



# Ross Township

Allegheny County, Pennsylvania

The Uniform Construction Code, contained in 34 Pa. Code, Chapters 401 — 405, as amended from time to time, is hereby adopted and incorporated herein by reference as the municipal building code of the Township.

[\[Ordinance 2124, 4/12/2004 § 2; Chapter 5 – Section 102, Township of Ross – Municipal Code\]](#)

The Pennsylvania Uniform Construction Code regulation has adopted the following codes for use throughout the Commonwealth of Pennsylvania, effective 02/14/2022.

**2021 International Residential Code** (one- and two-family dwellings no more than 3 stories in height)

**2021 International Building Code** (buildings and structures not regulated by the International Residential Code):

- Chapter 1 is not adopted (most of its requirements are incorporated in Chapter 403 of the UCC regulation)
- Chapter 27 (Electrical) requires that all electrical components, equipment and systems in buildings and structures covered by the IBC comply with the requirements of NFPA 70 - **2020, National Electric Code**.
- Appendix E – Supplementary Accessibility Requirements

**2021 International Swimming Pool & Spa Code**

**2009 International Building Code – Appendix H Signs**

**2009 ICC-A117.1 Accessible and Usable Buildings and Facilities**

**2021 International Existing Building Code**

**2021 International Energy Conservation Code\***

**2021 International Fire Code**

- Only referenced in Chapter 35 of the 2021 International Building Code.

**2021 International Mechanical Code**

**2021 International Fuel Gas Code**

- Any **LPG** requirements are superseded by the requirements of Pennsylvania's Propane and **Liquefied Petroleum Gas Act** (and regulations). This Act and regulations are limited to LPG Facility which is defined as Distributors, Bulk Plants, and Industrial Users. The department fully expects building code officials to permit, inspect, and regulate as needed all aspects of LPG appliances and related tubing inside structures in the same manner as any other appliance such as natural gas or electric as required by municipality or political subdivision ordinance. To further clarify, any appliance, heater, generator, etc. which would normally require a permit or inspection from a BCO does not become exempt simply because the fuel source is LPG.

**2022 Allegheny County Health Department Plumbing Code**

**2021 International Performance Code for Buildings and Facilities** (provides alternative compliance approach)

**2021 International Wildland-Urban Interface Code** (supplementary requirements that may be used to mitigate fire- and life-safety hazards in unique wildland areas)

[2025 PA Alternative Residential Energy Provisions \(.pdf\)](#)

**The following document is a list of the codes and modifications to the published document as voted on by the RAC in accordance with Act 45 of 1999, as amended.**

September 14, 2024

Nancy A. Walker, Esq.  
Secretary  
Pennsylvania Department of Labor & Industry  
Room 1700, L&I Building  
651 Boas Street  
Harrisburg, Pennsylvania 17121

Reference: Uniform Construction Code (UCC)  
2021 International Codes Adoption

Dear Secretary Walker:

With the official publication of the 2021 International Codes by the International Code Council (ICC) in January 2021, in accordance with the requirements of Act 45 of 1999 as amended, the Pennsylvania Uniform Construction Code (UCC) Review and Advisory Council (RAC) initiated review of the 2021 International Codes on October 13, 2021. During the October 13, 2021 meeting, which was properly advertised in accordance with the Act and with a quorum present, the RAC voted to include additional sections beyond those that had been modified and published by the ICC national review process and properly posted them on the RAC website. After clarification by vote of the RAC regarding the sections to be reviewed in the 2021 adoption process, a vote of the RAC was taken and passed unanimously to initiate review and adoption of the 2021 International Codes.

As part of the review and adoption of the 2021 International Codes, the following are some key actions that were taken, and the corresponding dates that they occurred:

- January 31, 2021 – ICC publishes the 2021 International Codes
- November 15, 2021 – RAC opens public comment requesting feedback on “Additional Sections”
- February 13, 2022 – RAC closes public comment period on “Additional Sections”
- September 8, 2022 – RAC publishes on the RAC website a list of “Additional Sections”
- October 13, 2022 – RAC initiates the review and adoption process for the 2021 International Codes
- November 12, 2022 – Public comment was opened and remained open for 120 days
- November 12, 2022 – Request for Technical Advisory Committee (TAC) members was opened and remained open for 30 days
- May 1, 2023 – An additional public comment period was opened and remained open for 120 days due to advertisement issues with the first public comment period
- May 1, 2023 – An additional request for Technical Advisory Committee (TAC) members was opened and remained open for 30 days due to advertisement issues with the first Technical Advisory Committee (TAC) request period

- September 7, 2023 – Public comments were assigned to the TAC committees for review and recommendation
- January 16, 2024 – TAC reports were posted to the RAC website
- February 1, 2024 – Public hearing was held on Zoom after being properly advertised in the *Morning Call*, a newspaper with regular circulation in the eastern portion of the Commonwealth
- February 29, 2024 – Public hearing was held on Zoom after being properly advertised in the *Pennsylvania Bulletin*
- March 28, 2024 – Public hearing was held on Zoom after being properly advertised in the *Pittsburgh Post-Gazette*, a newspaper with regular circulation in the Western portion of the Commonwealth
- April 22, 2024 – RAC received the transcripts of the three (3) public hearings
- May 2, 2024 – RAC Initiated deliberations and adoption of the 2021 International Codes

The following is a list of the codes and modifications to the published document as voted on by the RAC in accordance with Act 45 of 1999, as amended:

**Note:** A crosswalk has been made with the adoption of the 2015 and 2018 ICC codes, and the list provided contains those provisions that were previously adopted and not modified as part of the current code adoption.

- **2021 International Wildland-Urban Interface Code (IWUIC)**

Adopted without modification

- **2021 ICC Performance Code for Buildings and Facilities (ICCP)**

Adopted without modification

- **2021 International Fuel Gas Code (IFGC)**

Adopted without modification

- **2021 International Mechanical Code (IMC)**

Adopted without modification

- **2021 International Plumbing Code (IPC)**

Adopted without modification

- **2021 International Fire Code (IFC)**

Adopted by reference only and was adopted without modification

- **2021 International Swimming Pool & Spa Code (ISPSC)**

Adopted with the following modifications:

- Chapter 1 Scope and Administration, was adopted with the following modifications:
  - Section [A] 108.2 Schedule of permit fees, was not modified as part of the current Pennsylvania 2021 ISPSC adoption and will remain as published in the 2018 ISPSC (Section [A] 105.6.2) as follows:

*[A] 105.6.2 Fee schedule. The fees for work shall be as indicated in the following schedule:*

*[JURISDICTION TO INSERT APPROPRIATE SCHEDULE]*

- Section [A] 108.3 Permit valuations was not adopted as part of the current Pennsylvania 2021 ISPSC adoption and shall remain reserved.
- Section [A] 108.4 Work commencing prior to permit issuance, was not modified as part of the current Pennsylvania 2021 ISPSC adoption and will remain as published in the 2018 ISPSC (Section [A] 105.6.1 Work commencing prior to permit issuance) as follows:

*[A] 105.6.1 Work commencing before permit issuance. Any person who commences any work on a system before obtaining the necessary permits shall be subject to a fee as indicated in the adopted fee schedule and would be in addition to the required permit fees.*

- Section [A] 108.5 Related fees, was not adopted as part of the current Pennsylvania 2021 ISPSC adoption, and shall remain reserved.

- **2021 International Building Code (IBC)**

Adopted with the following modifications:

- Chapter 1 Scope and Administration, was excluded from consideration in accordance with the requirements of the Act
- Chapter 4 Special Detailed Requirements Based on Occupancy and Use, was adopted with the following modification:

- Section [F] 426.1 General, was not modified as part of the current Pennsylvania 2021 IBC adoption, and will remain as published in the 2018 IBC as follows:

*[F] 426.1 General. The provisions of Sections 426.1.1 through 426.1.7 shall apply to buildings in which materials that produce combustible dusts are stored or handled. Buildings that store or handle combustible dusts shall comply with NFPA 652 and the applicable provisions of NFPA 61, NFPA 85, NFPA 120, NFPA 484, NFPA 654, NFPA 655 and NFPA 664 and the International Fire Code.*

- Chapter 7 Fire and Smoke Protection Features, was adopted with the following modifications:

- Section 704.2 Column protection, was not modified as part of the Pennsylvania 2018 IBC adoption, maintaining the 2015 IBC language. The national language was not modified in 2021 code, and as such, this language again was maintained in the current Pennsylvania 2021 IBC adoption as follows:

*704.2 Column protection. Where columns are required to have protection to achieve a fire-resistance rating, the entire column shall be provided individual encasement protection by protecting it on all sides for the full column height, including connections to other structural members, with materials having the required fire-resistance rating. Where the column extends through a ceiling, the encasement protection shall be continuous from the top of the foundation or floor/ceiling assembly below through the ceiling space to the top of the column.*

- Section 704.4.1 Light-frame construction, was not modified as part of the Pennsylvania 2018 IBC adoption, maintaining the 2015 IBC language. The national language was not modified in 2021 code, and as such, this language again was maintained in the current Pennsylvania 2021 IBC adoption as follows:

*704.4.1 Light-frame construction. Studs and boundary elements that are integral elements in load-bearing walls of light-frame construction shall be permitted to have required fire-resistance ratings provided by the membrane protection provided for the load-bearing wall.*

- Chapter 8 Interior Finishes, was adopted with the following modification:

- Section 803.3 Heavy-timber exemption, was modified as part of the Pennsylvania 2018 IBC adoption. The national language was not modified in 2021 code, and as such, this language was maintained as modified in the 2018 adoption and in the current Pennsylvania 2021 IBC adoption as follows:

**803.3 Heavy timber exemption.** *In buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3, exposed portions of building elements complying with the requirements for buildings of heavy timber construction in Section 602.4 or Section 2304.11 shall not be subject to interior finish requirements except in interior exit stairways, interior exit ramps, and exit passageways.*

- Chapter 9 Fire Protection and Life Safety Systems, was adopted with the following modification:

- Section 903.3.1.2 NFPA 13R sprinkler systems, is adopted as follows:

**[FJ 903.3.1.2 NFPA 13R sprinkler systems.** *Automatic sprinkler systems in Group R occupancies shall be permitted to be installed throughout in accordance with NFPA 13R where the Group R occupancy meets all of the following conditions:*

1. *Four stories or fewer above grade plane.*
2. *For other than R-2 occupancies, the floor level of the highest story is 30 feet (9144 mm) or less above the lowest level of fire department vehicle access.*
- For R-2 occupancies, the roof assembly is less than 45 feet (13716 mm) above the lowest level of fire department vehicle access. The height of the roof assembly shall be determined by measuring the distance from the lowest required fire vehicle access road surface adjacent to the building to the eave of the highest pitched roof, the intersection of the highest roof to the exterior wall, or the top of the highest parapet, whichever yields the greatest distance.*

  3. *The floor level of the lowest story is 30 feet (9144 mm) or less below the lowest level of fire department vehicle access*

*The number of stories of Group R occupancies constructed in accordance with Sections 510.2 and 510.4 shall be measured from grade plane.*

- Chapter 11 Accessibility, was excluded from consideration in accordance with the requirements of the Act
- Chapter 30 Elevators and Conveying Systems, **only** the following sections/sub-sections were adopted:
  - **3002.1 Hoistway enclosure protection.**
  - **3002.2 Number of elevator cars in a hoistway.**
  - **3002.4 Elevator car to accommodate ambulance stretcher.**
  - **3002.7 Common enclosure with stairway.**
  - **3004.2.1 Enclosure.**
  - **3004.3.1 Enclosure.**
  - **3005.4 Machine rooms, control rooms, machinery spaces, and control spaces.**

- **SECTION 3006 ELEVATOR LOBBIES AND HOISTWAY OPENING PROTECTION**
- **SECTION 3007 FIRE SERVICE ACCESS ELEVATOR**
- **SECTION 3008 OCCUPANT EVACUATION ELEVATORS**
- **2021 International Existing Building Code (IEBC)**

Adopted with the following modifications:

  - Chapter 11 Additions, was adopted **without** the inclusion of Section 1106 Storm shelters. This Section was not adopted/excluded as part of the 2018 Pennsylvania 2018 IEBC adoption. The national language was not modified in 2021 code, and as such, is again not adopted/excluded in the current Pennsylvania 2021 IEBC.
- **2021 International Energy Conservation Code (IECC)**

Adopted with the following modifications:

  - Chapter 1 [CE] Scope and Administration, was adopted with the following modifications:
    - Section C105.2.6 Final inspection, (Originally Section C104.2.6 Final inspection, [2015 IECC], 104.3 Final inspection, [2009 IECC]), was modified as part of the Pennsylvania 2015 IECC adoption, maintaining the 2009 IRC language. The national language was not modified in 2018 nor 2021 code, and as such, this language again was maintained in the current Pennsylvania 2021 IECC adoption as follows:

*C105.2.6 Final inspection. The building shall have a final inspection and not be occupied until approved.*
  - Chapter 4 [CE] Commercial Energy Efficiency, was adopted with the following modifications:
    - Section C402.5.5 Rooms containing fuel-burning appliances, (Originally Section C402.5.3 Rooms containing fuel-burning appliances, [2018 IECC & 2015 IECC]) was modified as part of the Pennsylvania 2018 IECC adoption, maintaining both exceptions from the 2015 IECC. The national language was not modified in 2021 code, and as such, this language was maintained in the current Pennsylvania 2021 IECC adoption as follows:

**C402.5.5 Rooms containing fuel-burning appliances.** In Climate Zones 3 through 8, where combustion air is supplied through openings in an exterior wall to a room or space containing a space-conditioning fuel-burning appliance, one of the following shall apply:

1. The room or space containing the appliance shall be located outside of the building thermal envelope.
2. The room or space containing the appliance shall be enclosed and isolated from conditioned spaces inside the building thermal envelope. Such rooms shall comply with all of the following:
  - 2.1. The walls, floors and ceilings that separate the enclosed room or space from conditioned spaces shall be insulated to be not less than equivalent to the insulation requirement of below-grade walls as specified in Table C402.1.3 or C402.1.4.
  - 2.2. The walls, floors and ceilings that separate the enclosed room or space from conditioned spaces shall be sealed in accordance with Section C402.5.1.1.
  - 2.3. The doors into the enclosed room or space shall be fully gasketed.
  - 2.4. Water lines and ducts in the enclosed room or space shall be insulated in accordance with Section C403.
  - 2.5. Where an air duct supplying combustion air to the enclosed room or space passes through conditioned space, the duct shall be insulated to an R-value of not less than R-8.

***Exception:***

1. Direct vent appliances with both intake and exhaust pipes installed continuous to the outside.
2. Fireplaces and stoves complying with Sections 901 through 905 of the International Mechanical Code, and Section 2111.14 of the International Building Code.

- Section C405.11 Automatic receptacle control, is adopted as follows:

**C405.11 Automatic receptacle control.** The following shall may have automatic receptacle control complying with Section C405.11.1:

  1. At least 50 percent of all 125V, 15- and 20-amp receptacles installed in enclosed offices, conference rooms, rooms used primarily for copy or print functions, breakrooms, classrooms and individual workstations, including those installed in modular partitions and module office workstation systems.
  2. At least 25 percent of branch circuit feeders installed for modular furniture not shown on the construction documents.

