Overview of ENERGY STAR Single-Family New Homes **Rev. 12** Multifamily New Construction **Rev. 03**

2022 Residential New Construction Partner Meeting

Dean Gamble & Rebecca Hudson

October 11, 2022

EPA United States Environmental Protection Agency

What is a Revision?

1. It clarifies
2. It simplifies
3. It improves

Revisions to date

- Single-Family New Homes:
  - 12 Revisions since the release of Version 3.0 in 2010
  - Many significant Revisions early on; now relatively minor
  - Across these revisions, we've cut the number of Rater tasks by a full 1/3

- Multifamily New Construction:
  - 3 Revisions since the release of Version 1.0 in 2019
  - Each Revision is bringing significant improvements

Overview of ENERGY STAR Single-Family New Homes Rev. 12

#1. Pending sunset of National Version 3.0

- Implementation timelines updated to reflect that homes permitted on or after Jan. 01, 2023, will be required to meet National v3.1 instead of v3.0.

Single-Family New Homes Implementation Timeline

State / Territory	Homes Permitted [14] On or After This Date Must Meet the Adjacent Version & Revision	Version	Revision [15]
AL, AK, AZ, AR, CO, IN, ID, KS, KY, LA, MS, MO, NH, NC, ND, OH, OK, SC, SD, TN, VA, WV, WI, WY	10-01-2020	National v3	Rev. 10
	01-01-2022	National v3	Rev. 11
	01-01-2023	National v3.1	Rev. 11
	01-01-2024	National v3.1	Rev. 12

#2. Incorporation of National v3.2 + misc. improvements

- Incorporated newly developed National Version 3.2 into program documents.

ENERGY STAR Single-Family New Homes
National Program Requirements, Version 3.2 (Rev. 12)

Eligibility Requirements

Site-built or modular [1] Dwellin
STAR Single-Family New Hor
Dwelling Units in certain low-r
to July 1, 2021. See Footnote
While primarily intended for r
ENERGY STAR SFNH progra
For information about other E
Note that compliance with the

ENERGY STAR Single-Family New Homes
National Rater Design Review Checklist, Version 3 / 3.1 / 3.2 (Rev. 12)

If pursuing Track A - HVAC Grading, complete this page. [1]			
Home Address: _____ City: _____ State: _____ Permit Date: _____			
1. Partnership Status	**Must Correct**	**Rater [2] Verified**	**N/A[3]**
1.1 Rater has verified and documented that builder has an ENERGY STAR partnership agreement using energystar.gov/ResPartnerDirectory. [4]	☐	☐	-
2. High-Performance Fenestration			
2.1 Specified fenestration meets or exceeds 2009 IECC or, for National v3.2, 2021 IECC requirements. [5, 6]	☐	☐	-
3. High-Performance Enclosure			
3.1 Specified total building thermal envelope UA meets one of the following options. Note: Item 3.1.2 is not an option for National v3.2.			
3.1.1 Achieves ≤ 100% of the total UA resulting from the U-factors in 2009 IECC Table 402.1.3 or, for National v3.2, 2021 IECC Table 402.1.2. See exception in Fn. 7 [6,7,8,9] OR;	☐	☐	☐

Side Note #2:
An 'N/A' column has been added to the RDRC

Side Note #1:
URL has been updated in the RDRC

#3. Clarifications on HVAC design documentation

- Track B – HVAC Credential
  - New footnote added to Rater Design Review Checklist to reinforce when design review must be done:
    - Section 1 and 2 of the National HVAC Design Report must always be completed and collected.
    - If no HVAC systems applicable to Track B are in the home, then it's recommended, but not required, that Section 3-5 be completed, collected, and reviewed.
  - Mirrors guidance that's already provided in National HVAC Design Report.

#3. Clarifications on HVAC design documentation (cont.)

- Track A – HVAC Grading. Reflect final name of new ENERGY STAR design document and simplify reference to Std. 310 design review criteria

4a. ~~Review~~ of ANSI / RESNET / ACCA / ICC ~~Std.~~ 310 HVAC Design Report with ENERGY STAR Supplement[10]
4a.1 HVAC design report compliant with ANSI / RESNET / ACCA / ICC ~~Std.~~ 310, and ~~with~~ the National HVAC Design Supplement to Std. 310 for Dwellings & Units~~ENERGY STAR supplement~~, collected for records, with no applicable Items left blank.[11]
4a.2 ANSI / RESNET / ACCA / ICC ~~Std.~~ 310 design review criteria ~~Rater Design Review Checklist completed~~have been met for applicable housing type.~~, with all items marked, "Rater Verified".~~

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

1. Design Basis & Architectural Scope			
1.1 Design description (optional):			
1.2 Designer company:	Designer name:	Date:	
1.3 Software name and version used to complete design:			N/A ☐
For a Dwelling, Townhouse, or Dwelling / Sleeping Unit Within (i.e., duplex):			
1.4 Architectural plan name or address of the property:			
1.5 Architectural options used in the design: [3]			
1.6 Other architectural options that the design can be used with: [4]			
For a Dwelling / Sleeping Unit Not Within a Dwelling or Townhouse (e.g., condo, apartment):			
1.7 Unique ID for the bldg. that the dwelling / sleeping unit is in: [5]			
1.8 Architectural plan used in design (e.g., dwelling unit model):			
1.9 Other architectural plans that the design can be used with: [6]			
1.10 Architectural options used in the design: [3]			
1.11 Other architectural options that the design can be used with: [4]			
1.12 Dwelling / sleeping unit location used in design: [7]			

+

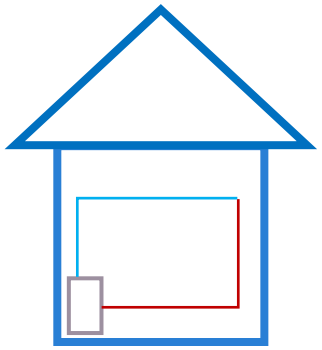
ENERGY STAR Single-Family New Homes, All Versions (Rev. 11)
ENERGY STAR Multifamily New Construction, All Versions (Rev. 02)
National HVAC Design Supplement to Std. 310 for Dwellings & Units [1]

1. Design Basis				
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]			☐	
2.2 Access point is specified for Rater to measure ventilation airflow rate and inspect any motorized / shutoff dampers. [4, 7]			☐	
System Controls:				
2.3 Specified controls for each Vent System allow it to operate automatically, without occupant intervention.			☐	

#3. Clarifications on HVAC design documentation (cont.)

- Track A – HVAC Grading. New footnote added to Rater Design Review Checklist to reinforce when design review must be done:
  - The Std. 310 design report must always be collected and reviewed per the Standard's design review criteria.
  - If the home has an AC or HP, then also meet the sizing limit in Item 4a.2.

Example



Home with boiler & no AC

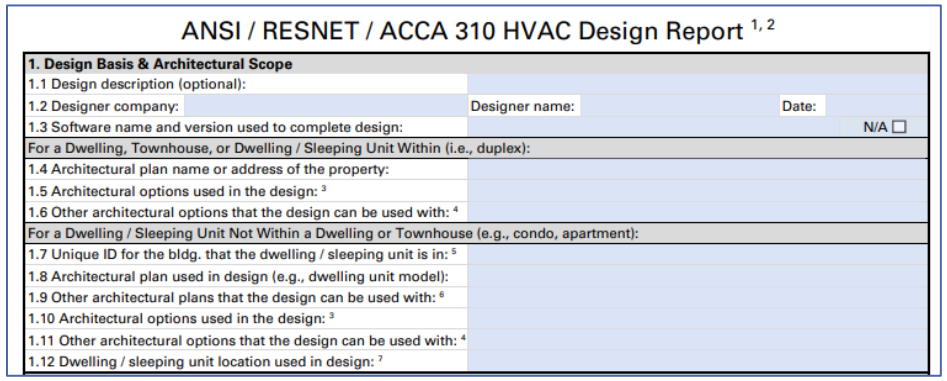
1. Even though home does not have forced-air systems that can be graded, collect the completed Std. 310 design report.
2. Review report to ensure it meets Std. 310 design review criteria.

- Note that no cooling sizing check is required because there is no cooling system.

#3. Clarifications on HVAC design documentation (cont.)

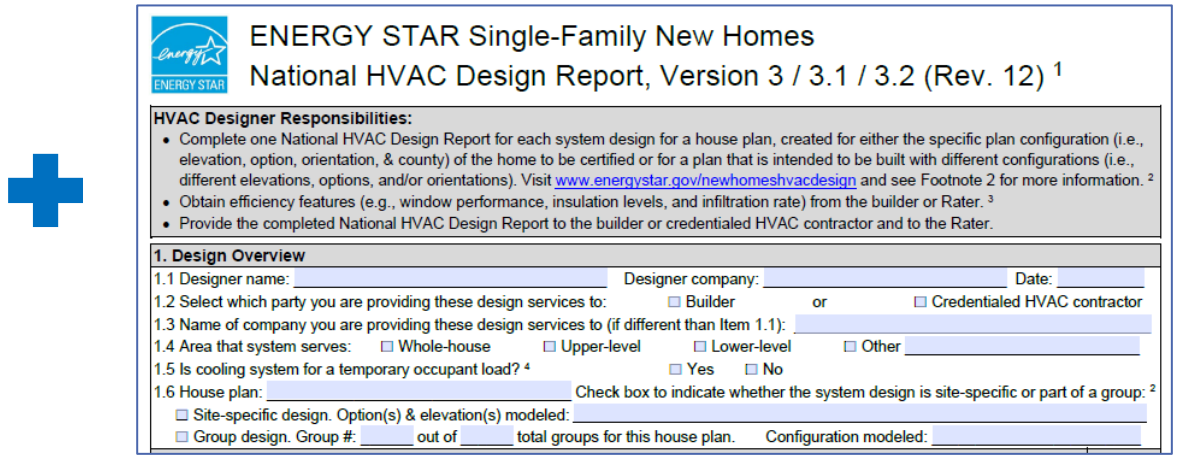
- Track A – HVAC Grading. Added an allowance to collect the National HVAC Design Report in lieu of the National HVAC Design Supplement to Std. 310:

> 11. As an alternative, the ENERGY STAR National HVAC Design Report may be collected in lieu of the ENERGY STAR National HVAC Design Supplement to Std. 310 for Dwellings & Units. In such cases, at least two documents will still be collected – an HVAC design report compliant with ANSI / RESNET / ACCA / ICC 310 plus the ENERGY STAR National HVAC Design Report. Note that for projects with more than one HVAC system, one ENERGY STAR National HVAC Design Report per system would need to be collected.



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

1. Design Basis & Architectural Scope			
1.1 Design description (optional):			
1.2 Designer company:	Designer name:	Date:	
1.3 Software name and version used to complete design:			N/A ☐
For a Dwelling, Townhouse, or Dwelling / Sleeping Unit Within (i.e., duplex):			
1.4 Architectural plan name or address of the property:			
1.5 Architectural options used in the design: [3]			
1.6 Other architectural options that the design can be used with: [4]			
For a Dwelling / Sleeping Unit Not Within a Dwelling or Townhouse (e.g., condo, apartment):			
1.7 Unique ID for the bldg. that the dwelling / sleeping unit is in: [5]			
1.8 Architectural plan used in design (e.g., dwelling unit model):			
1.9 Other architectural plans that the design can be used with: [6]			
1.10 Architectural options used in the design: [3]			
1.11 Other architectural options that the design can be used with: [4]			
1.12 Dwelling / sleeping unit location used in design: [7]			



ENERGY STAR Single-Family New Homes
National HVAC Design Report, Version 3 / 3.1 / 3.2 (Rev. 12) [1]

HVAC Designer Responsibilities:

- Complete one National HVAC Design Report for each system design for a house plan, created for either the specific plan configuration (i.e., elevation, option, orientation, & county) of the home to be certified or for a plan that is intended to be built with different configurations (i.e., different elevations, options, and/or orientations). Visit www.energystar.gov/newhomeshvacdesign and see Footnote 2 for more information. [2]
- Obtain efficiency features (e.g., window performance, insulation levels, and infiltration rate) from the builder or Rater. [3]
- Provide the completed National HVAC Design Report to the builder or credentialed HVAC contractor and to the Rater.

1. Design Overview

1.1 Designer name: _____ Designer company: _____ Date: _____
1.2 Select which party you are providing these design services to: ☐ Builder or ☐ Credentialed HVAC contractor
1.3 Name of company you are providing these design services to (if different than Item 1.1): _____
1.4 Area that system serves: ☐ Whole-house ☐ Upper-level ☐ Lower-level ☐ Other _____
1.5 Is cooling system for a temporary occupant load? [4] ☐ Yes ☐ No
1.6 House plan: _____ Check box to indicate whether the system design is site-specific or part of a group: [2]
☐ Site-specific design. Option(s) & elevation(s) modeled: _____
☐ Group design. Group #: _____ out of _____ total groups for this house plan. Configuration modeled: _____

  - This allowance is less relevant now that ENERGY STAR supplement can be printed directly from Wrightsoft and EnergyGauge.

