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This presentation reviews the changes to the commercial 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
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 2018
  - 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 went into effect 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 FROM THE 2018 IECC

- 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

- Changes HVAC Equipment
  - Reorganization of HVAC provisions, minimal changes
  - Increased small residential-size furnace efficiency

The efficiency of COMBUSTION HEATING APPLIANCES (FURNACES AND BOILERS) is measured by ANNUAL FUEL UTILIZATION EFFICIENCY (AFUE).

AFUE = \frac{\text{how efficient the appliance is at converting the energy in its fuel to heat}}{\text{the annual fossil fuel energy consumed by the appliance.}}

- 56-70% AFUE: old, low-efficiency heating systems
- 80-83% AFUE: mid-efficiency heating systems
- 90-98.5% AFUE: high-efficiency heating systems

Photo source: https://www.energy.gov/articles/energy-saver-101-infographic-home-heating
Changes in economizer requirements:

- Economizers are required on certain systems:
  - Individual systems \( > 54,000 \) Btu/h (4.5 tons) serving other than Group R occupancies
    - Systems without economizers cannot exceed 300,000 Btu/h (25 tons) or 20% of the total supply capacity
  - Individual systems \( > 270,000 \) Btu/h (22.5 tons) serving Group R occupancies
    - Systems without economizers cannot exceed 1,500,000 Btu/h (125 tons) or 20% of the total supply capacity
  - New exception for cooling equipment having 20% efficiency improvement over the Code minimum values
CHANGES FROM THE 2018 IECC

- Aligning requirements with ASHRAE 90.1:
  - Hotel Guestroom occupancy controls on temperature & ventilation
    - Vestibule controls:
      - Heating set-point limited to 60°F
      - Cooling set-point limited to 85°F
      - Integral heating systems in vestibules must shut-off heating when outdoor air temperature > 45°F
CHANGES FROM THE 2018 IECC

- Lighting changes
  - 90% high-efficacy fixtures in all dwelling units
  - Auto-controls on outdoor parking areas (NY State change)
CHANGES FROM ASHRAE 90.1-2016

- Changes for the Envelope
  - Requires Envelope verification on all projects
    - Similar to NYCECC required Air Barrier Continuity Plan
  - More stringent requirements for fenestration
    - Reduced U-factor & SHGC (0.36)
Changes to HVAC/Power/Other

- Economizer Fault Detection & Diagnostics
- Required metering of chiller plant electricity and efficiency
- New efficiency requirements: Pool Dehumidifiers, Dedicated Outdoor Air System
- Expanded requirements for HVAC-R alterations
CHANGES FROM ASHRAE 90.1-2016

- Changes to HVAC/Power/Other
  (continued)
  - 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

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%
CHANGES FROM ASHRAE 90.1-2016

Changes to Lighting
- Reduced exterior lighting power
  - Average of 30% reduction
- Increased parking area lighting controls
- Interior alterations must comply with occupancy, scheduled shutoff, daylighting controls, and bi-level switching
- Exterior lighting alteration must comply with photosensor and scheduled shutoff controls
New Provisions

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

- Changes to envelope:
  - More stringent insulation requirements
  - More stringent fenestration requirements
  - Mandatory thermal break for balconies and parapets
  - Air barrier commissioning on buildings >10,000 square feet, similar to Air Barrier Continuity Plan
NEW INSULATION TABLES

- **Roofs**
  - R-33ci, above deck (from R-30ci)
  - R-53, attic and other (from R-38)

- **Above-grade walls**
  - R-11.2ci, mass – all other (from R-9.5ci)
  - R-13.25ci, mass – Group R (from R-11.4ci)
  - R-13+R-8.5ci, metal framed – (from R-13+R-7.5ci)

- **Floors above unconditioned space**
  - R-14.6ci (all other), R-16.7ci (Group R) – (from R-10ci)

- **Heated slabs**
  - R-20 for 48” below + R-5 full slab – (from R-15 for 48”)
NEW REQUIREMENTS FOR BALCONIES + PARAPETS

- For new construction, all balconies and parapets are required to mitigate thermal bridging