- Section C405.11.1 Automatic receptacle control function, is adopted as follows:

***C405.11.1 Automatic receptacle control function.*** *Automatic receptacle controls shall comply with the following:*

1. *Either split controlled receptacles shall be provided with the top receptacle controlled, or a controlled receptacle shall be located within 12 inches (304.8 mm) of each uncontrolled receptacle.*
2. *One of the following methods shall be used to provide control:*
  - 2.1. *A scheduled basis using a time-of-day operated control device that turns receptacle power off at specific programmed times and can be programmed separately for each day of the week. The control device shall be configured to provide an independent schedule for each portion of the building of not more than 5,000 square feet (464.5 m<sup>2</sup>) and not more than one floor. The occupant shall be able to manually override an area for not more than 2 hours. Any individual override switch shall control the receptacles of not more than 5,000 feet (1524 m).*
  - 2.2. *An occupant sensor control that shall turn off receptacles within ~~20~~ 120 minutes of all occupants leaving a space.*
  - 2.3. *An automated signal from another control or alarm system that shall turn off receptacles within ~~20~~ 120 minutes after determining that the area is unoccupied.*
3. *All controlled receptacles shall be permanently marked in accordance with NFPA 70 and be uniformly distributed throughout the space.*
4. *Plug-in devices shall not comply.*

*Exceptions: Automatic receptacle controls are not required for the following:*

1. *Receptacles specifically designated for equipment requiring continuous operation (24 hours per day, 365 days per year).*
2. *Spaces where an automatic control would endanger the safety or security of the room or building occupants.*
3. *Within a single modular office workstation, noncontrolled receptacles are permitted to be located more than 12 inches (304.8 mm), but not more than 72 inches (1828 mm) from the controlled receptacles serving that workstation.*

- Chapter 2 [RE] Definitions, was adopted with the following modification:
  - Section R202 General definitions, was modified as part of the 2015 IECC adoption. The definition language that was added in Pennsylvania was not modified in the 2018 code nor 2021 code and, as such, will remain as published in the 2015 adoption as follows:
 

**Framing Factor.** *The fraction of the total building component area that is structural framing*
- Chapter 4 [RE] Residential Energy Efficiency, was adopted with the following modifications:
  - Section R401.2.5 (N1101.13.5) Additional energy efficiency, was not adopted as part of the current Pennsylvania adoption of the 2021 IECC/IRC
  - TABLE R402.1.2 (N1102.1.2) MAXIMUM ASSEMBLY U-FACTORS<sup>a</sup> AND FENESTRATION REQUIREMENTS , is adopted as follows:

**TABLE R402.1.2 (R1102.1.2)**  
**MAXIMUM ASSEMBLY U-FACTORS<sup>a</sup> AND FENESTRATION REQUIREMENTS**

CLIMATE ZONE	FENESTRATION U-FACTOR <sup>b</sup>	SKYLIGHT U-FACTOR	GLAZED FENESTRATION SHGC <sup>c,d,e</sup>	CEILING U-FACTOR	FRAME WALL U-FACTOR	MASS WALL U-FACTOR <sup>b</sup>	FLOOR U-FACTOR	BASEMENT WALL U-FACTOR	CRAWL SPACE WALL U-FACTOR
1	0.50	0.75	0.25	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	0.25	0.030	0.084	0.165	0.064	0.360	0.477
3	0.32	0.55	0.25	0.030	0.060	0.098	0.047	0.091	0.136
4 except Marine	0.30	0.55	0.40	0.026	0.060	0.098	0.047	0.059	0.065
5 and Marine 4	0.30	0.55	NR	0.026	0.051	0.082	0.033	0.050	0.055
6	0.30	0.55	NR	0.026	0.045	0.060	0.033	0.050	0.055
7 and 8	0.30	0.55	NR	0.026	0.045	0.057	0.028	0.050	0.055

- a. Nonfenestration *U*-factors shall be obtained from measurement, calculation or an approved source.
- b. Mass walls shall be in accordance with Section R402.2.5. Where more than half the insulation is on the interior, the mass wall *U*-factors shall not exceed 0.17 in Climate Zone 1, 0.14 in Climate Zone 2, 0.12 in Climate Zone 3, 0.087 in Climate Zone 4 except Marine, 0.065 in Climate Zone 5 and Marine 4, and 0.057 in Climate Zones 6 through 8.
- c. In warm-humid locations as defined by Figure R301.1 and Table R301.1, the basement wall *U*-factor shall not exceed 0.360.
- d. The SHGC column applies to all glazed fenestration.

**Exception:** In Climate Zones 0 through 3, skylights shall be permitted to be excluded from glazed fenestration SHGC requirements provided that the SHGC for such skylights does not exceed 0.30.

- e. There are no SHGC requirements in the Marine Zone.
- f. A maximum *U*-factor of 0.32 shall apply in Marine Climate Zone 4 and Climate Zones 5 through 8 to vertical fenestration products installed in buildings located either:
  - 1. Above 4,000 feet in elevation above sea level, or
  - 2. In windborne debris regions where protection of openings is required by Section R301.2.1.2. of the *International Residential Code*.

- Table R402.1.3 (N1102.1.3) INSULATION MINIMUM R-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT<sup>a</sup>, is adopted as follows:

**TABLE R402.1.3 (N1102.1.3)**  
**INSULATION MINIMUM R-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT<sup>a</sup>**

CLIMATE ZONE	FENESTRATION U-FACTOR <sup>b</sup>	SKYLIGHT <sup>b</sup> U-FACTOR	GLAZED FENESTRATION SHGC <sup>b,e</sup>	CEILING R-FACTOR	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE <sup>f</sup>	FLOOR R-VALUE	BASEMENT <sup>c</sup> WALL R-VALUE	SLAB <sup>d</sup> R-VALUE & DEPTH	CRAWL SPACE <sup>e</sup> WALL R-VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.32	0.55	0.25	38	20 or 13+5 <sup>h</sup>	8/13	19	5/13 <sup>f</sup>	0	5/13
4 except Marine	0.32	0.55	0.40	49	20 or 13+5 <sup>h</sup>	8/13	19	10/13	10, 2ft	10/13
5 and Marine 4	0.30	0.55	NR	49	23 or 13+7.5 <sup>h</sup> or 20+3.8 <sup>h</sup>	13/17	30 <sup>g</sup>	15/19	10, 4ft or 15, 3ft	15/19
6	0.30	0.55	NR	49	20+5 <sup>h</sup> or 13+10 <sup>h</sup>	15/20	30 <sup>g</sup>	15/19	10, 4 ft	15/19
7 and 8	0.30	0.55	NR	49	20+5 <sup>h</sup> or 13+10 <sup>h</sup>	19/21	38 <sup>g</sup>	15/19	10, 4 ft	15/19

For SI: 1 foot = 304.8 mm.

NR = Not Required.

- a. 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.
- b. The fenestration U-factor column excludes skylights. The SHGC column applies to all glazed fenestration.
- Exception:** In Climate Zones 1 through 3, skylights shall be permitted to be excluded from glazed fenestration SHGC requirements provided that the SHGC for such skylights does not exceed 0.30.
- c. "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. "15/19" means R-15 continuous insulation on the interior or exterior of the home or R-19 cavity insulation on the interior of the basement wall. Alternatively, compliance with "15/19" shall be R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulation on the interior or exterior of the home.
- d. R-5 insulation shall be provided under the full slab area of a heated slab in addition to the required slab edge insulation R-value for slabs, as indicated in the table. The slab edge insulation for heated slabs shall not be required to extend below the slab.
- e. There are no SHGC requirements in the Marine Zone.
- f. Basement wall insulation shall not be required in warm-humid locations as defined by Figure R301.1 and Table R301.1.
- g. Alternatively, insulation sufficient to fill the framing cavity providing not less than an R-value of R-19.
- h. 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.
- i. Mass walls shall be in accordance with Section R402.2.5. The second R-value applies where more than half of the insulation is on the interior of the mass wall.

- Section R403.3.5 (N1103.3.5) Duct testing (Originally Section R403.3.3 (N1103.3.3) Duct testing, [2018 IECC/IRC]), was not modified as part of the Pennsylvania adoption of the 2021 IECC/IRC, and will remain as published in the 2018 IECC/IRC as follows:

**R403.3.5 (N1103.3.5) Duct testing (Mandatory).** Ducts shall be pressure tested to determine air leakage by one of the following methods:

1. *Rough-in test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the system, including the manufacturer's air handler enclosure if installed at the time of the test. Registers shall be taped or otherwise sealed during the test.*

2. *Postconstruction test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. Registers shall be taped or otherwise sealed during the test.*

***Exceptions:***

1. *A duct air-leakage test shall not be required where the ducts and air handlers are located entirely within the building thermal envelope.*
2. *A duct air-leakage test shall not be required for ducts serving heat or energy recovery ventilators that are not integrated with ducts serving heating or cooling systems.*

*A written report of the results of the test shall be signed by the party conducting the test and provided to the building official.*

- Section R403.3.6 (N1103.3.6) Duct leakage (Originally Section R403.3.4 (N1103.3.4) Duct leakage, [2018 IECC/IRC]), was not modified as part of the Pennsylvania adoption of the 2021 IECC/IRC, and will remain as published in the 2018 IECC/IRC as follows:

***R403.3.6 (N1103.3.6) Duct leakage (Prescriptive). The total leakage of the ducts, where measured in accordance with Section R403.3.5, shall be as follows:***

1. *Rough-in test: The total leakage shall be less than or equal to 4 cubic feet per minute (113.3 L/min) per 100 square feet (9.29 m<sup>2</sup>) of conditioned floor area where the air handler is installed at the time of the test. Where the air handler is not installed at the time of the test, the total leakage shall be less than or equal to 3 cubic feet per minute (85 L/min) per 100 square feet (9.29 m<sup>2</sup>) of conditioned floor area.*
2. *Postconstruction test: Total leakage shall be less than or equal to 4 cubic feet per minute (113.3 L/min) per 100 square feet (9.29 m<sup>2</sup>) of conditioned floor area.*

- Section R403.3.7 (N1103.3.7) Building cavities (Mandatory), (Originally Section R403.3.5 (N1103.3.5) Building cavities, [2015 and 2018 IECC/IRC]), was modified as part of the Pennsylvania 2015 IECC/IRC adoption. The national language was not modified in the 2018 IECC/IRC and the modified language was maintained in the Pennsylvania 2018 IECC/IRC adoption. The language was not modified as part of the current Pennsylvania adoption of the 2021 IECC/IRC, and will remain as follows:

***R403.3.7 (N1103.3.7) Building cavities (Mandatory).*** *Building framing cavities shall not be used as supply ducts.*

- Section R403.5.1.1 (N1103.5.1.1) Circulation systems, is adopted as follows:

***R403.5.1.1 (N1103.5.1.1) Circulation systems.*** *Heated water circulation systems shall be provided with a circulation pump. The system return pipe shall be a dedicated return pipe or a cold water supply pipe. Gravity and thermosyphon circulation systems shall be prohibited. Controls for circulating hot water system pumps shall automatically turn off the pump when the water in the circulation loop is at the desired temperature and when there is no demand for hot water. The controls shall limit the temperature of the water entering the cold water piping to not greater than 104°F (40°C).*

***Exception:*** *Where the entire hot water piping system (both supply and return) are insulated with a minimum R3 insulation, the stated controls shall not be required.*

- Section R404.1 (N1104.1) Lighting equipment, was not modified as part of the current Pennsylvania 2021 IECC/IRC adoption and remains the 2018 IECC/IRC language as follows:

***R404.1 (N1104.1) Lighting equipment (Mandatory).*** *Not less than 90 percent of the permanently installed lighting fixtures shall contain only high-efficacy lamps.*

- Section R404.1.1 (N1104.1.1) Exterior lighting, was not modified as part of the current Pennsylvania 2021 IECC/IRC adoption and remains the 2018 IECC/IRC language as follows:

***R404.1.1 (N1104.1.1) Lighting equipment (Mandatory).*** *Fuel gas lighting systems shall not have continuously burning pilot lights.*

- Section R404.1.2 (N1104.1.2) Fuel gas lighting equipment, was not adopted as part of the current Pennsylvania 2021 IECC/IRC adoption.
- Section R404.2 (N1104.2) Interior lighting controls, was not adopted as part of the current Pennsylvania 2021 IECC/IRC adoption.
- Section R404.3 (N1104.3) Exterior lighting controls, was not adopted as part of the current Pennsylvania 2021 IECC/IRC adoption.

- TABLE R405.2 (N1105.2) REQUIREMENTS FOR TOTAL BUILDING PERFORMANCE, was adopted as follows:

TABLE N1105.2 (R405.2) REQUIREMENTS FOR TOTAL BUILDING PERFORMANCE	
SECTION <sup>a</sup>	TITLE
	General
N1101.13.5	Additional energy efficiency
N1101.14	Certificate
	Building Thermal Envelope
N1102.1.1	Vapor retarder
N1102.2.3	Eave baffle
N1102.2.4.1	Access hatches and doors
N1102.2.10.1	Crawl space wall insulation installation
N1102.4.1.1	Installation
N1102.4.1.2	Testing
N1102.5	Maximum fenestration U-factor and SHGC
	Mechanical
N1103.1	Controls
N1103.3, including N1103.3.1, except Sections N1103.3.2, N1103.3.3 and N1103.3.6	Ducts
N1103.4	Mechanical system piping insulation
N1103.5.1	Heated water circulation and temperature maintenance systems
N1103.5.3	Drain water heat recovery units
N1103.6	Mechanical ventilation
N1103.7	Equipment sizing and efficiency rating
N1103.8	Systems serving multiple dwelling units
N1103.9	Snow melt system controls
N1103.10	Energy consumption of pools and spas
N1103.11	Portable spas
N1103.12	Residential pools and permanent residential spas
	Electrical Power and Lighting Systems
N1104.1	Lighting equipment
N1104.2	Interior lighting controls

a. Reference to a code section includes all the relative subsections except as indicated in the table.

- Section R405.3.2 (N1105.3.2) Compliance report, (Originally Section R405.4.2 (N1105.4.2) Compliance report, [2015 and 2018 IECC/IRC]), was not modified as part of the Pennsylvania 2018 IECC/IRC adoption. The language was not modified as part of the current Pennsylvania adoption of the 2021 IECC/IRC, and will remain as follows:

**R405.3.2 (N1105.3.2) Compliance report.** *Compliance software tools shall generate a report that documents that the proposed design complies with Section R405.4 (N1105.4). A compliance report on the proposed design shall be submitted with the application for the building permit. Upon completion of the building, a compliance report based on the as-built condition of the building shall be submitted to the code official before a certificate of occupancy is issued. Batch sampling of buildings to determine energy code compliance for all buildings in the batch shall be prohibited.*

*Compliance reports shall include information in accordance with Sections R405.4.2.1 (N1105.4.2.1) and R405.4.2.2 (N1105.4.2.2). Where the proposed design of a building could be built on different sites where the cardinal orientation of the building on each site is different, compliance of the proposed design for the purposes of the application for the building permit shall be based on the worst-case orientation, worst-case configuration, worst-case building air leakage and worst-case duct leakage. Such worst-case parameters shall be used as inputs to the compliance software for energy analysis.*

- Section R405.3.2.1 (N1105.3.2.1) Compliance report for permit application, (Originally Section R405.4.2.1 (N1105.4.2.1) Compliance report for permit application, [2018 IECC/IRC]), was not modified as part of the current Pennsylvania adoption of the 2021 IECC/IRC, and will remain as follows:

**R405.3.2.1 (N1105.3.2.1) Compliance report for permit application.** A compliance report submitted with the application for building permit shall include the following:

1. Building street address, or other building site identification.
2. A statement indicating that the proposed design complies with Section R405.4 (N1105.4).
3. An inspection checklist documenting the building component characteristics of the proposed design as indicated in Table R405.4.2(l) (N1105.4.2(l)). The inspection checklist shall show results for both the standard reference design and the proposed design with user inputs to the compliance software to generate the results.
4. A site-specific energy analysis report that is in compliance with Section R405.4 (N1105.4).
5. The name of the individual performing the analysis and generating the report.
6. The name and version of the compliance software tool.

- Section R405.3.2.2 (N1105.3.2.2) Compliance report for certificate of occupancy, is adopted as follows:

**R405.3.2.2 (N1105.3.2.2) Compliance report for certificate of occupancy.** A compliance report submitted for obtaining the certificate of occupancy shall include the following:

1. Building street address, or other building site identification.
2. Declaration of the total building performance path on the title page of the energy report ~~and the title page of the building plans~~.
3. A statement, bearing the name of the individual performing the analysis and generating the report, indicating that the as-built building complies with Section R405.3 (N1105.3).
4. The name and version of the compliance software tool.
5. A site-specific energy analysis report that is in compliance with Section R405.3 (N1105.3).
6. A final confirmed certificate indicating compliance based on inspection, and a statement indicating that the confirmed rated design of the built home complies with Section R405.3 (N1105.3). The certificate shall report the energy features that were confirmed to be in the home, including component-level insulation R-values or U-factors; results from any required duct system and building envelope air leakage testing; and the type and rated efficiencies of the heating, cooling, mechanical ventilation and service water heating equipment installed.

7. Where on-site renewable energy systems have been installed, the certificate shall report the type and production size of the installed system.

