



FUTURE CHANGES TO THE NYC ENERGY CODE

presented by

Gina Bocra, R.A. and Emily Hoffman, P.E.

BUILD SAFE | LIVE SAFE
CONFERENCE 2019

COPYRIGHT MATERIALS

This presentation is protected by US and International Copyright laws. Reproduction, distribution, display and use of the presentation without written permission of the Department is prohibited.

The information in this presentation is current only as of the copyright date of this presentation. This presentation is not a substitute for any law, rule or regulation. The City disclaims any liability for errors that may be contained herein and shall not be responsible for any damages, consequential or actual, arising out of or in connection with the use of this information.

© 2019 New York City Department of Buildings

BUILD SAFE | LIVE SAFE
CONFERENCE 2019

NYC
Buildings

COURSE DESCRIPTION

This presentation reviews the anticipated changes to the 2016 NYC Energy Conservation Code. This course includes a summary of the substantive changes that will be made in the move from the IECC 2015 to the IECC 2018, the changes made by the New York State Fire Prevention and Building Code Council, the changes proposed by the NYStretch Energy Code, and the local provisions to be added by the NYC Department of Buildings.

LEARNING OBJECTIVES

At the end of this presentation, you will be able to:

1. Explain the most significant changes to the NYCECC that will impact building envelope systems and design requirements.
2. Analyze how changes in the NYCECC will impact lighting and HVAC design.
3. Explain how the NYStretch Energy Code will modify the requirements of the 2016 NYCECC in 2019 and future updates.
4. Explain how the code might evolve in the next decade to significantly reduce building related greenhouse gas emissions in NYC and how that will impact building design and construction.

NYCECC REVISION PROCESS

NYS Executive Law: Building & Construction Codes

- carve out for municipalities w/ populations >1 million

NYS Energy Law: Energy Codes

- own code if more stringent than State's
- NYC LL 85/09 effective July 1, 2010

NYCECC REVISION PROCESS

Local Law 32 of 2018

- DOB must adopt provisions that “**bring this code up to date with the most recent model stretch code published by the New York State Energy Research and Development Authority**”
- **NYStretch Energy Code** - 2020 targeted an aggregate energy reduction of 20% compared to ASHRAE 90.1 2013.

CHANGES TO THE BASE CODE

New York State will adopt

- 2018 IECC
- ASHRAE 90.1-2016

New York City will adopt

- The NY State Energy Conservation Construction Code
- Portions of the NYSERDA NYStretch Energy Code 2020
- Local changes from the DOB Energy Code Committee process

OVERVIEW OF CHANGES

Net effect of adopting the 2018 IECC/ASHRAE

- Commercial building efficiency increases by about 8%
- Residential efficiency increases by about 2%

Net effect of adopting the NYStretch Energy Code 2020

- Commercial building efficiency increases by about 5% more than the State code
- Residential efficiency increases by about 25% more than the State code

CHANGES FROM THE 2018 IECC



Photo source: DOB

Major changes for the envelope:

- All heated slabs must be insulated with R-5 insulation
- Clarified when and how air-spaces may be included in assembly u-factor calculations

CHANGES FROM THE 2018 IECC

Major changes for HVAC equipment

- Increased HVAC Equipment Efficiency requirements
- Increased HVAC Control requirements



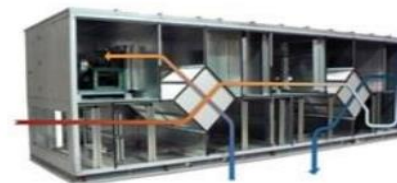
Chillers



Heat Pumps



Computer Room AC



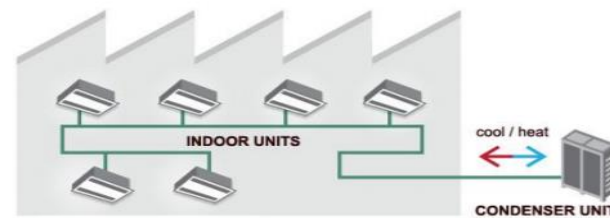
Dedicated Outdoor Air*



Rooftop AC Units



Cooling Towers



Variable Refrigerant Flow

CHANGES FROM THE 2018 IECC

Major changes

- Reduced Lighting Power Densities
 - Interior space-by-space reduced by ~25%
 - Exterior lighting power reduced by ~30%
 - Decorative and retail display reduced by ~25%

