

# Unpacking the 2018 IECC: Inside the Next Energy Code

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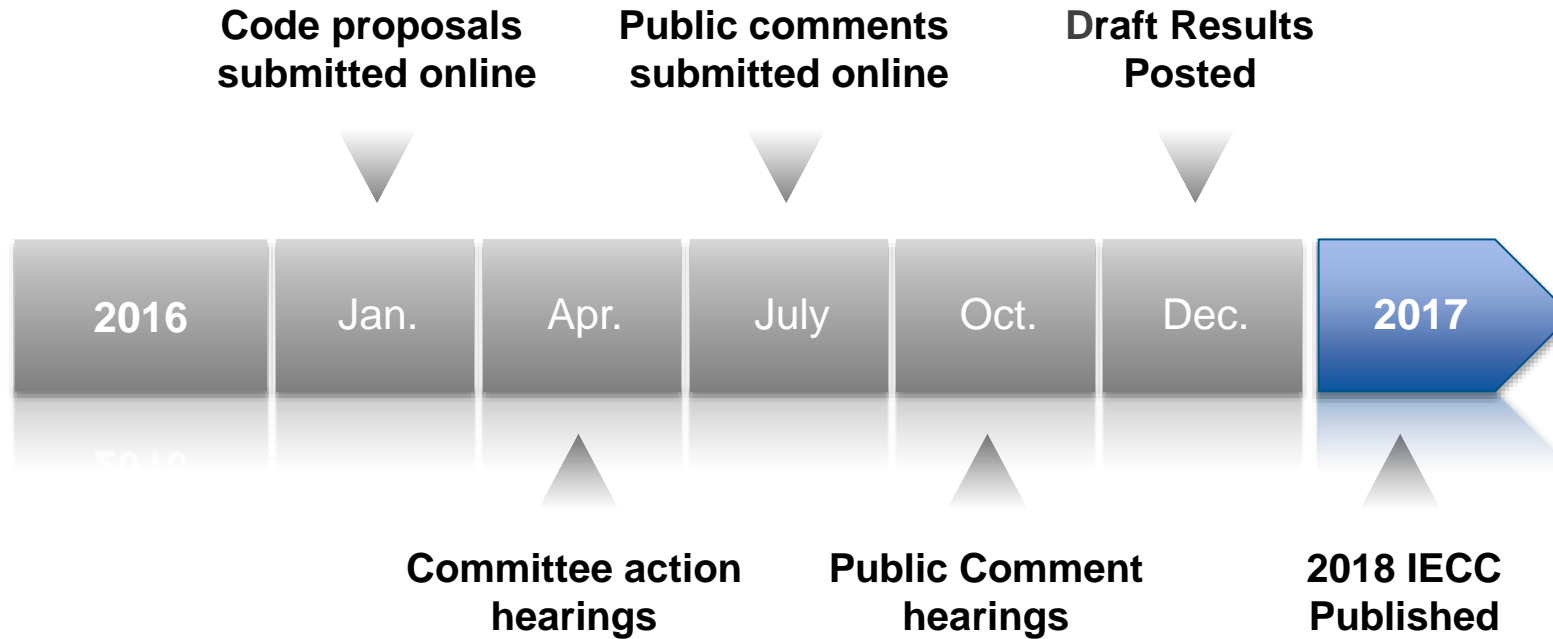
Charlie Haack  
Manager, Energy Efficiency  
Analytics & Policy

# Agenda

- ICC Code Development Process - Background
- 2018 IECC Commercial
  - What was held off
  - What passed
- 2018 IECC Residential
  - What was held off
  - What passed
- Overall Summary & Takeaways



# Background - Code Process



# 2018 IECC Commercial



# Commercial Proposals that would have Reduced Energy Efficiency, but were Held-off

- **CE18 – On-site renewable energy**
  - Establishes new provision in the performance compliance path that states that on-site renewable energy "shall be considered as a reduction in the energy use of the building."
- **CE42 – Performance path rollback**
  - 10% rollback in efficiency in the performance path performance target.
- **CE46 – Performance path rollback**
  - 15% rollback in efficiency in the performance path performance target.

