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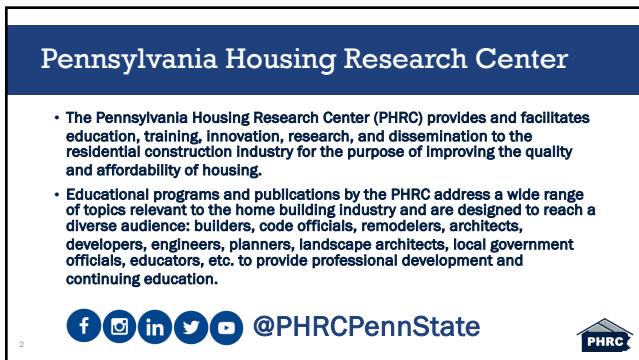
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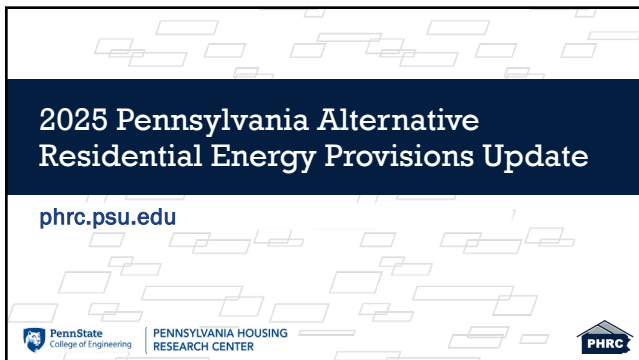
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## Description

In this special 30-minute webinar, the PHRC will review the newly published 2025 Pennsylvania Alternative Residential Energy Provisions (PA-Alt). Learn about the standard, its compliance worksheet to aid in permit applications, and sticker template.



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## Code Update: What is Changing?



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## When Is It Changing?

- Anticipated effective date for PA UCC code changes:

~~July 13, 2025~~  
New Date TBD



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## Why Does this Date Matter?

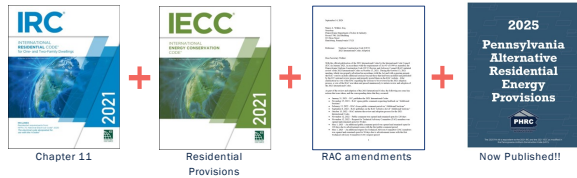
- **Act 36 of 2017 – PA Construction Codes Act (amending Act 45 of 1999)**
- **Section 304. Revised or successor codes**
  - Subsection (c)(4) - *Where a design or construction contract was signed before the effective date of regulations for a subsequent Uniform Construction Code or International Fuel Gas Code issued under this act, the permit may be issued under the Uniform Construction Code or International Fuel Gas Code in effect at the time the design or construction contract was signed if the permit is applied for within six months of the effective date of the regulation or the period specified by a municipal ordinance, whichever is less.*
- The official "effective date of regulations" determines which version of the PA UCC applies to a construction project.

Source: <https://www.pahrc.us/updates/unpublished-law-information/view-statute?statute=2017%2FAct%2F36&document=2>



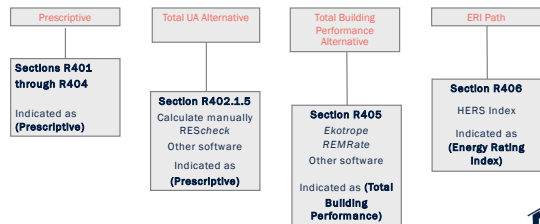
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## PA UCC Residential Energy Code Summary

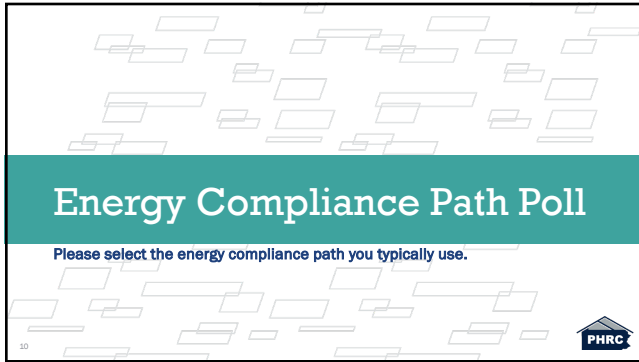


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## Summary: 2021 IECC Energy Compliance Options in Pennsylvania