- TABLE R405.4.2(1) (N1105.4.2(1)) SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS (Originally Table R405.5.2.1 (N1105.5.2(1)) SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS, [2018 IECC/IRC]), was not modified as part of the current Pennsylvania adoption of the 2021 IECC/IRC, and will remain as follows:

TABLE R405.4.2(1) [N1105.4.2(1)] SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS		
BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Above-grade walls	Type: mass where the proposed wall is a mass wall; otherwise wood frame.	As proposed
	Gross area: same as proposed.	As proposed
	U-factor: as specified in Table <a href="#">TABLE R402.1.2</a>	As proposed
	Solar absorptance = 0.75.	As proposed
	Emissance = 0.90.	As proposed
Basement and crawl space walls	Type: same as proposed.	As proposed
	Gross area: same as proposed.	As proposed
	U-factor: as specified in <a href="#">TABLE R402.1.2</a> , with the insulation layer on the interior side of the walls.	As proposed
Above-grade floors	Type: wood frame.	As proposed
	Gross area: same as proposed.	As proposed
	U-factor: as specified in <a href="#">TABLE R402.1.2</a>	As proposed
Ceilings	Type: wood frame.	As proposed
	Gross area: same as proposed.	As proposed
Roofs	U-factor: as specified in <a href="#">TABLE R402.1.2</a>	As proposed
	Type: composition shingle on wood sheathing.	As proposed
	Gross area: same as proposed.	As proposed
	Solar absorptance = 0.75.	As proposed
Attics	Emissance = 0.90.	As proposed
	Type: vented with an aperture of 1 ft <sup>2</sup> per 300 ft <sup>2</sup> of ceiling area.	As proposed
Foundations	Type: same as proposed.	As proposed
	Foundation wall area above and below grade and soil characteristics: same as proposed.	As proposed
Opaque doors	Area: 40 ft <sup>2</sup> .	As proposed
	Orientation: North.	As proposed
	U-factor: same as fenestration as specified in <a href="#">TABLE R402.1.2</a>	As proposed
Vertical fenestration other than opaque doors	Total area <sup>b</sup> = (a) The proposed glazing area, where the proposed glazing area is less than 15 percent of the conditioned floor area. (b) 15 percent of the conditioned floor area, where the proposed glazing area is 15 percent or more of the conditioned floor area.	As proposed
	Orientation: equally distributed to four cardinal compass orientations (N, E, S & W).	As proposed
	U-factor: as specified in <a href="#">TABLE R402.1.2</a>	As proposed
	SHGC: as specified in Table N1102.1.2 except for <i>climate zones</i> without an SHGC requirement, the SHGC shall be equal to 0.40.	As proposed
	Interior shade fraction: 0.92-(0.21 × SHGC for the standard reference design).	Interior shade fraction: 0.92-(0.21 × SHGC as proposed)
	External shading: none	As proposed
	Skylights	None
Thermally isolated sunrooms	None	As proposed

*(continued)*

TABLE R405.4.2(1) [N1105.4.2(1)]-continued  
SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Air exchange rate	<p>The air leakage rate at a pressure of 0.2 inch w.g. (50 Pa) shall be</p> <p><i>Climate Zones</i> 1 and 2: 5 air changes per hour.  <i>Climate Zones</i> 3 through 8: 3 air changes per hour.</p> <p>The mechanical ventilation rate shall be in addition to the air leakage rate and shall be the same as in the proposed design, but not greater than <math>0.01 \times CFA + 7.5 \times (N_{br} + 1)</math>  where:  <math>CFA</math> = conditioned floor area, <math>\text{ft}^2</math>.  <math>N_{br}</math> = number of bedrooms.  Energy recovery shall not be assumed for mechanical ventilation.</p>	<p>The measured air exchange rate<sup>a</sup>.</p> <p>The mechanical ventilation rate<sup>b</sup> shall be in addition to the air leakage rate and shall be as proposed.</p>
Mechanical ventilation	<p>Where mechanical ventilation is not specified in the proposed design: None</p> <p>Where mechanical ventilation is specified in the proposed design, the annual vent fan energy use, in units of kWh/yr, shall equal <math>(1/\epsilon_f) \times [0.0876 \times CFA + 65.7 \times (N_{br} + 1)]</math>  where:  <math>\epsilon_f</math> = the minimum exhaust fan efficacy, as specified in Table R403.6.1, corresponding to a flow rate of <math>0.01 \times CFA + 7.5 \times (N_{br} + 1)</math>  <math>CFA</math> = conditioned floor area, <math>\text{ft}^2</math>.  <math>N_{br}</math> = number of bedrooms.</p>	As proposed
Internal gains	<p>IGain, in units of Btu/day per dwelling unit, shall equal <math>17,900 + 23.8 \times CFA + 4,104 \times N_{br}</math>  where:  <math>CFA</math> = conditioned floor area, <math>\text{ft}^2</math>.  <math>N_{br}</math> = number of bedrooms.</p>	Same as standard reference design.
Internal mass	Internal mass for furniture and contents: 8 pounds per square foot of floor area.	Same as standard reference design, plus any additional mass specifically designed as a thermal storage element <sup>c</sup> but not integral to the building envelope or structure.
Structural mass	For masonry floor slabs: 80 percent of floor area covered by R-2 carpet and pad, and 20 percent of floor directly exposed to room air.	As proposed
	For masonry basement walls, as proposed, but with insulation as specified in TABLE R402.1.3, located on the interior side of the walls.	As proposed
	For other walls, ceilings, floors, and interior walls: wood frame construction.	As proposed
Heating systems <sup>d,e</sup>	<p>For other than electric heating without a heat pump: as proposed.</p> <p>Where the proposed design utilizes electric heating without a heat pump, the standard reference design shall be an air source heat pump meeting the requirements of Section C403 of the IECC—Commercial Provisions.</p> <p>Capacity: sized in accordance with Section N1103.7.</p>	As proposed
Cooling systems <sup>d,f</sup>	<p>As proposed.</p> <p>Capacity: sized in accordance with Section N1103.7.</p>	As proposed
Service water heating <sup>d,g</sup>	<p>As proposed.</p> <p>Use: same as proposed design.</p>	<p>As proposed</p> <p>Use, in units of gal/day = <math>30 + (10 \times N_{br})</math></p> <p>where:  <math>N_{br}</math> = number of bedrooms.</p>

*(continued)*

TABLE R405.4.2(1) [N1105.4.2(1)]-continued  
SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Thermal distribution systems	<p>Duct insulation: in accordance with Section N1103.3.1.</p> <p>A thermal distribution system efficiency (DSE) of 0.88 shall be applied to both the heating and cooling system efficiencies for all systems other than tested duct systems.</p> <p><b>Exception:</b> For nonducted heating and cooling systems that do not have a fan, the standard reference design thermal distribution system efficiency (DSE) shall be 1.</p> <p>For tested duct systems, the leakage rate shall be 4 cfm (113.3 L/min) per 100 ft<sup>2</sup> (9.29 m<sup>2</sup>) of <i>conditioned floor area</i> at a pressure of differential of 0.1 inch w.g. (25 Pa).</p>	<p>Duct insulation: as proposed.</p> <p>As tested or, where not tested, as specified in <b>TABLE R405.4.2(2)</b>.</p>
Thermostat	<p>Type: Manual, cooling temperature setpoint = 75°F; Heating temperature setpoint = 72°F.</p>	Same as standard reference design.

For SI: 1 square foot = 0.093 m<sup>2</sup>, 1 British thermal unit = 1055 J, 1 pound per square foot = 4.88 kg/m<sup>2</sup>, 1 gallon (US) = 3.785 L, °C = (°F-32)/1.8, 1 degree = 0.79 rad.

a. Where required by the *building official*, testing shall be conducted by an *approved* party. Hourly calculations as specified in the ASHRAE *Handbook of Fundamentals*, or the equivalent, shall be used to determine the energy loads resulting from infiltration.

b. The combined air exchange rate for infiltration and mechanical ventilation shall be determined in accordance with Equation 43 of 2001 ASHRAE *Handbook of Fundamentals*, page 26.24 and the "Whole-house Ventilation" provisions of 2001 ASHRAE *Handbook of Fundamentals*, page 26.19 for intermittent mechanical ventilation.

c. Thermal storage element shall mean a component that is not part of the floors, walls or ceilings that is part of a passive solar system, and that provides thermal storage such as enclosed water columns, rock beds, or phase-change containers. A thermal storage element shall be in the same room as fenestration that faces within 15 degrees (0.26 rad) of true south, or shall be connected to such a room with pipes or ducts that allow the element to be actively charged.

d. For a proposed design with multiple heating, cooling or water heating systems using different fuel types, the applicable standard reference design system capacities and fuel types shall be weighted in accordance with their respective loads as calculated by accepted engineering practice for each equipment and fuel type present.

e. For a proposed design without a proposed heating system, a heating system having the prevailing federal minimum efficiency shall be assumed for both the standard reference design and proposed design.

f. For a proposed design home without a proposed cooling system, an electric air conditioner having the prevailing federal minimum efficiency shall be assumed for both the standard reference design and the proposed design.

g. For a proposed design with a nonstorage-type water heater, a 40-gallon storage-type water heater having the prevailing federal minimum energy factor for the same fuel as the predominant heating fuel type shall be assumed. For a proposed design without a proposed water heater, a 40-gallon storage-type water heater with the prevailing federal minimum efficiency for the same fuel as the predominant heating fuel type shall be assumed for both the proposed design and standard reference design.

h. For residences with conditioned basements, R-2 and R-4 residences, and for townhouses, the following formula shall be used to determine glazing area:

$$AF = A_s \times FA \times F$$

where:

*AF* = Total glazing area.  
*A<sub>s</sub>* = Standard reference design total glazing area.  
*FA* = (Above-grade thermal boundary gross wall area)/(above-grade boundary wall area + 0.5 × below-grade boundary wall area).  
*F* = (above-grade thermal boundary wall area)/(above-grade thermal boundary wall area + common wall area) or 0.56, whichever is greater.  
 and where:  
 Thermal boundary wall is any wall that separates conditioned space from unconditioned space or ambient conditions.  
 Above-grade thermal boundary wall is any thermal boundary wall component not in contact with soil.  
 Below-grade boundary wall is any thermal boundary wall in soil contact.  
 Common wall area is the area of walls shared with an adjoining dwelling unit. *L* and *CF<sub>A</sub>* are in the same units.

- TABLE R406.2 (N1106.2) REQUIREMENTS FOR ENERGY RATING INDEX, is adopted as follows:

TABLE N1106.2 (R406.2) REQUIREMENTS FOR ENERGY RATING INDEX	
SECTION <sup>a</sup>	TITLE
	General
N1101.13.5	Additional efficiency packages
N1101.14	Certificate
	Building Thermal Envelope
N1102.1.1	Vapor retarder
N1102.2.3	Eave baffle
N1102.2.4.1	Access hatches and doors
N1102.2.10.1	Crawl space wall insulation installation
N1102.4.1.1	Installation
N1102.4.1.2	Testing
	Mechanical
N1103.1	Controls
N1103.3 except Sections N1103.3.2, N1103.3.3 and N1103.3.6	Ducts
N1103.4	Mechanical system piping insulation
N1103.5.1	Heated water circulation and temperature maintenance systems
N1103.5.3	Drain water heat recovery units
N1103.6	Mechanical ventilation
N1103.7	Equipment sizing and efficiency rating
N1103.8	Systems serving multiple dwelling units
N1103.9	Snow melt system controls
N1103.10	Energy consumption of pools and spas
N1103.11	Portable spas
N1103.12	Residential pools and permanent residential spas
	Electrical Power and Lighting Systems
N1104.1	Lighting equipment
N1104.2	Interior lighting controls
N1106.3	Building thermal envelope

a. Reference to a code section includes all of the relative subsections except as indicated in the table.

- Section R406.3 (N1106.3) Building thermal envelope, was not adopted as part of the Pennsylvania 2021 IECC/IRC adoption and is reserved
- Section R406.3.1 (N1106.3.1) On-site renewables are not included, was not adopted as part of the Pennsylvania 2021 IECC/IRC adoption
- Section R406.3.2 (N1106.3.2) On-site renewables are included, was not adopted as part of the Pennsylvania 2021 IECC/IRC adoption
- Section R406.4 (N1106.4) Energy Rating Index, (Originally Section R406.3 (N1106.3) Energy Rating Index, [2015 and 2018 IECC/IRC]), was not modified as part of the Pennsylvania 2018 IECC/IRC adoption. The language was not modified as part of the current Pennsylvania adoption of the 2021 IECC/IRC, and will remain as follows:

**R406.4 (N1106.4) Energy rating index.** The Energy Rating Index (ERI) shall be a numerical integer value that is based on a linear scale constructed such that the ERI reference design has an Index value of 100 and a residential building that uses no net purchased energy has an Index value of 0. Each integer value on the scale shall represent a 1 percent change in the total energy use of the rated design relative to the total energy use of the ERI reference design. The ERI shall consider all energy used in the residential building.

- Section R406.4.1 (N1106.4.1) ERI referenced design, (Originally Section R406.3.1 (N1106.3.1) ERI referenced design, [2015 and 2018 IECC/IRC]), was not modified as part of the Pennsylvania 2018 IECC/IRC adoption. The language was not modified as part of the current Pennsylvania adoption of the 2021 IECC/IRC, and will remain as follows:

**R406.4.1 (N1106.4.1) ERI reference design.** *The ERI reference design shall be configured such that it meets the minimum requirements of the 2006 International Energy Conservation Code prescriptive requirements. The proposed residential building shall be shown to have an annual total normalized modified load less than or equal to the annual total loads of the ERI reference design.*

- Section R406.7.1 (N1106.7.1) Compliance software tools, (Originally Section R406.6.1 (N1106.6.1) Compliance software tools, [2015 and 2018 IECC/IRC]), was not modified as part of the Pennsylvania 2018 IECC/IRC adoption. The language was not modified as part of the current Pennsylvania adoption of the 2021 IECC/IRC, and will remain as follows:

**R406.7.1 (N1106.7.1) Compliance software tools.** *Documentation verifying that the methods and accuracy of the compliance software tools conform to the provisions of this section shall be provided to the code official.*

- Section R406.8 (N1106.8) Calculation software tools, (Originally Section R406.7 (N1106.7) Calculation software tools, [2015 and 2018 IECC/IRC]), was not modified as part of the Pennsylvania 2018 IECC/IRC adoption. The language was not modified as part of the current Pennsylvania adoption of the 2021 IECC/IRC, and will remain as follows:

**R406.8 (N1106.8) Calculation software tools.** *Calculation software, where used, shall be in accordance with Sections R406.8.1 (N1106.8.1) through R406.8.3 (N1106.8.3).*

- Section R406.8.1 (N1106.8.1) Minimum capabilities, (Originally Section R406.7.1 (N1106.7.1) Minimum capabilities, [2015 and 2018 IECC/IRC]), was not modified as part of the Pennsylvania 2018 IECC/IRC adoption. The language was not modified as part of the current Pennsylvania adoption of the 2021 IECC/IRC, and will remain as follows:

**R406.7.1 (N1106.7.1) Minimum capabilities.** *Calculation procedures used to comply with this section shall be software tools capable of calculating the ERI as described in Section R406.3 (N1106.3), and shall include the following capabilities:*

1. *Computer generation of the ERI reference design using only the input for the rated design.*

*The calculation procedure shall not allow the user to directly modify the building component characteristics of the ERI reference design.*

2. *Calculation of whole-building, as a single zone, sizing for the heating and cooling equipment in the ERI reference design residence in accordance with Section R403.7 (N1103.7).*

- 3. *Calculations that account for the effects of indoor and outdoor temperatures and part-load ratios on the performance of heating, ventilating and air-conditioning equipment based on climate and equipment sizing.*
- 4. *Printed code official inspection checklist listing each of the rated design component characteristics determined by the analysis to provide compliance, along with their respective performance ratings.*
- Section R406.8.2 (N1106.8.2) Specific approval, (Originally Section R406.7.2 (N1106.7.2) Specific approval, [2015 and 2018 IECC/IRC]), was not modified as part of the Pennsylvania 2018 IECC/IRC adoption. The language was not modified as part of the current Pennsylvania adoption of the 2021 IECC/IRC, and will remain as follows:
 

**R406.7.2 (N1106.7.2) Specific approval.** *Performance analysis tools meeting the applicable sections of Section R406 (N1106) shall be approved. Tools are permitted to be approved based on meeting a specified threshold for a jurisdiction. The code official shall approve tools for a specified application or limited scope.*
- Section R406.8.3 (N1106.8.3) Input values, (Originally Section R406.7.3 (N1106.7.3) Minimum capabilities, [2015 and 2018 IECC/IRC]), was not modified as part of the Pennsylvania 2018 IECC/IRC adoption. The language was not modified as part of the current Pennsylvania adoption of the 2021 IECC/IRC, and will remain as follows:
 

**R406.7.3 (N1106.7.3) Input values.** *When calculations require input values not specified by Sections R402 (N1102), R403 (N1103), R404 (N1104) and R405 (N1105), those input values shall be taken from an approved source.*
- Section R406.7.5 (N1106.7.5) Specific approval, (Originally Section R406.6.4 (N1106.6.4) Specific approval, [2015 and 2018 IECC/IRC]), was not modified as part of the Pennsylvania 2018 IECC/IRC adoption. The language was not modified as part of the current Pennsylvania adoption of the 2021 IECC/IRC, and is removed (redundant due to previous action and reorganization).
- Section R406.7.6 (N1106.7.6) Input values, (Originally Section R406.6.5 (N1106.6.5) Input values, [2015 and 2018 IECC/IRC]), was not modified as part of the Pennsylvania 2018 IECC/IRC adoption. The language was not modified as part of the current Pennsylvania adoption of the 2021 IECC/IRC, and is removed (redundant due to previous action and reorganization).
- Section R408.1 (N1108.1) Scope, is adopted as follows:
 

**R408.1 (N1108.1) Scope.** *This section establishes additional efficiency package options to achieve additional energy efficiency in accordance with Section N1101.13.5.*

- Section R408.2 (N1108.2) Additional efficiency package options, is adopted as follows:

**R408.2 (N1108.2) Additional efficiency package options.** Additional efficiency package options for compliance with Section N1101.13.5 are set forth in Sections R408.2.1 (N1108.2.1) through R408.2.5 (N1108.2.5).

- **2021 International Residential Code (IRC)**

Adopted with the following modifications:

- Chapter 3 Building Planning, was adopted with the following modifications:
- Section R301.1.4 Intermodal shipping containers, is adopted as follows:

**R301.1.4 Intermodal shipping containers.** Intermodal shipping containers that are repurposed for use as buildings or structures shall be designed in accordance with the structural provisions in Section 3115 of the International Building Code. Prior to permitting, the applicant shall have the unit certified as free from contaminants by a qualified 3rd party inspector approved by the AHJ. Any penetrations beyond those permitted in Section 3115 of the International Building Code shall be certified by a Pennsylvania Registered Design Professional.

