raters evaluate the watt draw of the blower fan using one of three test methods:
  A. Plug-In Watt Meter
  B. Clamp-On Watt Meter
  C. Utility Meter

- The airflow and watt draw is used to calculate fan efficiency. The more efficient, the better. This is used to assign Grade I, II, or III.

- Regardless of grade, you can proceed to next task.

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Task 5: Refrigerant Charge

Task 5: Evaluate Refrigerant Charge

- Raters evaluates the refrigerant charge of the system using one of two test methods:
  A. Non-Invasive Method
  B. Weigh-In Verification Method

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Task 5: Evaluate Refrigerant Charge

A. Non-Invasive Method

- ‘Non-invasive’ means no gauges connected to refrigerant system.
- Instead, the temperature of the air and refrigerant lines are used.
- Triage systems into two bins:
  - Grade I – Charge is okay
  - Grade III – Charge is not okay

Refrigerant Gauges Not Connected

Temperature Sensors Used Instead

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Task 5: Evaluate Refrigerant Charge

B. Weigh-In Verification Method

- The weigh-in verification method can be used year-round and it must be used for:
  - Extreme outdoor conditions.
  - Mini/multi-split systems.
- This method is primarily a document review rather than a performance test.

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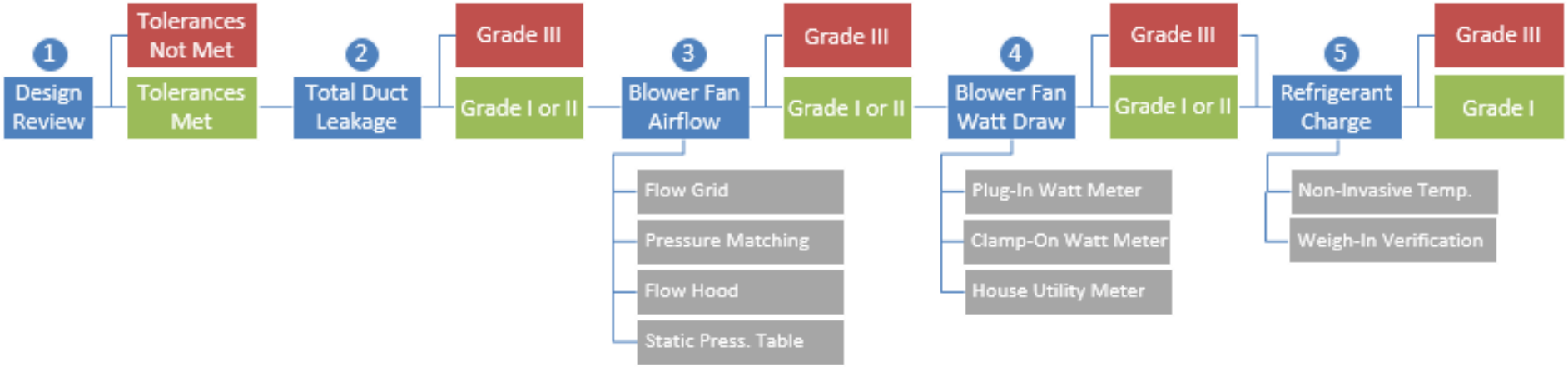
Std. 310: Standard for Grading the Installation of HVAC Systems



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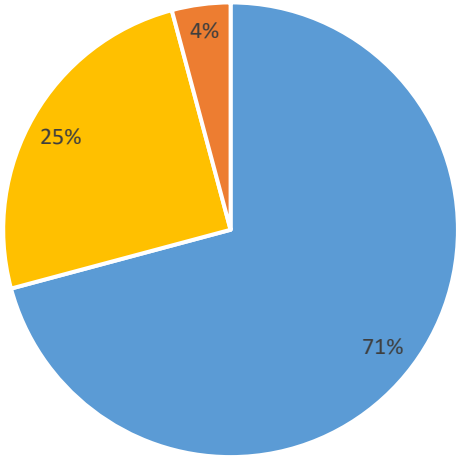
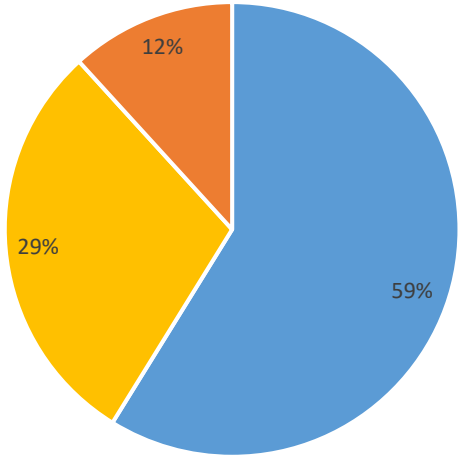
Field Test

- Six providers evaluated **18 systems** and performed **63 individual tests**.
- Required HVAC warm-up time is 15 minutes, but Raters can do other tasks during this time. After that, average time for all tests was **26 minutes**.
- Most systems achieved a **Grade I designation**:

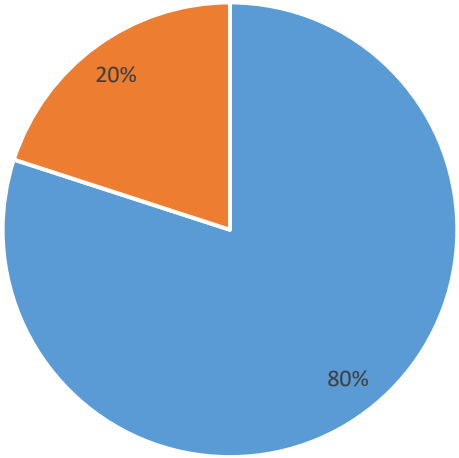
Blower Fan Airflow



Blower Fan Watt Draw



Refrigerant Charge



Grade I Grade II Grade III

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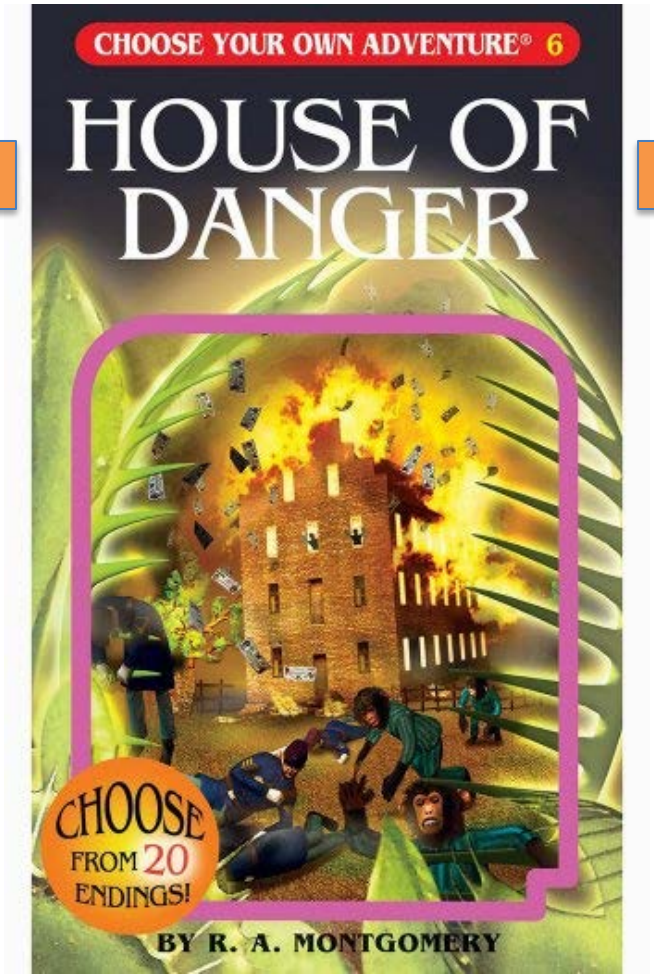
Integration with ENERGY STAR