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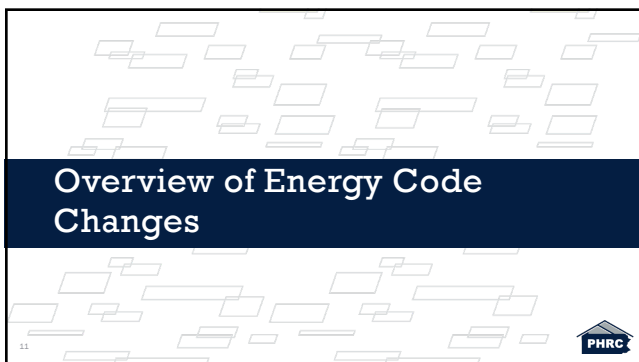
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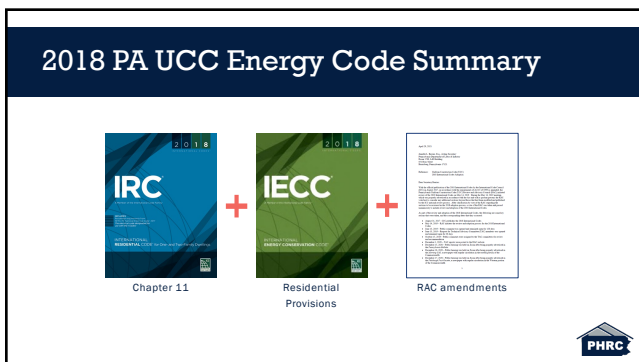
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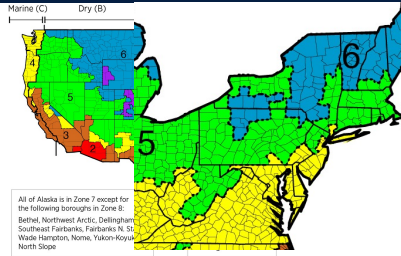
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## 2018 Climate Zone Map (3 Climate Zones in Pennsylvania)



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## 2018 IRC Table N1102.1.2

Table N1102.1.2 (M402.1.2)  
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT \*

Climate Zone	Fenestration U-Factor	SKYLIGHT* U-FACTOR	GLAZED FENESTRATION N SHGC <sup>a</sup>	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE	FLOOR R-VALUE	BASEMENT* WALL R-VALUE	SLAB* R-VALUE & DEPTH	CRAWL SPACE* WALL R-VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.55	0.25	38	13	4/5	13	0	0	0
3	0.35	0.55	0.25	38	20 or 13 + 5"	8/13	19	5/13	0	5/13
4 except Marine	0.32	0.55	0.40	49	20 or 13 + 5"	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.30	0.55	NR	49	20 or 13 + 5"	13/17	30*	15/19	10, 2 ft	15/19
6	0.30	0.55	NR	49	20 + 9" or 13 + 10"	15/20	30*	15/19	10, 4 ft	15/19
7 and 8	0.30	0.55	NR	49	20 + 9" or 13 + 10"	19/21	38*	15/19	10, 4 ft	15/19

Source: International Code Council (ICC), 2017, 2018 International Residential Code, Country Club Wb, IL



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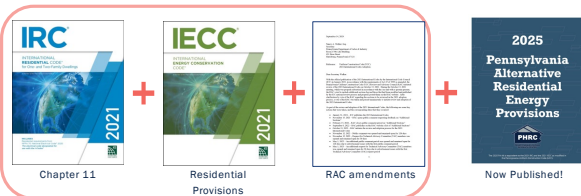
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## 2021 PA UCC Energy Code Summary



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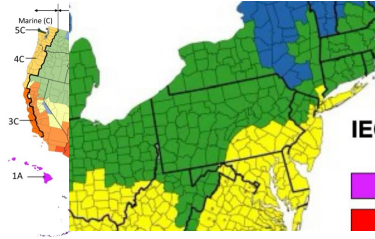
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## 2021 Climate Zone Map (2 Climate Zones in Pennsylvania)