- Section R305.1 Minimum height, is adopted as follows:

**R305.1 Minimum height.** Habitable space, hallways and portions of basements containing these spaces shall have a ceiling height of not less than 7 feet (2134 mm). Bathrooms, toilet rooms and laundry rooms shall have a ceiling height of not less than 6 feet 8 inches (2032 mm).

**Exceptions:**

1. For rooms with sloped ceilings, the required floor area of the room shall have a ceiling height of not less than 5 feet (1524 mm) and not less than 50 percent of the required floor area shall have a ceiling height of not less than 7 feet (2134 mm).
2. The ceiling height above bathroom and toilet room fixtures shall be such that the fixture is capable of being used for its intended purpose. A shower or tub equipped with a showerhead shall have a ceiling height of not less than 6 feet 8 inches (2032 mm) above an area of not less than 30 inches (762 mm) by 30 inches (762 mm) at the showerhead.
3. Beams, girders, ducts or other obstructions in basements containing habitable space shall be permitted to project to within 6 feet 4 inches (1931 mm) of the finished floor.
4. Beams and girders spaced apart not less than a minimum of 36 inches (914 mm) in clear finished width between projections, and shall have a minimum clear ceiling height of 6 feet 6 inches (1981 mm) from the finished floor directly under the beam shall project not more than 78 inches (1981 mm) from the finished floor.

- Section R310.1 Emergency escape and rescue opening required, is adopted as follows:

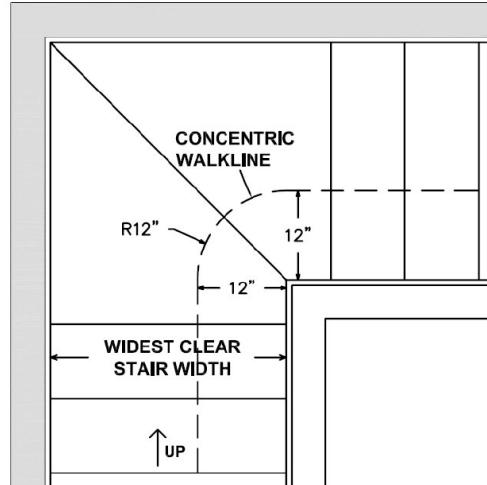
**R310.1 Emergency escape and rescue opening required.** Basements, habitable attics and every sleeping room shall have not less than one operable emergency escape and rescue opening. Where basements contain one or more sleeping rooms, an emergency escape and rescue opening shall be required in each sleeping room. Emergency escape and rescue openings shall open directly into a public way, or to a yard or court having a minimum width of 36 inches (914 mm) that opens to a public way.

**Exceptions:**

1. *Storm shelters and basements used only to house mechanical equipment not exceeding a total floor area of 200 square feet (18.58 m<sup>2</sup>).*
2. *Where the dwelling unit or townhouse unit is equipped with an automatic sprinkler system installed in accordance with Section P2904, sleeping rooms in basements shall not be required to have emergency escape and rescue openings provided that the basement has one of the following:*
  - 2.1. *One means of egress complying with Section R311 and one emergency escape and rescue opening.*
  - 2.2. *Two means of egress complying with Section R311.*
3. *A yard shall not be required to open directly into a public way where the yard opens to an unobstructed path from the yard to the public way. Such path shall have a width of not less than 36 inches (914 mm).*
4. *Properties with in-fill lots that are sprinklered in accordance with Section 2904, and a minimum clear yard size of 80 sq ft (7.43 m<sup>2</sup>) shall, be allowed to have access to the public way provided by a shared easement that is a minimum of 30 in (762 mm) wide.*

- Section R311.7.4 Walkline, was modified as part of the Pennsylvania 2018 IRC adoption. The national language was not modified in 2021 code, and as such, this language was maintained as modified in the 2018 adoption and in the current Pennsylvania 2021 IRC adoption as follows:

**R311.7.4 Walkline.** The walkline across winder treads and landings shall be concentric to the turn and parallel to the direction of travel entering and exiting the turn. The walkline shall be located 12 inches (305 mm) from the inside of the turn. The 12-inch (305 mm) dimension shall be measured from the widest point of the clear stair width at the walking surface. Where winders are adjacent within a flight, the point of the widest clear stair width of the adjacent winders shall be used.



**FIGURE R311.7.4  
WINDER TREAD AND LANDING DETAIL**

- Section R314.4 Interconnection, was not modified as part of the Pennsylvania 2018 IBC adoption, maintaining the 2015 IRC language. The national language was not modified in 2021 code, and as such, this language was again maintained as written in the 2015 adoption and in the current Pennsylvania 2021 IRC adoption as follows:

**R314.4 Interconnection.** *Where more than one smoke alarm is required to be installed within an individual dwelling unit in accordance with Section R314.3, the alarm devices shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms in the individual dwelling unit. Physical interconnection of smoke alarms shall not be required where listed wireless alarms are installed and all alarms sound upon activation of one alarm.*

**Exception:** *Interconnection of smoke alarms in existing areas shall not be required where alterations or repairs do not result in removal of interior wall or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available that could provide access for interconnection without the removal of interior finishes.*

- Section R325.5 Openness, was modified as part of the Pennsylvania 2015 IRC adoption. The national language was not modified in the 2018 code nor the 2021 code, and as such will remain as adopted in the Pennsylvania 2015 IRC adoption and in the current Pennsylvania 2021 IRC adoption as follows:

**R325.5 Openness.** *Mezzanines shall be open and unobstructed to the room in which they are located except for walls not more than 42 inches (1067 mm) 36 inches (914 mm) in height, columns and posts.*

**Exceptions:**

1. *Mezzanines or portions thereof are not required to be open to the room in which they are located, provided that the aggregate floor area of the enclosed space is not greater than 10 percent of the mezzanine area.*

2. ~~In buildings that are not more than two stories above grade plane and equipped throughout with an automatic sprinkler system in accordance with NFPA 13R or NFPA 13D, a mezzanine having two or more means of egress shall not be required to be open to the room in which the mezzanine is located.~~

- Section R326.3 Story above grade plane, is adopted as follows:

**R326.3 Story above grade plane.** A habitable attic shall be considered a story above grade plane.

*Exceptions: A habitable attic shall not be considered to be a story above grade plane provided that the habitable attic meets all the following:*

1. *The aggregate area of the habitable attic is either of the following:*
  - 1.1. *Not greater than one-third of the floor area of the story below.*
  - 1.2. *Not greater than one-half of the floor area of the story below where the habitable attic is located within a dwelling unit equipped with a fire sprinkler system in accordance with Section P2904.*
2. *The occupiable space is enclosed by the roof assembly above, knee walls, if applicable, on the sides and the floor-ceiling assembly below.*
3. *The floor of the habitable attic does not extend beyond the exterior walls of the story below.*
4. ~~*Where a habitable attic is located above a third story, the dwelling unit or townhouse unit shall be equipped with a fire sprinkler system in accordance with Section P2904.*~~

- Chapter 5 Floors, was adopted with the following modification:

- Section R506.2.3 Vapor retarder, is adopted as follows:

**R506.2.3 Vapor retarder.** A minimum 10 mil (0.010 inch: 0.25mm) vapor retarder conforming to ASTM E1745 Class A requirements 6 mil (0.006 inch: 152 mm) polyethylene or approved vapor retarder with joints lapped not less than 6 inches (152 mm) shall be placed between the concrete floor slab and the base course or the prepared subgrade where a base course does not exist.

*Exception: The vapor retarder is not required for the following:*

1. *Garages, utility buildings and other unheated accessory structures.*
2. *For unheated storage rooms having an area of less than 70 square feet (6.5 m<sup>2</sup>) and carports.*
3. *Driveways, walks, patios and other flatwork not likely to be enclosed and heated at a later date.*
4. *Where approved by the building official, based on local site conditions.*

- Chapter 7 Wall Covering, was adopted with the following modifications:
  - Section R703.2 Water-resistive barrier, is adopted as follows:

**R703.2 Water-resistive barrier.** ~~Not fewer than one layer of water resistive barrier shall be applied over studs or sheathing of all exterior walls with flashing as indicated in Section R703.4, in such a manner as to provide a continuous water resistive barrier behind the exterior wall veneer. The water resistive barrier material shall be continuous to the top of walls and terminated at penetrations and building appendages in a manner to meet the requirements of the exterior wall envelope as described in Section R703.1. Water resistive barrier materials shall comply with one of the following:~~

1. ~~No. 15 felt complying with ASTM D226, Type 1.~~
2. ~~ASTM E2568, Type 1 or 2.~~
3. ~~ASTM E331 in accordance with Section R703.1.1.~~
4. ~~Other approved materials in accordance with the manufacturer's installation instructions.~~

~~No. 15 asphalt felt and water resistive barriers complying with ASTM E2556 shall be applied horizontally, with the upper layer lapped over the lower layer not less than 2 inches (51 mm), and where joints occur, shall be lapped not less than 6 inches (152 mm).~~

**R703.2 Water-resistive barrier.** *Not fewer than one layer of water-resistive barrier shall be applied over studs or sheathing of all exterior walls with flashing as indicated in Section R703.4, in such a manner as to provide a continuous water-resistive barrier behind the exterior wall veneer. The water-resistive barrier material shall be continuous to the top of walls and terminated at penetrations and building appendages in a manner to meet the requirements of the exterior wall envelope as described in Section R703.1. Where the water-resistive barrier also functions as a component of a continuous air barrier, the water-resistive barrier shall be installed as an air barrier in accordance with Section N1102.4.1.1. Water-resistive barrier materials shall comply with one of the following:*

1. *No. 15 felt complying with ASTM D226, Type 1.*
2. *ASTM E2568, Type 1 or 2.*
3. *Foam plastic insulating sheathing water-resistive barrier systems complying with Section R703.1.1 and installed in accordance with the manufacturer's installation instructions.*
4. *ASTM E331 in accordance with Section R703.1.1.*
5. *Other approved materials in accordance with the manufacturer's installation instructions.*

No. 15 asphalt felt and water-resistive barriers complying with ASTM E2556 shall be applied horizontally, with the upper layer lapped over the lower layer not less than 2 inches (51 mm), and where joints occur, shall be lapped not less than 6 inches (152 mm).

*Exception: A water-resistive barrier shall not be required in unconditioned detached tool sheds, playhouses, and other similar accessory structures provided all of the following requirements are met:*

1. *Exterior wall covering is limited to siding that is attached directly to the studs.*
2. *Exterior walls are uninsulated.*
3. *Interior side of exterior walls has no wall covering or wall finishes.*

- Section R703.3.1 Exterior soffit installation (Previous Soffit installation), is adopted as follows:

**R703.3.1 Soffit installation.** *Soffits shall comply with Section R704.*

**R703.3.1 Exterior soffit installation.** *Exterior soffits shall comply with Section R704.*

- Section R703.4.1 Flashing installation at exterior window and door openings, is adopted as follows:

**R703.4.1 Flashing installation at exterior window and door openings.** *Flashing at exterior window and door openings shall extend to the surface of the exterior wall finish or to a water-resistive barrier complying with Section 703.2 for subsequent drainage. Air sealing shall be installed around all window and door openings on the interior side of the rough opening gap. Mechanically attached flexible flashings shall comply with AAMA 712. Flashing at exterior window and door openings shall be installed in accordance with one or more of the following:*

1. *The fenestration manufacturer's installation and flashing instructions, or for applications not addressed in the fenestration manufacturer's instructions, in accordance with the flashing manufacturer's instructions. Where flashing instructions or details are not provided, pan flashing shall be installed at the sill of exterior window and door openings. Pan flashing shall be sealed or sloped in such a manner as to direct water to the surface of the exterior wall finish or to the water resistive barrier for subsequent drainage. Openings using pan flashing shall incorporate flashing or protection at the head and sides.*
2. *In accordance with the flashing design or method of a registered design professional.*
3. *In accordance with other approved methods.*

**R703.4.1 Flashing installation at exterior window and door openings.** *Flashing at exterior window and door openings shall extend to the surface of the exterior wall finish or to a water-resistive barrier complying with Section 703.2 for subsequent drainage. Air sealing shall be installed around all window and door openings on the interior side of the rough opening gap. Mechanically attached flexible flashings shall comply with AAMA 712. Flashing at exterior window and door openings shall be installed in accordance with one or more of the following:*

1. *The fenestration manufacturer's installation and flashing instructions, or for applications not addressed in the fenestration manufacturer's instructions, in accordance with the flashing or water-resistive barrier manufacturer's instructions. Where flashing instructions or details are not provided, pan flashing shall be installed at the sill of exterior window and door openings. Pan flashing shall be sealed or sloped in such a manner as to direct water to the surface of the exterior wall finish or to the water resistive barrier for subsequent drainage. Openings using pan flashing shall incorporate flashing or protection at the head and sides.*
2. *In accordance with the flashing design or method of a registered design professional.*
3. *In accordance with other approved methods.*

- Section R703.7 Exterior plaster (stucco), was modified as part of the Pennsylvania 2018 IRC adoption. The national language was not modified in the 2021 code, and as such will remain as adopted in the Pennsylvania 2018 IRC adoption and in the current Pennsylvania 2021 IRC adoption as follows:

**R703.7 Exterior plaster (stucco).** *Installation of exterior plaster shall be in compliance with ASTM C926-2018B, ASTM C1063-2018B and the provisions of this code.*

- Section R704.1 General wind limitations, is adopted as follows:

**R704.1 General wind limitations.** *Where the design wind pressure is 30 pounds per square foot (1.44 kPa) or less, soffits shall comply with Section R704.2. Where the design wind pressure exceeds 30 pounds per square foot (1.44 kPa), soffits shall comply with Section R704.3. The design wind pressure on soffits shall be determined using the component and cladding loads specified in Table R301.2.1(1) for walls using an effective wind area of 10 square feet (0.93 m<sup>2</sup>) and adjusted for height and exposure in accordance with Table R301.2.1(2).*

**R704.1 General wind limitations.** *Where the design wind pressure is 30 pounds per square foot (1.44 kPa) or less, exterior soffits shall comply with Section R704.2. Where the design wind pressure exceeds 30 pounds per square foot (1.44 kPa), exterior soffits shall comply with Section R704.3. The design wind pressure on exterior soffits shall be determined using the component and cladding loads specified in Table R301.2.1(1) for walls using an effective wind area of 10 square feet (0.93 m<sup>2</sup>) and adjusted for height and exposure in accordance with Table R301.2.1(2).*

- Section R704.2 Exterior soffit installation where the design wind pressure is 30 psf or less (Previous Soffit installation where the design wind pressure is 30 psf or less), is adopted as follows:

**R704.2 Soffit installation where the design wind pressure is 30 psf or less.** *Where the design wind pressure is 30 pounds per square foot (1.44 kPa) or less, soffit installation shall comply with Section R704.2.1, R704.2.2, R704.2.3 or R704.2.4. Soffit materials not addressed in Sections R704.2.1 through R704.2.4 shall be in accordance with the manufacturer's installation instructions.*

**R704.2 Exterior soffit installation where the design wind pressure is 30 psf or less.**

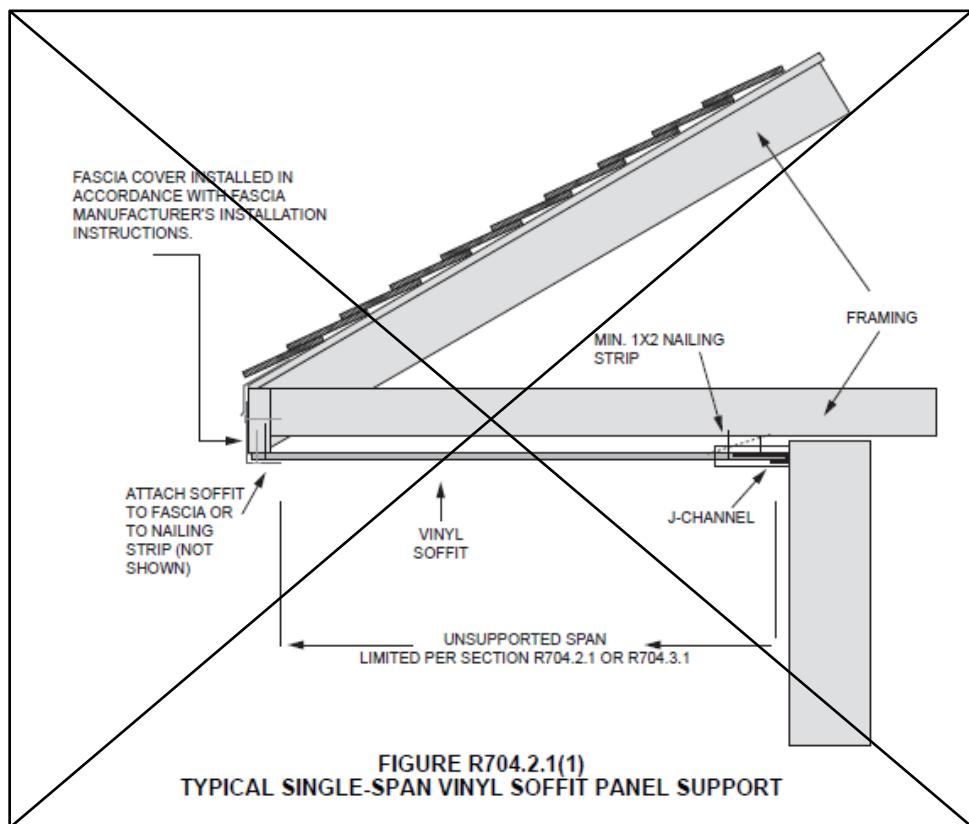
Where the design wind pressure is 30 pounds per square foot (1.44 kPa) or less, exterior soffit installation shall comply with Section R704.2.1, R704.2.2, R704.2.3 or R704.2.4. Soffit materials not addressed in Sections R704.2.1 through R704.2.4 shall be in accordance with the manufacturer's installation instructions.