- Two options for prescriptive compliance:
  - Parapet & balcony have continuous insulation with an R-value equivalent the adjacent wall
    - Example – Parapet above a Metal wall with R-13 + R-8.5ci, must be fully insulated (i.e. wrapped with insulation) with an R-8.5ci
  - Parapet & balcony incorporate a thermal break of minimum R-3
NEW REQUIREMENTS FOR BALCONIES + PARAPETS

- Trade-off allowed
  - Example of COMcheck input
CHANGES FROM THE NYSTRETCH CODE

- Changes to HVAC/Power
  - Requirements for regenerative drive elevators
  - Commercial kitchen equipment efficiencies

Photo source: www.energystar.gov
Changes from the NYStretch Code

Changes to the Lighting/Other

- Reduced LPD for interior/exterior lighting
- Occupancy sensors for corridors and egress illumination
- Whole building fuel-metering requirements
- High-efficiency option required for ASHRAE compliance path (new Appendix I)

CHANGES FROM THE NYSTRETCH CODE

- Changes for energy modeling path
  - Envelope backstop for buildings greater than 25,000 square feet
    - ComCheck req. for verification, in addition to EN1 Form
  - Source energy or energy cost are allowable metrics for compliance
  - Clarification that cogeneration systems may only take savings from recovered energy

Photo source: US Department of Energy
New Provisions

ADOPTED FROM THE NYC DEPARTMENT OF BUILDINGS & ENERGY CODE ADVISORY COMMITTEES
CHANGES FROM THE CITY

- Changes to the envelope
  - Require documenting unmitigated thermal bridges in the envelope
  - Add default u-factors for proposed spandrel panel assemblies
  - More stringent fenestration U-factor requirements
  - More commercial buildings to perform air leakage testing
    - 10,000 to 50,000 sqft up to 75 feet in height
  - Remove air curtain exception when vestibules are required
NEW FENESTRATION REQUIREMENTS

- U-factors now material dependent
- More stringent requirements below 95 feet
  - Windows at higher elevations on a building require more structural support (i.e. framing)
- Each window unit with a portion of the window above 95 feet may comply with 95 foot requirement
NEW FENESTRATION REQUIREMENTS

- Non-metal framing (all)
  - U-0.28 (all heights) *previously U-0.38 fixed, U-0.45 operable*

- Metal framing, fixed
  - U-0.30 (below 95’) *previously U-0.38*
  - U-0.36 (95’ and above) *previously U-0.38*

- Metal framing, operable
  - U-0.40 (below 95’) *previously U-0.45*
  - U-0.42 (95’ and above) *previously U-0.45*

- Curtainwall fixed
  - U-0.36 (all heights) *previously U-0.38*
Projects with spandrel panels in the design have two options to determine U-factor:

1. Use Table C402.1.4.2 to determine effective U-factor of spandrel, based on the following:
   - Frame type
   - Spandrel Panel
   - R-value of insulation between framing

2. If the assembly is not found in the table, then a THERM Analysis is required. Some examples of assemblies not in the table, are:
   - Assemblies with backpans
   - Assemblies with no insulation
### NEW DEFAULT SPANDREL U-FACTORS

#### TABLE C402.1.4.2
**EFFECTIVE U-FACTORS FOR SPANDREL PANELS**

<table>
<thead>
<tr>
<th>FRAME TYPE</th>
<th>SPANDREL PANEL</th>
<th>RATED R-VALUE OF INSULATION BETWEEN FRAMING MEMBERS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>R-4</td>
</tr>
<tr>
<td>Aluminum without Thermal Break</td>
<td>Single glass pane, stone, or metal panel</td>
<td>0.242</td>
</tr>
<tr>
<td></td>
<td>Double glass with no low-e coatings</td>
<td>0.233</td>
</tr>
<tr>
<td></td>
<td>Triple or low-e glass</td>
<td>0.226</td>
</tr>
<tr>
<td>Aluminum with Thermal Break</td>
<td>Single glass pane, stone, or metal panel</td>
<td>0.211</td>
</tr>
<tr>
<td></td>
<td>Double glass with no low-e coatings</td>
<td>0.200</td>
</tr>
<tr>
<td></td>
<td>Triple or low-e glass</td>
<td>0.191</td>
</tr>
<tr>
<td>Structural Glazing</td>
<td>Single glass pane, stone, or metal panel</td>
<td>0.195</td>
</tr>
<tr>
<td></td>
<td>Double glass with no low-e coatings</td>
<td>0.180</td>
</tr>
<tr>
<td></td>
<td>Triple or low-e glass</td>
<td>0.169</td>
</tr>
<tr>
<td>No framing or Insulation is</td>
<td>Single glass pane, stone, or metal panel</td>
<td>0.148</td>
</tr>
<tr>
<td>Continuous</td>
<td>Double glass with no low-e coatings</td>
<td>0.136</td>
</tr>
<tr>
<td></td>
<td>Triple or low-e glass</td>
<td>0.129</td>
</tr>
</tbody>
</table>
EXPANDED AIR BARRIER TESTING