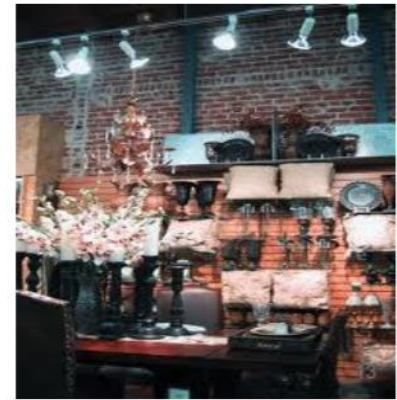


Photo source: US Department of Energy Building Energy Codes Program

CHANGES FROM THE 2018 IECC



Photo source: US Department of Energy
Building America Solution Center

Major changes in Residential

- Slight reduction in fenestration u-factor
- Energy Rating Index scores were increased, but allows for inclusion of on-site renewables when the envelope is based on IECC 2015

CHANGES FROM THE 2018 IECC

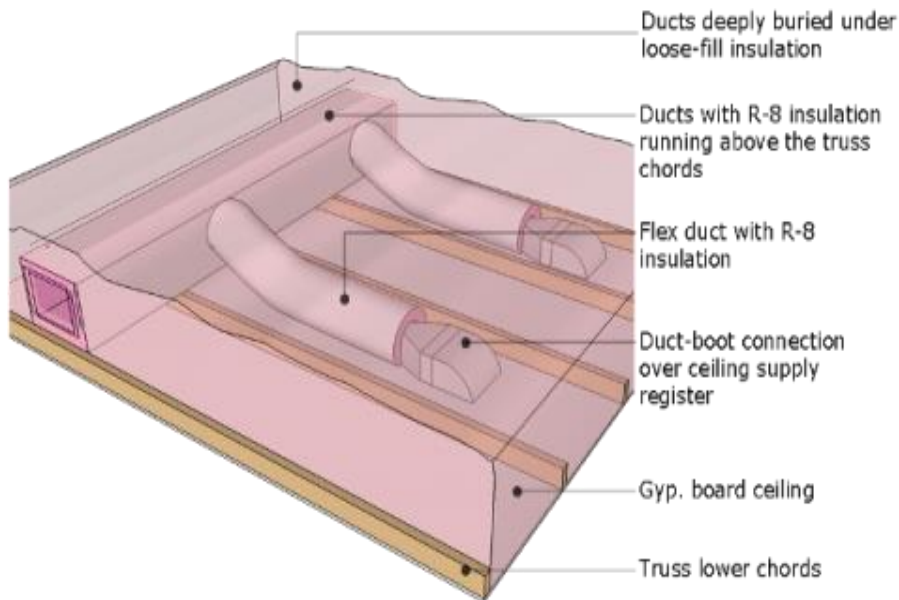


Photo Source: US Department of Energy Building America Solution Center

Major changes in Residential

- Requires any ductwork in unconditioned space to be buried under R-19 insulation, in addition to the R-8 requirement

CHANGES FROM ASHRAE 90.1-2016

Major changes for the envelope

- Requires Envelope verification on all projects
 - similar to ABC Plan
- More stringent requirements for fenestration
 - Reduced U-factor & SHGC

CHANGES FROM ASHRAE 90.1-2016

Major changes to HVAC/Power/Other:

- Economizer Fault Detection & Diagnostics
- Required metering of plant electricity and efficiency on
 - air-cooled chiller plants over 570 tons
 - water-cooled chiller plants over 1000 tons
- New efficiency requirements: DOAS systems
- Expanded efficiency and controls requirements for HVACR alterations

CHANGES FROM ASHRAE 90.1-2016



Photo source: US Department of Energy
Building Energy Codes Program

(continued)