#4. Consolidation of filter requirements

- Items 9.1 and 9.3 of the National Rater Field Checklist have been combined:

Rev. 11

9. Filtration
9.1 MERV 6+ filter(s) installed in each ducted mech. system, located to facilitate occupant access & regular service. [62]
9.2 Filter access panel includes gasket and fits snugly against exposed edge of filter when closed to prevent bypass. [63]
9.3 All return air and mechanically supplied outdoor air passes through filter prior to conditioning.

Rev. 12

9. Filtration
9.1 MERV 6+ filter(s) installed in each ducted mech. system, designed so all return and mechanically supplied outdoor air passes through filter(s) prior to conditioning, and located to facilitate occupant access & regular service. [63]
9.2 Filter access panel includes gasket and fits snugly against exposed edge of filter when closed to prevent bypass. [64]

#5. Simplified checklist item for combustion appliances

- Item 10.3 of the National Rater Field Checklist has been streamlined by moving rarely used alternative to a footnote:

Rev. 11

10.3 If unvented combustion appliances other than cooking ranges or ovens are located inside the home's pressure boundary, the Rater has followed ANSI/ACCA 12 QH-2014, Section 3.2.2, Appendix A Sections A2.2.6, A3, and A4, and verified the equipment meets the limits defined within. [64, 68]

Rev. 12

10.3 No unvented combustion appliances other than cooking ranges or ovens are located inside the home's pressure boundary. Alternative in Footnote 70. [65, 69, 70]

#6. Option added to install slab insulation on top of slab

- The National Rater Design Review Checklist and Rater Field Checklist contained an allowance to insulate on top of an existing slab (as opposed to at the perimeter or underneath).
- With Rev. 12, this has been extended to all slabs:

Rev. 12 Markup of Rater Field Checklist Footnote 15

15. ~~Consistent with the 2009 IECC, s~~Slab edge insulation is only required for slab-on-grade floors with a floor surface less than 12 inches below grade. Slab insulation shall extend to the top of the slab to provide a complete thermal break. If the top edge of the insulation is installed between the exterior wall and the edge of the interior slab, it shall be permitted to be cut at a 45-degree angle away from the exterior wall. Alternatively, the thermal break is permitted to be created using ≥ R-3 rigid insulation on top of ~~an existing~~ the slab ~~(e.g., in a home undergoing a gut rehabilitation)~~. In such cases, up to 10% of the slab surface is permitted to not be insulated (e.g., for sleepers, for sill plates). Insulation installed on top of slab shall be covered by a durable floor surface (e.g., hardwood, tile, carpet).

#7. Track B – Single-pkg systems exempted from charge test

- The National HVAC Commissioning Checklist requires the contractor to verify proper refrigerant charge.
- With Rev. 12, single-packaged systems have been exempted from this requirement:

Rev. 12 Markup of HVAC Commissioning Checklist

2. Refrigerant Charge - Run system for 15 minutes before testing. If outdoor ambient temperature at the condenser is ≤ 55°F or, if known, below the manufacturer-recommended minimum operating temperature for the cooling cycle, then the system shall include a TXV, the outdoor temperature shall be recorded in Item 2.1, and the contractor shall check "N/A" in this Section. [4] Ducted or non-ducted single-packaged systems (i.e., PTAC) are exempt from this section.

- Single-packaged system: A system in which all components are integrated into one cabinet (i.e., PTAC).

#8. Guidance on reporting equipment capacity

- The National HVAC Design Report and National HVAC Design Supplement to Std. 310 require the designer to report equipment capacity.
- Rev. 12 adds and refines footnotes to clarify how to do this for:
  - Two-speed and variable-capacity AC's and HP's: For two-speed equipment, the full system capacity shall reflect the capacity at the maximum available compressor speed. For variable-speed equipment, it shall reflect the capacity when the compressor operates at the AHRI rating speed.
  - Two-stage and modulating furnaces: The full system capacity shall reflect the maximum output available.

#9. Added capillary break option and improved wording

- Two small improvements to the National Water Management System Builder Requirements:

1. An option was added for creating a capillary break at crawlspace floors: installing a concrete slab over ≥ 1" polystyrene insulation with taped joints.
   - This mirrors an option already provided for other foundation types.

2. Item 1.6 and 4.3 limit the use of vapor retarders in walls where there's a potential for moisture to be trapped. To better convey the original intent, the phrase "air permeable" has been replaced with "vapor permeable".

1.6 Class 1 vapor retarder not installed on interior side of ~~air~~ vapor permeable insulation in exterior below-grade walls. [8]
4.3 In Warm-Humid climates, Class 1 vapor retarders not installed on the interior side of ~~air~~ vapor permeable insulation in above-grade walls, except at shower and tub walls. [8]

#10. Improvements to ENERGY STAR Reference Designs

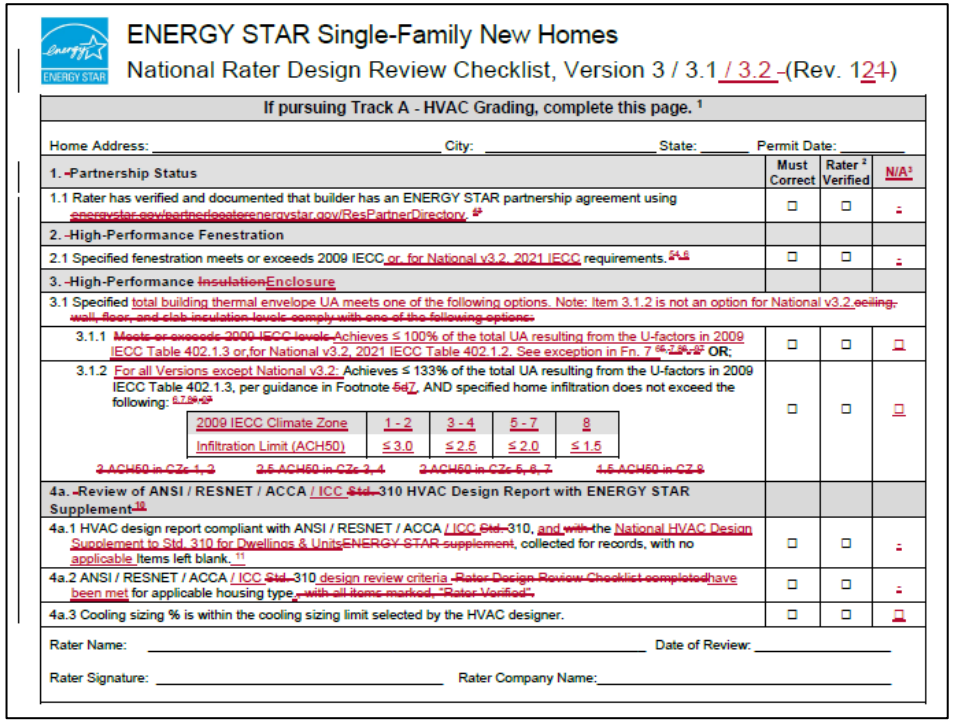
- Dehumidifiers addressed for the first time:
  - ANSI / RESNET / ICC 301 recently incorporated dehumidifiers.
  - In response, the ENERGY STAR Reference Designs will be configured with a dehumidifier like the ERI Reference Design if there's one present in the rated home; otherwise without one.
  - This avoids increasing program stringency when a builder chooses to add a dehumidifier, and rewards them for installing an efficient one.
- In CZ 7 & 8, the National v3.1 ENERGY STAR Reference Design has been revised to specify an air-source rather than ground-source heat pump.
  - This creates ENERGY STAR ERI Targets that are more consistent with other CZ's.
  - More relevant now that cold-climate air-source heat pumps are becoming available.

What we didn’t cover today

- Minor clarifications with limited applicability
- General cleanup of language and references

Release of Revision 12

- Released in October 2022.
- Updated program documents at: energystar.gov/newhomesrequirements.
- One-page highlights document, tracked-changes documents, and updated Policy Record at: energystar.gov/newhomespolicyrecord



ENERGY STAR Single-Family New Homes

National Rater Design Review Checklist, Version 3 / 3.1 / 3.2 (Rev. 12)

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

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

1. Partnership Status	Must Correct	Rater [2] Verified	N/A [3]
1.1 Rater has verified and documented that builder has an ENERGY STAR partnership agreement using energystar.gov/partnerlocator energystar.gov/ResPartnerDirectory. [4]	☐	☐	-
2. High-Performance Fenestration			
2.1 Specified fenestration meets or exceeds 2009 IECC or, for National v3.2, 2021 IECC requirements. [5,6]	☐	☐	-
3. High-Performance Insulation Enclosure			
3.1 Specified total building thermal envelope UA meets one of the following options. Note: Item 3.1.2 is not an option for National v3.2. ceiling, wall, floor, and slab insulation levels comply with one of the following options:			
3.1.1 Meets or exceeds 2009 IECC levels Achieves ≤ 100% of the total UA resulting from the U-factors in 2009 IECC Table 402.1.3 or, for National v3.2, 2021 IECC Table 402.1.2. See exception in Fn. 7 [6,7,8,9,10] OR;	☐	☐	☐
3.1.2 For all Versions except National v3.2: Achieves ≤ 133% of the total UA resulting from the U-factors in 2009 IECC Table 402.1.3, per guidance in Footnote 5d7, AND specified home infiltration does not exceed the following: [6,7,8,9,10]	☐	☐	☐
2009 IECC Climate Zone: 1 - 2 | 3 - 4 | 5 - 7 | 8 — Infiltration Limit (ACH50): ≤ 3.0 | ≤ 2.5 | ≤ 2.0 | ≤ 1.5 — 3 ACH50 in CZs 1, 2 | 2.5 ACH50 in CZs 3, 4 | 3 ACH50 in CZs 5, 6, 7 | 1.5 ACH50 in CZ 8			
4a. Review of ANSI / RESNET / ACCA / ICC Std. 310 HVAC Design Report with ENERGY STAR Supplement [10]			
4a.1 HVAC design report compliant with ANSI / RESNET / ACCA / ICC Std. 310, and with the National HVAC Design Supplement to Std. 310 for Dwellings & Units ENERGY STAR supplement, collected for records, with no applicable Items left blank. [11]	☐	☐	-
4a.2 ANSI / RESNET / ACCA / ICC Std. 310 design review criteria. Rater Design Review Checklist completed have been met 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: _____

Implementation of Revision 12

- Implementation date of 01/01/2024.
- What does this mean for you?
  - You can use Rev. 12 today for any home.
  - You must use Rev. 12 for any home permitted after January 1, 2024.

Overview of ENERGY STAR Multifamily New Construction Rev. 03

Revision themes

- **Rev. 03** - **Clarifications are key**

#1. Pending sunset of National Version 1.0, ASHRAE 90.1-2007

- Implementation timelines updated to reflect that buildings permitted on or after Jan. 01, 2024, will be required to meet National v1.1 instead of v1.0.

Multifamily New Construction Implementation Timeline

State / Territory	Buildings Permitted [4] On or After This Date Must Meet the Adjacent Version	Multifamily New Construction Program Version	Revision [16]
AL, AK, AZ, AR, CO, GU, HI, IN, ID, KS, KY, LA, MS, MO, NH, NMI, NC, ND, OH, OK, SC, SD, TN, VA, WV, WI, WY	07-01-2020	National Version 1	Rev. 01
	07-01-2021	National Version 1	Rev 02
	01-01-2024	National Version 1.1	Rev. 03

- ASHRAE minimum baseline will also transition ASHRAE 90.1-2010 instead of ASHRAE 90.1-2007.

#2. Incorporation of National v1.2

- Incorporated newly developed National Version 1.2 into program documents.