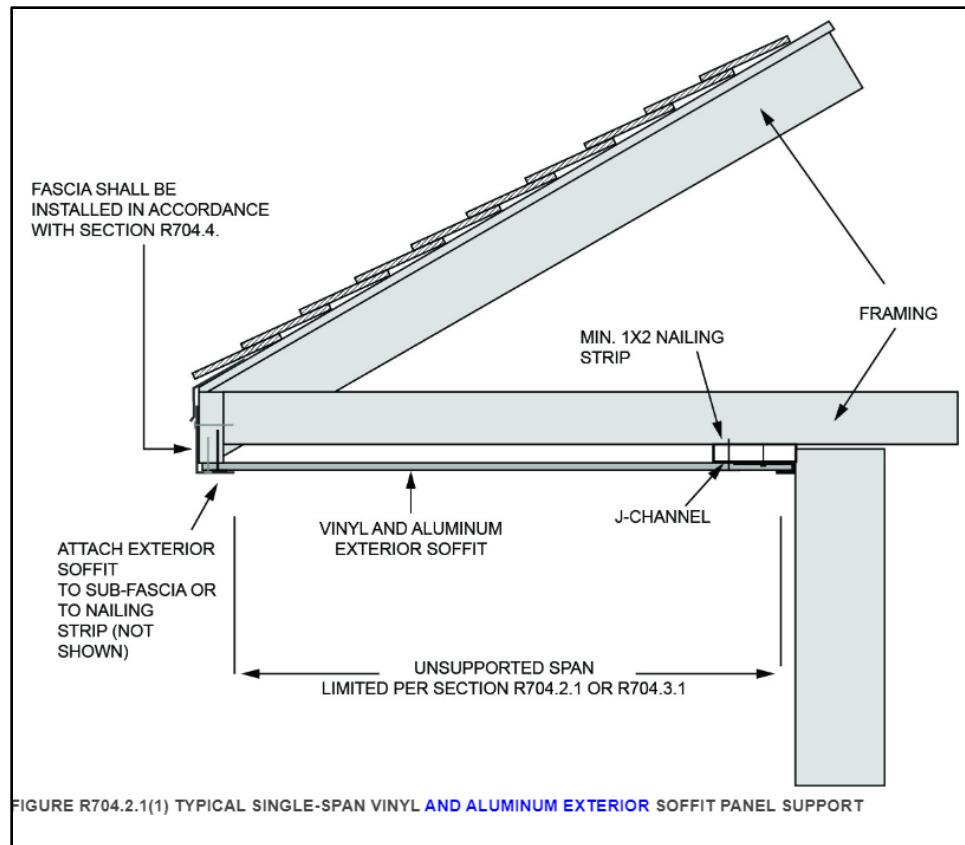
- Section R704.2.1 Vinyl and aluminum soffit panels (Previous Vinyl soffit panels), is adopted as follows:

**R704.2.1 Vinyl soffit panels.** *Vinyl soffit panels shall be installed using fasteners specified by the manufacturer and shall be fastened at both ends to a supporting component such as a nailing strip, fascia or subfascia component in accordance with Figure R704.2.1(1). Where the unsupported span of soffit panels is greater than 16 inches (406 mm), intermediate nailing strips shall be provided in accordance with Figure R704.2.1(2). Vinyl soffit panels shall be installed in accordance with the manufacturer's installation instructions. Fascia covers shall be installed in accordance with the manufacturer's installation instructions.*

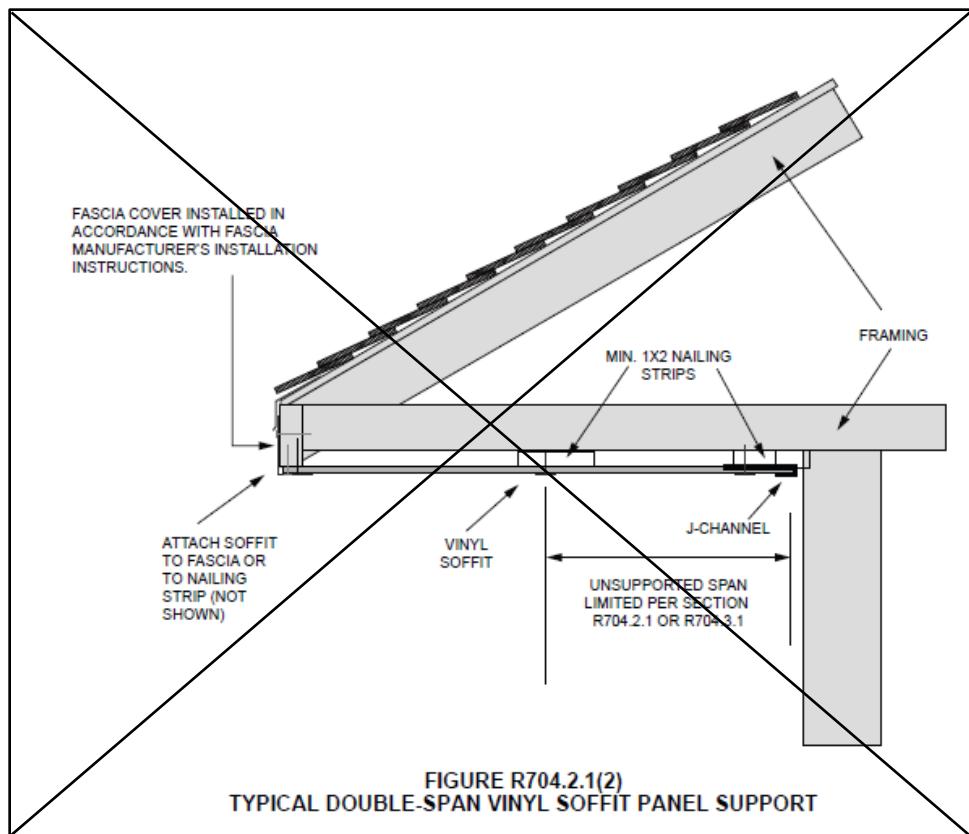
**R704.2.1 Vinyl and aluminum soffit panels.** *Vinyl and aluminum soffit panels shall be installed using aluminum, galvanized, stainless steel or rust-preventative coated nails or staples or other approved corrosion-resistant fasteners specified by the manufacturer and shall be fastened at both ends to a supporting component such as a nailing strip, fascia or sub-fascia component in accordance with Figure R704.2.1(1). Where the unsupported span of soffit panels is greater than 16 inches (406 mm), intermediate nailing strips shall be provided in accordance with Figure R704.2.1(2). Vinyl and aluminum soffit panels shall be installed in accordance with the manufacturer's installation instructions. Fascia covers shall be installed in accordance with the manufacturer's installation instructions.*

- FIGURE R704.2.1(1) TYPICAL SINGLE-SPAN VINYL AND ALUMINUM EXTERIOR SOFFIT PANEL SUPPORT (Previous TYPICAL SINGLE-SPAN VINYL SOFFIT PANEL SUPPORT), is adopted as follows:





- FIGURE R704.2.1(2) TYPICAL DOUBLE-SPAN VINYL AND ALUMINUM EXTERIOR SOFFIT PANEL SUPPORT (Previous TYPICAL DOUBLE-SPAN VINYL SOFFIT PANEL SUPPORT), is adopted as follows:



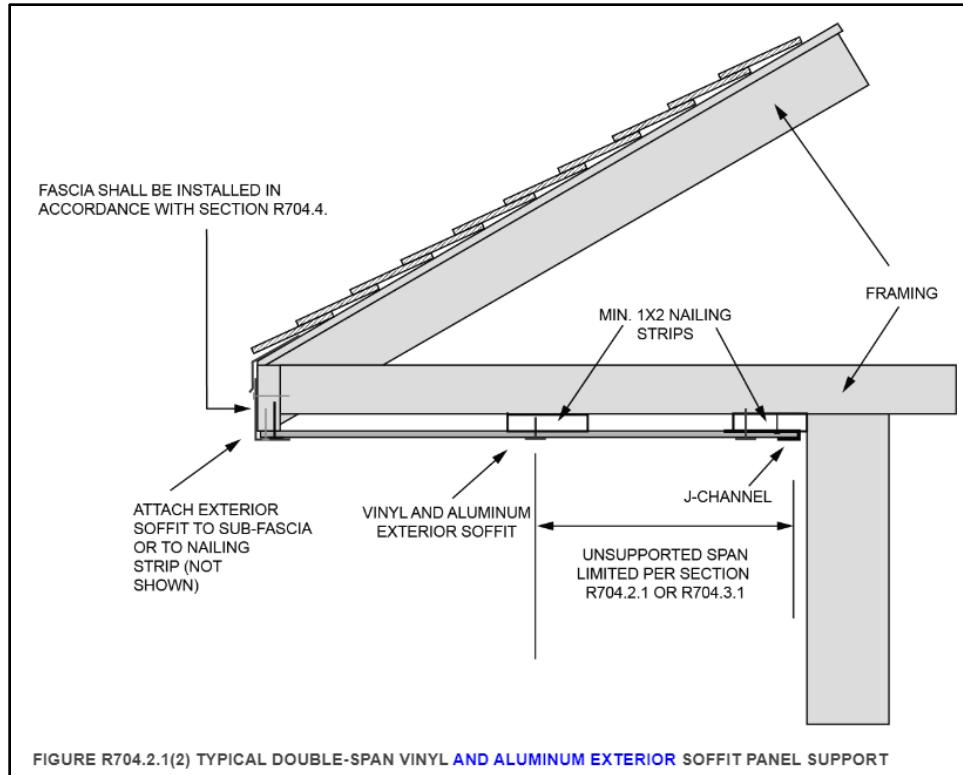


FIGURE R704.2.1(2) TYPICAL DOUBLE-SPAN VINYL AND ALUMINUM EXTERIOR SOFFIT PANEL SUPPORT

- Section R704.2.2 Fiber-cement exterior soffit panels (Previous Fiber-cement soffit panels), is adopted as follows:

**R704.2.2 Fiber cement soffit panels.** *Fiber cement soffit panels shall be a minimum of 1/4 inch (6.4 mm) in thickness and shall comply with the requirements of ASTM C1186, Type A, minimum Grade II, or ISO 8336, Category A, minimum Class 2. Panel joints shall occur over framing or over wood structural panel sheathing. Soffit panels shall be installed with spans and fasteners in accordance with the manufacturer's installation instructions.*

**R704.2.2 Fiber-cement exterior soffit panels.** *Fiber-cement exterior soffit panels shall be a minimum of 1/4 inch (6.4 mm) in thickness and shall comply with the requirements of ASTM C1186, Type A, minimum Grade II, or ISO 8336, Category A, minimum Class 2. Panel joints shall occur over framing or over wood structural panel sheathing. Exterior soffit panels shall be installed with spans and fasteners in accordance with the manufacturer's installation instructions.*

- Section R704.2.3 Hardboard exterior soffit panels (Previous Hardboard soffit panels), is adopted as follows:

**R704.2.3 Hardboard soffit panels.** *Hardboard soffit panels shall be not less than 7/16 inch (11.11 mm) in thickness and shall be fastened to framing or nailing strips with 2 1/2 inch by 0.113 inch (64 mm by 2.9 mm) siding nails spaced not more than 6 inches (152 mm) on center at panel edges and 12 inches (305 mm) on center at intermediate supports.*

**R704.2.3 Hardboard exterior soffit panels.** Hardboard exterior soffit panels shall be not less than 7/16 inch (11.11 mm) in thickness and shall be fastened to framing or nailing strips with 2-1/2-inch by 0.113-inch (64 mm by 2.9 mm) siding nails spaced not more than 6 inches (152 mm) on center at panel edges and 12 inches (305 mm) on center at intermediate supports.

- Section R704.2.4 Wood structural panel exterior soffit (Previous Wood structural panel soffit), is adopted as follows:

**R704.2.4 Wood structural panel soffit.** ~~The minimum nominal thickness for wood structural panel soffits shall be 3/8 inch (9.5 mm) and shall be fastened to framing or nailing strips with 2 inch by 0.099 inch (51 mm by 2.5 mm) nails. Fasteners shall be spaced not less than 6 inches (152 mm) on center at panel edges and 12 inches (305 mm) on center at intermediate supports.~~

**R704.2.4 Wood structural panel exterior soffit.** The minimum nominal thickness for wood structural panel soffits shall be 3/8 inch (9.5 mm) and shall be fastened to framing or nailing strips with 2-inch by 0.099-inch (51 mm by 2.5 mm) nails. Fasteners shall be spaced not more than 6 inches (152 mm) on center at panel edges and 12 inches (305 mm) on center at intermediate supports.

- Section R704.3 Exterior soffit installation where the design wind pressure exceeds 30 psf (Previous Soffit installation where the design wind pressure exceeds 30 psf), is adopted as follows:

**R704.3 Soffit installation where the design wind pressure exceeds 30 psf.** ~~Where the design wind pressure is greater than 30 psf, soffit installation shall comply with Section R704.3.1, R704.3.2, R704.3.3 or R704.3.4. Soffit materials not addressed in Sections R704.3.1 through R704.3.4 shall be in accordance with the manufacturer's installation instructions.~~

**R704.3 Exterior soffit installation where the design wind pressure exceeds 30 psf.** Where the design wind pressure is greater than 30 psf, exterior soffit installation shall comply with Section R704.3.1, R704.3.2, R704.3.3 or R704.3.4. Exterior soffit materials not addressed in Sections R704.3.1 through R704.3.4 shall be in accordance with the manufacturer's installation instructions.

- Section R704.3.1 Vinyl exterior soffit panels (Previous Vinyl soffit panels), is adopted as follows:

**R704.3.1 Vinyl soffit panels.** ~~Vinyl soffit panels and their attachments shall be capable of resisting wind loads specified in Table R301.2.1(1) for walls using an effective wind area of 10 square feet (0.929 m<sup>2</sup>) and adjusted for height and exposure in accordance with Table R301.2.1(2). Vinyl soffit panels shall be installed using fasteners specified by the manufacturer and shall be fastened at both ends to a supporting component such as a nailing strip, fascia or sub fascia component in accordance with Figure R704.2.1(1). Where the unsupported span of soffit panels is greater than 12 inches (305 mm), intermediate nailing strips shall be provided in accordance with Figure R704.2.1(2). Vinyl soffit panels shall be installed in accordance with the manufacturer's installation instructions. Fascia covers shall be installed in accordance with the manufacturer's installation instructions.~~

**R704.3.1 Vinyl exterior soffit panels.** Vinyl exterior soffit panels and their attachments shall be capable of resisting wind loads specified in Table R301.2.1(1) for walls using an effective wind area of 10 square feet ( $0.929 m^2$ ) and adjusted for height and exposure in accordance with Table R301.2.1(2). Vinyl exterior soffit panels shall be installed using fasteners specified by the manufacturer and shall be fastened at both ends to a supporting component such as a nailing strip, fascia or sub-fascia component in accordance with Figure R704.2.1(1). Where the unsupported span of exterior soffit panels is greater than 12 inches (305 mm), intermediate nailing strips shall be provided in accordance with Figure R704.2.1(2). Vinyl exterior soffit panels shall be installed in accordance with the manufacturer's installation instructions.

- Section R704.3.2 Fiber-cement exterior soffit panels (Previous Fiber-cement soffit panels), is adopted as follows:

**R704.3.2 Fiber-cement soffit panels.** Fiber-cement soffit panels shall comply with Section R704.2.2 and shall be capable of resisting wind loads specified in Table R301.2.1(1) for walls using an effective wind area of 10 square feet ( $0.929 m^2$ ) and adjusted for height and exposure in accordance with Table R301.2.1(2).

**R704.3.2 Fiber-cement exterior soffit panels.** Fiber-cement exterior soffit panels shall comply with Section R704.2.2 and shall be capable of resisting wind loads specified in Table R301.2.1(1) for walls using an effective wind area of 10 square feet ( $0.929 m^2$ ) and adjusted for height and exposure in accordance with Table R301.2.1(2).

