

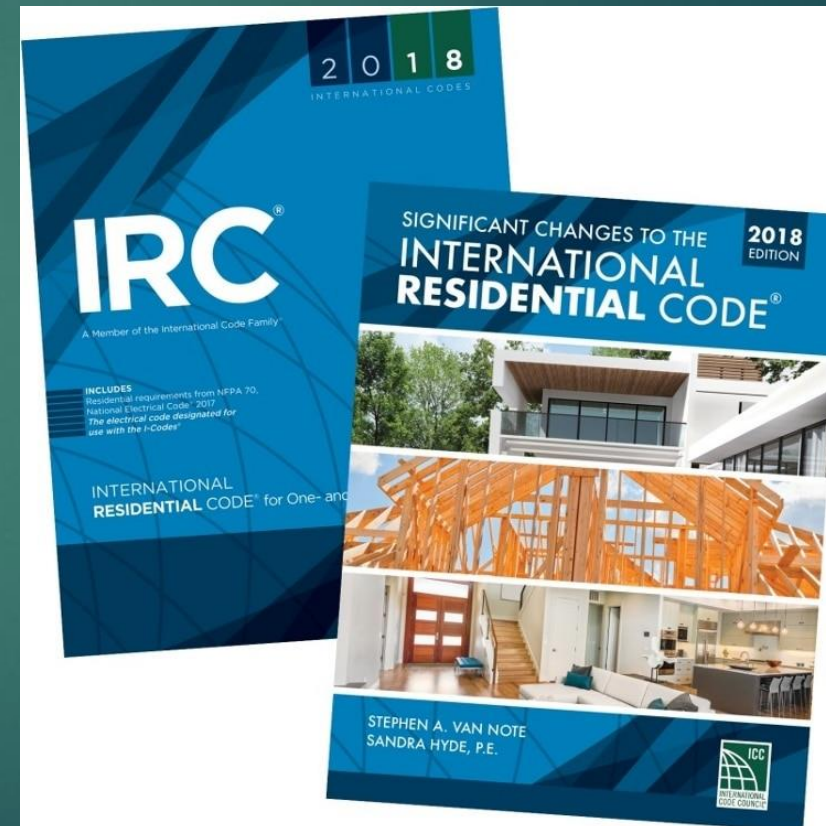
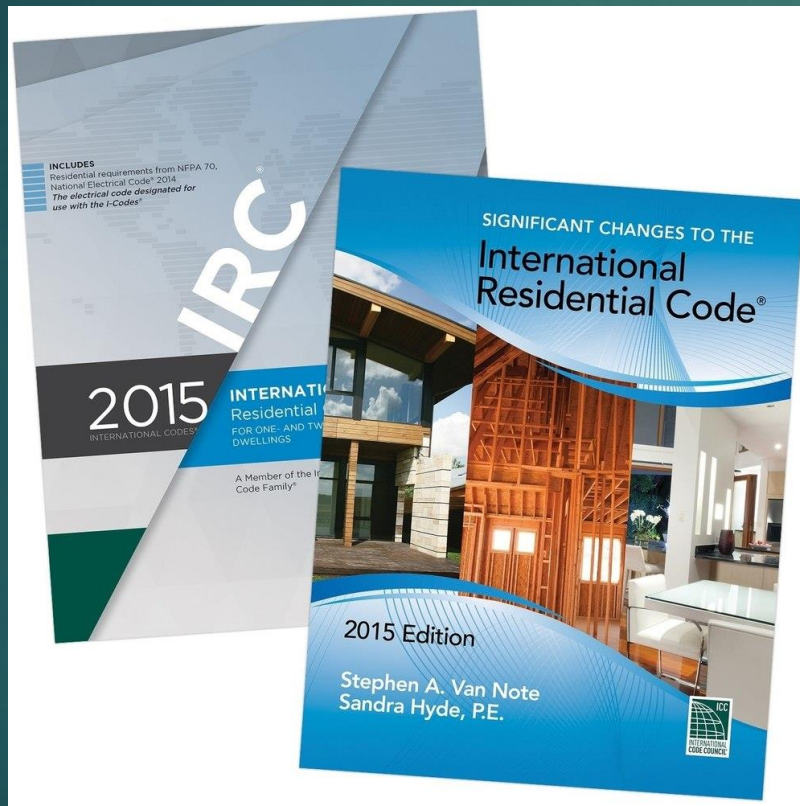
Notable Changes to the 2018 International Residential Code