ENERGY STAR Multifamily New Construction
National Program Requireme

Eligibility Requirements

The following multifamily building types are eligible to participate

- Any multifamily building with dwelling or sleeping units
- Any mixed-use buildings with dwelling or sleeping units of the building square footage. Parking garage square f
- Townhouses, if following the requirements listed in Foo

ENERGY STAR Multifamily New Construction
National Rater Design Review Checklist [1], Version 1 / 1.1 / 1.2 (Rev. 03)

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

Building Name: _____ Number of Units: _____ Permit Date: _____

Building Address: _____ City: _____ State: _____

1. Partnership Status	**Must Correct**	**Rater Verified** [4]	**N/A**
1.1 Rater has verified and documented that builder or developer has an ENERGY STAR partnership agreement using http://www.energystar.gov/ResPartnerDirectory. Builder name: _____ Developer name: _____	☐	☐	-
1.2 ASHRAE Only: Rater has verified modeler is listed in the online directory: www.energystar.gov/ASHRAEdirectory. Modeler name: _____ (Not required for buildings in California)	☐	☐	☐
2. High-Performance Fenestration Specified fenestration meets or exceeds the levels in Items 2.1 and 2.2 based on location, Path, and the program version used to certify the building. [5]			
2.1 Dwelling units:			
2.1.1 Prescriptive: ENERGY STAR MF Reference Design requirements.	☐	☐	☐
2.1.2 ERI and ASHRAE only: 2009 IECC or, for National v1.2, 2021 IECC residential requirements. [6]	☐	☐	☐
2.2 Common space: [2]			
2.2.1 ERI and Prescriptive: ENERGY STAR MF Reference Design requirements for Class AW windows.	☐	☐	☐
2.2.2 ASHRAE only: 2009 IECC or, for National v1.2, 2021 IECC commercial requirements. [6]	☐	☐	☐

#3. Insulation backstop flexibility

- Added option to use Residential or Commercial Chapter of the IECC
- Combined the common space to be the same for all paths within a Version

3. High-Performance Insulation Specified ceiling [7], wall [8], floor, and slab-on-grade insulation meet or exceed the levels in 3.1 and 3.2 based on location, Path, and the program version used to certify the building. [9, 10, 11]
3.1 Dwelling unit:
3.1.1 Prescriptive: ENERGY STAR MF Reference Design requirements.
3.1.2 ERI & ASHRAE only: Either the Residential chapter or the "Group R" column in the Commercial chapter of the 2009 IECC or, for National v1.2, the 2021 IECC. See exceptions in Footnote 9. [6, 12]
3.2 Common space: [2] Either the Residential chapter or the "All Other" column in the Commercial chapter of the 2009 IECC, or for National v1.2 the 2021 IECC. See exceptions in Footnote 9. [6, 12]

9. To comply with Items 3.1 and 3.2, specified ceiling, wall, floor, and slab-on-grade insulation must meet or exceed the levels in Tables 3 or 4 below based on location, Path, and the program version used to certify the building. Where identifying insulation requirements from the IECC, values from either the R-value or U-factor table may be used for compliance.

Table 3: All Versions Except National v1.2:

	Dwelling Unit Options		Common Space Options	
ERI and ASHRAE	2009 IECC Residential Chapter†	2009 IECC Commercial Chapter "Group R" Column	2009 IECC Residential Chapter†	2009 IECC Commercial Chapter "All Other" Column
Prescriptive	ENERGY STAR MF Reference Design			

Table 4: National v1.2

	Dwelling Unit Options		Common Space Options	
ERI and ASHRAE	2021 IECC: Residential Chapter†	2021 IECC Commercial Chapter "Group R" Column	2009 IECC Residential Chapter†	2009 IECC Commercial Chapter "All Other" Column
Prescriptive	ENERGY STAR MF Reference Design			

†When referencing the R-value from the Residential chapter, steel-frame components must use the table for steel-frame ceilings, walls, and floors.

#4. Slab thermal bridging clarifications

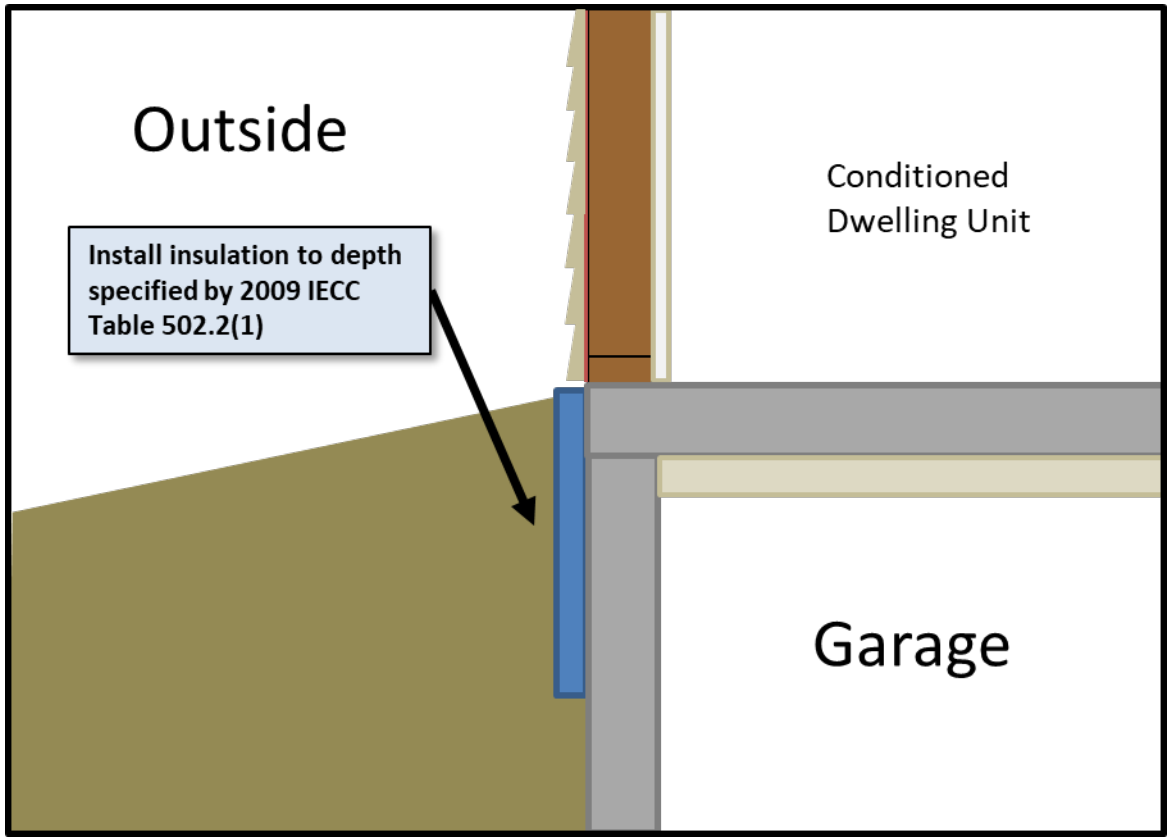
3. Reduced Thermal Bridging
3.1 For insulated ceilings with attic space above (i.e., non-cathedralized), Grade I insulation extends to the inside face of the exterior wall below and is ≥ R-21 in CZ 1-5; ≥ R-30 in CZ 6-8. [10, 19]
3.2 For insulated ceilings with attic space above, attic access panels and drop-down stairs insulated ≥ R-10 or equipped with durable ≥ R-10 cover. [20]
3.3 Insulation beneath attic platforms (e.g., HVAC platforms, walkways) ≥ R-21 in CZ 1-5; ≥ R-30 in CZ 6-8. [10]
3.4 For slabs on grade or at grade without ground contact in CZ 4-8, 100% of slab edge insulated to ≥ R-5 at the depth specified by 2009 IECC Table 502.2(1) & aligned with the thermal boundary of the walls. [10, 21, 22]
3.5 For above-grade concrete slab edges (e.g., podiums, balconies) in CZ 4-8, 100% of slab edge insulated to ≥ R-5 & aligned with the thermal boundary of the walls. At this boundary, for slabs resting on mass walls, insulation must extend ≥8 ft. below the bottom of the slab edge & for slabs resting on columns, the insulation must surround the column, at a depth of 4ft. Alternatives in Footnote 24. [10, 23]
3.6 For concrete slab floors in CZ 4-8 above ambient conditions, garages, or unconditioned spaces outside the thermal boundary, floor insulation meets the U-factor specified in Table 502.1.2 of the 2009 IECC for Group R when dwelling units are above the slab, & 'All Other' when common space is above the slab. [10, 25]

#4. Slab thermal bridging clarifications (con't)

- Reorganized the vertical insulation requirements (Items 3.4 and 3.5) to clarify 'elevated' slab
  - Item 3.4 covers slabs on grade or 'at grade'
  - Item 3.5 covers above-grade slabs

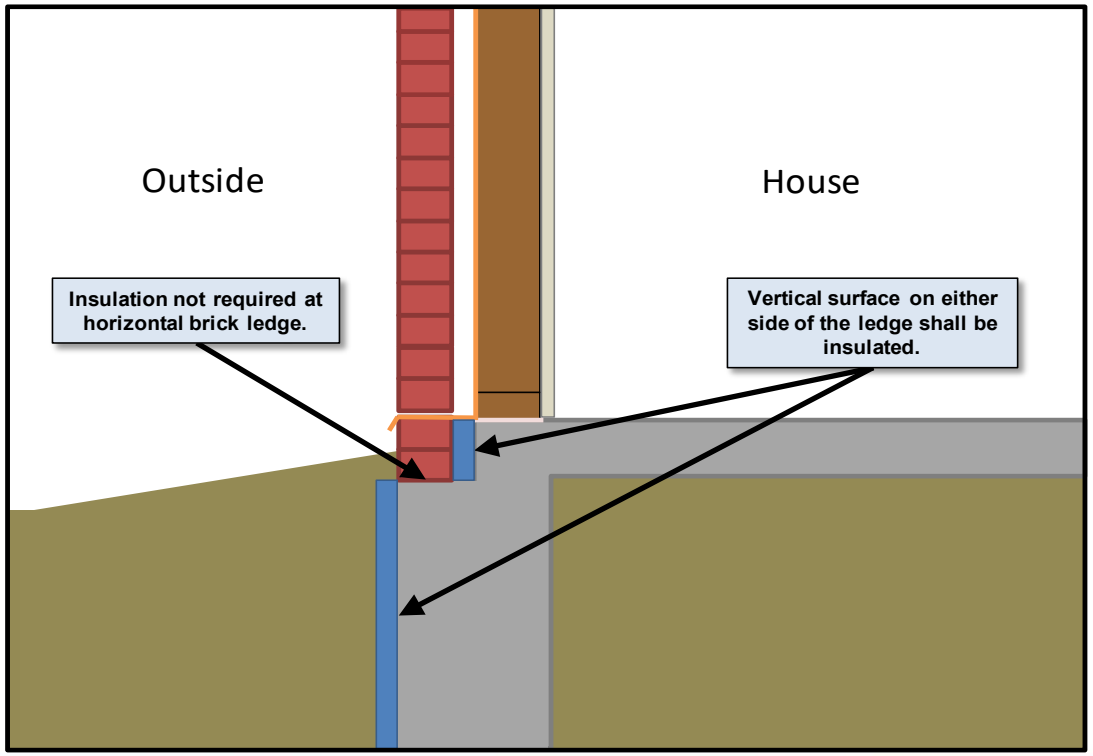
#4. Slab thermal bridging clarifications (Item 3.4)

- Item 3.4 applies to slab-on-grade slab **and** concrete slab edges that are **at grade** level, **even if** the entire slab is **not** in contact with the ground (e.g., space exists below the slab)



#4. Slab thermal bridging clarifications (Item 3.4, con't)

- Slabs with **multiple pours** may use the monolithic slab detail if all concrete is in direct contact and reinforced (e.g., with rebar) at the joints.