Two HVAC pathways to certification

Track A: HVAC Grading



Track B: HVAC Credential

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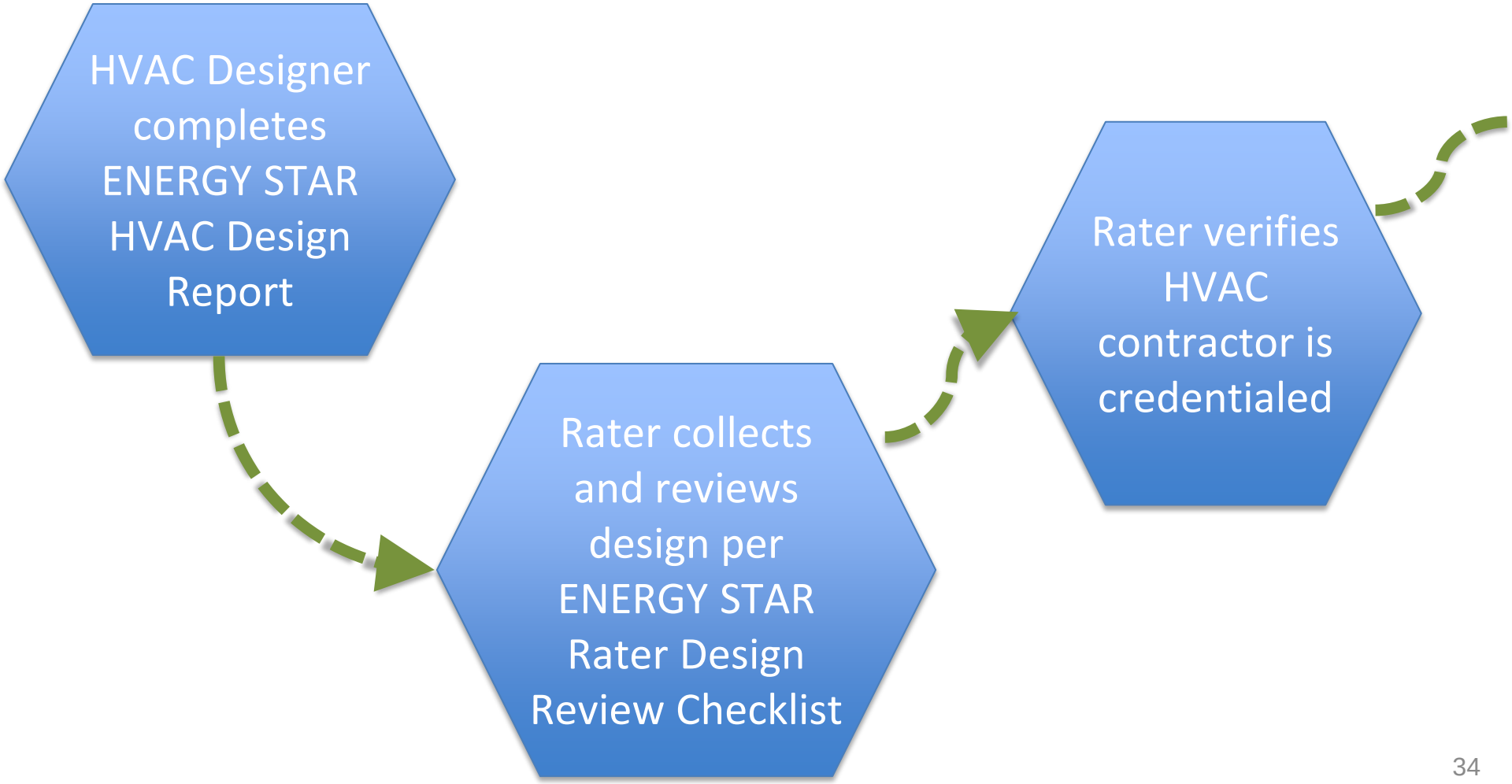
Track B: HVAC Credential