A Presentation for Local Arizona Builders

Publications are available to assist builders in understanding the changes to the International Residential Code.

Note: The following slides do not represent a comprehensive list of all changes. Please consider purchasing the Significant Changes books for both the 2015 and 2018 Editions of the IRC at ICCSafe.org



Local amendments to the International Residential Code (IRC)

- The IRC is administered out of Chapter 1 of the IBC as well as all Codes (by local amendment)
- Wind changed to 115 mph/3 second gust. Basically the same 89 mph Vasd - Ultimate wind speed (2015)
- Design temperatures reference IECC (2015/2018)
- Appendix G for swimming pools is no longer available, the City and County will both be adopting 2018 ISPSC for residential pools only
- Adoption of: Appendix H - Patio Covers, Appendix Q - Tiny Houses, Appendix R - Light Straw-Clay Construction, and Appendix S - Strawbale
- City adopting Appendix T - Solar Ready Provisions. Pima County will continue to consider adoption but not currently included.

R101.2, R202 **Scope — Accessory Structures** **(2015)**

CHANGE:

- Maximum height for accessory structures has been increased from two to three stories above grade plane.
- Accessory structures are now permitted to be unlimited in area.

R301.3 Story Height **(2015)**

Change:


Revised the story height limits.

- Max story height 11'-7"
 - Wood and steel wall framing
 - Insulated concrete panels
 - Structurally Insulated Panel walls
- Masonry wall height is limited to 13'-7" above grade plane

R304.1 – Minimum Habitable Room area (2015)

Change:

Habitable rooms floor area reduced from 120 sqft to 70 sqft



R302.2 - Townhouse Separation (2015/2018)

Change:

Separation shall be:

A double wall (2 one hour-rated walls) or a two hour common wall

Exception:

One hour common wall is acceptable with automatic sprinklers

Plumbing/Mechanical equipment, ducts, vents, etc. not allowed in common wall

Note: Code change consistent with current interpretation.

R304.1 – Minimum Habitable Room area (2015)

Change:

Habitable rooms floor area reduced from 120 sqft to 70 sqft

R308.4.2 Glazing Adjacent to Doors (2018)

Change:

Safety glazing required:

- Glass is within 24" of either side of the door in the plane of the door in a closed position
- Glass is less than 180 degrees from the plane of the door in closed position within 24" of hinge side of a in-swing door

R314 Smoke Alarms (2015/2018)

Change:

- Battery-operated smoke alarms are permitted for alterations, repairs, and additions
- IRC smoke detection systems do not require monitoring by an approved supervising station
- Exceptions:
 - Work involving the exterior surfaces of dwellings (such as the replacement of roofing or siding, addition or replacement of windows or doors, or the addition of a porch or deck) does not invoke the need to install alarms
 - Installation, alteration, or repairs of plumbing or mechanical systems

R315 Carbon Monoxide Alarms (2015/2018)

Change:

- Carbon monoxide alarms now require connection to the house wiring system with battery backup.
- An attached garage is one criterion for requiring carbon monoxide alarms, but only if the garage has an opening into the dwelling
- A carbon monoxide alarm is required in bedrooms when there is a fuel-fired appliance in the bedroom or adjoining bathroom.

