2018 IECC
Proposals & Themes

Jeremy Williams, U.S. Department of Energy
Eric Makela, Cadmus
Jim Edelson, New Buildings Institute

Learning Objectives:

1. Describe the ICC code development process and how to participate
2. Outline primary themes that have been proposed for the upcoming cycle
3. Identify key proposals for the 2018 IECC
4. Discuss themes & proposals which could significantly impact the energy code

Session Overview:

- Introduction:
  - ICC code development process
  - Overview of DOE Proposals
- *Residential* Proposals & Themes
- *Commercial* Proposals & Themes
- Common Themes
- Q + A

ICC Code Development Process

International Energy Conservation Code (IECC):

- Administered by the International Code Council (ICC)
- Recognized in federal statute as the national model energy code for residential buildings
- Adopted by the majority of U.S. states (Res & Com)
- Updated every three years through an established public hearing and consensus process
- *Anyone can participate!*

More information on the ICC Development Process:

http://www.iccsafe.org/codes-tech-support/codes/code-development-process/code-development-2/

2018 IECC

Current Code Development Cycle:

- Proposals were due to the ICC on January 11th, 2016
  - Published on March 8th
- All proposals initially heard and voted on by a committee appointed by the ICC
- Final proposals are voted on by the ICC Governmental Membership (predominately Building Officials)
- Upcoming Public Hearings:
  - *Committee Action Hearings*: April 17-27 in Louisville
  - *Public Comment Hearings*: October 19-25 in Kansas City

Current Code Development Cycle:

http://www.iccsafe.org/codes-tech-support/codes/code-development/current-code-development-cycle/

Major Themes

Residential:

- Envelope—fenestration and wall insulation
- High-efficacy Lighting
- Blower door & duct testing standards
- Ventilation
- Performance—ERI & traditional path
- Packages & Add-on measures
- Renewables