- Section R704.3.3 Hardboard exterior soffit panels (Previous Hardboard soffit panels), is adopted as follows:

**R704.3.3 Hardboard soffit panels.** Hardboard soffit panels shall comply with the manufacturer's installation instructions and shall be capable of resisting wind loads specified in Table R301.2.1(1) for walls using an effective wind area of 10 square feet ( $0.929 m^2$ ) and adjusted for height and exposure in accordance with Table R301.2.1(2).

**R704.3.3 Hardboard exterior soffit panels.** Hardboard exterior soffit panels shall comply with the manufacturer's installation instructions and shall be capable of resisting wind loads specified in Table R301.2.1(1) for walls using an effective wind area of 10 square feet ( $0.929 m^2$ ) and adjusted for height and exposure in accordance with Table R301.2.1(2).

- Section Wood structural panel exterior soffit (Previous Wood structural panel soffit), is adopted as follows:

**R704.3.4 Wood structural panel soffit.** Wood structural panel soffits shall be capable of resisting wind loads specified in Table R301.2.1(1) for walls using an effective wind area of 10 square feet ( $0.929 m^2$ ) and adjusted for height and exposure in accordance with Table R301.2.1(2). Alternatively, wood structural panel soffits shall be installed in accordance with Table R704.3.4.

**R704.3.4 Wood structural panel exterior soffit.** Wood structural panel exterior soffits shall be capable of resisting wind loads specified in Table R301.2.1(1) for walls using an effective wind area of 10 square feet ( $0.929 m^2$ ) and adjusted for height and exposure in accordance with Table R301.2.1(2). Alternatively, wood structural panel exterior soffits shall be installed in accordance with Table R704.3.4.

- TABLE R704.3.4 PRESCRIPTIVE ALTERNATIVE FOR WOOD STRUCTURAL PANEL SOFFIT <sup>b, c, d, e</sup>, is adopted as follows:

TABLE R704.3.4 PRESCRIPTIVE ALTERNATIVE FOR WOOD STRUCTURAL PANEL SOFFIT <sup>b, c, d, e</sup>					
MAXIMUM DESIGN PRESSURE (+ or - psf)	MINIMUM PANEL SPAN RATING	MINIMUM PANEL PERFORMANCE CATEGORY	NAIL TYPE AND SIZE	FASTENER <sup>f</sup> SPACING ALONG EDGES AND INTERMEDIATE SUPPORTS	
				Galvanized Steel	Stainless Steel
30	24/0	3/8	6d box (2 x 0.099 x 0.266 head diameter)	6 <sup>f</sup>	4
40	24/0	3/8	6d box (2 x 0.099 x 0.266 head diameter)	6	4
50	24/0	3/8	6d box (2 x 0.099 x 0.266 head diameter)	4	4
			8d common (2 <sup>1</sup> / <sub>2</sub> x 0.131 x 0.281 head diameter)	6	6
60	24/0	3/8	6d box (2 x 0.099 x 0.266 head diameter)	4	3
			8d common (2 <sup>1</sup> / <sub>2</sub> x 0.131 x 0.281 head diameter)	6	4
70	24/16	7/16	8d common (2 <sup>1</sup> / <sub>2</sub> x 0.131 x 0.281 head diameter)	4	4
			10d box (3 x 0.128 x 0.312 head diameter)	6	4
80	24/16	7/16	8d common (2 <sup>1</sup> / <sub>2</sub> x 0.131 x 0.281 head diameter)	4	4
			10d box (3 x 0.128 x 0.312 head diameter)	6	4
90	32/16	15/32	8d common (2 <sup>1</sup> / <sub>2</sub> x 0.131 x 0.281 head diameter)	4	3
			10d box (3 x 0.128 x 0.312 head diameter)	6	4

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 0.0479 kPa.

a. Fasteners shall comply with Sections R703.3.2 and R703.3.3.

b. Maximum spacing of soffit framing members shall not exceed 24 inches.

c. Wood structural panels shall be of an exterior exposure grade.

d. Wood structural panels shall be installed with strength axis perpendicular to supports with not fewer than two continuous spans.

e. Wood structural panels shall be attached to soffit framing members with specific gravity of at least 0.42. Framing members shall be minimum 2 x 3 nominal with the larger dimension in the cross section aligning with the length of fasteners to provide sufficient embedment depths.

f. Spacing at intermediate supports shall be not greater than 12 inches on center.

*Footnote modification:*

*e. Wood structural panels shall be attached to soffit framing members with specific gravity of at least 0.35. Where the specific gravity of the wood species used for soffit framing members is greater than or equal to 0.35 but less than 0.42 in accordance with AWC NDS, the fastener spacing shall be multiplied by 0.67 or the same fastener spacing as prescribed for galvanized steel nails shall be permitted to be used where RSRS-01 (2" x 0.099" x 0.266" head) nails replace 6d box nails and RSRS-03 (2-1/2" x 0.131" x 0.281" head) nails replace 8d common nails or 10d box nails. RSRS is a Roof Sheathing Ring Shank nail meeting the specifications in ASTM F1667. Framing members shall be minimum 2 x 3 nominal with the larger dimension in the cross section aligning with the length of fasteners to provide sufficient embedment depths.*

- Chapter 8 Roof-Ceiling Construction, was adopted with the following modifications:
  - Section R802.3 Ridge, is adopted as follows:
 

**R802.3 Ridge.** *A ridge board used to connect opposing rafters shall be not less than 1 inch (25 mm) nominal thickness and not less in depth than the cut end of the rafter. Where ceiling joist or rafter ties do not provide continuous ties across the structure as required by Section R802.5.2, the ridge shall be supported by a wall or ridge beam designed in accordance with accepted engineering practice and supported on each end by a wall, or column, or girder.*
  - Section R806.1 Ventilation required, was modified as part of the Pennsylvania 2018 IRC adoption. The national language was not modified in the 2021 code, and as such will remain as adopted in the Pennsylvania 2018 IRC adoption and in the current Pennsylvania 2021 IRC adoption as follows:
 

**R806.1 Ventilation required.** *Enclosed attics and enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters shall have cross ventilation for each separate space by ventilating openings protected against the entrance of rain or snow. Ventilation openings shall have a least dimension of 1/16 inch (1.6 mm) minimum and 1/4 inch (6.4 mm) maximum. Ventilation openings having a least dimension larger than 1/4 inch (6.4 mm) shall be provided with corrosion-resistant wire cloth screening, hardware cloth, perforated vinyl or similar material with openings having a least dimension of 1/16 inch (1.6 mm) minimum and 1/4 inch (6.4 mm) maximum. Openings in roof framing members shall conform to the requirements of Section R802.7. Required ventilation openings shall open directly to the outside air ~~and shall be protected to prevent the entry of birds, rodents, snakes and other similar creatures.~~*
  - Section R806.2 Minimum vent area, was not modified as part of the Pennsylvania 2018 IRC adoption. The national language was not modified in the 2021 code, and as such will remain as adopted in the Pennsylvania 2015 IRC adoption and in the current Pennsylvania 2021 IRC adoption as follows:
 

**R806.2 Minimum vent area.** *The minimum net free ventilating area shall be 1/150 of the area of the vented space.*

**Exception:** *The minimum net free ventilation area shall be 1/300 of the vented space provided one or more of the following conditions are met:*

    1. *In Climate Zones 6, 7 and 8, a Class I or II vapor retarder is installed on the warm-in-winter side of the ceiling.*
    2. *Not less than 40 percent and not more than 50 percent of the required ventilating area is provided by ventilators located in the upper portion of the attic or rafter space. Upper ventilators shall be located not more than 3 feet (914 mm) below the ridge or highest point of the space, measured vertically, with the balance of the required ventilation provided by eave or cornice vents. Where the location of wall or roof framing members conflicts with the installation of upper ventilators, installation more than 3 feet (914 mm) below the ridge or highest point of the space shall be permitted.*

- Section R806.3 Vent and insulation clearance, was modified as part of the Pennsylvania 2018 IRC adoption. The national language was not modified in the 2021 code, and as such will remain as adopted in the Pennsylvania 2018 IRC adoption and in the current Pennsylvania 2021 IRC adoption as follows:

**R806.3 Vent and insulation clearance.** *Where eave or cornice vents are installed, blocking, bridging and insulation nothing shall not block the free flow of air. Not less than a 1-inch (25 mm) space shall be provided between the insulation and the roof sheathing and at the location of the vent.*

- Chapter 10 Chimneys and Fireplaces, was adopted with the following modification:
  - Section R1005.8 Insulation shield, was not adopted was not adopted as part of the Pennsylvania 2018 IRC adoption. The national language was not modified in the 2021 code, and as such will remain as adopted in the Pennsylvania 2018 IRC adoption and in the current Pennsylvania 2021 IRC adoption **without** the inclusion of Section R1005.8 Insulation shield
- Chapter 11 [RE] Energy Efficiency, was adopted with the following modifications:
  - Section N1101.13.5 (R401.2.5) Additional energy efficiency, was not adopted as part of the current Pennsylvania adoption of the 2021 IRC/IECC
  - TABLE N1102.1.2 (R402.1.2) MAXIMUM ASSEMBLY U-FACTORS<sup>a</sup> AND FENESTRATION REQUIREMENTS , is adopted as follows:

**TABLE R1102.1.2 (R402.1.2)  
MAXIMUM ASSEMBLY U-FACTORS<sup>a</sup> AND FENESTRATION REQUIREMENTS**

CLIMATE ZONE	FENESTRATION U-FACTOR <sup>b</sup>	SKYLIGHT U-FACTOR	GLAZED FENESTRATION SHGC <sup>c,d,e</sup>	CEILING U-FACTOR	FRAME WALL U-FACTOR	MASS WALL U-FACTOR <sup>b</sup>	FLOOR U-FACTOR	BASEMENT WALL U-FACTOR	CRAWL SPACE WALL U-FACTOR
1	0.50	0.75	0.25	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	0.25	0.030	0.084	0.165	0.064	0.360	0.477
3	0.32	0.55	0.25	0.030	0.060	0.098	0.047	0.091	0.136
4 except Marine	0.30	0.55	0.40	0.026	0.060	0.098	0.047	0.059	0.065
5 and Marine 4	0.30	0.55	NR	0.026	0.051	0.082	0.033	0.050	0.055
6	0.30	0.55	NR	0.026	0.045	0.060	0.033	0.050	0.055
7 and 8	0.30	0.55	NR	0.026	0.045	0.057	0.028	0.050	0.055

- Nonfenestration *U*-factors shall be obtained from measurement, calculation or an approved source.
- Mass walls shall be in accordance with Section N1102.2.5. Where more than half the insulation is on the interior, the mass wall *U*-factors shall not exceed 0.17 in Climate Zone 1, 0.14 in Climate Zone 2, 0.12 in Climate Zone 3, 0.087 in Climate Zone 4 except Marine, 0.065 in Climate Zone 5 and Marine 4, and 0.057 in Climate Zones 6 through 8.
- In warm-humid locations as defined by Figure R301.1 and Table R301.1, the basement wall *U*-factor shall not exceed 0.360.
- The SHGC column applies to all glazed fenestration.

**Exception:** In Climate Zones 0 through 3, skylights shall be permitted to be excluded from glazed fenestration SHGC requirements provided that the SHGC for such skylights does not exceed 0.30.

- There are no SHGC requirements in the Marine Zone.

f. A maximum U-factor of 0.32 shall apply in Marine Climate Zone 4 and Climate Zones 5 through 8 to vertical fenestration products installed in buildings located either:

1. Above 4,000 feet in elevation above sea level, or
2. In windborne debris regions where protection of openings is required by Section R301.2.1.2.

■ Table N1102.1.3 (R402.1.3) INSULATION MINIMUM R-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT<sup>a</sup>, is adopted as follows:

**TABLE N1102.1.3 (R402.1.3)**  
**INSULATION MINIMUM R-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT<sup>a</sup>**

CLIMATE ZONE	FENESTRATION U-FACTOR <sup>b</sup>	SKYLIGHT <sup>b</sup> U-FACTOR	GLAZED FENESTRATION SHGC <sup>a,e</sup>	CEILING R-FACTOR	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE <sup>f</sup>	FLOOR R-VALUE	BASEMENT <sup>g</sup> WALL R-VALUE	SLAB <sup>h</sup> R-VALUE & DEPTH	CRAWL SPACE <sup>b</sup> WALL R-VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.32	0.55	0.25	38	20 or 13+5 <sup>h</sup>	8/13	19	5/13 <sup>f</sup>	0	5/13
4 except Marine	0.32	0.55	0.40	49	20 or 13+5 <sup>h</sup>	8/13	19	10/13	10, 2ft	10/13
5 and Marine 4	0.30	0.55	NR	49	23 or 13+7.5 <sup>h</sup> or 20+3.8 <sup>h</sup>	13/17	30 <sup>g</sup>	15/19	10, 4ft or 15, 3ft	15/19
6	0.30	0.55	NR	49	20+5 <sup>h</sup> or 13+10 <sup>h</sup>	15/20	30 <sup>g</sup>	15/19	10, 4 ft	15/19
7 and 8	0.30	0.55	NR	49	20+5 <sup>h</sup> or 13+10 <sup>h</sup>	19/21	38 <sup>g</sup>	15/19	10, 4 ft	15/19

For SI: 1 foot = 304.8 mm.

NR = Not Required.

- a. 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.
- b. The fenestration U-factor column excludes skylights. The SHGC column applies to all glazed fenestration. **Exception:** In Climate Zones 1 through 3, skylights shall be permitted to be excluded from glazed fenestration SHGC requirements provided that the SHGC for such skylights does not exceed 0.30.
- c. "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. "15/19" means R-15 continuous insulation on the interior or exterior of the home or R-19 cavity insulation on the interior of the basement wall. Alternatively, compliance with "15/19" shall be R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulation on the interior or exterior of the home.
- d. R-5 insulation shall be provided under the full slab area of a heated slab in addition to the required slab edge insulation R-value for slabs, as indicated in the table. The slab edge insulation for heated slabs shall not be required to extend below the slab.
- e. There are no SHGC requirements in the Marine Zone.
- f. Basement wall insulation shall not be required in warm-humid locations as defined by Figure N1101.7 and Table N1101.7.
- g. Alternatively, insulation sufficient to fill the framing cavity providing not less than an R-value of R-19.
- h. 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.
- i. Mass walls shall be in accordance with Section N1102.2.5. The second R-value applies where more than half of the insulation is on the interior of the mass wall.

- Section N1103.3.5 (R403.3.5) Duct testing (Originally Section N1103.3.3 (R403.3.3) Duct testing, [2018 IRC/IECC]), was not modified as part of the Pennsylvania adoption of the 2021 IRC/IECC, and will remain as published in the 2018 IRC/IECC as follows:

**N1103.3.5 (R403.3.5) Duct testing (Mandatory).** *Ducts shall be pressure tested to determine air leakage by one of the following methods:*

1. *Rough-in test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the system, including the manufacturer's air handler enclosure if installed at the time of the test. Registers shall be taped or otherwise sealed during the test.*
2. *Postconstruction test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. Registers shall be taped or otherwise sealed during the test.*

**Exceptions:**

1. *A duct air-leakage test shall not be required where the ducts and air handlers are located entirely within the building thermal envelope.*
2. *A duct air-leakage test shall not be required for ducts serving heat or energy recovery ventilators that are not integrated with ducts serving heating or cooling systems.*

*A written report of the results of the test shall be signed by the party conducting the test and provided to the building official.*

- Section N1103.3.6 (R403.3.6) Duct leakage (Originally Section N1103.3.4 (R403.3.4) Duct leakage, [2018 IRC/IECC]), was not modified as part of the Pennsylvania adoption of the 2021 IRC/IECC, and will remain as published in the 2018 IRC/IECC as follows:

**N1103.3.6 (R403.3.6) Duct leakage (Prescriptive).** *The total leakage of the ducts, where measured in accordance with Section N1103.3.5, shall be as follows:*

1. *Rough-in test: The total leakage shall be less than or equal to 4 cubic feet per minute (113.3 L/min) per 100 square feet (9.29 m<sup>2</sup>) of conditioned floor area where the air handler is installed at the time of the test. Where the air handler is not installed at the time of the test, the total leakage shall be less than or equal to 3 cubic feet per minute (85 L/min) per 100 square feet (9.29 m<sup>2</sup>) of conditioned floor area.*
2. *Postconstruction test: Total leakage shall be less than or equal to 4 cubic feet per minute (113.3 L/min) per 100 square feet (9.29 m<sup>2</sup>) of conditioned floor area.*

- Section N1103.3.7 (R403.3.7) Building cavities (Mandatory), (Originally Section N1103.3.5 (R403.3.5) Building cavities, [2015 and 2018 IRC/IECC]), was modified as part of the Pennsylvania 2015 IRC/IECC adoption. The national language was not modified in the 2018 IRC/IECC and the modified language was maintained in the Pennsylvania 2018 IRC/IECC adoption. The language was not modified as part of the current Pennsylvania adoption of the 2021 IRC/IECC, and will remain as follows:

***N1103.3.7 (R403.3.7) Building cavities (Mandatory).*** *Building framing cavities shall not be used as supply ducts.*

- Section N1103.5.1.1 (R403.5.1.1) Circulation systems, is adopted as follows:

***N1103.5.1.1 (R403.5.1.1) Circulation systems.*** *Heated water circulation systems shall be provided with a circulation pump. The system return pipe shall be a dedicated return pipe or a cold water supply pipe. Gravity and thermosyphon circulation systems shall be prohibited. Controls for circulating hot water system pumps shall automatically turn off the pump when the water in the circulation loop is at the desired temperature and when there is no demand for hot water. The controls shall limit the temperature of the water entering the cold water piping to not greater than 104°F (40°C).*

***Exception:*** *Where the entire hot water piping system (both supply and return) are insulated with a minimum R3 insulation, the stated controls shall not be required.*

- Section N1104.1 (R404.1) Lighting equipment, was not modified as part of the current Pennsylvania 2021 IRC/IECC adoption and remains the 2018 IRC/IECC language as follows:

***N1104.1 (R404.1) Lighting equipment (Mandatory).*** *Not less than 90 percent of the permanently installed lighting fixtures shall contain only high-efficacy lamps.*

- Section N1104.1.1 (R404.1.1) Exterior lighting, was not modified as part of the current Pennsylvania 2021 IRC/IECC adoption and remains the 2018 IRC/IECC language as follows:

***N1104.1.1 (R404.1.1) Lighting equipment (Mandatory).*** *Fuel gas lighting systems shall not have continuously burning pilot lights.*

- Section N1104.1.2 (R404.1.2) Fuel gas lighting equipment, was not adopted as part of the current Pennsylvania 2021 IRC/IECC adoption.
- Section N1104.2 (R404.2) Interior lighting controls, was not adopted as part of the current Pennsylvania 2021 IRC/IECC adoption.
- Section N1104.3 (R404.3) Exterior lighting controls, was not adopted as part of the current Pennsylvania 2021 IRC/IECC adoption.