Exception:

- Exterior work such as roofing, siding, windows, doors, and deck and porch additions no longer trigger the carbon monoxide alarm provisions for existing buildings

Carbon monoxide alarms must be interconnected when:

- The alarms are required in multiple locations
 - Bedrooms on more than one level
 - Bedroom are separated on opposite ends of the dwelling
 - Fuel-fired appliance in a bedroom
- Carbon monoxide alarm is required in each of the separate locations
- Interconnection provides notification at each location of a device
 - When one alarm activates, all carbon monoxide alarms are activated to provide early notification
- Interconnection may be achieved through wiring or through wireless technology.
- Interconnection between carbon monoxide detectors and smoke detectors is not required unless combination devices are used.

R324.6 Roof Access for Photovoltaic Solar Energy Systems (2018)

Change:

Roof access, pathways, and setback requirements shall be provided. Access and minimum spacing shall be required to provide emergency access to the roof. These requirements were previously located in the International Fire Code.

R324.6.2.2 Solar Panels Near Emergency Escape and Rescue Openings (2018)

Change:

Rooftop-mounted photovoltaic panels and modules are not permitted to be installed directly above emergency escape and rescue openings.

R403.1.6 Foundation Anchor Bolt Placement (2015)

Change:

- Bolts shall be located in the middle third of the width of the plate
- Industry standard suggests they're located at least two bolt diameters from the edge but the code was previously silent on this topic.

R602.7.5 Supports for headers (2018)

Change:

The minimum number of full-height studs at each end of a header shall be in accordance with Table R602.7.5.

Change Significance: Headers equal to or exceeding 10 feet in length must be supported by at least two (2) king studs at each end to accommodate lateral reinforcement to stiffen walls for out-of-plane wind loads.

R602.10.6.2 Hold-downs for Portal Framed Braced Wall Panels

Change:

The required hold-downs on the panel side of a portal framed braced wall panel have been reduced from 4200 lb. rating to 3500 lb.

R806.5 Unvented Attics

Change:

The code has added language for applying fiberglass batts, blown cellulose and blown fiberglass in addition to spray-applied foam in an unvented attic where the insulation is applied tight to the roof sheathing. However, a vapor diffusion port or vent is required to act as a moisture control measure.

R1005.8 Chimney Insulation Shield

Change:

Where factory-built chimneys pass through insulated assemblies, an insulation shield shall be installed to provide clearance from insulation material.

N1101.6 Definition of building Thermal envelope

Change:

- Revised definition for building thermal envelope
- Clarifies that it is an assembly of materials enclosing conditioned space or creating a boundary between conditioned and unconditioned space.

Equivalent U-Factors - Table N1102.1.4

Code Edition	Section	Fenestration	Skylight	Ceiling	Frame Wall	Mass Wall	Floor	Basement Wall	Crawl Space
2018	R402.1.4	0.400	0.650	0.030	0.084	0.165	0.064	0.360	0.477
2015	R402.1.4	0.400	0.650	0.030	0.084	0.165	0.064	0.360	0.477
2012	R402.1.3	0.400	0.650	0.030	0.082	0.165	0.064	0.360	0.477
2009	402.1.3	0.650	0.750	0.035	0.082	0.165	0.064	0.360	0.477
2006	402.1.3	0.750	0.750	0.035	0.082	0.165	0.064	0.360	0.477

N1104.1 Lighting

Change:

The required percentage of permanent lighting fixtures having high-efficacy lamps increased from 75% to 90%

N1102.4 Testing for air leakage

Change:

- A new standard for air-leakage testing, RESNET/ICC 380, is now referenced in the IRC to provide flexibility for the testing industry
- In addition to ASTM E 779 or ASTM E 1827
- Expands the test methodology and provides a step-by-step approach to testing for building envelope leakage
- Establishes test procedures for determining air tightness of buildings

Change:
The alternate Energy Rating Index (ERI) path for energy compliance has been adjusted with new ratings.