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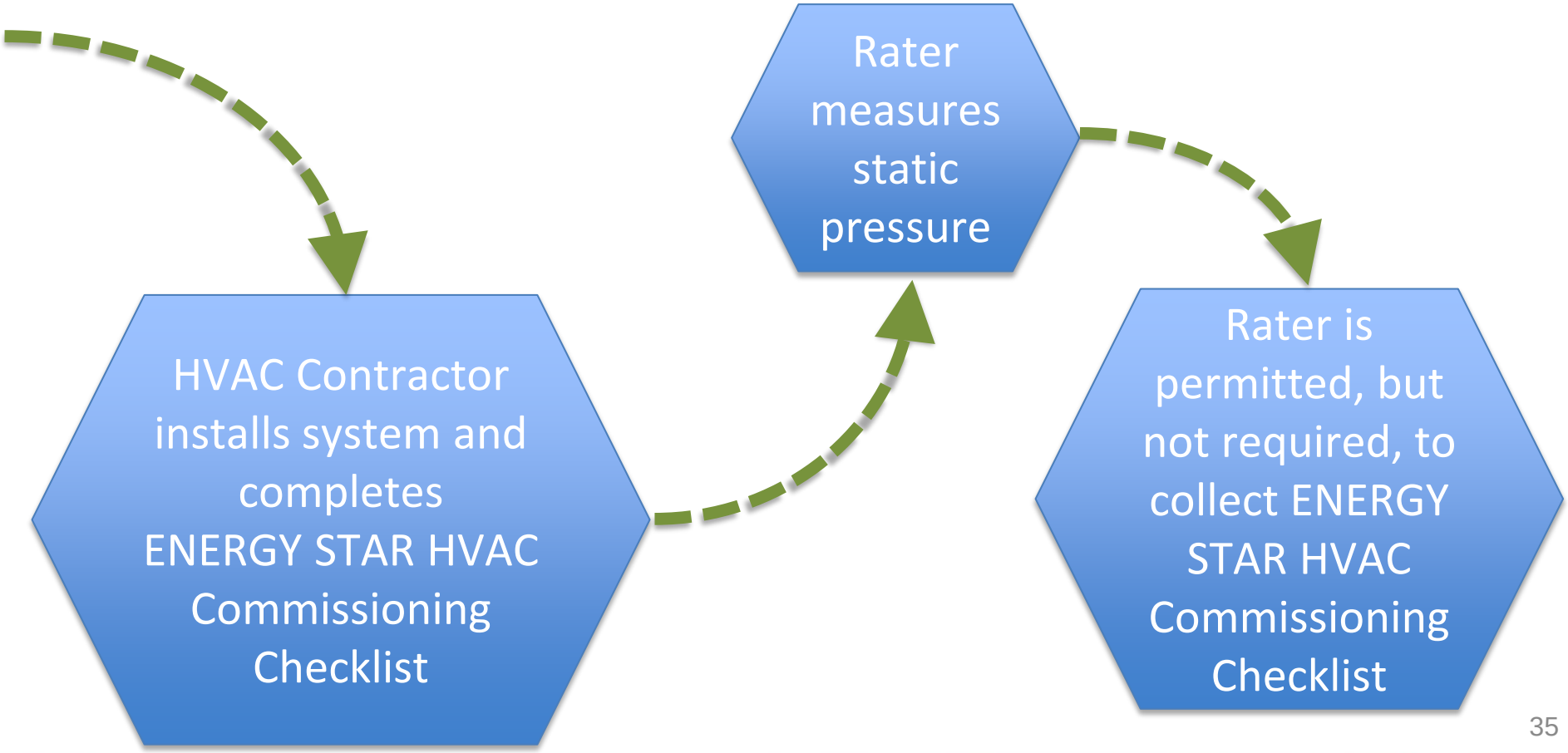
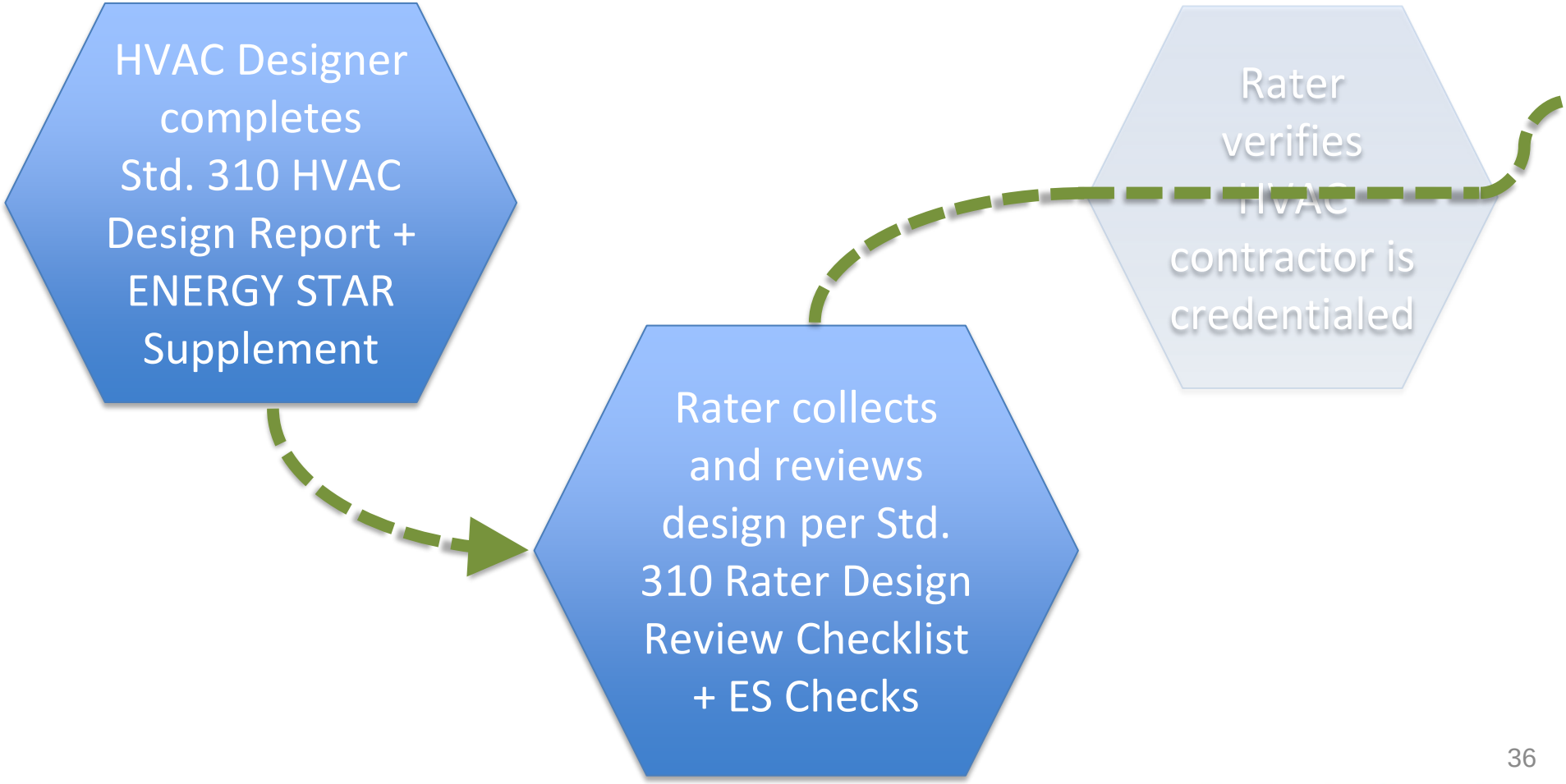
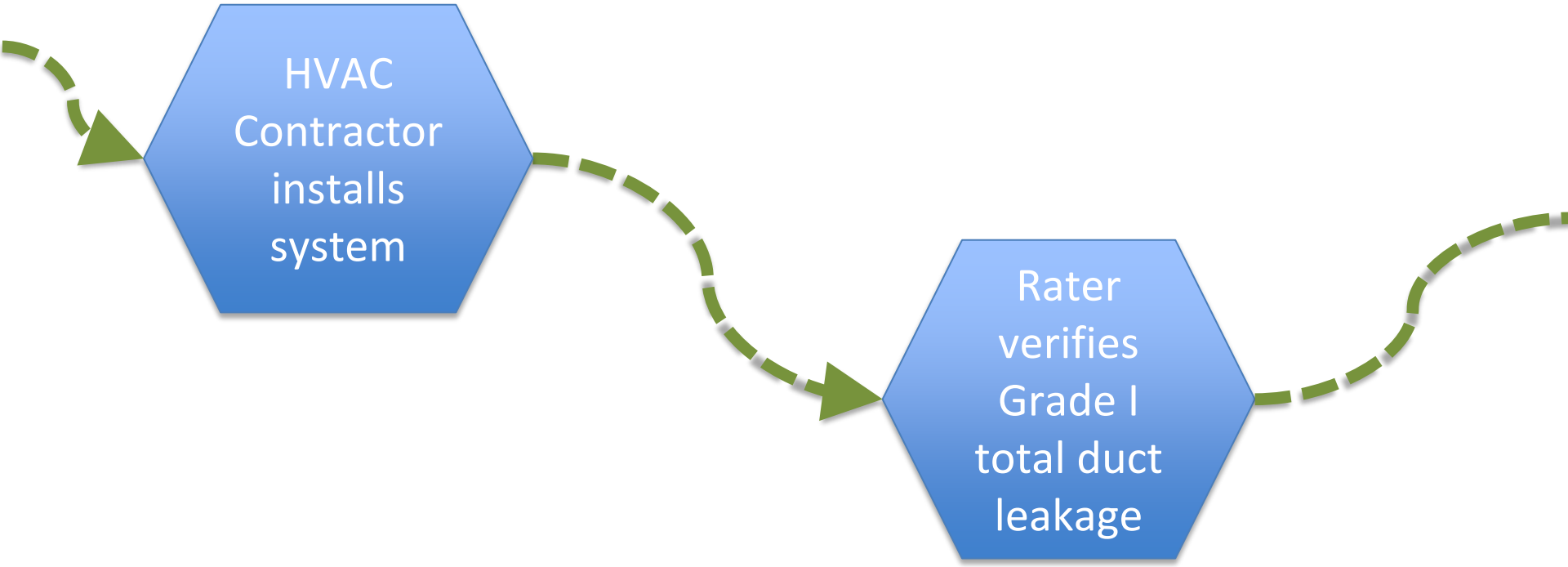
Track B: HVAC Credential