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## 2021 Table N1102.1.3 – Insulation and Fenestration Table – RAC Report

TABLE R402.1.3 (N1102.1.3)  
INSULATION MINIMUM R-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT\*

CLIMATE ZONE	FENESTRATION U-FACTOR <sup>a</sup>	SKYLIGHT <sup>b</sup> U-FACTOR	GLAZED FENESTRATION SHGC <sup>c,d</sup>	CEILING R-FACTOR	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE <sup>e</sup>	FLOOR R-VALUE	BASEMENT <sup>f</sup> WALL R-VALUE	SLAB <sup>g</sup> R-VALUE & DEPTH	CRAWL SPACE <sup>h</sup> WALL R-VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.55	0.25	38	13	4/5	13	0	0	0
3	0.32	0.55	0.25	38	20 or 13 + 5"	8/13	19	5/12 <sup>i</sup>	0	5/13
4 except Marine	0.32	0.55	0.40	49	20 or 13 + 5"	8/13	19	10/13	10, 2ft	10/13
5 and Marine 4	0.30	0.55	NR	49	23 or 13 + 7.5" or 20 + 3.8"	13/17	30 <sup>f</sup>	15/19	10, 4ft or 15, 3ft	15/19
6	0.30	0.55	NR	49	20 + 5" or 13 + 10"	15/20	30 <sup>f</sup>	15/19	10, 4 ft	15/19
7 and 8	0.30	0.55	NR	49	20 + 5" or 13 + 10"	19/21	30 <sup>f</sup>	15/19	10, 4 ft	15/19

Source: <https://www.penn.gov/energy/energy-climate-zone-map>

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## 2025 Pennsylvania Alternative Residential Energy Provisions

Per the PA Department of Labor & Industry, the PA-Alt is named by its publication year, which does not correspond with adopted I-Codes



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## 2025 Pennsylvania Alternative Residential Energy Provisions

### 2025 Pennsylvania Alternative Residential Energy Provisions



- Based on the 2021 IECC and UCC Amendments
- Compliance allowed by UCC Title 34, Chapter 403
- Created and published by the Pennsylvania Housing Research Center
- Allows trade-offs



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## PA Act 45 of 1999 (Pennsylvania Construction Codes Act) Section 301(c)

- (c) Prescriptive methods for energy-related standards.-  
-The department shall, within 180 days of the effective date of this section, by regulation promulgate prescriptive methods to implement the energy-related standards of the Uniform Construction Code which take into account the various climatic conditions through this Commonwealth. In deriving these standards the department shall seek to balance energy savings with initial construction costs.



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## Pennsylvania Alternative Residential Energy Provisions

- Compliance allowed by UCC Title 34, Chapter 403 (d)(1)
  - The prescriptive methods for detached residential buildings contained in the "International Energy Conservation Code of [2021]" compliance guide containing State maps, prescriptive energy packages and related software published by the United States Department of Energy, Building Standards and Guidelines Program (REScheckTM) or "Pennsylvania's Alternative Residential Energy Provisions." (Prescriptive vs. requiring modeling)

Source: <https://www.pennsylvania.gov/energy/building-standards/alternative-residential-energy-provisions-2021-compliance-guide>



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Scope Clarification

SECTION PA100

GENERAL

**PA101 Scope.** The provisions of this document regulate energy efficiency for the design and construction of buildings regulated by the 2021 International Residential Code (IRC) as modified in the Pennsylvania Uniform Construction Code (UCC) in the Commonwealth of Pennsylvania. In addition, the provisions of this document only apply to new construction of one- and two-family dwellings and townhouses not more than three stories above grade plane in height with a separate means of egress and their accessory structures not more than three stories above grade plane in height and are not applicable to alteration, repair, addition, and change of occupancy of existing buildings and structures.

*Exception:* Portions of the building envelope that do not enclose conditioned space.

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Source: <https://www.pennsylvania.gov/energy/2025/Pennsylvania-Alternative-Residential-Energy-Provisions.pdf>

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Pennsylvania Alternative Residential Energy Provisions

Entrance Requirements

Tradeoff

2025 Pennsylvania Alternative Residential Energy Provisions

PHRC

- Choose one Entrance Requirement
  - "Energy Enhancement Options"
- Receive ALL tradeoffs
- Energy modeling completed (BEopt) to ensure equivalent energy usage

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Energy Enhancement Options

Choose **ONE** of the following Energy Enhancement Options to qualify for the alternative path.

