

Welcome to the Energy Codes portion of the Chicago Department of Buildings Self-Certification training class. This one-page handout highlights some of the most important points from this presentation. For a PDF of the full presentation, please go to: <https://smartenergy.illinois.edu/education/presentations>

There are five main sections to this presentation:

1. Building Envelope Requirements
2. Mechanical Systems & Service Water Heating
3. Lighting & Electrical Systems
4. Residential
5. Additional Efficiency Package options

### **Specific Commercial Proposals that Improve or Protect Energy Efficiency:**

- **C402.1.4 Assembly U-factor, C-factor or F-factor based method**
  - Garage Door Glazing. A U-factor of .31 has been added to table C402.1.4 as a minimum requirement for garage doors with glazing.
- **C402.2.6 Insulation of radiant heating systems**
  - Heated Slab Insulation. R-5 full under-slab insulation has been added as a requirement in Table C402.1.3 for heated slabs in all climate zones.
- **C402.2.7 Airspaces**
  - When the thermal properties of airspaces are calculated as part of the thermal wall assembly, these airspaces must be enclosed in an unvented cavity designed to minimize airflow into and out of the cavity.
- **C404.2 Service water-heating equipment performance efficiency**
  - Water heater efficiencies. Updated to current federal water heater efficiencies.
- **C405.1 Lighting Equipment**
  - A proposal to increase the percentage of high efficacy lamps in permanently installed fixtures from 75% to 90% passed. This will remain a mandatory requirement in the code.
- **C405.2 Lighting controls**
  - Daylighting controls. Lighting systems shall be provided with controls that comply with Sections C405.2.1 through C405.2.6, with exceptions.
- **C405.2.1, C405.2.1.1, C405.2.1.3 Occupant sensor requirements**
  - Expanded occupant sensor requirements to include open office spaces.
  - Reduction allowed Light Power Densities (LPD) for interior and exterior lighting systems.
- **C405.3.2, Interior lighting power allowances**
  - Allowed Lighting Power Densities (LPD) were reduced approximately 20% to account for use of LED lighting. Libraries saw largest drop of 34%.
- **C406 Additional Efficiency Packages**
  - Added efficiency package options for increased envelope efficiency and reduced air leakage buildings.
- **C407.3 Performance based compliance**
  - A maximum on-site renewable energy cost reduction of 5% is now a component of C407.3 the Performance based compliance approach. In addition to limiting the

amount of renewable energy offset:

- Requires documentation which demonstrates the reduction in energy use associated with on-site renewable energy.
- Clarifies that renewable energy purchased from off-site sources shall be the same in the standard reference design and proposed design.

### **Residential Proposals that Improve or Protect Energy Efficiency:**

- **Table R402.1.2, Table R402.1.4 Improved window efficiency**
  - Lowers vertical fenestration U-factors in CZ 5 from 0.32 to 0.30.
- **Table R402.1.2 Heated Slab Insulation**
  - R-5 full under-slab insulation has been added as a requirement in Table R402.1.2 for heated slabs in all climate zones.
- **R402.4.1.1 Air Barrier & Insulation**
  - Added language to the air barrier and insulation installation table will specify the following:
    - Supply and return register boots must be sealed to the subfloor or drywall.
    - Recessed lighting must be sealed to the finished surface.
    - Space behind electrical/phone boxes need to be insulated.
  - ICC/RESNET Standard 380 added as envelope leakage test procedure option.
- **403.3.6 Buried Ductwork in Attic**
  - Ducts that are tested to have a leakage rate less than or equal to 1.5 cfm25/100 SF to the outside, are insulated with  $\geq$  R-8 insulation, and have at least R-19 insulation above and to the sides of the ducts, count as being in conditioned space.
- **R403.6.1 ERV/HRV Fan Efficiency**
  - A minimum fan efficiency of 1.2 cfm/watt has been added for HRV and ERVs.
- **R404.1 Lighting Equipment**
  - Not less than 90 percent of the permanently installed lighting fixtures shall contain only high-efficacy lamps (increased from 75 percent).
- **Table R406.4 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.
  - ERI scores were increased from 55 to 61 in CZ 5.
    - Where on-site renewable energy is included in the ERI calculation, buildings must meet or exceed the thermal envelope requirements in Table R402.1.2 of the 2015 IECC.
    - The 2009 IECC envelope backstop will remain in effect for buildings without on-site generation.
- **RESNET Standards Referenced**
  - The ANSI/RESNET/ICC 301-2014 is now a referenced standard in the code as the basis for the ERI calculation. Additionally, ANSI/RESNET/ICC 380-2016 is now a referenced standard for building envelope testing.