Track A: HVAC Grading



Track A: HVAC Grading



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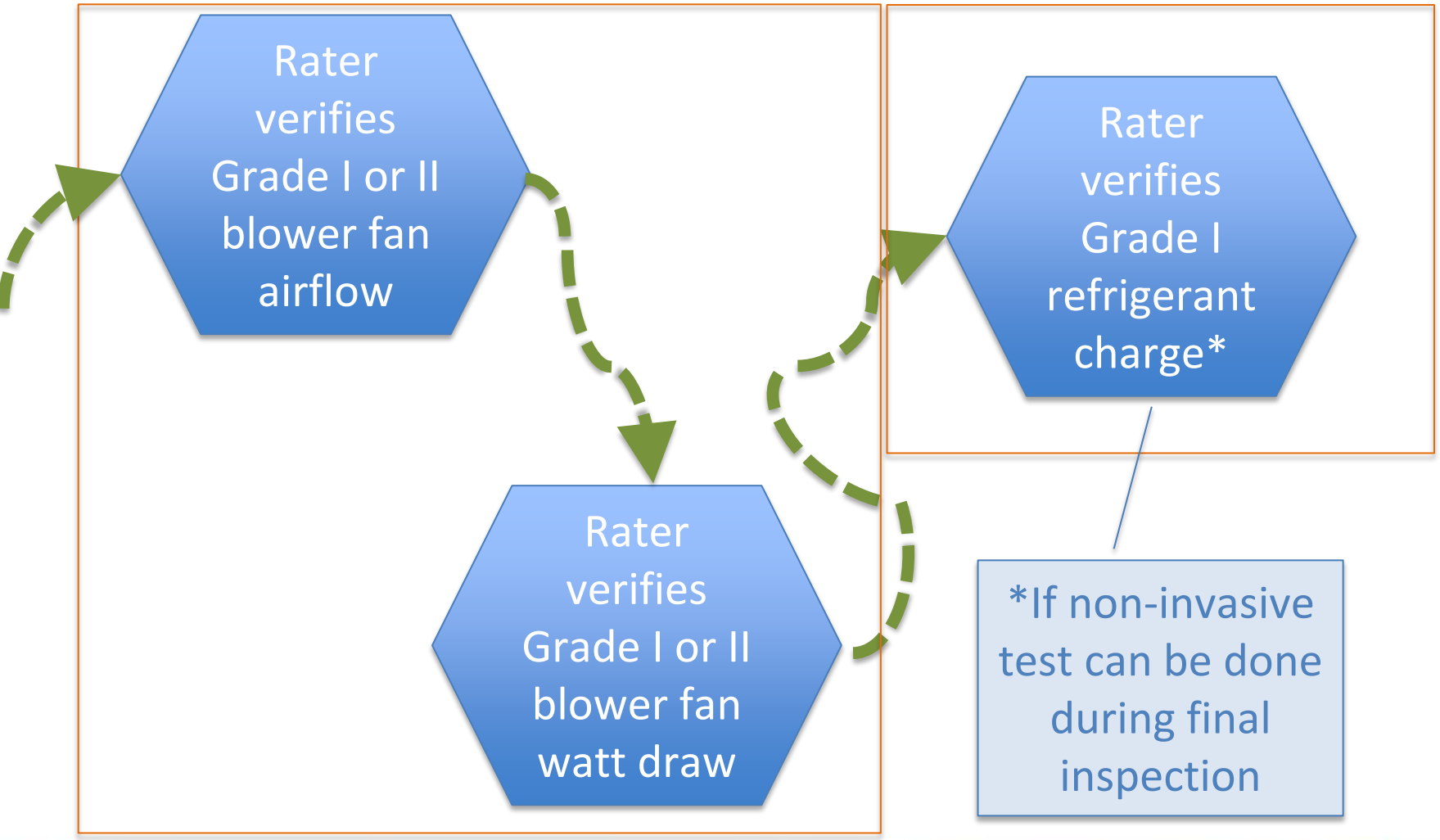
Track A: HVAC Grading



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Certified Homes	Track A: HVAC Grading	Track B: HVAC Credential
HVAC designer completes..	..Std. 310 Design Report + ENERGY STAR Supplement	..ENERGY STAR Design Report
Rater reviews design report per..	..Std. 310 Review Checklist + ENERGY STAR Supplement	..ENERGY STAR 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*	..total duct leakage limits, static pressure, permitted to collect ES HVAC Commissioning Checklist

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	..ENERGY STAR HVAC Design Report
Rater reviews design report per..	..Std. 310 Review Checklist + ENERGY STAR Supplement	..ENERGY STAR Design Review Checklist
Rater verifies..	[n/a for In-unit Forced-Air Systems]	..Functional Testing Agent meets credentials
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*	..total duct leakage limits, static pressure; required to collect FT Checklist, where FT Agent is not a credentialed contractor

Program Requirements Document

National Program Requirements
ENERGY STAR Certified Homes, Version 3.1 (Rev. 10)

Two paths are provided for satisfying the mandatory requirements for all certified homes, Exhibit 2. Path A - HVAC Grading utilizes ANSI / RESNET / ACCA Std. 310, a standard for grading the installation of HVAC systems. Path B - HVAC Credential utilizes an HVAC contractor credentialed by an EPA-recognized H-QUITO. Either path may be selected, but all requirements within that path must be satisfied for the home to be certified.

Exhibit 2: Mandatory Requirements for All Certified Homes

Party Responsible	Mandatory Requirements
Rater	• Completion of National Rater Design Review Checklist • Completion of National Rater Field Checklist
Builder	• Completion of National Water Management System Builder Requirements
If pursuing Path A - HVAC Grading:	
HVAC System Designer	• Completion of an HVAC design report compliant with ANSI / ACCA / RESNET Std. 310, plus the ENERGY STAR Supplement. [x]
HVAC Installing Contractor	• None. While the HVAC contractor plays a critical role in properly installing and commissioning a system, the Rater is the party responsible for assessing its installation quality in accordance with ANSI / RESNET / ACCA Std. 310.
If pursuing Path B - HVAC Credential:	
HVAC System Designer	• Completion of National HVAC Design Report
HVAC Installing Contractor	• Completion of National HVAC Commissioning Checklist.

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Rater Design Review Checklist

National Rater Design Review Checklist
ENERGY STAR Certified Homes, Version 3 / 3.1 (Rev. 10)

If pursuing Path A (HVAC Grading) complete this page.

Home Address: _____ City: _____ State: _____ Permit Date: _____

1. Partnership Status	Must Correct	Rater [1] Verified
1.1 Rater has verified that builder is an ENERGY STAR partner using energystar.gov/partnerlocator.	☐	☐
2. High-Performance Fenestration		
2.1 Specified fenestration meets or exceeds 2009 IECC requirements. [3]	☐	☐
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 [4, 5, 6] **OR**;	-	-
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 4d, AND specified home infiltration does not exceed the following: [5, 6] 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 [7]		
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.	☐	☐
4a.2 ANSI / RESNET / ACCA Std. 310 Rater Design Review Checklist completed for applicable housing type, with all items marked, "Rater Verified".	☐	☐
4a.3 Cooling sizing % is within the cooling sizing limit selected by the HVAC designer.	☐	☐

Rater Name: _____ Date of Review: _____

Rater Signature: _____ Rater Company Name: _____

National Rater Design Review Checklist
ENERGY STAR Certified Homes, Version 3 / 3.1 (Rev. 10)

If pursuing Path B (HVAC Credential) complete this page.