# Commercial Proposals that Improve or Protect Energy Efficiency that were Passed

- **CE171** – Update to current federal water heater efficiencies
- **CE175** – Improved showerhead flow rate
  - Updated showerhead flowrate requirements in commercial buildings to levels required in the U.S. EPA's WaterSense program since 2010 (2 gallons per minute)
- **CE183** – Daylighting controls
- **CE185** – Expanded occupant sensor requirements to include open office spaces
- **CE251** – Clarification of on-site and purchased renewable energy
  - Limits the reduction in energy cost from on-site renewable energy to 5% of total energy cost; also clarifies that renewable energy purchased from off-site sources shall be the same in the standard reference design and proposed design; requires documentation of any reduction in energy use associated with on-site renewable energy.
- **CE43, CE54, CE91, CE92, and CE93** improved efficiency, but did not pass.



# Commercial Summary

- **Theme – held the line on efficiency!**
- **No notable change in efficiency over the 2015 IECC, only minor changes**
  - Improved showerhead flow rates to WaterSense levels
  - Provided more detailed lighting control requirements



# 2018 IECC Residential



Presentation Title

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## Residential Proposals that would have Reduced Energy Efficiency, but were Held-off

- **RE28 – Prescriptive envelope trade-off option**
  - Lowers vertical fenestration U-factors in CZ 3-4 from 0.35 to 0.32 and in CZ 5 from 0.32 to 0.30; in CZ 6-8, U-factor is lowered from 0.32 to 0.30, or in the alternative, U-0.26 if wood-framed walls are insulated to R-25 cavity-only.
- **RE58 – Increased infiltration rate**
  - Increases mandatory maximum air leakage rate to 6 ACH50 in CZ 1-2 and 5 ACH50 in CZ 3-8; sets prescriptive maximum air leakage rate at 5 ACH50 in CZ 1-2 and 3 ACH50 in CZ 3-8, allowing trade-offs.
- **RE108 – Less stringent duct leakage testing**
  - Allows an option for testing post-construction duct leakage to outdoors
- **RE130 – Decrease in efficiency in performance path**
  - Includes lighting in the scope of performance path; sets standard reference design assumption based on Section R404.1 requirements.

## Residential Proposals that would have Reduced Energy Efficiency, but were Held-off

- **RE134 – Minimum insulation level rollback under Energy Rating Index**
  - Establishes performance path trade-offs for heating, cooling, and water heating equipment; adds a thermal envelope backstop to the performance path that requires total UA to be  $\leq$  the prescriptive UA X 1.15.
- **RE146 – Window efficiency rollback**
  - Sets standard reference design glazing area assumption at a fixed 15%; also deletes footnote h, which established glazing area assumption for residences with conditioned basements.
- **RE156 – Minimum insulation level rollback under Energy Rating Index**
  - Modifies thermal envelope backstop of Energy Rating Index to be  $\leq$  the Total UA of current code x 1.15; deletes SHGC requirement. Committee modification reduces the stringency of the SHGC backstop from 0.30 to .40 in climate zones 1-3.

# Residential Proposals that Reduce Energy Efficiency that were Passed

- **RE17 – Log Homes can use Standard ICC-400**
  - Adds an exception to the residential thermal envelope requirements for log homes complying with ICC-400.



