INTRODUCING THE RESIDENTIAL PROVISIONS OF THE 2020 NYCECC

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This presentation reviews the changes to the residential provisions of 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 made to align with NYSERDA’s NYStretch Energy Code-2020, and the local provisions adopted by the NYC Department of Buildings.
AGENDA

1. Code revision and committee process
2. Code revision impact and timeline
3. New provisions adopted from the 2020 ECCCNYS
4. New provisions adopted from the NYSERDA NYStretch Energy Code – 2020
5. New provisions adopted from the NYC Department of Buildings and Advisory Committees
6. Resource & Form Updates
7. Future codes and legislation
Code Revision & Committee Process
DEVELOPMENT OF THE 2020 NYCECC
NYCECC REVISION PROCESS

- NYS Executive Law: Building & Construction Codes
  - Carve out for municipalities with populations greater than 1 million

- NYS Energy Law: Energy Codes
  - Allows a municipality to have their own code if more stringent than State’s code
  - NYC LL 85 of 2009 effective July 1, 2010 established NYC’s first Energy code
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”


- DOB staff participated in the development of the NYStretch Energy Code- 2020
NYCECC COMMITTEE PROCESS

- The Energy Code development is supported by two Advisory Committees
  - Two committees: Commercial, Residential
  - Committee members are selected from an open call
- DOB staff proposed changes, Committee members submitted changes for debate (77 Res., 260 Com.)
- Proposed bill includes changes approved by Commissioner La Rocca
Code Revision Impact & Timeline of Adoption

OVERALL IMPACT OF THE 2020 NYCECC
CHANGES TO THE BASE CODE

- NY State voted to adopt in September and further amended in December 2019
  - 2018 IECC
  - ASHRAE 90.1-2016

- NYC Adopted
  - The NY State Energy Conservation Construction Code
  - Portions of the NYSERDA NYStretch Energy Code 2020
  - Local changes from the DOB Energy Code Committee process
  - Legacy changes from the NYCECC that should be preserved
OVERVIEW OF THE 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 (approximately 13% more than ASHRAE 90.1-2013)
  - Residential efficiency increases by about 19% more than the 2016 NYCECC
The NYCECC became effective on May 12, 2020

DOB issued Buildings Bulletin 002-2020, clarification on when 2020 NYCECC applies to projects

2016 ECC may apply if filed prior to May 12, 2020

Applications must be “complete” and include the following:

- Architectural, Structural, Lighting, Energy Analysis

- Mechanical/Boiler DOB NOW projects OK to file later

- Approval will not occur until all disciplines reviewed/approved for Energy
NYCECC RESOURCE UPDATES

- Updated Forms
  - TR-8 Form
  - EN-1 Form
- Rules 5000-01, 5000-02, 101-07
- COMcheck (desktop only) & REScheck (desktop & web)
  - 2020 NYCECC Specific
- Bulletins 007-2020, 008-2020, 009-2020
NYCECC RESOURCE UPDATES

- Supporting Documents How-to Guide
- Training Modules (in process)
- Available for purchase from ICC

The integrated Code is available on our website:
- https://www1.nyc.gov/site/buildings/codes/energy-conservation-code.page
New Provisions
ADOPTED FROM THE 2020 ECCCNYS
Changes in Residential
- Energy Rating Index scores allow for inclusion of on-site renewables when the envelope is based on IECC 2015 (2016 NYCECC)
New Provisions

ADOPTED FROM THE NYSERDA NYSTRETCH ENERGY CODE - 2020
CHANGES FROM THE NYSTRETCH CODE

- Major changes for Residential Code
  - All ducts required to be located within conditioned space

Photo Source: US Department of Energy
CHANGES FROM THE NYSTRETCH CODE

- Major changes for Residential Code
  - Requires balanced mechanical ventilation OR
  - Energy or heat recovery ventilation (ERV/HRV) system
  - Design must show supply/exhaust fans, duct work, ERV/HRV
  - Verification testing of ventilation system

Photo Source: US Department of Energy
CHANGES FROM THE NYSTRETCH CODE

- Major changes for Residential Code
  - Adds hot water supply piping requirements to reduce energy loss
  - One of four required options: pipe volume method, pipe length method, drain water heat recovery, OR demand recirculation pump

Photo Source: US Department of Energy
CHANGES FROM THE NYSTRETCH CODE

- Major changes for Residential Code
  - Adds hot water supply piping
  - Reduces the ERI Score to 50 from 54 (62 in 2020 ECCCNYS)
  - Removed Solar-Ready Requirements
    - Building Code (LL92/94) now require solar or green roof on all new construction and roof replacements

Photo Source: US Department of Energy
Major changes for Residential Code

- Electric Vehicle Ready requirements for parking located on a building site – includes accessory garages
  - Either 208/240V 40-amp outlet OR
  - Panel capacity and conduit for future installation of outlet
- Common parking areas require 5% of parking spaces to be EV ready
- Alterations trigger requirements when parking is created or exists on building site and panel capacity is increased

Photo Source: US Department of Energy
New Provisions
ADOPTED FROM THE NYC DEPARTMENT OF BUILDINGS & ENERGY CODE ADVISORY COMMITTEES
Single-family homes > 3 stories are considered commercial buildings.