Home Address: _____ City: _____ State: _____ Permit Date: _____

1. Partnership Status	Must Correct	Rater [1] Verified
1.1 Rater has verified that builder is an ENERGY STAR partner using energystar.gov/partnerlocator.	☐	☐
1.2 Rater has verified that HVAC contractor holds credential required to complete National HVAC Commissioning Checklist. HVAC Contractor Company Name: _____ Exception 1: If all equipment installed in home to be certified is an exempted type, then check "N/A". [2] ☐ N/A	☐	☐
2. High-Performance Fenestration		
2.1 Specified fenestration meets or exceeds 2009 IECC requirements. [3]	☐	☐
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 [4, 5, 6] **OR**;	-	-
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 4d, AND specified home infiltration does not exceed the following: [5, 6] 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	-	-
4b. Review of ENERGY STAR National HVAC Design Report [7]		
4b.1 National HVAC Design Report collected for records, with no Items left blank.	☐	☐
4b.2 National HVAC Design Report reviewed by Rater for the following parameters (National HVAC Design Report Item # in parenthesis):		
4b.2.1 Cooling season and heating season outdoor design temperatures used in loads (3.3) are within the limits defined for the State and County, or US Territory, where the home will be built, or the designer has provided an allowance from EPA to use alternative values. [8]	☐	☐
4b.2.2 Number of occupants used in loads (3.4) is within ± 2 of the home to be certified. [9]	☐	☐
4b.2.3 Conditioned floor area used in loads (3.5) is between 100 sq. ft. smaller and 300 sq. ft. larger than the home to be certified. [10]	☐	☐
4b.2.4 Window area used in loads (3.6) is between 15 sq. ft. smaller and 60 sq. ft. larger than the home to be certified, or, for homes to be certified with > 500 sq. ft. of window area, between 3% smaller and 12% larger. [11]	☐	☐
4b.2.5 Predominant window SHGC used in loads (3.7) is within 0.1 of predominant value in the home to be certified. [10]	☐	☐
4b.2.6 Sensible, latent, & total heat gain are documented (3.10 - 3.12) for the orientation of the home to be certified. [11]	☐	☐
4b.2.7 The variation in total heat gain across orientations (3.13) is ≤ 6 kBtuh. [11]	☐	☐
4b.2.8 Cooling sizing % (4.13) is within the cooling sizing limit (4.15) selected by the HVAC designer.	☐	☐

Rater Name: _____ Date of Review: _____

Rater Signature: _____ Rater Company Name: _____

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Rater Field Checklist

National Rater Field Checklist
ENERGY STAR Certified Homes, Version 3 / 3.1 (Rev. 10)

HVAC System [30] (National HVAC Design Report Item # in parenthesis)		Must Correct	Rater Verified [2]	N/A [3]
5. Heating & Cooling Eqpt. – Complete Path A - HVAC Grading or Path B - HVAC Credential				
Path A	5a.1 Blower fan airflow is Grade I or II per ANSI / RESNET / ACCA Std. 310	☐	☐	☐
	5a.2 Blower fan watt draw is Grade I or II per ANSI / RESNET / ACCA Std. 310	☐	☐	☐
	5a.3 Refrigerant charge is Grade I per ANSI / RESNET / ACCA Std. 310. See Footnote xx for exemptions. [xx]	☐	☐	☐
Path B	5b.1 HVAC manufacturer & model number on installed equipment matches either of the following ☐ National HVAC Design Report (4.3, 4.4, & 4.17) ☐ Written approval received from designer	☐	☐	☐
	5b.2 External static pressure measured by Rater at contractor-provided test locations and documented below: 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.	☐	☐	☐

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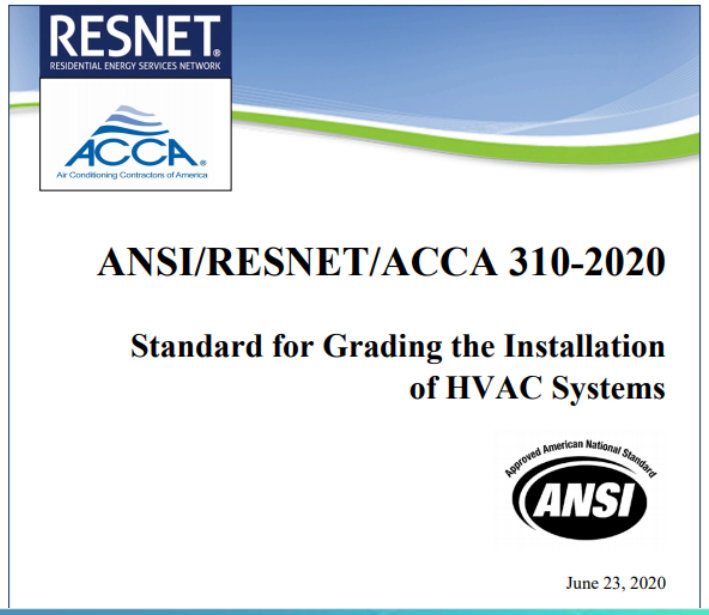
Timeline for Use

1. Standard 310: HVAC Grading Standard

- **What is this?** Defines how the Rater completes the design review, field tests, and designates the grade.

- View standard at: **https://www.resnet.us/about/standards/resnet-ansi/**

Status: Complete!


RESNET
RESIDENTIAL ENERGY SERVICES NETWORK
ACCA
Air Conditioning Contractors of America

ANSI/RESNET/ACCA 310-2020

Standard for Grading the Installation of HVAC Systems

Approved American National Standard
ANSI

June 23, 2020

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2. Training & Evaluation

- **What is this?** Trains and evaluates Raters and RFI's on new requirements in Std. 310, prior to use.

Status: Complete and available for Raters today!

ANSI / RESNET / ACCA 310 Training
Module 1: Intro, Design Review,
Total Duct Leakage Test

ANSI / RESNET / ACCA 310 Training
Module 2: Blower Fan Airflow

ANSI / RESNET / ACCA 310 Training
Module 3: Blower Fan Watt Draw

ANSI / RESNET / ACCA 310 Training
Module 4: Refrigerant Charge

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3. Standard 301: Energy Ratings Update

- **What is this?** Integrates Std. 310 into the overall rating process; updates definitions, calculations, minimum rated features, and on-site inspection protocols.

Status: Complete!

ANSI/RESNET/ICC 301-2019 Addendum B-2020

Clarifications, HVAC Quality Installation Grading, and Dehumidification

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4. Rating software updates

- **What is this?** Rating software vendors must add the inputs and calculations to support Std 310.
- **Status:** Underway.

ekotrope

EnergyGauge®
Energy and Economic Analysis Software

REM/*Rate*™

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5. Std. 310 HVAC Design Report Template

- **What is this?** Create new Std. 310 HVAC design report and integrate into Wrightsoft and RHVAC.
- **Status:** Underway.