Table N1106.4 Maximum Energy Rating Index

TABLE N1106.4 (R406.4) Maximum Energy Rating Index

Climate Zone	Energy Rating Index ^a
1	52 <u>57</u>
2	52 <u>57</u>
3	51 <u>57</u>
4	54 <u>62</u>
5	55 <u>61</u>
6	54 <u>61</u>
7	53 <u>58</u>
8	53 <u>58</u>

a. Where on-site renewable energy is included for compliance using the ERI analysis of Section N1106.4, the building shall meet the mandatory requirements of Section N1106.2, and the building thermal envelope shall be greater than or equal to the levels of efficiency and SHGC in Table N1102.1.2 or Table N1102.1.4.

M1305.1.1 Access to furnaces within compartments

The minimum working clearance for furnaces and air handlers is now governed solely by the manufacturer's specifications.

M1502.3.1 Dryer exhaust duct termination

Wall and roof terminations for dryer exhaust must be undiminished in size and provide 12.5 square inches of area

M1502.4.2 Concealed dryer exhaust ducts

Change:

Wall and ceiling cavities enclosing dryer exhaust ducts must provide sufficient space. The required 4-inch duct may not be squeezed out of its round shape

M1503.6 Makeup air for kitchen exhaust systems

Change:

Makeup air for domestic cooking exhaust systems is no longer required if all fuel-burning appliances in the dwelling unit have a direct vent or mechanical draft vent system.

M1901 Ranges and ovens

Change:

The provisions for reduced clearances above cooking surfaces have been clarified. The listing requirement for microwave ovens has been added to Section M1901.

Cooking appliances shall:

- Be listed and labeled for household use
- Be installed in accordance with the manufacturer's instructions
- Not interfere with combustion air or access for operation and servicing

G2404.11 Condensate Pumps

Change:

Condensate pumps shall be connected to the appliance or equipment served to prevent operation should the pump fail

G2406.2 Prohibited Locations for Appliances

Change:

Gas-fired clothes dryer is allowed to be installed in a bathroom or toilet room where a permanent opening communicates with other permitted spaces

G2413.2 Maximum Gas Demand

Change:

- Table G2413.2 has been removed which provided typical gas demands for common appliances
- This was only intended to assist the design and not for final calculations
- Due to the wide range of appliances on the market, the applicant must provide the maximum demand of proposed appliances.

TABLE G2413.2 (402.2) — Approximate Gas Input for Typical Appliances

Appliance	Input Btu/h (Approx.)
Space Heating Units	
Hydronic boiler:	
Single-family	100,000
Multifamily, per unit	60,000
Warm-air furnace:	
Single-family	100,000
Multifamily, per unit	60,000

(Portions of deleted table not shown for brevity and clarity.)



G2414.4.2, G2414.10.1

Schedule 10 Steel Gas Piping

Change:

Schedule 10 steel pipe allowed for fuel-gas piping,
Press connect fitting eliminate the need for threaded
connections

G2420.6

Support for Shutoff Valves in Tubing Systems

Change:

Shutoff valves in gas tubing systems require rigid support
separate from the tubing to prevent damage at the valve
connection

P2503.5 Drain, Waste, and Vent System Testing

Change:

- The 2015 IRC reduced the water head test height from 10 feet to 5 feet.
- Lowering the fill stack to 5 feet enables both the installer and the inspector visually observe the water level inside the pipe during the test.

P2603.2.1 Protection Against Physical Damage

Change:

Plumbing piping installed through holes in framing members must be placed at least 1.25 inches from the edge of the stud instead of the previously required 1.5 inches without requiring steel shield plates.

P2503.7 Air Testing of PEX Piping

Change:

- Compressed-air testing of PEX water-supply piping is now allowed when testing is in accordance with the manufacturer's instructions
- Testing is accomplished with:
 - Water at a pressure at least equal to the working pressure
 - An air test of not less than 50 psi
- The code now provides an exception to allow compressed-air or compressed-gas testing of PEX (cross-linked polyethylene) piping when in accordance with the manufacturer's instructions.