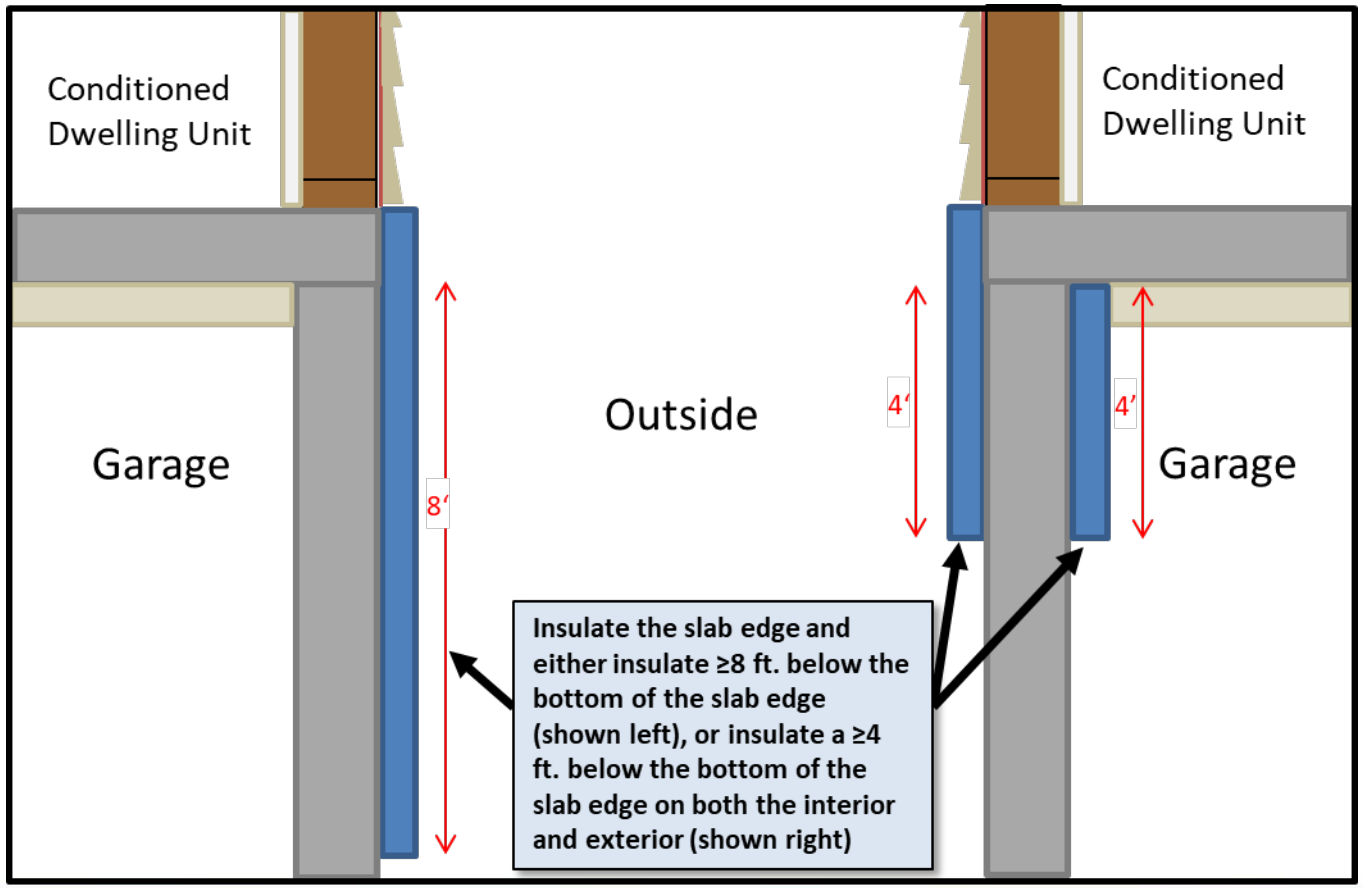
#4. Slab thermal bridging clarifications (Item 3.5)

- Replaced ‘elevated’ with ‘above-grade’ to be clear Item 3.5 does **not** apply to **below-grade** slab edges that could be considered ‘elevated’.

3.5 For above-grade concrete slab edges (e.g., podiums, balconies) in CZ 4-8, 100% of slab edge insulated to ≥ R-5 & aligned with the thermal boundary of the walls. At this boundary, for slabs resting on mass walls, insulation must extend ≥8 ft. below the bottom of the slab edge & for slabs resting on columns, the insulation must surround the column, at a depth of 4ft. Alternatives in Footnote 24. [10, 23]

#4. Slab thermal bridging clarifications (Item 3.5, con't)

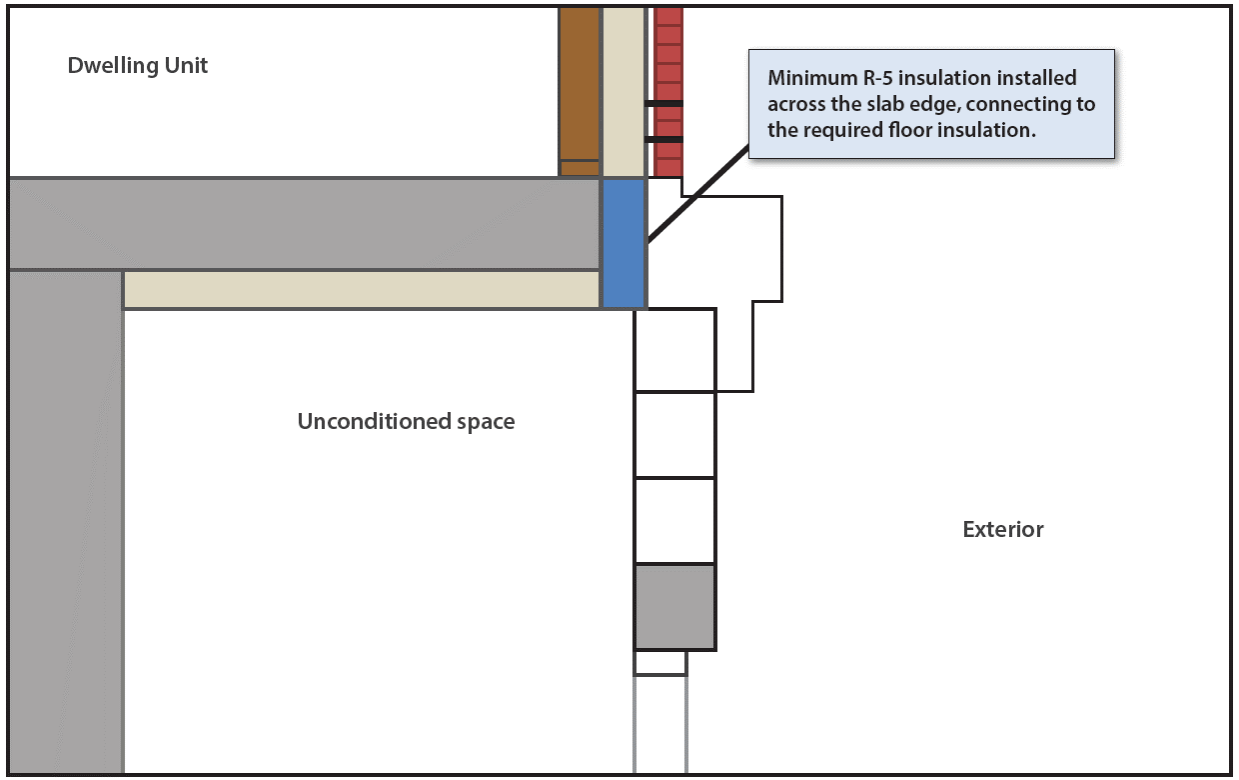
- In Rev.02, this alternative detail was introduced…



In Rev. 03 we added some new alternatives…

#4. Slab thermal bridging clarifications (Item 3.5, con't)

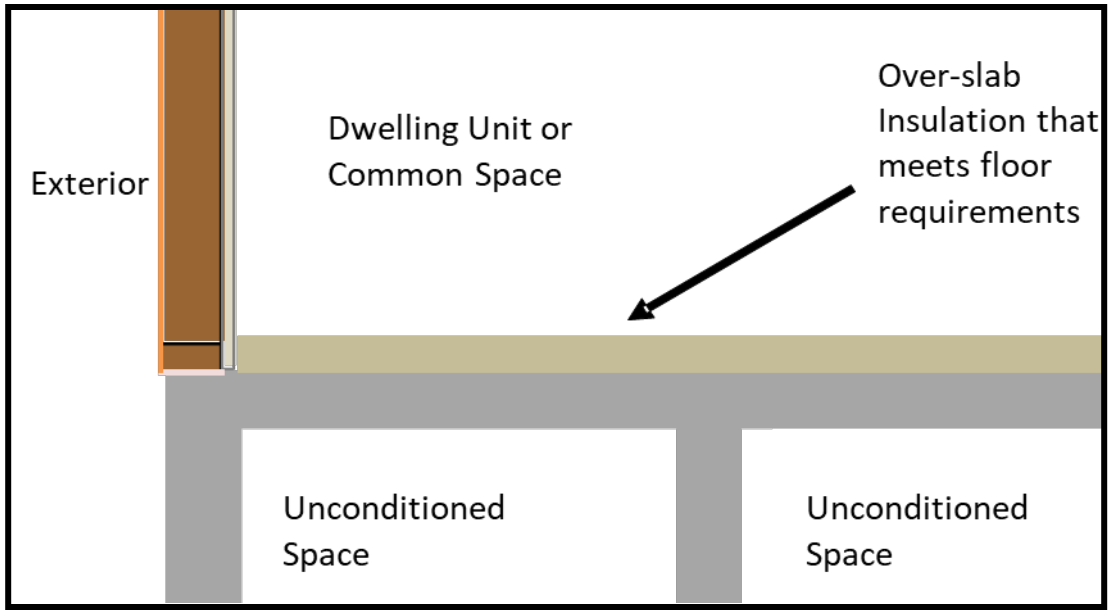
- New alternative - internally-supported above-grade slabs with R-5 slab edge insulation that is in full contact with to the under-slab insulation.



#4. Slab thermal bridging clarifications (Item 3.5, con't)

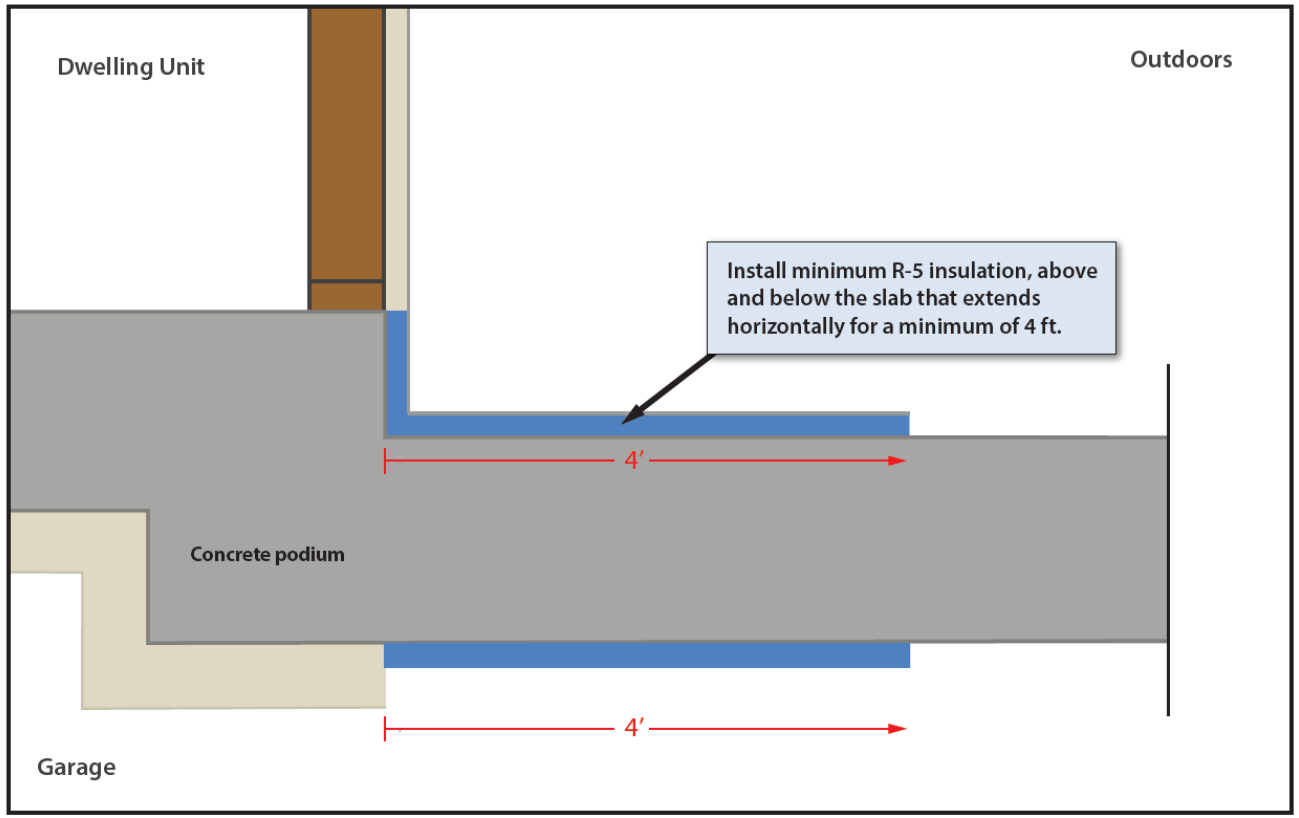
- New alternative - **top of slab** insulation.

23. Item 3.5 does not apply to the repeated concrete floor perimeter edges of a multistory building as those are subject to Item 3.7.1. Item 3.5 also does not apply where floor insulation meeting the requirements of Item 3.6 is installed above the slab and provides a continuous thermal boundary where it intersects the wall. Where specific details cannot meet this requirement, partners shall provide the detail to EPA to request an exemption prior to the building's certification. EPA will compile exempted details and work with industry to develop feasible details for use in future revisions to the program. A list of currently exempted and non-exempted details is available at: www.energystar.gov/slabedge.