ANSI / RESNET / ACCA 310 HVAC Design Report [1, 2]

1. Design Basis & Architectural Scope					
1.1 Designer company:	Superior HVAC Design Incorporated	Designer name:	Ms. Maximum Designer	Date:	07-01-2020
1.2 Software name and version used to complete design:	Acme Design Software, v1.0				N/A ☐
For a Dwelling, Townhouse, or Dwelling / Sleeping Unit Within (i.e., duplex):					
1.3 Architectural plan name or address of the property:	Sunflower Plan				
1.4 Architectural options included in the design: [3]	Balcony with sliding glass door				
1.5 Other architectural options that the design can be used with: [4]	Bonus room				
For a Dwelling / Sleeping Unit Not Within a Dwelling or Townhouse (e.g., condo, apartment):					
1.6 Unique ID for the bldg. that the dwelling / sleeping unit is in: [5]	Success Lofts @ 135 Prosper Ave				
1.7 Architectural plan used in design:	Unit A-3				
1.8 Other architectural plans that the design can be used with: [6]	Unit A-1, Unit A-2, Unit B-1, Unit B-2, Unit B-3				
1.9 Architectural options included in the design: [3]	Balcony with sliding glass door				
1.10 Other architectural options that the design can be used with: [4]	Media room				
1.11 Dwelling / sleeping unit location used in design: [7]	Top-Floor Corner Unit				

2. Dwelling-Unit Mechanical Ventilation System Design		
Ventilation System Type & Control Location:	System 1	System 2
2.1 Unique name or ID for each system: [8]	ERV 1	
2.2 Vent. equipment manufacturer & model #: [9]	Broan DEF782	
2.3 Specified system type: [10]	ERV	
2.4 Specified control location: [11]	Utility Rm.	
2.5 Ventilation zone name(s) served by system: [12]	Living Area	
Ventilation Zone Served by Ventilation System:	Zone 1	Zone 2
2.6 Ventilation zone name: [12]	Living Area	
2.7 Design basis: [13]	62.2-2010	
2.8 Floor area (sq. ft.) and # bedrooms in vent. zone:	2,200 3	

ANSI / RESNET / ACCA 310 HVAC Design Report [1, 2]

4. Heating & Cooling Equipment Selection	1		2		3	
Air Conditioners, Heat Pumps, & Other Cooling Equipment (If none of these will be installed, check "N/A")						N/A ☐
4.1 Unique name or ID for each system:	AC #1		HP #1			
4.2 Zone that system serves (See Item 3.6):	Living Area		Basement			
4.3 Equipment type: [29]	AC		HP			
4.4 Evaporator / fan coil mfr. & model #: [30]	Goodman AC16abc		Goodman HP15def			
4.5 Condenser mfr. & model #: [30]	Goodman Cdr16abc	N/A ☐	Goodman Cdr15def	N/A ☐		N/A ☐
4.6 AHRI ref. #, or check box for alt. OEM doc.: [31]	12345678	OEM ☐	46512345	OEM ☐		OEM ☐
4.7 If AC / HP, rated cooling efficiency: [32]	16 SEER	N/A ☐	15 SEER	N/A ☐		N/A ☐
4.8 If HP, rated heating efficiency: [33]		N/A ☒	9.5 HSPF	N/A ☐		N/A ☐
4.9 If HP, ratio of max. to min. rated capacity:		N/A ☒	3:1	N/A ☐		N/A ☐
4.10 If AC / HP, blower fan motor & speed type: [34]	PSC Single	N/A ☐	ECM Variable	N/A ☐		N/A ☐
4.11 If AC / HP, compressor speed type: [35]	Single	N/A ☐	Variable	N/A ☐		N/A ☐
4.12 If AC / HP, meter device type: [36]	Piston / Cap	N/A ☐	TXV	N/A ☐		N/A ☐
4.13 If TXV or EEV, OEM subcooling target (°F): [37]		N/A ☒	5	N/A ☐		N/A ☐
4.14 Filter performance metric and rating: [38]	MERV 7	N/A ☐	MERV 7	N/A ☐		N/A ☐
Furnaces, Boilers, & Other Heating Equipment (If none of these will be installed, check "N/A")						N/A ☐
4.15 Unique name or ID for each system:	Furnace #1					
4.16 Zone that system serves (See Item 3.6):	Living Area					
4.17 Equipment type: [39]	Furnace					
4.18 Equipment manufacturer & model #:	Goodman AC16abc					
4.19 AHRI ref. #, or check box for alt. OEM doc.: [31]	54648977	OEM ☐		OEM ☐		OEM ☐
4.20 If furnace or boiler, rated heating efficiency:	90 AFUE	N/A ☐		N/A ☐		N/A ☐
4.21 If furnace, blower fan motor & speed type: [34]	Other Variable	N/A ☐		N/A ☐		N/A ☐

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Timeline for Use

Track A – HVAC grading, which uses Std 310, can be used once:

1. Raters / RFI's have:
   - Completed their training and graded field evaluation, and,
   - Their QAP has confirmed & reported their eligibility to their HCO;
2. Updated rating software is available that incorporates Std 310;
3. Recommended: the Std. 310 HVAC design report template and ENERGY STAR supplement is complete and automated.

- In the meantime, informally try Standard 310 on a single house. The "ANSI/RESNET/ACCA 310-2020 Data Field Tool" is available at **https://www.resnet.us/about/standards/resnet-ansi/** under Spreadsheet Calculators.