Entrance Requirements

Tradeoff

2025 Pennsylvania Alternative Residential Energy Provisions

PHRC

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## Energy Enhancement Options

Table PA104  
Energy Enhancement Options

Option	Description	Minimum efficiency by climate zone	
		4	5
1	Ductless heat pumps <sup>a</sup>	8.6 HSPF2 and 18 SEER2	8.6 HSPF2 and 18 SEER2
2	All air ducts located inside the thermal envelope	Compliant	Compliant
3	Geothermal or water source heat pump installed <sup>a</sup>	Compliant (COP 3.6)	Compliant (COP 3.6)
4	Improved efficiency air source heat pump installed <sup>a</sup>	7.7 HSPF2 and 16.2 SEER2	8.4 HSPF2 and 18.1 SEER2
5	Improved efficiency condensing furnace installed <sup>a</sup>	92.5 AFUE	92.5 AFUE
6	Exterior continuous insulation	R20+10	R20+15
7	Improved efficiency windows	U-factor ≤ 0.21	U-factor ≤ 0.19
8	Package: Improved efficiency windows and higher attic R-value with raised heel truss	Windows: U-factor ≤ 0.25	U-factor ≤ 0.21
		Attic: R-value ≥ 60	R-value ≥ 60
9	Package: Improved efficiency windows and heat pump water heater	Windows: U-factor ≤ 0.25	U-factor ≤ 0.21
		Heat Pump Water Heater: UEF ≥ 3.5	UEF ≥ 3.5

Notes:  
a. For multiple cooling systems, all systems shall meet or exceed the minimum efficiency requirements in this section and shall be sized to serve 100 percent of the cooling design load. For multiple heating systems, all systems shall meet or exceed the minimum efficiency requirements in this section and shall be sized to serve 100 percent of the heating design load.  
b. Full lengths of uncompressible insulation shall extend over the top plate at the eaves.

Source: <https://www.pahrc.org/energy-enhancement-options>



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## Energy Tradeoffs

- **ALL** of the following are allowed as a reduction when at least one energy enhancement option has been met.



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## Feedback – Use Zoom Chat

For those who are using the PA-Alt, why do you use it?



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### Energy Tradeoffs

- **Cathedral Ceilings: R-30 insulation, for up to 75% of the total *living space* square footage area**
  - **PA302.2 Ceilings without attic spaces.** Where the design of the roof/ceiling assembly does not allow sufficient space for the required insulation, such as cathedral ceilings, the minimum required insulation for such roof/ceiling assemblies shall be R-30. Insulation shall extend over the top of the wall plate to the outer edge of such plate and shall not be compressed. This reduction of insulation from the requirements of Section PA301 shall be limited to 75% of the total living space square footage area.

Source: <https://www.penn.gov/documents/2015/04/2015-Pennsylvania-Residential-Energy-Requirements.pdf>

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### Energy Tradeoffs

- **Attic Hatches: R-20 instead of insulating to the surrounding area**

Figure PA302.3 (1)  
Attic Hatch

Figure PA302.3 (2)  
Pull-Down Stairs

Source: <https://www.penn.gov/documents/2015/04/2015-Pennsylvania-Residential-Energy-Requirements.pdf>

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## Energy Tradeoffs

### • Slab Edge Insulation: Thermal break

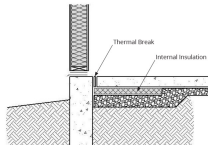


Figure PA302.9.2  
Interior Slab Insulation

**PA302.9.2 Interior Insulation.** Interior insulation shall be installed from the bottom of the slab and extend the distance provided in Table PA301 by any combination of vertical insulation or horizontal insulation extending under the slab. The slab edge shall be separated from the foundation wall by a continuous 1/2 inch thermal break as per Figure PA302.9.2. A thermal break shall be created by a material suitable for ground contact, which includes, but is not limited to, asphalt impregnated fiber board or extruded polystyrene. Slab-edge insulation is not required in jurisdictions designated by the code official as having a very heavy termite infestation.