#4. Slab thermal bridging clarifications (Item 3.5, con't)

- New alternative- **horizontal insulation** for projected slabs without a thermal break



#4. Slab thermal bridging clarifications (Item 3.5, con't)

- Expanded option to de-rate wall assembly for all projected slabs (not just balconies)

#4. Slab thermal bridging clarifications (Item 3.5, con't)

- Reorganized Footnote 24 to include alternatives

24. EPA has developed the following alternatives for projected slabs and podiums to comply with Item 3.5:

For projected slabs (e.g., podiums, balconies), where a minimum of R-5 slab edge insulation is not installed between conditioned space and the unconditioned projected slab, use one of the options below:

a) Modify the UA calculation for the wall assembly that accounts for this projected slab when demonstrating compliance with Item 1.2.
   a. Where no insulation is installed, modify the UA calculation such that the area of the wall that is uninsulated due to the projected slab is calculated as 400% of that actual area. For example, for a projected slab without any thermal break that is 20 feet wide, and has a thickness of 1 foot, the area to be used in the UA calculation is 80 ft^2 instead of 20 ft^2.
   b. Where insulation R-2 and greater is installed, the area is not required to be modified.

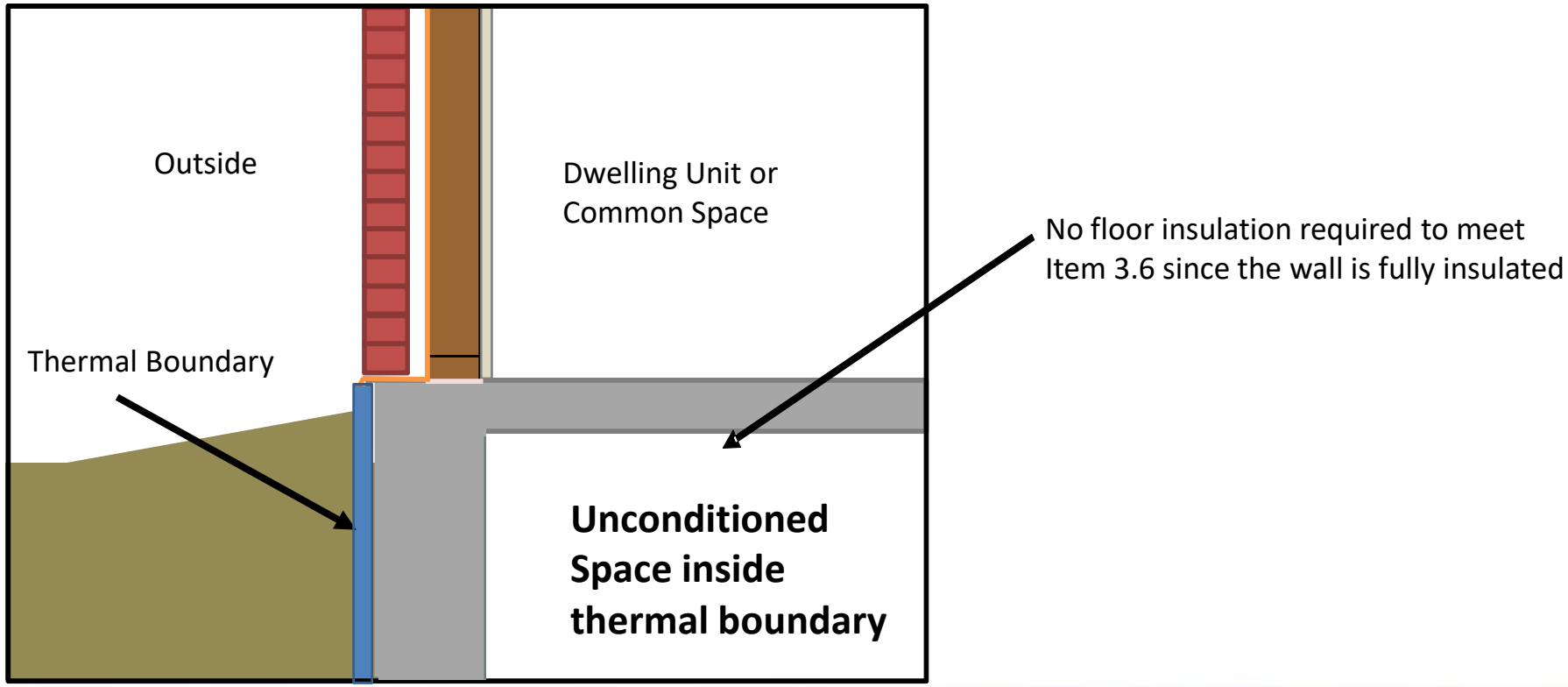
b) Install minimum R-5 insulation, above and below the slab that extends horizontally for a minimum of 4 ft. Insulation installed on top of slab shall be covered by a durable floor surface. When demonstrating compliance with Item 1.2, R-1 insulation may be associated with the area of the wall that is uninsulated due to the projected slab.

For the following podium constructions, a minimum of 8ft is not required:

a) Where podium wall is less than 8ft in height, insulation must instead be installed for the full height of the podium.
b) For podiums that continue below-grade, insulate to a minimum of 8ft below the bottom of the slab edge, or to the depth below-grade specified for slab edge insulation by Table 502.2(1) of the 2009 IECC.
c) Where a minimum of 4ft of insulation is installed on both interior and exterior surfaces of the wall.
d) For podiums where the horizontal slab is not in direct contact with the exterior wall and R-5 insulation is provided at the slab edge, continuous with the under-slab insulation. See energystar.gov/slabedge for example.

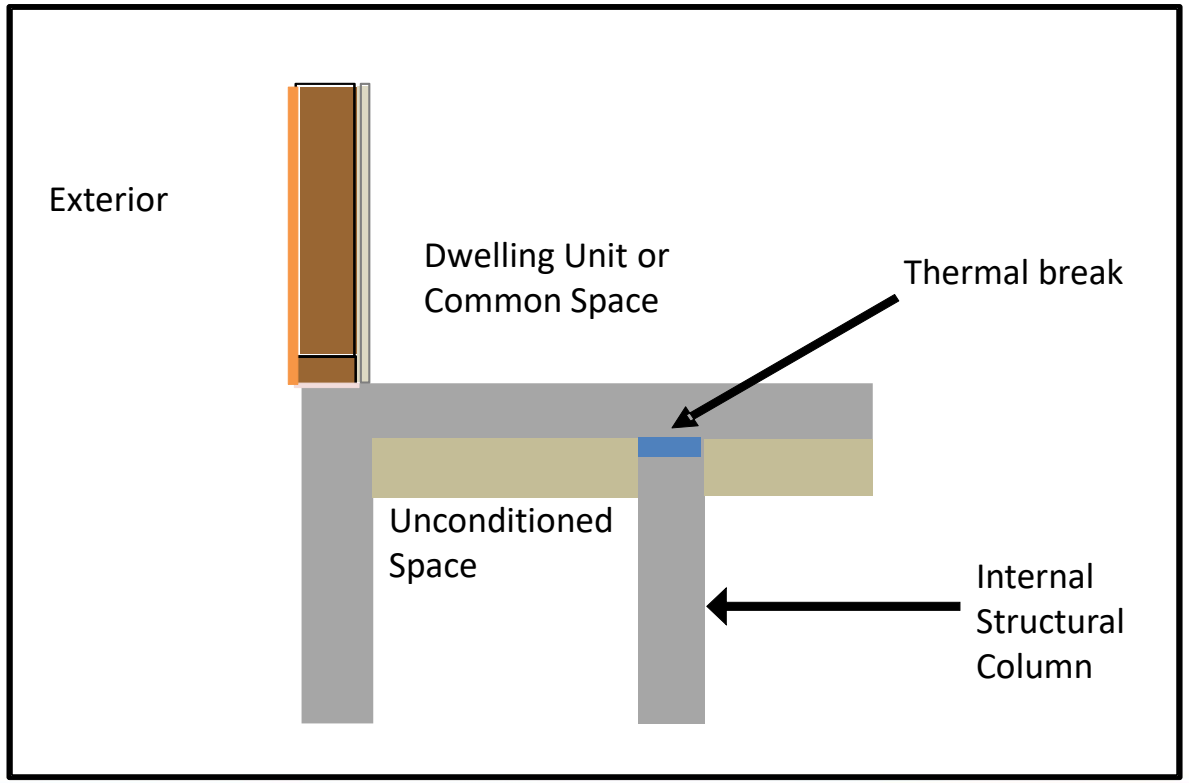
#4. Slab thermal bridging clarifications (Item 3.6)

- The floor insulation backstop **does not apply** if it is the floor above unconditioned space that is **inside the thermal boundary**



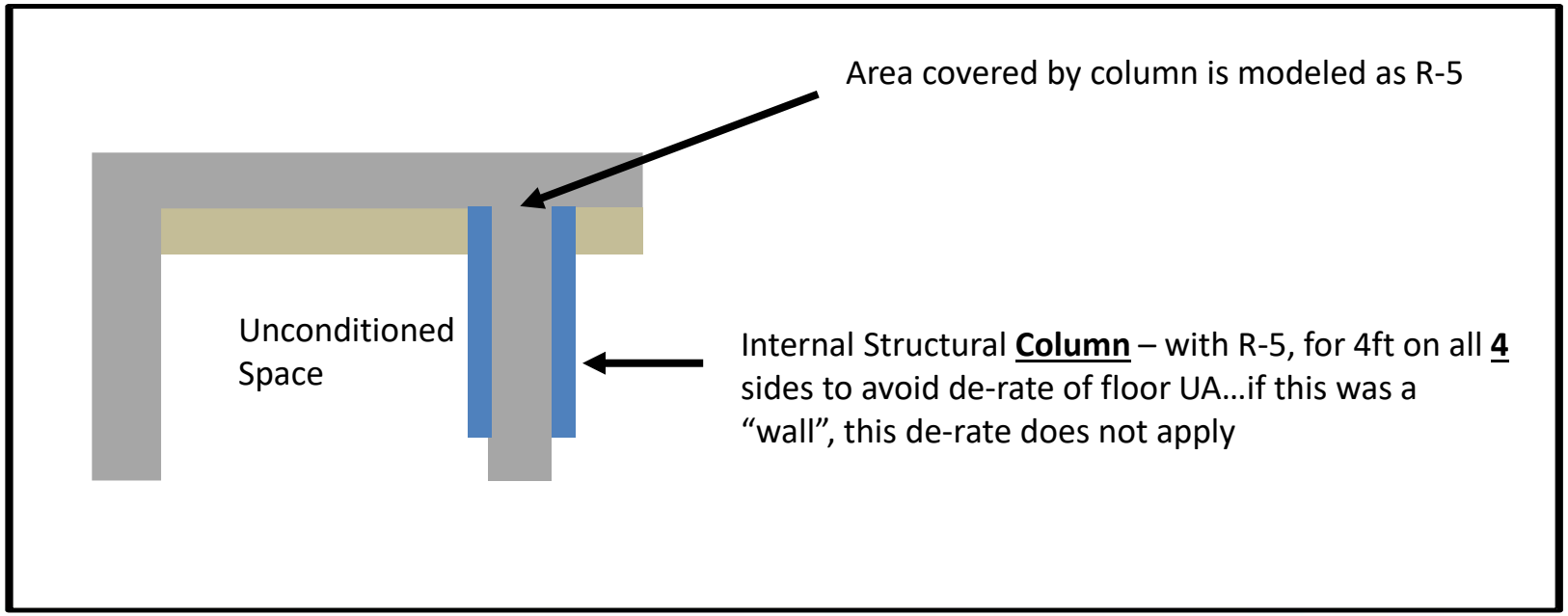
#4. Slab thermal bridging clarifications (Item 3.6, con't)

- For structural columns **with a thermal break** supporting concrete slabs (e.g., podiums), **no** de-rate penalty on the floor UA is required



#4. Slab thermal bridging clarifications (Item 3.6, con't)

- For structural columns **without a thermal break**, the de-rate only applies to structural 'columns', not 'walls'.
- Also, where using the insulated column alternative, a **maximum** of R-5 can be used in the modified floor UA calculation