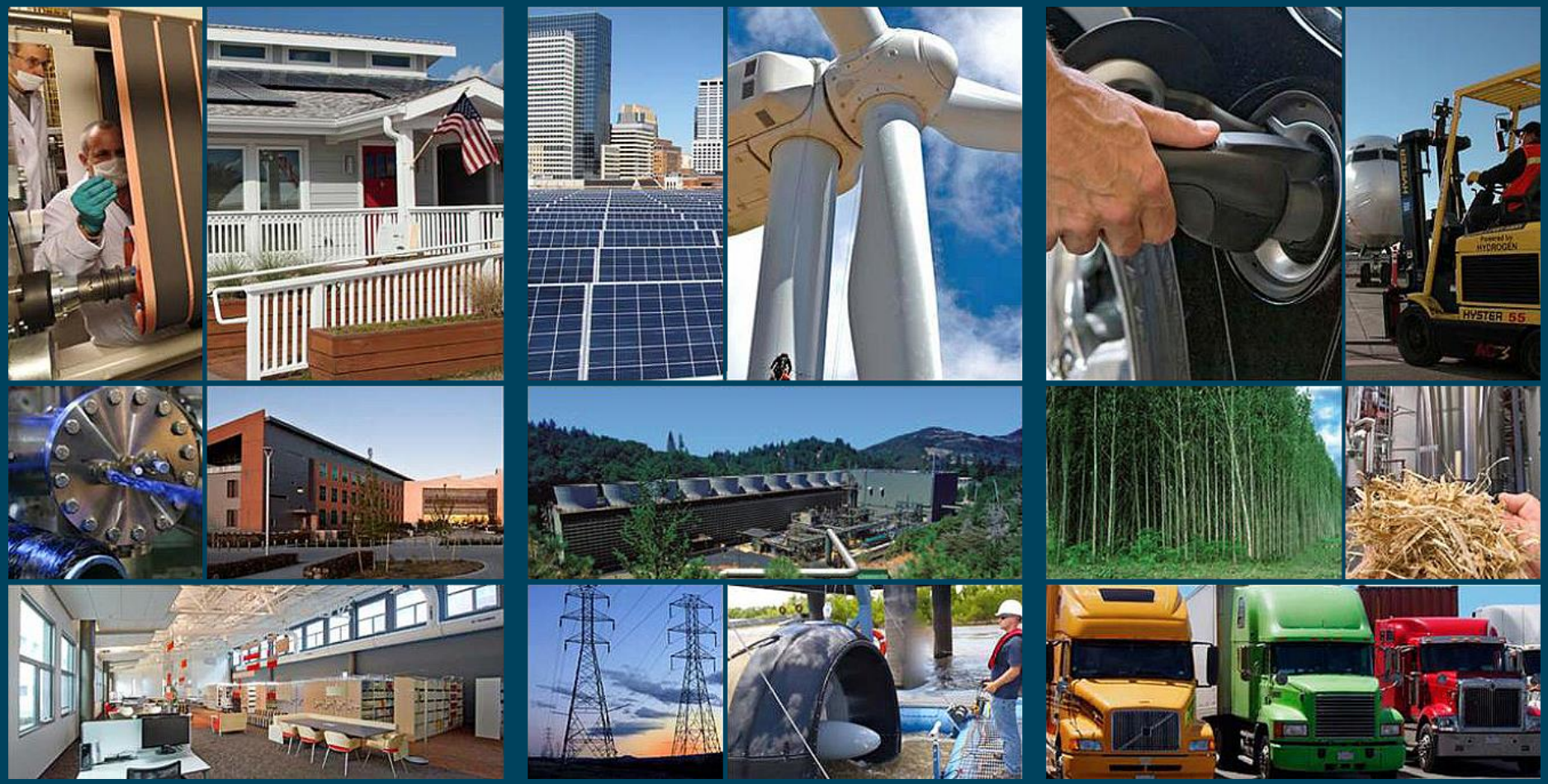
Major Themes

Commercial:

- High-efficacy Lighting & controls
- Fenestration
- Envelope air-tightness testing
- Packages
- Renewables
- Existing buildings

Building Energy Codes Program

DOE Proposals for the 2018 IECC



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2016 National Energy Codes Conference

March2016

Tucson, AZ

BACKGROUND

DOE Building Energy Codes Program

Federal Role: DOE plays a role in all aspects of energy codes—development through implementation

Statutory Directives (42 USC 6833 & 6836):

+ Participate in industry code development and consensus processes (e.g., ICC & ASHRAE)
+ Review published editions of IECC & Standard 90.1
+ Provide technical assistance for all phases

More information: http://www.energycodes.gov/about/statutory-requirements

DOE Proposal Development

How DOE Develops its Proposals for the IECC:

- All information—initial concepts, analyses, draft & final proposals—published on DOE Codes Program website
- Stakeholder Outreach:
  - (2) Webinars: Original concepts and draft proposals
  - (2) In-person meetings: DOE proposals and others'
  - Feedback solicited as part of meetings and *Federal Register*
- (7) *Residential* and (12) *commercial* proposals submitted
- All proposals are cost-effective under DOE's life-cycle cost-effectiveness methodology

More information on DOE proposal development:

https://www.energycodes.gov/development/2018IECC

RESIDENTIAL

R-1: Wall Framing (R402.2.3)

Requires using 24” o.c. stud spacing if 2x6 framing:

- Not required at doors, windows, wall junctions, etc.
- Where 24-in o.c. framing is possible, its initial cost is generally lower than that of standard framing techniques
- Where it cannot be used (e.g., for structural reasons), the U-factor table (which is not modified here) allows flexibility
- Not required for multifamily construction

Goal is to save energy by reducing thermal bridging

Full proposal and supporting information:
https://www.energycodes.gov/development/2018IECC

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R-2: Fenestration U-factor (R402.1)

Modifies fenestration U-factors in CZ 3-8:

- CZ 3-4: 0.35 → 0.32
- CZ 5-8: 0.32 → 0.30

(Tables R402.1.2 & R402.1.4)