Major changes to HVAC/Power/Other:

- Elevators to list Usage category & Energy efficiency class (*staging for future addition of elevator efficiency requirements*)
- Hotel guest room ventilation occupancy control
- All controls requirements updated to '**Capable of and configured to**'

CHANGES FROM ASHRAE 90.1-2016

Major changes to Lighting:

- Reduced interior lighting power
 - Space-by-space – 26% overall reduction
 - Building area – 34% overall reduction
 - Retail display allowance reduced 25%
 - Decorative allowance reduced 25%



Photo source: US Department of Energy
Building America Solution Center

CHANGES FROM ASHRAE 90.1-2016

Major changes to Lighting

- Reduced exterior lighting power
 - Average of 30% reduction
- Increased Parking area lighting controls
- Interior alterations must comply with occupancy, scheduled shutoff and bi-level switching
- Exterior lighting alteration must comply with photosensor and scheduled shutoff controls

CHANGES FROM THE NYStretch CODE

Major envelope changes

- More stringent insulation requirements
- Mandatory thermal break for balconies and parapets
- More stringent fenestration requirements
- Solar-ready for commercial buildings 5 stories or less
- Air barrier commissioning on buildings >25,000 sq. ft.

CHANGES FROM THE NYStretch CODE

Major HVAC/power changes

- Service water heating systems over 1MMBtu must have 25% site-recovered or renewable energy **or** have an efficiency of 94%
- Requirements for regenerative drive elevators
- Commercial kitchen equipment efficiencies

CHANGES FROM THE NYStretch CODE

Major lighting/other changes

- Reduced LPD for interior/exterior lighting
- Occupancy sensors for corridors and egress illumination
- Whole building metering requirements
- High-efficiency option required for ASHRAE compliance path
- Modifications to the **Additional Energy Efficiency Options**

CHANGES FROM THE NYStretch CODE



Photo source: US Department of Energy

Major changes for energy modeling path

- Envelope backstop for buildings >25,000 sq. ft.
- Source energy or energy cost are allowable metrics for compliance
- Clarification that cogeneration systems may only take savings from recovered energy

CHANGES FROM THE NYStretch CODE

Major changes for residential code

- Requires balanced mechanical ventilation or energy recovery in all homes
- Adds hot water supply piping requirements to reduce energy loss
- Requires verification testing of the ventilation system
- Sets high-efficacy lighting requirement at 90%
- Reduces the ERI Score to 50 from 54 (NYCECC)
- Requires Additional Energy Efficiency through options

CHANGES FROM THE CITY

Changes are not finalized until we complete the legislative process

- Possible requirement to document unmitigated thermal bridges in the envelope (C and R)
- May require one- and two-family homes to meet some mandatory requirements of the residential code when they are greater than three stories
- May include default u-factors for spandrel panel assemblies

CHANGES FROM THE CITY

(continued)

- May reduce u-factors for fenestration (C)
- May reduce the threshold for air-leakage testing in commercial buildings to 10,000 sq. ft.
- May update HVAC efficiency tables to include all ASHRAE-regulated equipment at the current Federal efficiency standards

NYCECC of the Future

Local Law 32 of 2018

- Mandates that we adopt the next version of the NYStretch Code, if it exists, in 2022
- Requires that the 2025 Code set absolute limits on energy consumption in buildings 25,000 sq. ft. and greater, based on a to-be-determined metric (such as energy use intensity, or EUI, or carbon)

NYCECC OF THE FUTURE

- **Intro 1253 of 2019**
 - Sets Greenhouse Gas emission caps on existing buildings beginning in 2024
 - Caps will reduce over time to require deep-energy retrofits of all buildings 25,000 sq. ft. and greater, based on their occupancy
- Future legislation is expected to target net-zero performance for all new buildings by 2030
- Future legislation is expected to address smaller buildings to mandate deep-energy retrofits



© 2019 New York City Department of Buildings

BUILD SAFE | LIVE SAFE
CONFERENCE 2019

