Providing effective energy strategies for buildings and communities

2018 International Energy Conservation Code Updates

02.28.2018
Who we are

We assist buildings and communities in achieving energy efficiency, saving money, and becoming more sustainable.

We are an applied research program at University of Illinois, working in collaboration with 360 Energy Group.

Our goal: Reduce the energy footprint of Illinois.
SEDAC is the Illinois Energy Conservation Code Training Provider

This training program is sponsored by Illinois EPA
Energy Code Assistance

- Technical support
  - 800.214.7954
  - energycode@sedac.org
- Online resources at [sedac.org/energy-code](http://sedac.org/energy-code)
- Workshops
- Webinars
- Online on-demand training modules
Energy Code Training

SEDAC is the Illinois Energy Conservation Code training provider

The Smart Energy Design Assistance Center (SEDAC) is providing training to increase awareness of the Illinois Energy Conservation Code and to improve the energy efficiency of new construction and renovation in Illinois. Community code officials, construction professionals and trades, and design professionals such as architects and engineers are invited to participate. SEDAC will be offering workshops, webinars, online training, resources, and technical support. This program is funded by the Illinois Environmental Protection Agency (IEPA), in compliance with Illinois law.
History of Model Codes Improvement

Residential

Commercial

MEC/IECC  Ashrae 90/90.1 Standard
2018 IECC Commercial Changes Highlights

- Commercial
  - No significant energy efficiency improvement (initial estimate of 2-5% improvement)
  - Mechanical Section (C 403): Reorganized, so all provisions for a type of equipment or system are in one place
  - More detailed requirements for lighting controls: Change from “be capable of” to “be configured”
  - Appendix CA Solar-Ready Zone
  - Definition of “Approved”: Change from “Approval by the code official as a result of investigation and tests conducted by him or her, or by nationally recognized organizations” to “Acceptable to the code official”
  - ASHRAE 90.1-2016
  - New climate zone map (6 counties in Illinois – Calhoun, Clark, Coles, Cumberland, Greene, Jersey: from 4A to 5A)
  - New performance-based compliance path (Appendix G)
2018 IECC Residential Changes Highlights

• Residential
  • No significant energy efficiency improvement (initial estimate of 0% improvement)
  • Definition of “Approved”
  • Inspection: Change from construction or work shall remain “accessible and exposed” to “visible and able to accessed” for inspection”
2018 IECC Updates

- Commercial
  - Envelope
  - HVAC
  - Service Water Heating
  - Lighting
  - Performance
  - Maintenance & Commissioning

- Residential
  - Envelope
  - HVAC
  - Lighting
  - Performance

- IL Amendment Process
Commercial
Heated Slab Insulation

R-5 continuous insulation required under heated slabs for both commercial and residential applications.
Isolating Combustion Appliances

- Specifies minimum construction methods for rooms containing open combustion appliances (Water heaters, furnaces, etc.)
- This was amended out in 2015 IL Energy Conservation Code due to increased cost of building these isolated rooms.
- Alternative is to install sealed combustion (higher efficiency) appliances

Images courtesy of DOE
Expanded VFDs

- Pumps and fans with 2hp and larger now required
- Increased allowance for DDC controlled systems
Improved HVAC Turndown

Reduced minimum airflow from 30% to 20% of maximum

2015 IECC

2018 IECC
Automatic HVAC control now required for buildings with over 50 guestrooms

Image courtesy of Wattstopper
Heat Traps now required for hot water storage tanks, not just water heaters
Luminaire Level Lighting Controls

• Allows for luminaire lighting controls to take the place of centralized controls
• Must include occupancy sensor and ambient light sensor

Image courtesy of Cree
Office Area Occupancy Sensors

Open office areas now must have occupancy sensors
Daylight Responsive Exception

• Does not require daylight-responsive controls if 40% lower than wattage allowance
• Office Allowance – 0.79 w/sf
• Threshold for Daylight-responsive controls – 0.47 w/sf
Increased Exterior Lighting Controls

- Daylight shutoff
- Decorative lighting shut off during non-business hours
- Lighting setback – 30% watts minimum
- Time switch control functionality
Track Lighting Demand Reduction

Reduces demand from 30W/ft to 8W/ft
Reduced Lighting Power Allowances

- Office 0.82 to 0.79 – 4% reduction
- Library 1.19 to 0.78 – 34% reduction
Increased Efficiencies

Dry-type transformers & Motors

Images courtesy of Schneider Electric

Image courtesy of Baldor
Renewable Energy Credit Limits

- Limits on-site renewable credits to 5%
- Allows Code Official to request documentation on renewables used for credit

Image courtesy of: solartrader.ca
Building O&M must be provided to building owner

Image courtesy of Berkeley
Residential
Modest improvement in window U-factors

<table>
<thead>
<tr>
<th>Climate Zone</th>
<th>2015 U-Factor</th>
<th>2018 U-Factor</th>
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Ducts Buried in Ceiling Insulation

Provides allowance for duct insulation in buried duct work (for simulated energy performance analysis)
Ducts in Conditioned Space

Provides criteria to determine if ducts are inside conditioned space or not.

- Completely inside air barrier OR
- Buried in the ceiling insulation AND
  - Air handler within air & thermal barrier
  - Duct leakage <1.5 cfm per 100 sf
  - Full depth insulation above duct
HRV / ERV Fan Efficiency

- Minimum fan efficiency of 1.2 cfm/w is added for Heat Recovery Ventilator and Energy Recovery Ventilator for whole house mechanical ventilation system.

Image courtesy of Calcs Plus
High Efficiency Lighting

• Increases high efficiency lighting to 90% from 75%
• Eliminates the low-voltage exception
Batch sampling is allowed for stacked multifamily units
Energy Rating Index

• Increase of Max. ERI score

<table>
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<th>2018 ERI Score</th>
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</tbody>
</table>

Image courtesy of Energy IQ
IL Code Amendment Process: What changes would you recommend?
Fill out code change proposal form
• Contact info
• Sections impacted
• Proposed revisions
• Reason
• Cost impact

https://www2.illinois.gov/cdb/business/codes/Pages/2018-IECC-Announcement.aspx
Public Code Change Proposal Form
To Amend the 2018 Illinois Energy Conservation Code

Code Section: ______________________

Office Use Only
Proposal Number: __________________
Date Submittal Received: __________

Date: ____________________________
Name: ____________________________
Jurisdiction/Company: ______________
Submitted on Behalf of: ______________
Address: __________________________
Phone: ____________________________
E-Mail: ____________________________

Related Sections Impacted by this Amendment:

Revise as Follow (in strike-thru / underline format):

Reason:

Cost Impact:

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Amendment Proposals

• Don’t submit multiple amendments to a single code section
• If multiple code sections affected, multiple amendments need to be submitted
• Text should be presented as proposed new text, not deleted text
• Cost impact: based on construction cost impact
• Supporting documentation needed
Amendment Proposals
Due March 31, 2018
to
CDB.BuildingCodes@illinois.gov
Questions?

energycode@sedac.org
800-214-7954