Note: The provisions in Section PA302.9.2 only apply to unheated slabs. For heated slabs, refer to requirements in 2021 IRC Table N1102.1.3 (R402.1.3) as modified and 2021 IRC Section N1102.2.9 (R402.2.9).

Source: <https://www.documents.moscow.idaho.gov/2021/2021%20Energy%20Code%20Adoption%20Agenda%20Presentation%20-%20Final%2020200404.pdf>



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## 2021 Table N1102.1.3 – Insulation and Fenestration Table – RAC Report

**TABLE R402.1.3 (N1102.1.3)**  
**INSULATION MINIMUM R-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT\***

CLIMATE ZONE	FENESTRATION U-FACTOR <sup>a</sup>	SKYLIGHT <sup>b</sup> U-FACTOR	GLAZED FENESTRATION SHGC <sup>c,d</sup>	CEILING R-FACTOR	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE <sup>e</sup>	FLOOR R-VALUE	BASEMENT <sup>f</sup> WALL R-VALUE	SLAB <sup>g</sup> R-VALUE & DEPTH	CRAWL SPACE <sup>h</sup> WALL R-VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.55	0.25	38	13	4/5	13	0	0	0
3	0.32	0.55	0.25	38	20 or 13 + 5"	8/13	19	5/12 <sup>i</sup>	0	5/13
4 except Marine	0.32	0.55	0.40	49	20 or 13 + 5"	8/13	19	10/13	10, 2ft	10/13
5 and Marine 4	0.30	0.55	NR	49	23 or 13 + 7.5" or 20 + 3.8"	13/17	30 <sup>j</sup>	15/19	10, 4ft or 15, 3ft	15/19
6	0.30	0.55	NR	49	20 + 5" or 13 + 10"	15/20	30 <sup>j</sup>	15/19	10, 4 ft	15/19
7 and 8	0.30	0.55	NR	49	20 + 5" or 13 + 10"	19/21	30 <sup>j</sup>	15/19	10, 4 ft	15/19

Source: <https://www.documents.moscow.idaho.gov/2021/2021%20Energy%20Code%20Adoption%20Agenda%20Presentation%20-%20Final%2020200404.pdf>



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## Energy Tradeoffs

### • CZ5 Basement & CrawlSpace: 10/13 Insulation (instead of 15/19)

**Table PA301**  
**Insulation Minimum R-values and Fenestration Requirements by Component\***

Climate Zone	Fenestration <sup>a</sup> U-factor	Skylights <sup>b</sup> U-factor	Glazed Fenestration SHGC <sup>c,d</sup>	Ceiling R-value	Wood Frame Wall R-value	Mass Wall R-value <sup>e</sup>	Floor R-value	Basement <sup>f</sup> Wall R-value	Slab <sup>g</sup> R-value and depth	CrawlSpace <sup>h</sup> Wall R-value
4	0.32	0.55	0.4	49	20 <sup>f</sup> or 13+5"	8/13	19	10/13	10, 2 ft	10/13
5	0.30	0.55	NR	49	23 <sup>f</sup> , 20+3.8", or 13+7.5"	13/17	30	10/13	10, 4 ft or 15, 3 ft	10/13

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Source: <https://www.documents.moscow.idaho.gov/2021/2021%20Energy%20Code%20Adoption%20Agenda%20Presentation%20-%20Final%2020200404.pdf>



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## Energy Tradeoffs

### • Wood Frame Wall R-Value: Cavity-Only Wall Insulation Option

Table PA301

Insulation Minimum R-values and Fenestration Requirements by Component<sup>a</sup>

Climate Zone	Fenestration <sup>a</sup> U-factor	Skylights <sup>a</sup> U-factor	Glazed Fenestration SHGC <sup>a,c</sup>	Ceiling R-value	Wood Frame Wall R-value	Mass Wall R-value <sup>f</sup>	Floor R-value	Basement <sup>f</sup> Wall R-value	Slab <sup>g</sup> R-value and depth	Crawlspace <sup>h</sup> Wall R-value
4	0.32	0.55	0.4	49	20 <sup>f,g</sup> or 13+5 <sup>f</sup>	8/13	19	10/13	10, 2 ft	10/13
5	0.30	0.55	NR	49	23 <sup>f,g</sup> or 13+3.8 <sup>f</sup> , or 13+7.5 <sup>f</sup>	13/17	30	10/13	10, 4 ft or 15, 3 ft	10/13