P2713.1 Bathtub overflow

Change:

Overflow outlets are no longer required for bathtubs

P2801.6 Plastic Pan for gas-fired Water heaters

Change:

- Plastic safety pans allowed under gas water heaters
- Material must meet prescribed flame spread and smoke-developed indices

P2903.5 Water hammer arrestors

Change:

Water hammer arrestor is now required where quick-closing valves are used in the water distribution system

P2906.6.1 Saddle Tap fittings on Water distribution Piping

Change:

- Saddle tap fittings are not permitted on water distribution system piping
- Combination saddle tap and valve fittings are not permitted on water distribution system

P2906.18.2 Joints between PVC and CPVC Piping

Change:

Single solvent-cemented transition joint now an acceptable method for connecting CPVC water distribution system to a PVC water service pipe

P3003.2 Prohibited Joints for Sanitary drainage

Change:

Solvent cement joint permitted for joining ABS and PVC piping at the building drain to the building sewer connection.

P3003.9 Solvent Cementing of PVC Joints

Change:

Purple primer is no longer required for joints of non-pressure PVC DWV piping 4 inches or less in diameter

P3005.1.6 Reduction in Pipe Size

Change:

Water closet flanges, offset bend fittings and off-set flanges are specifically listed as exceptions to the provision that drainage piping must not be reduced in size in the direction of flow.

P3103.1 Vent Pipe Terminations

Change:

2-inch vent extension through a sloped roof allowed when the vent is covered.

E3703.5 Garage Branch Circuits

Change:

A separate 20-ampere branch circuit is required to serve receptacle outlets in garages with electric power

E3901.9 Garage receptacle outlet location

Change:

At least one receptacle is required in each vehicle bay no more than 5.5 ft above the floor

E3901.2 Wall Space for receptacle distribution

Change:

- Cabinets with countertops now considered wall space
- General purpose receptacle spacing requirements apply

E3902.8, E3902.9, E302.10 Ground-Fault Circuit Interrupter Protection

Change:

- Three new items appeared in the 2015 IRC in the list of locations requiring GFCI protection. These locations are:
 - Less than 6 feet from bathing fixtures
 - Laundry areas
 - Dishwashers

E4101.3 Cord-and-plug-connected appliances

TABLE E4101.3 Flexible Cord Length

Appliance	Minimum Cord Length (inches)	Maximum Cord Length (inches)
Electrically operated in-sink waste disposal	18	36
Built-in dishwasher	36	48 78
Trash compactor	36	48
Range hoods	18	36 48

Change:

- Maximum cord lengths for range hoods and built-in dishwashers increased
- Receptacle outlet for the dishwasher required to be in the space adjacent to the appliance

Appendix Q

Tiny Houses

CHANGE TYPE: Addition

CHANGE SUMMARY: A new Appendix Q covers provisions for tiny houses, defined as dwellings with a maximum floor area of 400 square feet.

TABLE A-1

Element	General requirement
Egress roof access window	A skylight or roof window for emergency escape from a loft
Loft	Open on one side with a ceiling height of less than 6 feet 8 inches
Tiny house	Maximum area 400 square feet excluding lofts
Ceiling heights	Generally 6 feet 8 inches or less
Minimum loft area	35 square feet with 5-foot minimum dimension
Stairway	Width: 17 to 25 inches Headroom: 6 feet 2 inches Risers: 7 to 12 inches Treads: Calculated based on riser height
Ladders	Width: 12 inches Rung spacing: 10 to 14 inches Incline 70 to 80 degrees
Loft guard height	One-half of the clear height to ceiling Not required to be over 36 inches

Appendix T

Solar-Ready Zone

The City of Tucson's Solar Ready Ordinance shall be regulated by Appendix T of the IRC. Amendments to Appendix T have been established to ensure no additional cost will be incurred by builders in comparison to the existing regulations already in effect. Pima County will not be adopting Appendix T at this time.