- TABLE N1105.2 (R405.2) REQUIREMENTS FOR TOTAL BUILDING PERFORMANCE, was adopted as follows:

TABLE N1105.2 (R405.2) REQUIREMENTS FOR TOTAL BUILDING PERFORMANCE	
SECTION <sup>a</sup>	TITLE
	General
N1101.13.5	Additional energy efficiency
N1101.14	Certificate
	Building Thermal Envelope
N1102.1.1	Vapor retarder
N1102.2.3	Eave baffle
N1102.2.4.1	Access hatches and doors
N1102.2.10.1	Crawl space wall insulation installation
N1102.4.1.1	Installation
N1102.4.1.2	Testing
N1102.5	Maximum fenestration U-factor and SHGC
	Mechanical
N1103.1	Controls
N1103.3, including N1103.3.1, except Sections N1103.3.2, N1103.3.3 and N1103.3.6	Ducts
N1103.4	Mechanical system piping insulation
N1103.5.1	Heated water circulation and temperature maintenance systems
N1103.5.3	Drain water heat recovery units
N1103.6	Mechanical ventilation
N1103.7	Equipment sizing and efficiency rating
N1103.8	Systems serving multiple dwelling units
N1103.9	Snow melt system controls
N1103.10	Energy consumption of pools and spas
N1103.11	Portable spas
N1103.12	Residential pools and permanent residential spas
	Electrical Power and Lighting Systems
N1104.1	Lighting equipment
N1104.2	Interior lighting controls

a. Reference to a code section includes all the relative subsections except as indicated in the table.

- Section N1105.3.2 (R405.3.2) Compliance report, (Originally Section N1105.4.2 (R405.4.2) Compliance report, [2015 and 2018 IRC/IECC]), was not modified as part of the Pennsylvania 2018 IRC/IECC adoption. The language was not modified as part of the current Pennsylvania adoption of the 2021 IRC/IECC, and will remain as follows:

**N1105.3.2 (R405.3.2) Compliance report.** *Compliance software tools shall generate a report that documents that the proposed design complies with Section N1105.4 (R405.4). A compliance report on the proposed design shall be submitted with the application for the building permit. Upon completion of the building, a compliance report based on the as-built condition of the building shall be submitted to the code official before a certificate of occupancy is issued. Batch sampling of buildings to determine energy code compliance for all buildings in the batch shall be prohibited.*

*Compliance reports shall include information in accordance with Sections N1105.4.2.1 (R405.4.2.1) and N1105.4.2.2 (R405.4.2.2). Where the proposed design of a building could be built on different sites where the cardinal orientation of the building on each site is different, compliance of the proposed design for the purposes of the application for the building permit shall be based on the worst-case orientation, worst-case configuration, worst-case building air leakage and worst-case duct leakage. Such worst-case parameters shall be used as inputs to the compliance software for energy analysis.*

- Section N1105.3.2.1 (R405.3.2.1) Compliance report for permit application, (Originally Section N1105.4.2.1 (R405.4.2.1) Compliance report for permit application, [2018 IRC/IECC]), was not modified as part of the current Pennsylvania adoption of the 2021 IRC/IECC, and will remain as follows:

***N1105.3.2.1 (R405.3.2.1) Compliance report for permit application.*** A compliance report submitted with the application for building permit shall include the following:

1. Building street address, or other building site identification.
2. A statement indicating that the proposed design complies with Section N1105.4 (R405.4).
3. An inspection checklist documenting the building component characteristics of the proposed design as indicated in Table N1105.4.2(1) (R405.4.2(1)). The inspection checklist shall show results for both the standard reference design and the proposed design with user inputs to the compliance software to generate the results.
4. A site-specific energy analysis report that is in compliance with Section N1105.4 (R405.4).
5. The name of the individual performing the analysis and generating the report.
6. The name and version of the compliance software tool.

- Section N1105.3.2.2 (R405.3.2.2) Compliance report for certificate of occupancy, is adopted as follows:

***N1105.3.2.2 (R405.3.2.2) Compliance report for certificate of occupancy.*** A compliance report submitted for obtaining the certificate of occupancy shall include the following:

1. Building street address, or other building site identification.
2. Declaration of the total building performance path on the title page of the energy report ~~and the title page of the building plans~~.
3. A statement, bearing the name of the individual performing the analysis and generating the report, indicating that the as-built building complies with Section N1105.3.
4. The name and version of the compliance software tool.
5. A site-specific energy analysis report that is in compliance with Section N1105.3. (R405.3)
6. A final confirmed certificate indicating compliance based on inspection, and a statement indicating that the confirmed rated design of the built home complies with Section N1105.3. The certificate shall report the energy features that were confirmed to be in the home, including component-level insulation R-values or U-factors; results from any required duct system and building envelope air leakage testing; and the type and rated efficiencies of the heating, cooling, mechanical ventilation and service water heating equipment installed.

7. Where on-site renewable energy systems have been installed, the certificate shall report the type and production size of the installed system.

- TABLE N1105.4.2(1) (R405.4.2(1)) SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS (Originally Table N1105.5.2(1) (R405.5.2.1) SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS, [2018 IRC/IECC]), was not modified as part of the current Pennsylvania adoption of the 2021 IRC/IECC, and will remain as follows:

TABLE N1105.4.2(1) [R405.4.2(1)] SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS		
BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Above-grade walls	Type: mass where the proposed wall is a mass wall; otherwise wood frame.	As proposed
	Gross area: same as proposed.	As proposed
	U-factor: as specified in <a href="#">TABLE N1102.1.2</a>	As proposed
	Solar absorptance = 0.75.	As proposed
Basement and crawl space walls	Emittance = 0.90.	As proposed
	Type: same as proposed.	As proposed
	Gross area: same as proposed.	As proposed
	U-factor: as specified in <a href="#">TABLE N1102.1.2</a> with the insulation layer on the interior side of the walls.	As proposed
Above-grade floors	Type: wood frame.	As proposed
	Gross area: same as proposed.	As proposed
	U-factor: as specified in <a href="#">TABLE N1102.1.2</a>	As proposed
	Type: wood frame.	As proposed
Ceilings	Gross area: same as proposed.	As proposed
	U-factor: as specified in <a href="#">TABLE N1102.1.2</a>	As proposed
	Type: composition shingle on wood sheathing.	As proposed
	Gross area: same as proposed.	As proposed
Roofs	Solar absorptance = 0.75.	As proposed
	Emittance = 0.90.	As proposed
	Type: vented with an aperture of 1 ft <sup>2</sup> per 300 ft <sup>2</sup> of ceiling area.	As proposed
	Type: same as proposed.	As proposed
Foundations	Foundation wall area above and below grade and soil characteristics: same as proposed.	As proposed
	Area: 40 ft <sup>2</sup> .	As proposed
Opaque doors	Orientation: North.	As proposed
	U-factor: same as fenestration as specified in <a href="#">TABLE N1102.1.2</a>	As proposed
	Total area <sup>b</sup> =	As proposed
	(a) The proposed glazing area, where the proposed glazing area is less than 15 percent of the conditioned floor area.	
Vertical fenestration other than opaque doors	(b) 15 percent of the conditioned floor area, where the proposed glazing area is 15 percent or more of the conditioned floor area.	
	Orientation: equally distributed to four cardinal compass orientations (N, E, S & W).	As proposed
	U-factor: as specified in <a href="#">TABLE N1102.1.2</a>	As proposed
	SHGC: as specified in Table N1102.1.2 except for <i>climate zones</i> without an SHGC requirement, the SHGC shall be equal to 0.40.	As proposed
Skylights	Interior shade fraction: 0.92-(0.21 × SHGC for the standard reference design).	Interior shade fraction: 0.92-(0.21 × SHGC as proposed)
	External shading: none	As proposed
	None	As proposed
Thermally isolated sunrooms	None	As proposed

*(continued)*

TABLE N1105.4.2(1) [R405.4.2(1)]-continued  
SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Air exchange rate	<p>The air leakage rate at a pressure of 0.2 inch w.g. (50 Pa) shall be</p> <p><i>Climate Zones</i> 1 and 2: 5 air changes per hour.  <i>Climate Zones</i> 3 through 8: 3 air changes per hour.</p> <p>The mechanical ventilation rate shall be in addition to the air leakage rate and shall be the same as in the proposed design, but not greater than <math>0.01 \times CFA + 7.5 \times (N_{br} + 1)</math>  where:  <math>CFA</math> = conditioned floor area, <math>\text{ft}^2</math>.  <math>N_{br}</math> = number of bedrooms.  Energy recovery shall not be assumed for mechanical ventilation.</p>	<p>The measured air exchange rate<sup>a</sup>.</p> <p>The mechanical ventilation rate<sup>b</sup> shall be in addition to the air leakage rate and shall be as proposed.</p>
Mechanical ventilation	<p>Where mechanical ventilation is not specified in the proposed design: None</p> <p>Where mechanical ventilation is specified in the proposed design, the annual vent fan energy use, in units of kWh/yr, shall equal <math>(1/\epsilon_f) \times [0.0876 \times CFA + 65.7 \times (N_{br} + 1)]</math>  where:  <math>\epsilon_f</math> = the minimum exhaust fan efficacy, as specified in Table R403.6.1, corresponding to a flow rate of <math>0.01 \times CFA + 7.5 \times (N_{br} + 1)</math>  <math>CFA</math> = conditioned floor area, <math>\text{ft}^2</math>.  <math>N_{br}</math> = number of bedrooms.</p>	As proposed
Internal gains	<p>IGain, in units of Btu/day per dwelling unit, shall equal <math>17,900 + 23.8 \times CFA + 4,104 \times N_{br}</math>  where:  <math>CFA</math> = conditioned floor area, <math>\text{ft}^2</math>.  <math>N_{br}</math> = number of bedrooms.</p>	Same as standard reference design.
Internal mass	Internal mass for furniture and contents: 8 pounds per square foot of floor area.	Same as standard reference design, plus any additional mass specifically designed as a thermal storage element <sup>c</sup> but not integral to the building envelope or structure.
Structural mass	For masonry floor slabs: 80 percent of floor area covered by R-2 carpet and pad, and 20 percent of floor directly exposed to room air.	As proposed
	For masonry basement walls, as proposed, but with insulation as specified in <b>TABLE N1102.1.3</b> located on the interior side of the walls.	As proposed
	For other walls, ceilings, floors, and interior walls: wood frame construction.	As proposed
Heating systems <sup>d,e</sup>	<p>For other than electric heating without a heat pump: as proposed.</p> <p>Where the proposed design utilizes electric heating without a heat pump, the standard reference design shall be an air source heat pump meeting the requirements of Section C403 of the IECC—Commercial Provisions.</p> <p>Capacity: sized in accordance with Section N1103.7.</p>	As proposed
Cooling systems <sup>d,f</sup>	<p>As proposed.</p> <p>Capacity: sized in accordance with Section N1103.7.</p>	As proposed
Service water heating <sup>d,g</sup>	<p>As proposed.</p> <p>Use: same as proposed design.</p>	<p>As proposed</p> <p>Use, in units of gal/day = <math>30 + (10 \times N_{br})</math>  where:  <math>N_{br}</math> = number of bedrooms.</p>

*(continued)*

TABLE N1105.4.2(1) [R405.4.2(1)]-continued  
SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Thermal distribution systems	<p>Duct insulation: in accordance with Section N1103.3.1.</p> <p>A thermal distribution system efficiency (DSE) of 0.88 shall be applied to both the heating and cooling system efficiencies for all systems other than tested duct systems.</p> <p><b>Exception:</b> For nonducted heating and cooling systems that do not have a fan, the standard reference design thermal distribution system efficiency (DSE) shall be 1.</p> <p>For tested duct systems, the leakage rate shall be 4 cfm (113.3 L/min) per 100 ft<sup>2</sup> (9.29 m<sup>2</sup>) of <i>conditioned floor area</i> at a pressure of differential of 0.1 inch w.g. (25 Pa).</p>	<p>Duct insulation: as proposed.</p> <p>As tested or, where not tested, as specified in <b>TABLE N1105.4.2(2)</b></p>
Thermostat	<p>Type: Manual, cooling temperature setpoint = 75°F; Heating temperature setpoint = 72°F.</p>	Same as standard reference design.

For SI: 1 square foot = 0.093 m<sup>2</sup>, 1 British thermal unit = 1055 J, 1 pound per square foot = 4.88 kg/m<sup>2</sup>, 1 gallon (US) = 3.785 L, °C = (°F-32)/1.8, 1 degree = 0.79 rad.

a. Where required by the *building official*, testing shall be conducted by an *approved* party. Hourly calculations as specified in the ASHRAE *Handbook of Fundamentals*, or the equivalent, shall be used to determine the energy loads resulting from infiltration.

b. The combined air exchange rate for infiltration and mechanical ventilation shall be determined in accordance with Equation 43 of 2001 ASHRAE *Handbook of Fundamentals*, page 26.24 and the "Whole-house Ventilation" provisions of 2001 ASHRAE *Handbook of Fundamentals*, page 26.19 for intermittent mechanical ventilation.

c. Thermal storage element shall mean a component that is not part of the floors, walls or ceilings that is part of a passive solar system, and that provides thermal storage such as enclosed water columns, rock beds, or phase-change containers. A thermal storage element shall be in the same room as fenestration that faces within 15 degrees (0.26 rad) of true south, or shall be connected to such a room with pipes or ducts that allow the element to be actively charged.

d. For a proposed design with multiple heating, cooling or water heating systems using different fuel types, the applicable standard reference design system capacities and fuel types shall be weighted in accordance with their respective loads as calculated by accepted engineering practice for each equipment and fuel type present.

e. For a proposed design without a proposed heating system, a heating system having the prevailing federal minimum efficiency shall be assumed for both the standard reference design and proposed design.

f. For a proposed design home without a proposed cooling system, an electric air conditioner having the prevailing federal minimum efficiency shall be assumed for both the standard reference design and the proposed design.

g. For a proposed design with a nonstorage-type water heater, a 40-gallon storage-type water heater having the prevailing federal minimum energy factor for the same fuel as the predominant heating fuel type shall be assumed. For a proposed design without a proposed water heater, a 40-gallon storage-type water heater with the prevailing federal minimum efficiency for the same fuel as the predominant heating fuel type shall be assumed for both the proposed design and standard reference design.

h. For residences with conditioned basements, R-2 and R-4 residences, and for townhouses, the following formula shall be used to determine glazing area:

$$AF = A_s \times FA \times F$$

where:

*AF* = Total glazing area.  
*A<sub>s</sub>* = Standard reference design total glazing area.  
*FA* = (Above-grade thermal boundary gross wall area)/(above-grade boundary wall area + 0.5 × below-grade boundary wall area).  
*F* = (above-grade thermal boundary wall area)/(above-grade thermal boundary wall area + common wall area) or 0.56, whichever is greater.  
 and where:  
 Thermal boundary wall is any wall that separates conditioned space from unconditioned space or ambient conditions.  
 Above-grade thermal boundary wall is any thermal boundary wall component not in contact with soil.  
 Below-grade boundary wall is any thermal boundary wall in soil contact.  
 Common wall area is the area of walls shared with an adjoining dwelling unit. *L* and *CF<sub>A</sub>* are in the same units.