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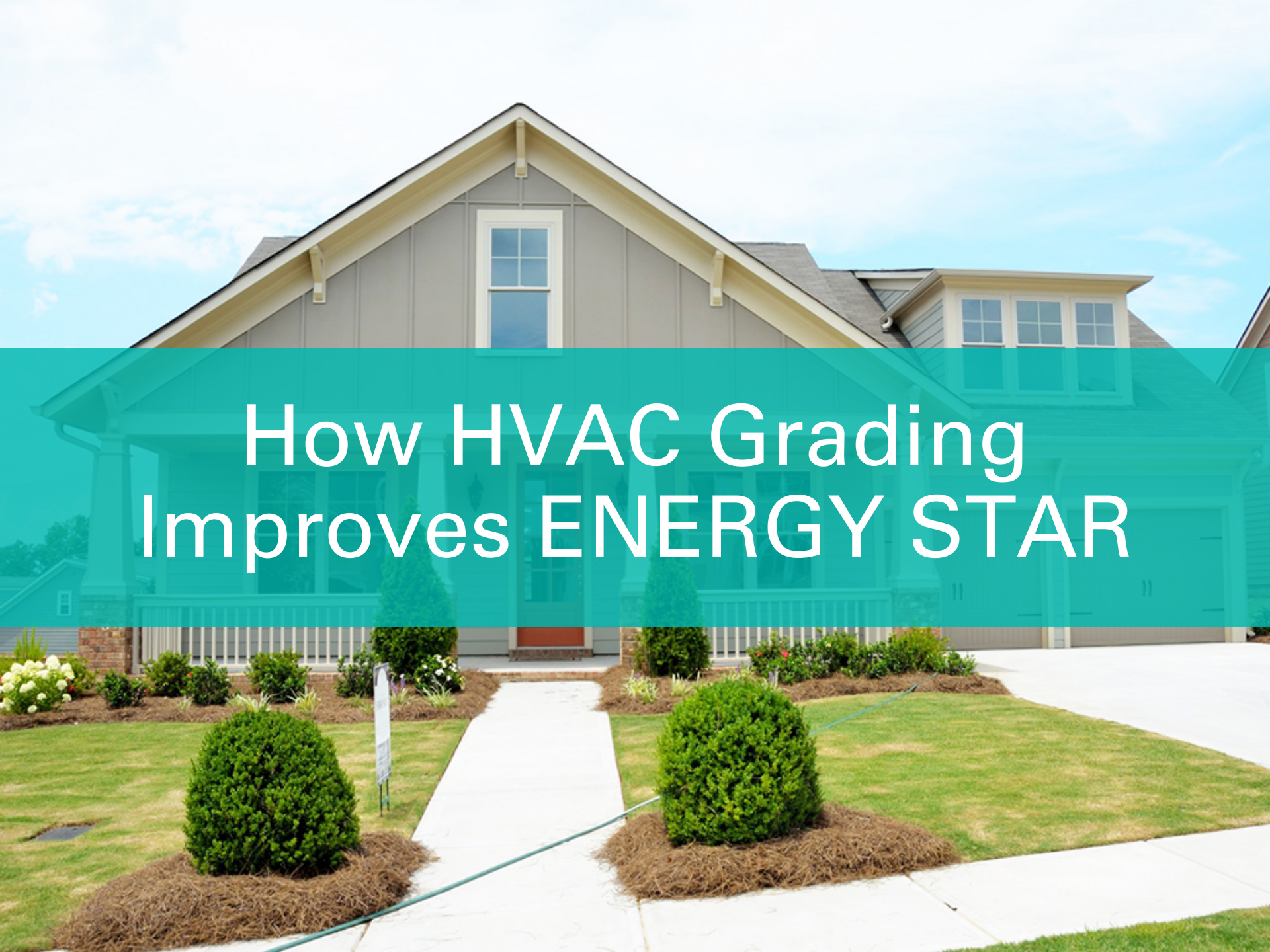
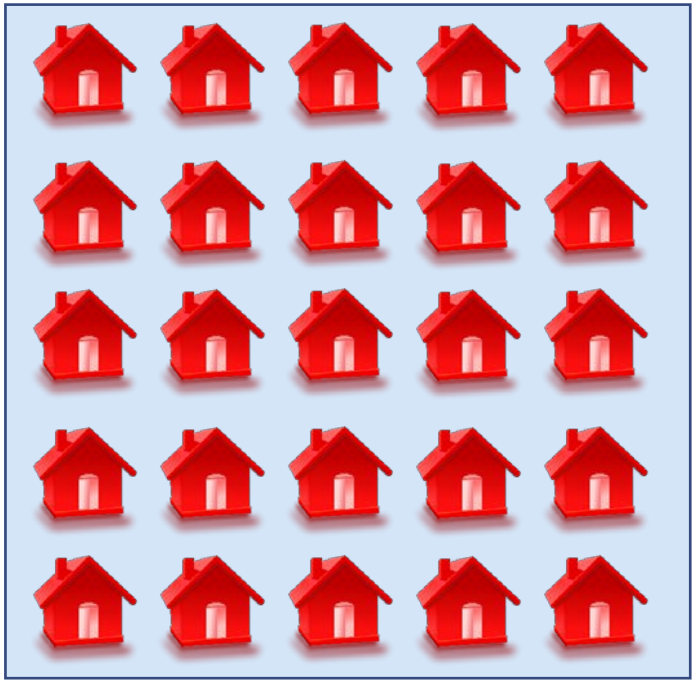


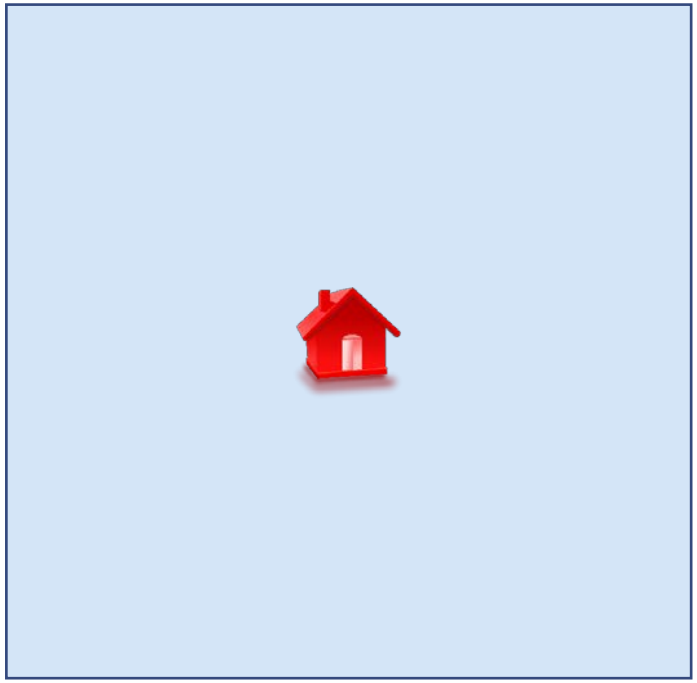
How HVAC Grading Improves ENERGY STAR

How HVAC grading improves ENERGY STAR

1. HVAC contractor does not need to be credentialed, nor complete the commissioning checklist.



$24/home



$600/home

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How HVAC grading improves ENERGY STAR

2. Rewards properly installed HVAC with ERI points and helps with tax credit. For an ENERGY STAR v3.1-caliber home:

Climate	AC	Heat Pump
Cold	~ 1	~ 3 - 4
Mixed	~ 1 -2	~ 3 - 4
Warm	~ 2 -3	~ 3 - 4
Hot	~ 3 - 4	~ 3 - 4

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How HVAC grading improves ENERGY STAR

3. Integrates most of ENERGY STAR into a good energy rating.

Efficiency Feature	• Good energy rating with features locked in

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How HVAC grading improves ENERGY STAR

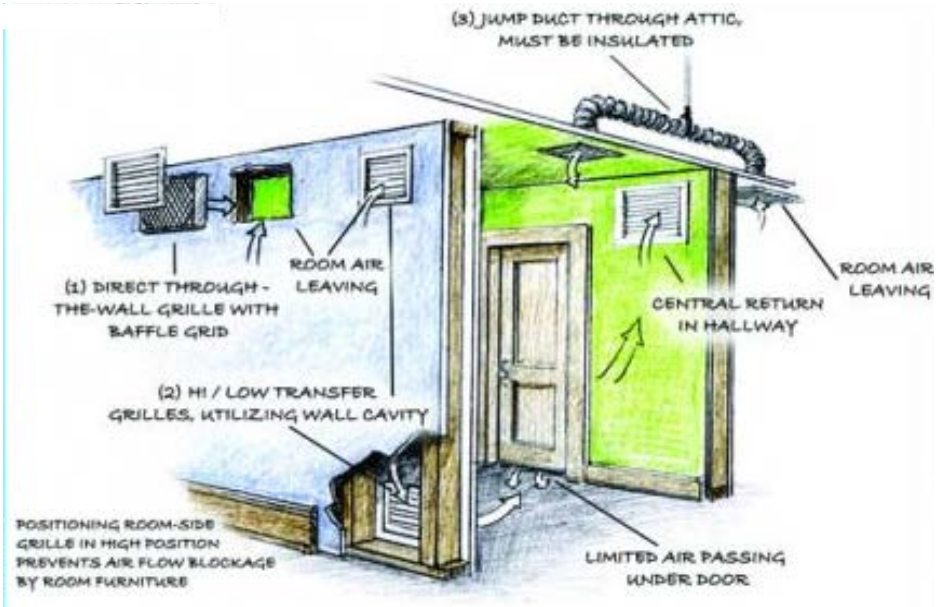
3. Integrates most of ENERGY STAR into a good energy rating.