NYC added the following requirements for these buildings:
- Permanent certificate
- Air leakage testing
- Balanced ventilation or Energy Recovery
Changes to Residential Provisions
- Require documenting certain linear/point thermal bridges in the envelope
- Align piping insulation requirements between residential and commercial provisions
NEW THERMAL BRIDGE DOCUMENTATION

- **What is a thermal bridge?**
  - Highly conductive material that interrupts insulation
  - Area of high heat transfer
  - Greatly affects thermal performance of building envelope
  - The Code doesn’t consider the effects of most thermal bridging outside of assemblies

- **Why require documentation but no performance requirements?**
  - This is a big change for the design community
  - First step (2020 NYCECC) is to require identification of the thermal bridges
  - Next step (2022 NYCECC) is to require that the thermal bridges are calculated correctly in the building assemblies
NEW THERMAL BRIDGE DOCUMENTATION

What types of projects need to provide this documentation?

- All new buildings – both commercial and residential
- All additions to buildings – both commercial and residential
- Any alteration where the building envelope is part of the scope of work – both commercial and residential
NEW THERMAL BRIDGE DOCUMENTATION

- New requirement: Document 3 types of thermal bridging on plans
- Clear Field Assemblies, Linear and Point Source

Figure 6: Example clear field assembly
Figure 7: Example linear transmittance of a floor slab detail
Figure 8: Example point transmittance of a beam penetration detail
Clear Field Assemblies

1. Clear field thermal bridges are taken into account in the assembly types found in ASHRAE 90.1 Appendix A

2. Assemblies not taking U-factors from ASHRAE Appendix A must be noted as such in the drawings

3. Examples include brick ties, cladding, studs
NEW THERMAL BRIDGE DOCUMENTATION

- **Point Thermal Bridges**
  1. Must be noted as thermal bridge on the drawings - Only when a single point of 12 in\(^2\) or greater (8 in\(^2\) or greater in residential) penetrates the insulation
  2. These are not areas associated with HVAC or electrical areas within the building envelope
  3. An example is structural beam penetration through insulation
NEW THERMAL BRIDGE DOCUMENTATION

- Linear Thermal Bridges
  1. The linear thermal bridges listed in the corresponding table (Table R402.6 or Table C402.6) must be documented in a table including the following items:
     A. Linear thermal bridge type
     B. Total length of each bridge throughout entire thermal envelope
     C. Identification of a relevant detail showing a cross-section through the thermal bridge
     D. $\Psi$-value for each thermal bridge
NEW THERMAL BRIDGE DOCUMENTATION

- Linear Thermal Bridges (continued)

2. The $\Psi$-value is listed in Table C402.6 or R402.6, but alternate values may be used with proper analysis (i.e. THERM)

3. Examples include shelf angles, slab edges, balconies, parapets, window interfaces
## NEW THERMAL BRIDGE DOCUMENTATION

### Example Documentation for Linear Thermal Bridge

<table>
<thead>
<tr>
<th>Linear Thermal Bridge Type</th>
<th>Total Length</th>
<th>Detail Location</th>
<th>$\Psi$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balcony</td>
<td>260 feet</td>
<td>A-450</td>
<td>0.50</td>
</tr>
<tr>
<td>Fenestration Perimeter</td>
<td>1074 feet</td>
<td>A-452</td>
<td>0.32</td>
</tr>
<tr>
<td>Shelf Angle</td>
<td>83 feet</td>
<td>A-500</td>
<td>0.41</td>
</tr>
</tbody>
</table>

Figure 9: Example building length and area takeoffs

1. Parapet Length
2. Slab Lengths
3. Wall to Window Transition Lengths
4. Corner Length
5. Opaque Brick Wall Area
6. Glazing Area
Resource & Form Updates
TO ALIGN WITH THE 2020 NYCECC
## FORM CHANGES: TR8 TECHNICAL REPORT

### Changes to TR8 Form (Admin)

![TR8 Technical Report Form](image)

### Location Information

Required for all applications.

- House No(s)
- Street Name
- BIN No(s)
- Work on Floor(s)

### Applicant Information

Required for all applications.

- Last Name
- First Name
- Middle Initial
- Business Name
- Business Telephone
- Business Address
- Business Fax/Email Address
- City
- State
- Zip
- Mobile Telephone
- License Type (choose one): P.E., R.A.
- License Number
Changes to TR8 Form (Envelope)

- Remove loading dock weather seals
- Add new inspection, ‘Air barrier continuity plan testing’
FORM CHANGES: TR8 TECHNICAL REPORT

Changes to TR8 Form (HVAC)
- Add new inspection for mandatory residential ventilation
- Desegregate piping requirements and duct requirements
- Service water heating piping design now in IB5/IIB5
- Duct leakage testing no longer stand-alone testing requirement
FORM CHANGES: TR8 TECHNICAL REPORT

Changes to TR8 Form (lighting/power)

- Change wording of ‘electrical energy consumption’ to incorporate all metering requirements
- Elevators lumped together with electrical motor inspection
- Remove solar ready and replace with electric vehicle ready
The NYCECC of the Future

OTHER LEGISLATION AFFECTING THE ENERGY CODE
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

- Local Law 97 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
THANK YOU!

For further technical questions, email energycode@buildings.nyc.gov