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Source: <https://www.phrc.org/resources/energy-code/R-Values/PHRC%20Resnet%20Insulation%20and%20Energy%20Tradeoffs.pdf>

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## Energy Tradeoffs

### • Wood Frame Wall R-Value: Cavity-Only Wall Insulation Option

## Notes:

- R-values are minimums. U-factors and SHGC are maximums. Where insulation is installed in a cavity that is less than the label or design thickness of the insulation, the installed R-value of the insulation shall be not less than the R-value specified in the table.
- The fenestration U-factor column excludes skylights. The SHGC column applies to all glazed fenestration.
- "10/13" means R-10 continuous insulation on the interior or exterior of the home or R-13 cavity insulation on the interior of the basement wall.
- For heated slabs, refer to requirements in 2021 IRC Table N1102.1.3 (R402.1.3) as modified and 2021 IRC Section N1102.2.9 (R402.2.9).
- The first value is cavity insulation, the second value is continuous insulation. Therefore, as an example, "13+5" means R-13 cavity insulation plus R-5 continuous insulation.
- Mass walls shall be in accordance with 2021 IRC Section N1102.2.5. The second R-value applies where more than half of the insulation is on the interior of the mass wall.
- R-13 insulation shall be permitted in place of R-20 requirement provided the construction of the wall is of the advanced framing type, has a framing fraction of 19% and insulation is installed per ANSI/RESNET/ICC 301-2022 Section 4.2.2.1 and Table 4.2.2(6).
- R-20 insulation shall be permitted in place of R-23 requirement provided the construction of the wall is of the advanced framing type, has a framing fraction of 19% and insulation is installed per ANSI/RESNET/ICC 301-2022 Section 4.2.2.1 and Table 4.2.2(6).

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Source: <https://www.phrc.org/resources/energy-code/R-Values/PHRC%20Resnet%20Insulation%20and%20Energy%20Tradeoffs.pdf>

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## 2022 ANSI/RESNET/ICC 301

### • Section 4.2.2.1

- A framing fraction shall be designated for each segment of framed wall, floor, and ceiling assembly that separates one space type from another type or the exterior.
- A wall segment is defined as a planar section bounded side-to-side by the wall corners and top-to-bottom by the top plate and bottom plate. A floor segment is defined as a planar section bounded by rim or band joists. A ceiling segment is defined as a planar section bounded by exterior top plates, eaves, or gables. If different framing fractions are designated for different segments of the framed wall, floor, or ceiling assembly, then multiple entries are permitted to be entered into the rating software. Alternatively, the entire assembly can be modeled with the highest designated framing fraction.
- For ratings where the framing is not visible at the time of the site inspection, the framing fractions shall equal the highest default framing fraction for the assembly component listed in Table 4.2.2(6).
- For ratings where the framing is visible at the time of the site inspection, floor and ceiling assemblies shall use the default framing fractions for their framing spacing listed in Table 4.2.2(6). Wall assemblies shall use the default framing fractions for their framing spacing and the Standard framing type listed in Table 4.2.2(6), unless the wall assembly is a Structural Insulated Panel or a steel-framed wall, or the conditions in Section 4.2.2.1.1 or Section 4.2.2.1.2 have been met.

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Source: <https://www.phrc.org/resources/energy-code/2022-ANSI-RESNET-ICC-301-2022-Section-4.2.2.1-1.pdf>

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## 2022 ANSI/RESNET/ICC 301

TABLE 4.2.2.0 (DEFAULT FRAMING FRACTIONS FOR WOOD-FRAMED ASSEMBLY COMPONENTS)

ASSEMBLY COMPONENT	FRAMING SPACING (INCHES ON CENTER)	FRAMING TYPE	DEFAULT FRAMING FRACTIONS (% AREA)
Wall	16	Standard	20%
	16	Advanced	18%
	24	Standard	20%
	24	Advanced	18%
Floor	n/a	Structural Insulated Panel	10%
	16	n/a	13%
Ceiling	24	n/a	10%
	16	n/a	10%
	24	n/a	7%