Matches earlier version of ENERGY STAR (5.0) *except* CZ 4 U-factor was also found cost-effective in CZ 3

Common use in all CZ with high market penetration

Full proposal and supporting information:
https://www.energycodes.gov/development/2018IECC

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R-4: Envelope Air Leakage (R403.6)

Changes envelope air leakage requirements from *mandatory* to *prescriptive*:

- Effect is to permit trade-offs of building envelope elements against tested air leakage rates
- Provides flexibility and/or allows hedging against potential failed envelope pressure tests (occur after construction)
- Retains requirement that all homes be tested (i.e., conducting the test is still *mandatory*)

Flexibility for builders while minimizing air leakage

Full proposal and supporting information:
https://www.energycodes.gov/development/2018IECC

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R-5: High-Efficacy Lighting (R202)

Changes definition of *high-efficacy lamps* to 75 lumens/Watt:

- Encourage higher efficiency Light-Emitting Diode (LED) lamps
- Still permit the most efficient CFL products

PNNL Cost Analysis*

Savings	Payback
$6/year	< 1 year

*Assumes 2018 LED cost of $4.84/lamp (compared to CFL at $3.10)

LED's have become a highly cost-effective option

Full proposal and supporting information:
https://www.energycodes.gov/development/2018IECC

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COMMERCIAL

C-1: Envelope Air Leakage Testing (C402.4)

Requires testing of envelope air leakage in certain commercial buildings:

- Targets certain building types (e.g., by CZ and floor area)—testing remains as an option for other buildings
- Currently an optional path in the IECC—proposal does not modify the maximum leakage rate (0.40 cfm/sf)
- Current DoD requirement (0.25 cfm/sf)

Savings:

- $1.69 to 12.59 per thousand sf for large offices
- Savings-to-Investment Ratio (SIR) = 1.8

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C-2: Fenestration SHGC (C402.4)

Reduces SHGC thresholds in CZ 1 & 2:

- Will result in reduced heat gain and less energy used for space cooling in warmer climates
- Improvements in occupant comfort
- Peak cooling and equipment sizes may also be reduced

Savings:

- $0.087 to 0.141 per sf of glazing area (medium offices and mid-rise apartments)
- SIR = 2.5 (medium offices) and 1.7 (mid-rise apartments)

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C-6: Occupancy Sensors (C405.2.1)

Expands use of occupancy sensors to open offices:

- Applications not previously included due to technological limitations—now available from multiple manufacturers

Savings:

- $34/year in CZ 8 annually at SIR = 2.2 to 1.4 (offices)

Requires faster shut-off for occupancy controls:

- Reduces delay from 30 to 20 minutes
- Achievable by re-programming sensors at no additional cost

Savings:

- $15-20 per 1000 sf in CZ 8 annually (No cost increase)

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C-8: Interior Lighting (C405.4.2.2)

Reduce *interior* lighting allowances:

- Revises power allowances based on LED, where practical
- LED technology is becoming more cost effective—already used in many common applications
- LEDs provide more lighting at a lower energy use—higher cost of lamp is offset by longer performance
- Proposal mirrors parallel update to Standard 90.1

Savings: $10-126 per 1000 sf of floor area (offices and retail buildings) in CZ 8—costs offset by reduced lamp replacement

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C-9: Exterior Lighting (C405.5)

Reduce *exterior* lighting allowances:

- Revises interior lighting power allowances based on LED, where practical—an average reduction of about 4%
- LED technology is becoming more cost effective—already used in many common applications
- LEDs provide more lighting at a lower energy use—higher cost of lamp is offset by longer performance
- Proposal mirrors parallel update to Standard 90.1

Savings: $70 per fixture annually (retail)—costs offset by reduced lamp replacement costs

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DOE Building Energy Codes Program

For more information:

2016 National Codes Conference

March 21-24, 2016 | Tucson, AZ

The only national conference dedicated to all things energy codes!

Visit: www.energycodes.gov

Contact: Jeremy Williams, *Project Manager*
jeremy.williams@ee.doe.gov

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