# Residential Proposals that Improve or Protect Energy Efficiency that were Passed

- **RE31 – Improved window efficiency**
  - Lowers vertical fenestration U-factors in CZ 3 & 4 from 0.35 to 0.32 and CZ 5-8 from 0.32 to 0.30
- **RE173 – Energy Rating Index target less stringent, but clarified role of on-site renewable energy**
  - Increases maximum ERI scores from (51-55) to (57-62) and clarifies that where on-site renewable energy is included for compliance, the building shall meet the mandatory requirements of R406.2 and the thermal envelope shall meet or exceed the requirements of the 2015 IECC.
- **RE18, RE103, RE134, RE146, RE156 improved efficiency, but did not pass.**

# Residential Summary

- **Similar theme – held the line on efficiency!**
- **Minor improvement over the 2015 IECC**
  - Windows: 0.6-1.1% improvement in the prescriptive path.
- **Energy Rating Index path**
  - Negotiations between parties led to an easing of the Energy Rating Index Targets combined with improving thermal envelope requirements when using on-site renewables.
  - Unclear energy impact as it is unknown how many homes are following this path for code compliance and how many would incorporate on-site renewable energy into the ERI calculation.



# Thank you

Charlie Haack

Manager, Energy Efficiency Analytics & Policy

Charlie.Haack@icf.com



Reserve Slides:



## Other Proposals that would have Reduced Energy Efficiency, but were Held-off

- **ADM42 – Code intent change to include “net energy use”**
  - Revises intent of residential energy code as follows: “to regulate the design and construction of buildings for the effective net energy use and conservation of energy over the life of the building.”
- **ADM45 – Code does not cover useful life of building**
  - Revises intent of residential energy code as follows: “to regulate the design and construction of buildings for the effective use and conservation of energy ~~over the useful life of the building.~~”
- **AMD46 – Mandatory requirements, not required.**
  - Eliminates requirement that above-code programs meet "mandatory" requirements of the code.



# Commercial Proposals that Improve Energy Efficiency that did not pass

## ■ CE43 - D

- (EECC) - Increases efficiency of performance path by requiring proposed design to demonstrate building energy cost  $\leq$  80% of the standard reference design, instead of current 85%; requires all other compliance paths to select 2 additional efficiency options under Section C406, instead of 1.

## ■ CE54 - D

- (EECC) - Revises prescriptive opaque envelope tables to incorporate ASHRAE 90.1 values where they are more efficient than the IECC values.

## ■ CE91 - D

- (EECC) - Creates a new fenestration U-factor/SHGC table for fenestration in commercial buildings three stories or less; U-factors and SHGC requirements for buildings three stories or less are consistent with current commercial fenestration table except fixed and operable fenestration must meet same U-factor requirements as residential prescriptive table; clarifies which fenestration table applies under performance path standard reference design.

# Commercial Proposals that Improve Energy Efficiency that did not pass

- **CE92 - D**

- (EECC) - Lowers fenestration SHGC requirements in CZ 4/5/6 from 0.40/0.40/0.40 to 0.25/0.25/0.25, with adjustments for PF and orientation

- **CE93 - D**

- (EECC) - Eliminates PF-specific SHGC specifications from prescriptive table and sets baseline SHGC requirement consistent with 2012 IECC levels: 0.25 for CZ 1-3; 0.40 for CZ 4-6; and 0.45 for CZ 7-8; establishes fenestration SHGC multiplier consistent with ASHRAE 90.1 methodology.



# Residential Proposals that Improve Energy Efficiency that Passed

- **RE18 – D**

- (EECC) - Improves floor insulation requirement in CZ 2 from R-13 to R-19; and in CZ 4 from R-19 to R-30.

- **RE103 – D**

- (EECC) - Classifies duct tightness test as mandatory; sets mandatory level at 8cfm/100 sq. ft. and prescriptive level at 4cfm/100 sq. ft., permitting trade-offs.

- **RE135 – D**

- (EECC) - Establishes mandatory minimum thermal envelope requirements for performance path equivalent to the backstop applicable to the ERI compliance path; clarifies that this requirement must be met in order for software to show compliance.

- **RE179 – D**

- (EECC) – Improves energy efficiency of all compliance paths by 5%; includes new points-based table of energy-efficient options from which a code user may select one or more improvements to meet the required improvement in energy efficiency.