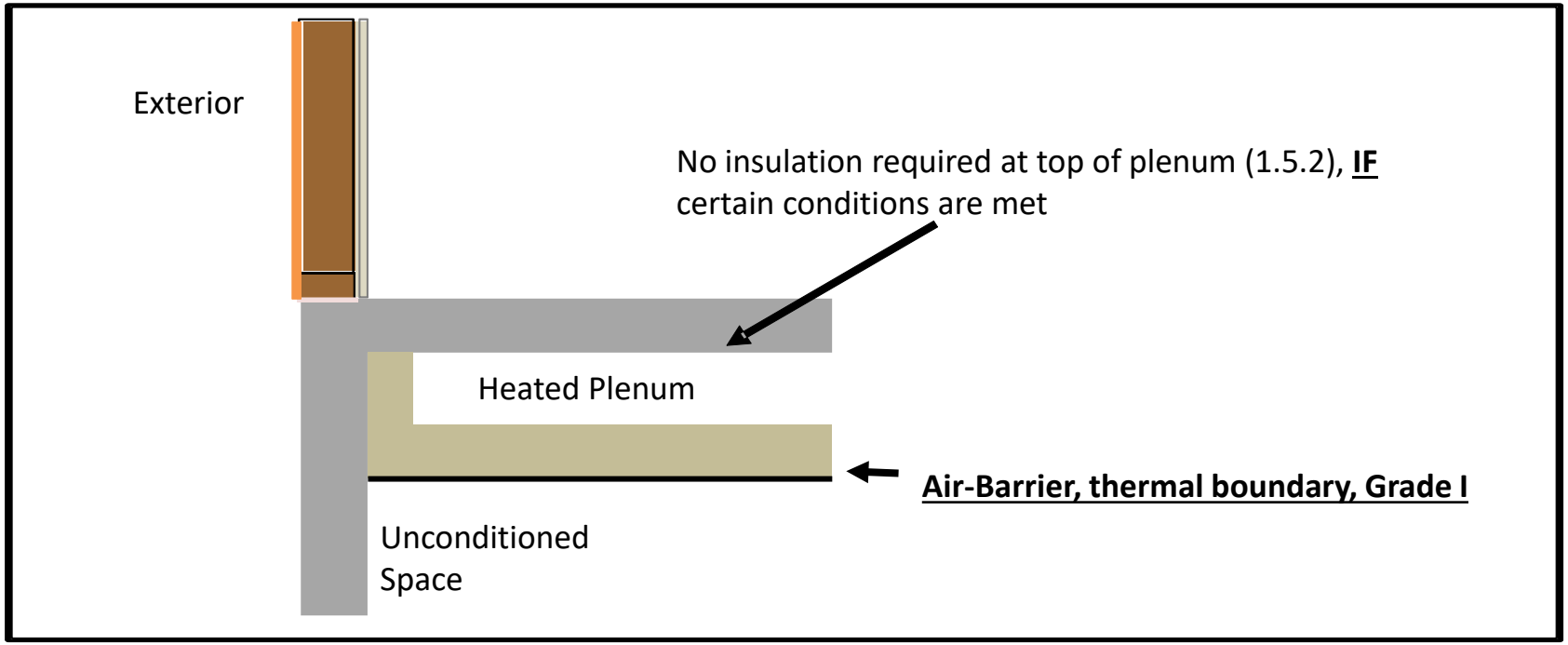
#4. Slab thermal bridging clarifications (con't)

- For heated plenums & garages, the insulation requirements above the plenum (Item 1.5.2) or garage (Item 1.6.2) apply when 3.6 is not applicable.

1.5 Heated plenums in unconditioned space or ambient conditions must meet the following requirements: [9]
1.5.1 Sides of heated plenum are an air barrier and insulated to ≥ R-3ci in CZ 1-4; ≥ R-5ci in CZ 5-6; ≥ R-7.5ci in CZ 7; ≥ R-9.5ci in CZ 8, [10] **AND;**
1.5.2 Insulation at top of heated plenum meets Item 3.6 where applicable. Otherwise, meets or exceeds the R-value for mass floors from the "All Other" column of Table 502.2(1) of 2009 IECC, [10, 11] **AND;**
1.5.3 Bottom of heated plenum must have at least R-13 insulation. [11, 12]
1.6 Garages with space heating must meet the following requirements: [9]
1.6.1 Insulation on above grade walls and walls on the first story below grade ≥ R-5ci in CZ 5-6; ≥ R-7.5ci in CZ 7; ≥ R-9.5ci in CZ 8, [10] **AND;**
1.6.2 Ceiling insulation meets Item 3.6 where applicable. Otherwise, meets or exceeds the R-value for mass floors from the "All Other" column of Table 502.2(1) of 2009 IECC. [10]

#4. Slab thermal bridging clarifications (Item 1.5.2)

- For heated plenums, new alternative where just the bottom of the plenum can be insulated instead of both top and bottom



#5. Advanced framing expansion

- Option to use advanced framing for all stories in CZ4 & CZ5

3. Reduced Thermal Bridging				
3.7 At above-grade walls and rim / band joists separating conditioned space from the exterior, one of the following options used: [23, 26]				
3.7.1 Continuous rigid insulation, insulated siding, or combination of the two is: ≥ R-3 in CZ 1-4; ≥ R-5 in CZ 5-8 [24, 25, 26, 27], **OR**;	☐	☐	☐	☐
3.7.2 Structural Insulated Panels **OR**; Insulated Concrete Forms **OR**; Double-wall framing **OR**; [24, 26, 28]	☐	☐	☐	☐
3.7.3 For wood-framed walls in CZ 1-5 (all stories) & in CZ 6-8 (≤ 3 stories) only: 'advanced framing' details including all Items below: [27, 32]				
3.7.3a Corners insulated ≥ R-6 to edge [30], **AND**;	☐	☐	☐	☐
3.7.3b Headers above windows & doors insulated ≥ R-3 for 2x4 framing or equivalent cavity width, and ≥ R-5 for all other assemblies (e.g., with 2x6 framing) [31], **AND**;	☐	☐	☐	☐
3.7.3c Interior / exterior wall intersections insulated to same R-value as rest of exterior wall. [32]	☐	☐	☐	☐
3.7.3d In CZ 4C & 5, for > 3 stories, ≥ 5.5" framing depth used with wall cavity insulated ≥R-20.0.	☐	☐	☐	☐

#6. Clarifications on Track A & B applicability and reqs.

- Track B – HVAC Testing by FT Agent
  - New footnote added to reinforce when design review must be done:
    - **Rater Design Review Checklist** Section 4b shall be fully completed if any dwelling unit contains an applicable system.
    - For all other buildings, the National HVAC Design Report must be collected and for buildings pursuing the prescriptive path the ventilation must meet Item 4b.2.1, but Items 4b.2.2 through 4b.2.10 are not required.
  - Mirrors guidance that's already provided in National HVAC Design Report, where dwelling-unit loads are only required for applicable systems.

#6. Clarifications on Track A & B applicability and reqs (cont.)

- Track A – HVAC Grading by Rater
  - New footnotes added for Track A eligibility
    - Dwelling units must have at least one applicable system.
    - Dwelling units must use ANSI / RESNET / ACCA / ICC 310.
    - Common spaces with an applicable system may use ANSI / RESNET / ACCA / ICC 310.

#6. Clarifications on Track A & B applicability and reqs (cont.)

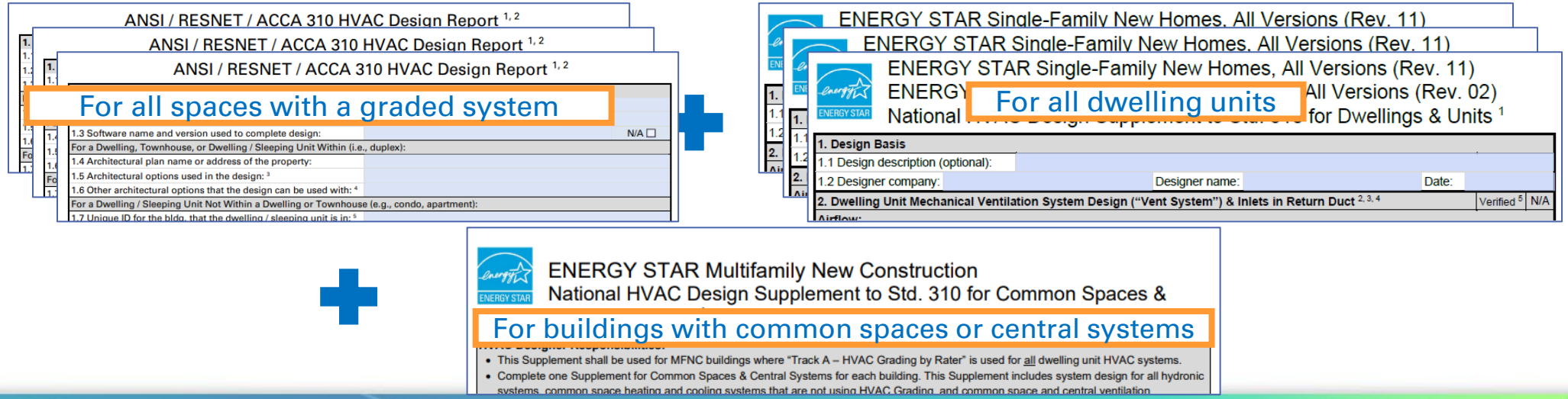
- Track A – Split documentation into sub-items, reflect names of new ENERGY STAR design docs. and simplify reference to Std. 310 design review criteria

4a. Review of ANSI / RESNET / ACCA 310 HVAC Design Report with ENERGY STAR Supplements [6, 13]
4a.1 The following documentation collected for records, with no applicable Items left blank. [14]
4a.1.1 For all dwelling units, HVAC design report(s) compliant with ANSI / RESNET / ACCA 310 and the National HVAC Design Supplement(s) to Std. 310 for Dwellings & Units.
4a.1.2 For common spaces using ANSI / RESNET / ACCA 310, HVAC design report(s) compliant with ANSI / RESNET / ACCA 310.
4a.1.3 National HVAC Design Supplement to Std. 310 for Common Spaces & Central Systems.

#6. Clarifications on Track A & B applicability and reqs (cont.)

- Track A – Split documentation into sub-items, reflect names of new ENERGY STAR design docs. and simplify reference to Std. 310 design review criteria

4a. Review of ANSI / RESNET / ACCA 310 HVAC Design Report with ENERGY STAR Supplements [6, 13]
4a.1 The following documentation collected for records, with no applicable Items left blank. [14]
4a.1.1 For all dwelling units, HVAC design report(s) compliant with ANSI / RESNET / ACCA 310 and the National HVAC Design Supplement(s) to Std. 310 for Dwellings & Units.
4a.1.2 For common spaces using ANSI / RESNET / ACCA 310, HVAC design report(s) compliant with ANSI / RESNET / ACCA 310.
4a.1.3 National HVAC Design Supplement to Std. 310 for Common Spaces & Central Systems.



#6. Clarifications on Track A & B applicability and reqs (cont.)

- Track A – All dwelling unit systems and any common space systems using ANSI / RESNET / ACCA / ICC 310 must complete **Rater Field Checklist** Items 5a.1-5a.4. All other common space systems or non-applicable dwelling unit systems must meet 5a.4.

HVAC System [40]	
5. Heating & Cooling Eqpt. Complete Track A - HVAC Grading by Rater [41] or Track B - HVAC Testing by FT Agent [42]	
Track A	5a.1 Blower fan volumetric airflow is Grade I or II per ANSI / RESNET / ACCA 310
	5a.2 Blower fan watt draw is Grade I or II per ANSI / RESNET / ACCA 310
	5a.3 Refrigerant charge is Grade I per ANSI / RESNET / ACCA 310. See Footnote 43 for exemptions.
	5a.4 HVAC manufacturer & model number on installed equipment matches the HVAC Design Report in compliance with ANSI / RESNET / ACCA 310 or the HVAC Design Supplement to Std. 310 for Common Spaces and Central Systems. [44]

  - Common space systems using HVAC Grading must also complete duct testing
  - All systems using HVAC Grading are exempt from Section 2 and 3 of the Functional Testing Checklist. Section 5 still applies.
  - All other systems must complete all relevant sections of the Functional Testing Checklist.