- TABLE N1106.2 (R406.2) REQUIREMENTS FOR ENERGY RATING INDEX, is adopted as follows:

TABLE N1106.2 (R406.2) REQUIREMENTS FOR ENERGY RATING INDEX	
SECTION <sup>a</sup>	TITLE
	General
N1101.13.5	Additional efficiency packages
N1101.14	Certificate
	Building Thermal Envelope
N1102.1.1	Vapor retarder
N1102.2.3	Eave baffle
N1102.2.4.1	Access hatches and doors
N1102.2.10.1	Crawl space wall insulation installation
N1102.4.1.1	Installation
N1102.4.1.2	Testing
	Mechanical
N1103.1	Controls
N1103.3 except Sections N1103.3.2, N1103.3.3 and N1103.3.6	Ducts
N1103.4	Mechanical system piping insulation
N1103.5.1	Heated water circulation and temperature maintenance systems
N1103.5.3	Drain water heat recovery units
N1103.6	Mechanical ventilation
N1103.7	Equipment sizing and efficiency rating
N1103.8	Systems serving multiple dwelling units
N1103.9	Snow melt system controls
N1103.10	Energy consumption of pools and spas
N1103.11	Portable spas
N1103.12	Residential pools and permanent residential spas
	Electrical Power and Lighting Systems
N1104.1	Lighting equipment
N1104.2	Interior lighting controls
N1106.3	Building thermal envelope

a. Reference to a code section includes all of the relative subsections except as indicated in the table.

- Section N1106.3 (R406.3) Building thermal envelope, was not adopted as part of the Pennsylvania 2021 IRC/IECC adoption and is reserved
- Section N1106.3.1 (R406.3.1) On-site renewables are not included, was not adopted as part of the Pennsylvania 2021 IRC/IECC adoption
- Section N1106.3.2 (R406.3.2) On-site renewables are included, was not adopted as part of the Pennsylvania 2021 IRC/IECC adoption
- Section N1106.4 (R406.4) Energy Rating Index, (Originally Section N1106.3 (R406.3) Energy Rating Index, [2015 and 2018 IRC/IECC]), was not modified as part of the Pennsylvania 2018 IRC/IECC adoption. The language was not modified as part of the current Pennsylvania adoption of the 2021 IRC/IECC, and will remain as follows:

**N1106.4 (R406.4) Energy rating index.** The Energy Rating Index (ERI) shall be a numerical integer value that is based on a linear scale constructed such that the ERI reference design has an Index value of 100 and a residential building that uses no net purchased energy has an Index value of 0. Each integer value on the scale shall represent a 1 percent change in the total energy use of the rated design relative to the total energy use of the ERI reference design. The ERI shall consider all energy used in the residential building.

- Section N1106.4.1 (R406.4.1) ERI referenced design, (Originally Section N1106.3.1 (R406.3.1) ERI referenced design, [2015 and 2018 IRC/IECC]), was not modified as part of the Pennsylvania 2018 IRC/IECC adoption. The language was not modified as part of the current Pennsylvania adoption of the 2021 IRC/IECC, and will remain as follows:

**N1106.4.1 (R406.4.1) ERI reference design.** *The ERI reference design shall be configured such that it meets the minimum requirements of the 2006 International Energy Conservation Code prescriptive requirements. The proposed residential building shall be shown to have an annual total normalized modified load less than or equal to the annual total loads of the ERI reference design.*

- Section N1106.7.1 (R406.7.1) Compliance software tools, (Originally Section N1106.6.1 (R406.6.1) Compliance software tools, [2015 and 2018 IRC/IECC]), was not modified as part of the Pennsylvania 2018 IRC/IECC adoption. The language was not modified as part of the current Pennsylvania adoption of the 2021 IRC/IECC, and will remain as follows:

**N1106.7.1 (R406.7.1) Compliance software tools.** *Documentation verifying that the methods and accuracy of the compliance software tools conform to the provisions of this section shall be provided to the code official.*

- Section N1106.8 (R406.8) Calculation software tools, (Originally Section N1106.7 (R406.7) Calculation software tools, [2015 and 2018 IRC/IECC]), was not modified as part of the Pennsylvania 2018 IRC/IECC adoption. The language was not modified as part of the current Pennsylvania adoption of the 2021 IRC/IECC, and will remain as follows:

**N1106.8 (R406.8) Calculation software tools.** *Calculation software, where used, shall be in accordance with Sections N1106.8.1 (R406.8.1) through N1106.8.3 (R406.8.3).*

- Section N1106.8.1 (R406.8.1) Minimum capabilities, (Originally Section N1106.7.1 (R406.7.1) Minimum capabilities, [2015 and 2018 IRC/IECC]), was not modified as part of the Pennsylvania 2018 IRC/IECC adoption. The language was not modified as part of the current Pennsylvania adoption of the 2021 IRC/IECC, and will remain as follows:

**N1106.8.1 (R406.8.1) Minimum capabilities.** *Calculation procedures used to comply with this section shall be software tools capable of calculating the ERI as described in Section N1106.3, and shall include the following capabilities:*

1. *Computer generation of the ERI reference design using only the input for the rated design.*

*The calculation procedure shall not allow the user to directly modify the building component characteristics of the ERI reference design.*

2. *Calculation of whole-building, as a single zone, sizing for the heating and cooling equipment in the ERI reference design residence in accordance with Section N1103.7 (R403.7).*

- 3. *Calculations that account for the effects of indoor and outdoor temperatures and part-load ratios on the performance of heating, ventilating and air-conditioning equipment based on climate and equipment sizing.*
- 4. *Printed code official inspection checklist listing each of the rated design component characteristics determined by the analysis to provide compliance, along with their respective performance ratings.*
- Section N1106.8.2 (R406.8.2) Specific approval, (Originally Section N1106.7.2 (R406.7.2) Specific approval, [2015 and 2018 IRC/IECC]), was not modified as part of the Pennsylvania 2018 IRC/IECC adoption. The language was not modified as part of the current Pennsylvania adoption of the 2021 IRC/IECC, and will remain as follows:
 

**N1106.8.2 (R406.8.2) Specific approval.** *Performance analysis tools meeting the applicable sections of Section N1106 (R406) shall be approved. Tools are permitted to be approved based on meeting a specified threshold for a jurisdiction. The code official shall approve tools for a specified application or limited scope.*
- Section N1106.8.3 (R406.8.3) Input values, (Originally Section N1106.7.3 (R406.7.3) Minimum capabilities, [2015 and 2018 IRC/IECC]), was not modified as part of the Pennsylvania 2018 IRC/IECC adoption. The language was not modified as part of the current Pennsylvania adoption of the 2021 IRC/IECC, and will remain as follows:
 

**N1106.8.3 (R406.8.3) Input values.** *When calculations require input values not specified by Sections N1102 (R402), N1103 (R403), N1104 (R404) and N1105 (R405), those input values shall be taken from an approved source.*
- Section N1106.7.5 (R406.7.5) Specific approval, (Originally Section N1106.6.4 (R406.6.4) Specific approval, [2015 and 2018 IRC/IECC]), was not modified as part of the Pennsylvania 2018 IRC/IECC adoption. The language was not modified as part of the current Pennsylvania adoption of the 2021 IRC/IECC, and is removed (redundant due to previous action and reorganization).
- Section N1106.7.6 (R406.7.6) Input values, (Originally Section N1106.6.5 (R406.6.5) Input values, [2015 and 2018 IRC/IECC]), was not modified as part of the Pennsylvania 2018 IRC/IECC adoption. The language was not modified as part of the current Pennsylvania adoption of the 2021 IRC/IECC, and is removed (redundant due to previous action and reorganization).
- Section N1108.1 (R408.1) Scope, is adopted as follows:
 

**N1108.1 (R408.1) Scope.** *This section establishes additional efficiency package options to achieve additional energy efficiency in accordance with Section N1101.13.5.*

- Section N1108.2 (R408.2) Additional efficiency package options, is adopted as follows:

**N1108.2 (R408.2) Additional efficiency package options.** *Additional efficiency package options for compliance with Section N1101.13.5 are set forth in Sections N1108.2.1 (R408.2.1) through N1108.2.5 (R408.2.5).*

- Chapter 13 General Mechanical System Requirements, was adopted with the following modification:
  - Section M1305.1.3.2 Excavations (Previous Pit locations), was not modified as part of the Pennsylvania 2018 IRC adoption. The national language was not modified in the 2021 code, and as such will remain as adopted in the Pennsylvania 2018 IRC adoption (2015 IRC language) and in the current Pennsylvania 2021 IRC adoption as follows:

**M1305.1.3.2 Excavations.** *Excavations for appliance installations shall extend to a depth of 6 inches (152 mm) below the appliance and 12 inches (305 mm) on all sides, except that the control side shall have a clearance of 30 inches (762 mm).*

- Chapter 14 Heating and Cooling Equipment and Appliances, was adopted with the following modification:
  - Section M1411.6.1 Refrigerant line insulation protection (Previous Refrigerant line insulation), was not modified as part of the Pennsylvania 2018 IRC adoption. The national language was not modified in the 2021 code, and as such will remain as adopted in the Pennsylvania 2018 IRC adoption (2015 IRC language) and in the current Pennsylvania 2021 IRC adoption as follows:

**M1411.6.1 Refrigerant line insulation protection.** *Refrigerant piping insulation shall be protected in accordance with Section N1103.4.1.*

- Chapter 15 Exhaust Systems, was adopted with the following modification:
  - Section M1502.3.1 Exhaust termination outlet and passageway size, was not adopted as part of the Pennsylvania 2018 IRC adoption. The national language was not modified in the 2021 code, and as such was not adopted
- Chapter 24 Fuel Gas, was adopted with the following modifications:
  - Section G2427.2.2 (503.2.4) Appliances with integral vents, was adopted as follows:

**G2427.2.2 (503.2.4) Appliances with integral vents.** *Appliances incorporating integral venting means shall be installed in accordance with Section G2427.8, Items 1 and 2.*

- Section G2427.5.1 (503.5.1) Factory-built chimneys, is adopted as follows:

**G2427.5.1 (503.5.1) Factory-built chimneys.** Factory-built chimneys shall be listed in accordance with UL 103 and installed in accordance with manufacturer's instructions. Factory-built chimneys used to vent appliances that operate at a positive vent pressure shall be listed for such application.

- Section G2427.5.4 (503.5.5) Size of chimneys, is adopted as follows:

**G2427.5.4 (503.5.5) Size of chimneys.** The effective area of a chimney venting system serving listed appliances with draft hoods, Category I appliances, and other appliances listed for use with Type B vents shall be determined in accordance with one of the following methods:

1. *The provisions of Section G2428.*
2. *The effective areas of the vent connector and chimney flue of a venting system serving a single appliance with a draft hood shall be not less than the area of the appliance flue collar or draft hood outlet, nor greater than seven times the draft hood outlet area.*
3. *The effective area of a chimney flue or a venting system serving two appliances with draft hoods, shall be not less than the area of the larger draft hood outlet plus 50 percent of the area of the smaller draft hood outlet. Nor greater than seven times the smallest draft hood outlet.*
4. *Chimney venting systems using mechanical draft shall be sized in accordance with approved engineering methods.*
5. *Other approved engineering methods.*

- Section G2427.5.10 (503.5.11) Insulation shield, is adopted as follows:

**G2427.5.10 (503.5.11) Insulation shield.** Where a factory-built chimney passes through insulated assemblies, an insulation shield constructed of steel having a thickness of not less than 0.0187 inch (0.475 mm) (nominal 26 gage) shall be installed to provide clearance between the chimney and the insulation material. The clearance shall be not less than the clearance to combustibles specified by the chimney manufacturer's installation instructions. Where chimneys pass through attic space, the shield shall terminate not less than 2 inches (51 mm) above the installation materials and shall be secured in place to prevent displacement. Insulation shields provided as part of a listed chimney system shall be installed in accordance with the manufacturer's installation instructions.

- Chapter 29 Water Supply and Distribution, was adopted with the following modifications:
  - Section P2903.5 Water hammer, was not modified as part of the Pennsylvania 2018 IRC adoption. The national language was not modified in the 2021 code, and as such will remain as adopted in the Pennsylvania 2018 IRC adoption (2015 IRC language) and in the current Pennsylvania 2021 IRC adoption as follows:

**P2903.5 Water hammer.** The flow velocity of the water distribution system shall be controlled to reduce the possibility of water hammer. Water-hammer arrestors shall be installed in accordance with the manufacturer's instructions. Water-hammer arrestors shall conform to ASSE 1010.

- Section P2905.3 Hot water supply to fixtures, was not adopted as part of the current Pennsylvania 2021 IRC adoption
- Section P2906.6.1 Saddle tap fittings, was not adopted as part of the Pennsylvania 2018 IRC adoption. The national language was not modified in the 2021 code, and as such will remain not adopted in the current Pennsylvania 2021 IRC adoption
- Chapter 36 Services, was adopted with the following modification:
  - Section E3601.8 Emergency disconnects, is adopted as follows

**E3601.8 Emergency disconnects.** For one- and two-family detached dwelling units, all service conductors shall terminate in disconnecting means having a short-circuit current rating equal to or greater than the available fault current, installed in a readily accessible outdoor location. If more than one disconnect is provided, they shall be grouped. Each disconnect shall be one of the following:

1. Service disconnects marked as follows: EMERGENCY DISCONNECT, SERVICE DISCONNECT.
2. Meter disconnect switches that have a short-circuit current rating equal to or greater than the available fault current and all metal housings and service enclosures are grounded in accordance with Section E3908.7 and bonded in accordance with Section 3609. A meter disconnect switch shall be capable of interrupting the load served and shall be marked as follows: EMERGENCY DISCONNECT, METER DISCONNECT, NOT SERVICE EQUIPMENT.
3. Other listed disconnect switches or circuit breakers on the supply side of each service disconnect that are suitable for use as service equipment and marked as follows: EMERGENCY DISCONNECT, NOT SERVICE EQUIPMENT.

Markings shall comply with Section E3404.12. [230.82 (3), 230.85]

- Chapter 39 Power and Lighting Distribution, was adopted with the following modifications:
  - Section E3901.4.2 Island countertop spaces, was not modified as part of the Pennsylvania 2021 IRC adoption, and as such will remain in the 2018 IRC as follows:

**E3901.4.2 Island countertop spaces.** At least one receptacle outlet shall be installed at each island countertop space with a long dimension of 24 inches (610 mm) or greater and a short dimension of 12 inches (305 mm) or greater. [210.52(C)(2)]

- Section E3901.11 Foyers, was modified as part of the Pennsylvania 2015 IRC adoption. The national language was not modified in the 2018 code nor the 2021 code, and as such will remain as adopted in the Pennsylvania 2015 IRC adoption and in the current Pennsylvania 2021 IRC adoption as follows:

***E3901.11 Foyers.*** *Foyers that are not part of a hallway in accordance with Section E3901.10 and that have an area that is greater than 60 ft<sup>2</sup> (5.57 m<sup>2</sup>) shall have a receptacle(s) located in each wall space that is 3 feet (914 mm) 6 feet (1829 mm) or more in width, but a minimum of one receptacle. Doorways, door-side windows that extend to the floor, and similar openings shall not be considered as wall space. [210.52(H)]*

- Section 3905.8 Boxes at fan outlets, is adopted as follows:

***E3905.8 Boxes at fan outlets.*** *Outlet boxes and outlet box systems used as the sole support of ceiling-suspended fans (paddle) shall be marked by their manufacturer as suitable for this purpose and shall not support ceiling-suspended fans (paddle) that weigh more than 70 pounds (31.8 kg). For outlet boxes and outlet box systems designed to support ceiling-suspended fans (paddle) that weigh more than 35 pounds (15.9 kg), the required marking shall include the maximum weight to be supported.*

*Outlet boxes mounted in the ceilings of habitable rooms ~~in a location acceptable~~ for the installation of a ceiling-suspended (paddle) fan shall comply with one of the following:*

1. *Listed for sole support of ceiling-suspended (paddle) fans.*
2. *An outlet box complying with the applicable requirements of Section E3905.6 and providing access to structural framing capable of supporting of a ceiling-suspended (paddle) fan bracket or equipment. [314.27(C)]*

- Chapter 40 Receptacles, was adopted with the following modifications:
  - Section E4002.11 Bathtub and shower space, was not modified as part of the Pennsylvania 2021 IRC adoption, and as such will remain in the 2018 IRC as follows:

***E4002.11 Bathtub and shower space.*** *A receptacle shall not be installed within or directly over a bathtub or shower stall. [406.9(C)]*

- Section 4004.5 Means of support, is adopted as follows:

***E4004.5 Means of support.*** *Luminaires shall be permitted to be supported by outlet boxes or fittings installed as required by Sections E3905, and E3906. Outlet boxes complying with Section ~~E3906.12~~ E3905.6.3 shall be considered lighting outlets as required by Section E3903. [410.36(A)]*

If you or the Department would like clarification or interpretation of the information provided, please contact me.

Thank you for all of the Department's support during this process.

Respectfully submitted,  
UCC Review and Advisory Council

A handwritten signature in blue ink that reads "Walter G. M. Schneider III". The signature is fluid and cursive, with "Walter" and "G. M." on the first line, and "Schneider III" on the second line.

Walter G. M. Schneider III, Ph.D., P.E., CBO, MCP, CFO, MIFireE, F.ASCE, FM, CPT  
Committee Chair

File