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## 2022 ANSI/RESNET/ICC 301

- **4.2.2.1.1:** The default framing fractions for the **Advanced framing type** are permitted to be used if the wall segment complies with **all** the following conditions:

- 4.2.2.1.1.1: Corners of cavities shall be completely filled with  $\geq R-6$  insulation.
- 4.2.2.1.1.2: Intersections with interior walls shall be insulated to the same R-value as the remainder of the wall assembly.
- 4.2.2.1.1.3: Headers of frame walls shall be insulated  $\geq R-3$  for 2x4 framing or equivalent cavity width, and  $\geq R-5$  for all other assemblies,<sup>4</sup> where the R-value requirement refers to the manufacturer's nominal insulation value.
- 4.2.2.1.1.4: The framing shall be limited at all windows and doors to one pair of king studs, plus one pair of jack studs per window opening to support the header and sill.

- **4.2.2.1.2:** The assembly-specific framing fraction or 10%, whichever is larger, is permitted to be used if a framing plan with the design framing fraction and a professional engineer's stamp has been obtained and the framing plan has been verified to match the actual assembly in field.

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## PA304.6 Electrical and communication outlet boxes (air-sealed boxes)

- Electrical and communication outlet boxes that **penetrate the air barrier of the building thermal envelope** shall be caulked, taped, gasketed or otherwise sealed to the air barrier element being penetrated, or air-sealed boxes tested and marked in accordance with NEMA OS 4. Air-sealed boxes shall be installed in accordance with the manufacturer's instructions.

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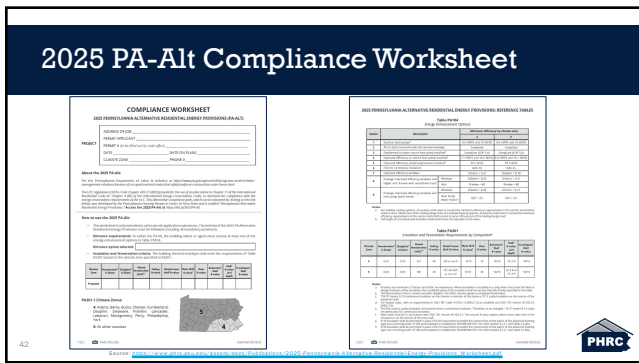
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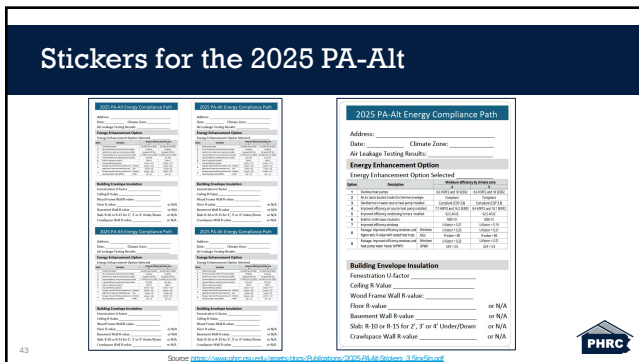
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## Links

- **2025 PA Alternative Residential Energy Provisions**
  - <https://bit.ly/2025PA-Alt>
- **2025 PA-Alt Worksheet**
  - [https://bit.ly/2025PA-Alt\\_Worksheet](https://bit.ly/2025PA-Alt_Worksheet)
- **2025 PA-Alt Stickers**
  - [https://bit.ly/2025PA-Alt\\_Stickers](https://bit.ly/2025PA-Alt_Stickers)
- **Note: We recommend using these links if posting/linking the documents.**
  - This will ensure future revisions are automatically linked.

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## PA UCC Residential Code Summary: 7/13/25



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## Questions?

[phrc.psu.edu](http://phrc.psu.edu)

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**Thank you for attending!**  
**Save the date!**

**2025-26 PHRC Webinar Series**  
**begins on**  
**September 9**

*Energy Code Compliance Options in PA*



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**2025 Pennsylvania Alternative  
Residential Energy Provisions Update**

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