#7. Alignment with Single-Family New Homes

- Townhouses must complete pressure-balancing for all bedrooms, regardless of airflow
- SFNH HVAC Design Report may be used for dwelling units where room-by-room loads are calculated
- Aligned with SFNH Rev 12:
  - Consolidation of filter requirements
  - Option to install slab insulation on top of slab
  - Full system capacity should be reported for two-speed or variable-speed AC's and HP's and two-stage or modulating furnaces
  - Capillary break option added and "air permeable" was replaced with "vapor permeable" in the National Water Management System Requirements
  - Dehumidifiers added to the ENERGY STAR Reference Designs
  - In CZ 7&8, National v1.1 ENERGY STAR Reference Design revised to specify ASHP

#8. Simplifications

#8. Simplifications – HVAC

- Removed requirement to check that thermostat is on an interior wall
- Removed requirement to limit simultaneous heating and cooling
- Removed functional testing requirement to measure HVAC supply air-flow temperature
- Provided a temporary alternative to measurement of PTAC/PTHP supply ventilation for common spaces
  - Permits before 1/1/2024, OA designed to meet 62.1 and the presence of a window is allowed
  - Permits after 1/1/2024, measurement is required or an alternative OA strategy needed

63. For permits on or before 01/01/2024, where outdoor air is supplied via a PTAC or PTHP, in lieu of measurement, the design CFM shall meet or exceed the ventilation rates required by ASHRAE 62.1-2010 and the space served by the PTAC or PTHP shall have at least one operable window. For permits after 01/01/2024, both the runtime and measurement of outdoor air through these systems will be required to demonstrate compliance with ASHRAE 62.1-2010 or alternative ventilation system specified (e.g., ducted supply).

#8. Simplifications – HVAC (con't)

- Individuals within an organization may complete the Functional Testing Checklist under the oversight of the Functional Testing Agent

1. This Checklist is designed to align with the requirements of ANSI / ACCA's 5 QI-2015 protocol, thereby improving the performance of HVAC equipment in new multifamily buildings when compared to new multifamily buildings built to minimum code. However, these features alone cannot prevent all ventilation, indoor air quality, and HVAC problems (e.g., those caused by a lack of maintenance or occupant behavior). Therefore, this Checklist is not a guarantee of proper ventilation, indoor air quality, or HVAC performance.

   The items in this checklist may be marked as "FT Agent Verified" by an individual employed at the Company listed in Item 1.1, if performed under the oversight of the Functional Testing Agent signing this Checklist.

   The checklist may be completed and signed by a Rater, rather than a Functional Testing Agent, if only Sections 1, 4 and 5 are applicable (i.e. Rater completing Section 5 or Item 4.2 for a system that is also being

#8. Simplifications – Hot Water

- Removed hot water pipe insulation mandatory requirement
- Removed requirement to measure temperature at showerhead, must still measure temperature at faucet

#8. Simplifications – Lighting

- LEDs may be installed in lieu of meeting common space and garage lighting power density calculations

12. Lighting
12.1 Common Space [2] Lighting Controls:
12.1.1 ERI and Prescriptive Path: All common spaces [2] (including shared garages), except the building lobby and where automatic shutoff would endanger the safety of occupants [84], have occupancy sensors or automatic bi-level lighting controls insta
12.1.2 ASHRAE Path only: All common spaces [2] (inclu corridors, and stairwells and where automatic shu occupancy sensors or automatic bi-level lighting c
12.2 Exterior lighting controls: Fixtures, including parking timers or photocell controls except fixtures intended for 24-hour operation, required for security, or associated with the electric meter for an individual dwelling unit.
12.3 Common Spaces [2] and Garages: 90% of installed lighting fixtures are integrated LED fixtures or contain LED lamps. See Footnote 85 for alternate options.
12.4 ERI Path: All exterior and common space lighting fixtures meet the efficiency requirements in the ENERGY STAR Multifamily Reference Design, except fixtures located on dwelling unit balconies. [88, 89]
12.5 Prescriptive Path: All lighting fixtures (i.e., dwelling units, common spaces, and exterior) meet the efficiency requirements in the ENERGY STAR Multifamily Reference Design. [88, 89]
12.6 Prescriptive Path: Dwelling unit overall in-unit lighting power density ≤ 0.75 W/ft^2. When calculating overall lighting power density, use 1.1 W/ft^2 where lighting is not installed. [86]

85. As an alternative to the efficiency requirements in Item 12.3, installed lighting may instead meet the following lighting power allowances. In common spaces (except garages), for ERI and Prescriptive Path, total installed lighting power for the combined common spaces [2] must not exceed ASHRAE 90.1-2007 allowances for those combined spaces, using the Space-by-Space or Building Area Method. For ASHRAE Path, total installed lighting power for the combined common spaces [2] must not exceed ASHRAE 90.1-2007 allowances for those combined spaces, using the Space-by-Space or Building Area Method, by more than 20%. For all Paths, see Footnote 86 and 87 for allowances.

In shared garages, installed lighting shall not exceed 0.24 W/ft^2.

#9 Improvements & Clarifications

- Created a target for Phius CORE 2021 and Phius ZERO 2021 projects
  - PHIUS+ CORE 2015 and 2018
    - Source energy $\leq$ 6,500 kWh/person/yr
  - Phius CORE 2021 and Phius ZERO 2021
    - 10% less than the Phius CORE 2021 source criteria for all Versions except 1.2
    - 15% less than the Phius CORE 2021 source criteria for Version 1.2
- Added Mass Floor Insulation to the ENERGY STAR Reference Design
- Updated source energy BPFs (for ASHRAE Path) to align with PNNL update

#9 Improvements & Clarifications – HVAC Design & Testing

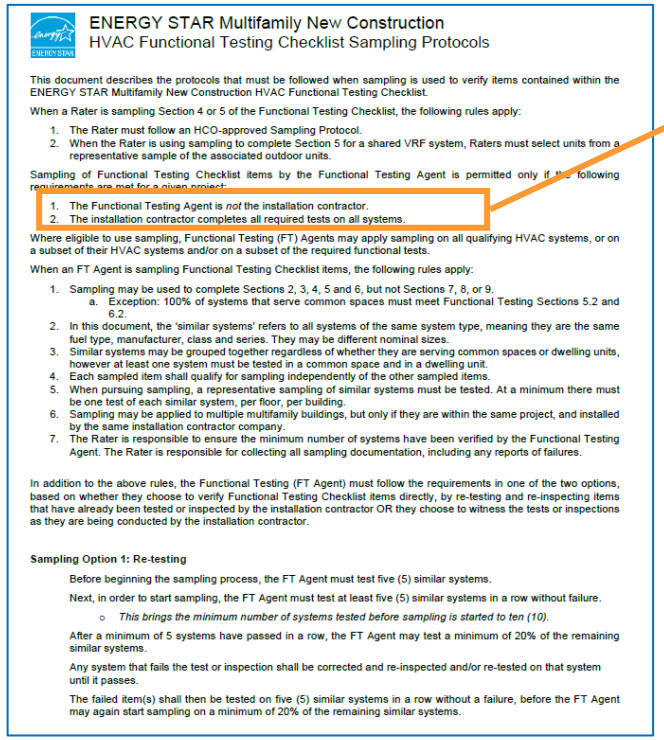
- The 150% ventilation limits for common spaces do not apply to ASHRAE Path
- Outdoor air airflow supplied to unique common spaces must be listed separately
- All outdoor air inlets on HVAC systems (including PTAC/PTHPs) must have a motorized damper that close when the ventilation is off
- Use of ASHRAE 183 for load calculation (i.e., TRACE, HAP) is explicitly allowed
- Loads must be documented for all the configurations of a floorplan in the bldg, which depend on location/level within the building

#9 Improvements & Clarifications – HVAC Design & Testing (con't)

- Electric resistance restrictions within the Prescriptive and ERI Path are for space conditioning. They are not applicable to:
  - Pre-heating ventilation air for spaces with other primary space conditioning systems.
  - Stairwells or heated plenums with thermostatic controls set to 50 or lower.
- The exhaust system components of central HRVs and ERVs must meet the central exhaust system requirements for testing and fan efficiencies

#9 Improvements & Clarifications – HVAC Design & Testing (con't)

- For the HVAC Functional Testing Checklist, when sampling is used, FT Agent must confirm documentation was collected that the installing contractor performed testing on all systems



ENERGY STAR Multifamily New Construction
HVAC Functional Testing Checklist Sampling Protocols

This document describes the protocols that must be followed when sampling is used to verify items contained within the ENERGY STAR Multifamily New Construction HVAC Functional Testing Checklist.

When a Rater is sampling Section 4 or 5 of the Functional Testing Checklist, the following rules apply:

1. The Rater must follow an HCO-approved Sampling Protocol.
2. When the Rater is using sampling to complete Section 5 for a shared VRF system, Raters must select units from a representative sample of the associated outdoor units.

Sampling of Functional Testing Checklist items by the Functional Testing Agent is permitted only if the following requirements are met for a given project:

1. The Functional Testing Agent is *not* the installation contractor.
2. The installation contractor completes all required tests on all systems.

Where eligible to use sampling, Functional Testing (FT) Agents may apply sampling on all qualifying HVAC systems, or on a subset of their HVAC systems and/or on a subset of the required functional tests.

When an FT Agent is sampling Functional Testing Checklist items, the following rules apply:

1. Sampling may be used to complete Sections 2, 3, 4, 5 and 6, but not Sections 7, 8, or 9.
   a. Exception: 100% of systems that serve common spaces must meet Functional Testing Sections 5.2 and 6.2.
2. In this document, the 'similar systems' refers to all systems of the same system type, meaning they are the same fuel type, manufacturer, class and series. They may be different nominal sizes.
3. Similar systems may be grouped together regardless of whether they are serving common spaces or dwelling units, however at least one system must be tested in a common space and in a dwelling unit.
4. Each sampled item shall qualify for sampling independently of the other sampled items.
5. When pursuing sampling, a representative sampling of similar systems must be tested. At a minimum there must be one test of each similar system, per floor, per building.
6. Sampling may be applied to multiple multifamily buildings, but only if they are within the same project, and installed by the same installation contractor company.
7. The Rater is responsible to ensure the minimum number of systems have been verified by the Functional Testing Agent. The Rater is responsible for collecting all sampling documentation, including any reports of failures.

In addition to the above rules, the Functional Testing (FT Agent) must follow the requirements in one of the two options, based on whether they choose to verify Functional Testing Checklist items directly, by re-testing and re-inspecting items that have already been tested or inspected by the installation contractor OR they choose to witness the tests or inspections as they are being conducted by the installation contractor.

Sampling Option 1: Re-testing

Before beginning the sampling process, the FT Agent must test five (5) similar systems.

Next, in order to start sampling, the FT Agent must test at least five (5) similar systems in a row without failure.

- *This brings the minimum number of systems tested before sampling is started to ten (10).*

After a minimum of 5 systems have passed in a row, the FT Agent may test a minimum of 20% of the remaining similar systems.

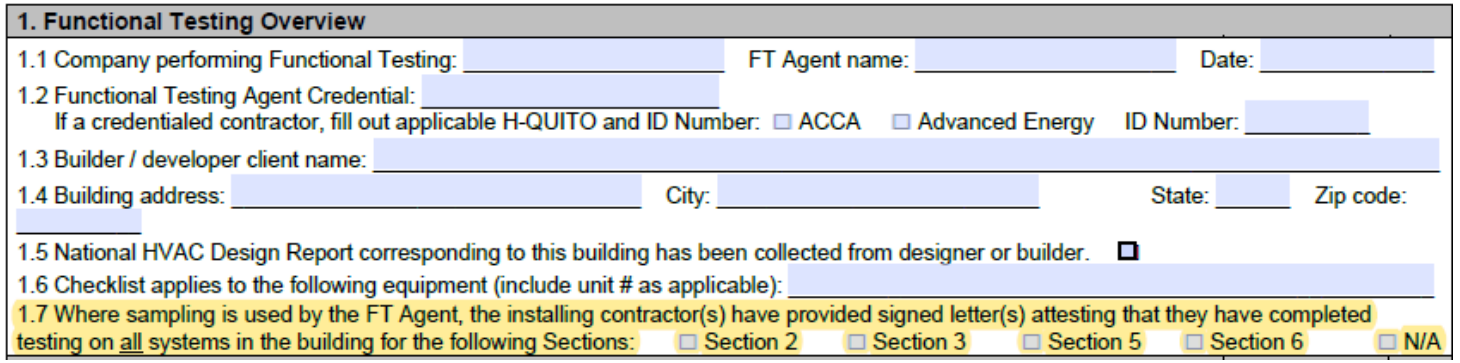
Any system that fails the test or inspection shall be corrected and re-inspected and/or re-tested on that system until it passes.

The failed item(s) shall then be tested on five (5) similar systems in a row without a failure, before the FT Agent may again start sampling on a minimum of 20% of the remaining similar systems.

1. The Functional Testing Agent is *not* the installation contractor.
2. The installation contractor completes all required tests on all systems.