Comfort: Complete Thermal Enclosure System

How HVAC grading improves ENERGY STAR

3. Integrates most of ENERGY STAR into a good energy rating.

Comfort: Bedroom Comfort Vents



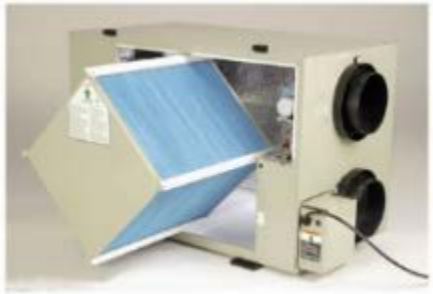
PASSIVE AIR-RETURN PATHWAY - 3 OPTIONS

ADEQUATE VOLUME OF RETURN AIR CANNOT PASS UNDER CLOSED DOOR. PASSIVE PATHWAYS FROM ROOMS TO HALLWAY (AND CENTRAL RETURN DUCT) PROVIDES EFFICIENT ROUTE FOR REMOVING STALE AIR AND BALANCING VOLUMES OF AIR SUPPLIED AND AIR REMOVED FROM ROOM (HELPING BALANCE THE HVAC SYSTEM).

How HVAC grading improves ENERGY STAR

3. Integrates most of ENERGY STAR into a good energy rating.

Air Quality: Whole-House Fresh Air System



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How HVAC grading improves ENERGY STAR

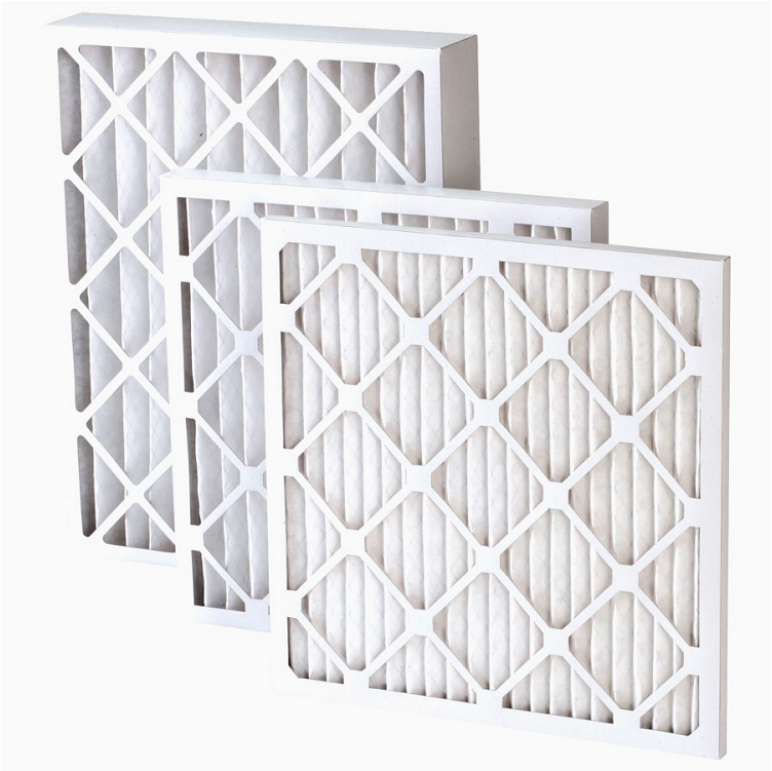
3. Integrates most of ENERGY STAR into a good energy rating.

Air Quality: Kitchen & Bath Fans That Work Well

How HVAC grading improves ENERGY STAR

3. Integrates most of ENERGY STAR into a good energy rating.

Air Quality: MERV 6+ Filter, Properly Installed



How HVAC grading improves ENERGY STAR

3. Integrates most of ENERGY STAR into a good energy rating.

Air Quality: Combustion Safety

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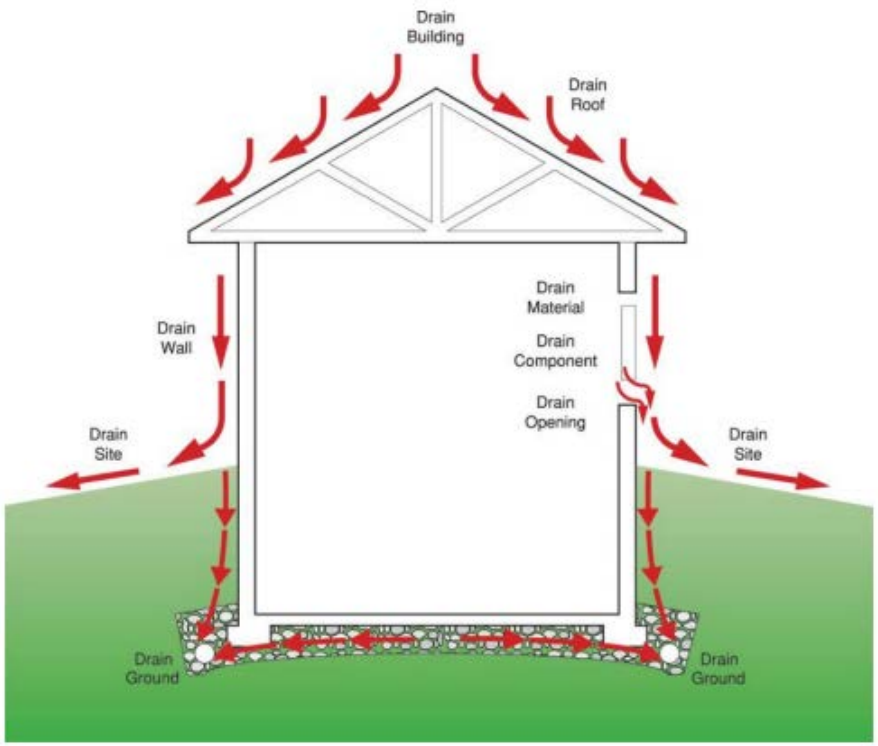
How HVAC grading improves ENERGY STAR

3. Integrates most of ENERGY STAR into a good energy rating.

Durability: Water Management System



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How HVAC grading improves ENERGY STAR

3. Integrates most of ENERGY STAR into a good energy rating.

Energy Rating

Efficiency Feature	• Good energy rating with features locked in
Comfort Features	• Complete thermal enclosure system • Bedroom comfort vents
Air Quality Features	• Whole-house fresh air system • Kitchen and bath fans that work well • MERV 6+ filter, properly installed • Combustion safety
Durability Feature	• Complete water management system

Upcoming Partner Meeting Webinar Series Sessions

- **Indoor airPLUS Version 2** | Nick Hurst, EPA | Tuesday, November 10, 2020 at 1:00pm ET
- **ES Certified Homes Revision 11** | Dean Gamble and Elliot Seibert, EPA | Thursday, November 12, 2020 at 1:00pm ET
- **ES Marketing Materials & Communications** | Marta Montoro, EPA | Tuesday, November 17, 2020 at 1:00pm ET
- **WaterSense Labeled Homes Version 2.0** | Jonah Schein, EPA | Thursday, November 19, 2020 at 1:00pm ET

ENERGY STAR Residential New Construction

Web & Email:

Single Family: www.energystar.gov/newhomesrequirements
Multifamily: www.energystar.gov/mfnc
Email: energystarhomes@energystar.gov

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