#9 Improvements & Clarifications – HVAC Design & Testing (con't)

- For the HVAC Functional Testing Checklist, when sampling is used, FT Agent must confirm documentation was collected that the installing contractor performed testing on all systems



1. Functional Testing Overview

1.1 Company performing Functional Testing: _____ FT Agent name: _____ Date: _____

1.2 Functional Testing Agent Credential: _____
If a credentialed contractor, fill out applicable H-QUITO and ID Number: ☐ ACCA ☐ Advanced Energy ID Number: _____

1.3 Builder / developer client name: _____

1.4 Building address: _____ City: _____ State: _____ Zip code: _____

1.5 National HVAC Design Report corresponding to this building has been collected from designer or builder. ☐

1.6 Checklist applies to the following equipment (include unit # as applicable): _____

1.7 Where sampling is used by the FT Agent, the installing contractor(s) have provided signed letter(s) attesting that they have completed testing on all systems in the building for the following Sections: ☐ Section 2 ☐ Section 3 ☐ Section 5 ☐ Section 6 ☐ N/A

HVAC Functional Testing Checklist

- Clarified minimum sampling documentation for Functional Testing

HVAC Functional Testing Checklist Sampling Protocols

As noted in the HVAC Functional Testing Checklist, under FT Agent responsibilities, upon concluding sampling of items on the HVAC Functional Testing Checklist, the FT Agent shall provide the completed and signed checklists to the builder / developer and the Rater for the systems they re-tested or witnessed. In addition, they must submit sampling documentation to the Rater that demonstrates systems selected meet the requirements in these protocols, including any reports of failures. This documentation must note at a minimum: the number of total applicable systems to be tested, the number of systems re-tested by the FT Agent or the number of tests witnessed by the FT Agent, and the number of failures. This data will be included in the Excel version of the HVAC Functional Testing Checklist. The installing contractor(s) must also provide signed letter(s) attesting that they have completed testing on all systems in the building for specific Sections of the checklist.

As noted above, the Rater is then responsible to ensure the minimum number of systems have been verified by the Functional Testing Agent, prior to the units / building earning ENERGY STAR certification.

#9 Improvements & Clarifications - Lighting

- Clarified lighting control applicability for specific common spaces

12. Lighting
12.1 Common Space [2] Lighting Controls:
12.1.1 ERI and Prescriptive Path: All common spaces [2] (including shared garages), except the building lobby, mechanical equipment rooms, and where automatic shutoff would endanger the safety of occupants [84], have occupancy sensors or automatic bi-level lighting controls installed and operation has been verified.
12.1.2 ASHRAE Path only: All common spaces [2] (including shared garages), except the building lobby, mechanical equipment rooms, corridors, and stairwells and where automatic shutoff would endanger the safety of occupants [84], have occupancy sensors or automatic bi-level lighting controls installed and operation has been verified.

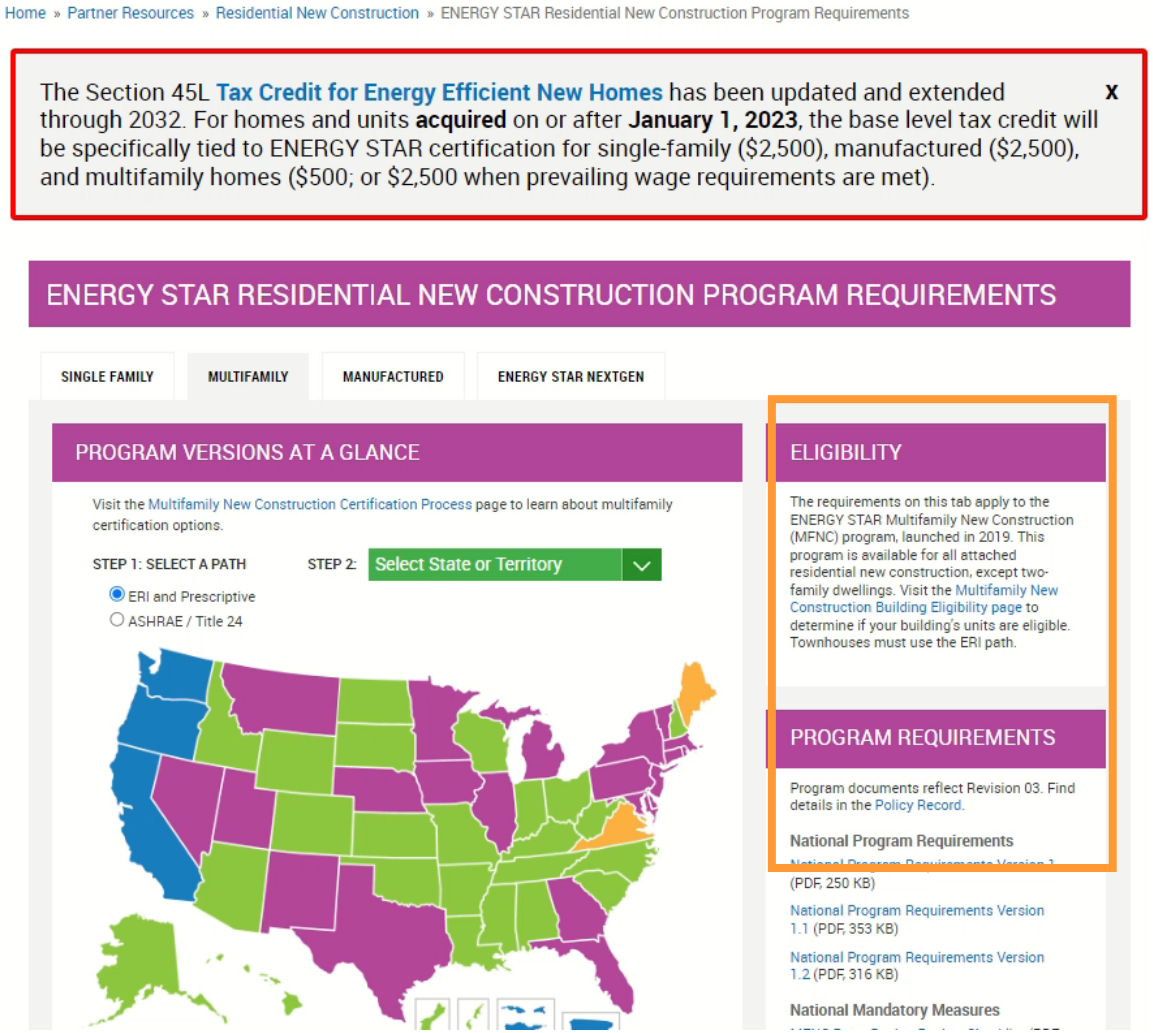
84. For common spaces where automatic lighting controls are not installed due to safety concerns associated with automatic lighting shutoff, the architect or engineer must provide the specific location(s) where this concern is applicable. The Rater shall retain a copy of the email or letter that documents the location(s) for their records and check the box in the "Rater Verified" column. For Item 12.1.1, this exemption does not apply to corridors or stairwells; where safety is a concern in those spaces, the ASHRAE Path should be pursued.

- Lighting control requirements are not applicable to exterior lights on the dwelling unit meter

12.2 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 associated with the electric meter for an individual dwelling unit.

#10 Excel tools

- Created Excel tools for MFNC HVAC Design Report and the HVAC Functional Testing Checklist



Summary of Rev. 03

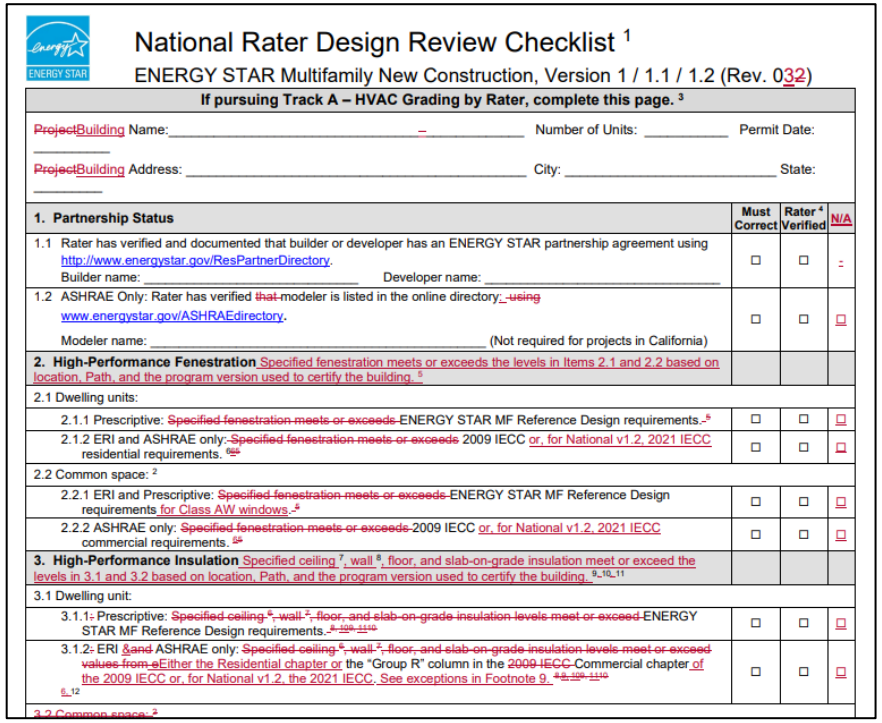
- Top ten changes in Rev. 03:
  1. Sunset of Version 1.0 and ASHRAE 90.1-2007 baseline
  2. Incorporation of National v1.2
  3. Insulation backstop flexibility
  4. Slab thermal bridging clarifications
  5. Advanced framing expansion
  6. Clarification of HVAC Track A and B eligibility and applicability
  7. Alignment with SFNH
  8. Simplifications
  9. Improvements and Clarifications
  10. Excel tools

What we didn't cover today

- Minor clarifications with limited applicability
- General cleanup of language and references

Release of Revision 03

- Released in October 2022.
- Updated program documents at: energystar.gov/mfnc.
- Three-page highlights document, tracked-changes documents, and updated Policy Record at: energystar.gov/newhomespolicyrecord



National Rater Design Review Checklist [1]

ENERGY STAR Multifamily New Construction, Version 1 / 1.1 / 1.2 (Rev. 032)

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

~~Project~~Building Name: _____ Number of Units: _____ Permit Date: _____

~~Project~~Building Address: _____ City: _____ State: _____

1. Partnership Status	Must Correct	Rater [4] Verified	N/A
1.1 Rater has verified and documented that builder or developer has an ENERGY STAR partnership agreement using http://www.energystar.gov/ResPartnerDirectory. Builder name: _____ Developer name: _____	☐	☐	-
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)	☐	☐	☐
2. High-Performance Fenestration Specified fenestration meets or exceeds the levels in Items 2.1 and 2.2 based on location, Path, and the program version used to certify the building. [5]			
2.1 Dwelling units:			
2.1.1 Prescriptive: ~~Specified fenestration meets or exceeds~~ ENERGY STAR MF Reference Design requirements.~~[5]~~	☐	☐	☐
2.1.2 ERI and ASHRAE only: ~~Specified fenestration meets or exceeds~~ 2009 IECC or, for National v1.2, 2021 IECC residential requirements. ~~[5]~~[5]	☐	☐	☐
2.2 Common space: [2]			
2.2.1 ERI and Prescriptive: ~~Specified fenestration meets or exceeds~~ ENERGY STAR MF Reference Design requirements for Class AW windows.~~[5]~~	☐	☐	☐
2.2.2 ASHRAE only: ~~Specified fenestration meets or exceeds~~ 2009 IECC or, for National v1.2, 2021 IECC commercial requirements. ~~[5]~~[5]	☐	☐	☐
3. High-Performance Insulation Specified ceiling [7], wall [8], floor, and slab-on-grade insulation meet or exceed the levels in 3.1 and 3.2 based on location, Path, and the program version used to certify the building. [9, 10, 11]			
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, 10, 11]~~	☐	☐	☐
3.1.2 ERI ~~&and~~ ASHRAE only: ~~Specified ceiling [6], wall [7], floor, and slab-on-grade insulation levels meet or exceed values from e~~Either the Residential chapter or the "Group R" column in the ~~2009 IECC~~ Commercial chapter of the 2009 IECC or, for National v1.2, the 2021 IECC. See exceptions in Footnote 9. ~~[8, 10, 11]~~[6, 12]	☐	☐	☐
~~3.2 Common space: [2]~~			

Implementation of Revision 03

- Implementation date of 01/01/2024.
- What does this mean for you?
  - You can use Rev. 03 today for any building.
  - You must use Rev. 03 for any building permitted after January 1, 2024.

Q & A

ENERGY STAR Residential New Construction

Web & Email:

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

Dean Gamble
Technical Manager
ENERGY STAR SF New Homes
gamble.dean@epa.gov

Rebecca Hudson
Technical Manager
ENERGY STAR MF New Construction
hudson.rebecca@epa.gov