- Expanded mandatory blower door testing for small buildings

- Allow R-2 Buildings to follow an alternative testing procedure, using sampling of dwelling units and a threshold of 0.3 cfm/enclosure area (Section R402.4.1.3).

<table>
<thead>
<tr>
<th>Area of Building (sqft)</th>
<th>Height of Building</th>
<th>2020 NYCECC Air Leakage Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 10,000</td>
<td>Any</td>
<td>Visual Inspection</td>
</tr>
<tr>
<td>≥ 10,000 to 25,000</td>
<td>&lt; 75 ft</td>
<td>Blower door test</td>
</tr>
<tr>
<td>≥ 10,000 to 25,000</td>
<td>&gt; 75 ft</td>
<td>ABC Plan or Blower door test</td>
</tr>
<tr>
<td>25,000 to &lt; 50,000</td>
<td>≤ 75 ft</td>
<td>Blower door test</td>
</tr>
<tr>
<td>25,000 to &lt; 50,000</td>
<td>&gt; 75 ft</td>
<td>ABC Plan or Blower door test</td>
</tr>
<tr>
<td>≥ 50,000</td>
<td>any</td>
<td>ABC Plan or Blower door test</td>
</tr>
</tbody>
</table>
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

(continued)

- 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](image1)
![Figure 7: Example linear transmittance of a floor slab detail](image2)
![Figure 8: Example point transmittance of a beam penetration detail](image3)
NEW THERMAL BRIDGE DOCUMENTATION

- 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

- Point Thermal Bridges
  1. Must be noted as thermal bridge on the drawings - Only when a single point of 12 in² or greater (8 in² 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
  - 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:
    - Linear thermal bridge type
    - Total length of each bridge throughout entire thermal envelope
    - Identification of a relevant detail showing a cross-section through the thermal bridge
    - $\Psi$-value for each thermal bridge
      - The $\Psi$-value is listed in Table C402.6 or R402.6, but alternate values may be used with proper analysis (i.e. THERM)
      - 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>Ψ-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
Changes from the City

- Changes to HVAC/Other
  - Update HVAC efficiency tables to include all ASHRAE-regulated equipment at the current Federal efficiency standards
  - Modifications to the “Additional Energy Efficiency Options” – removal of renewable energy
  - Expanded commissioning requirements for alterations
Resource & Form Updates
TO ALIGN WITH THE 2020 NYCECC
FORM CHANGES: TR8

Changes to TR8 Form (Admin)

---

**Location Information**

Required for all applications.

<table>
<thead>
<tr>
<th>House No(s)</th>
<th>Street Name</th>
<th>BIN No(s)</th>
<th>Work on Floor(s)</th>
</tr>
</thead>
</table>

**Applicant Information**

Required for all applications.

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>Middle Initial</th>
<th>Business Name</th>
<th>Business Telephone</th>
<th>Business Fax/Email Address</th>
<th>Business Address</th>
<th>City</th>
<th>State</th>
<th>Zip</th>
<th>Mobile Telephone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

*TR8: Technical Report Statement of Responsibility for Energy Code Progress Inspections*

This form must be typewritten.
FORM CHANGES: TR8

Changes to TR8 Form (Envelope)

- Remove loading dock weather seals
- Add new inspection, ‘Air barrier continuity plan testing’

<table>
<thead>
<tr>
<th>Y</th>
<th>N</th>
<th>Progress Inspections</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Protection of exposed foundation insulation (IA1), (IIA1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Insulation placement and R-values (IA2), (IIA2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fenestration and door U-factor and product ratings (IA3), (IIA3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fenestration air leakage (IA4), (IIA4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fenestration areas (IA5), (IIA5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Air sealing and insulation—visual barrier—visual inspection (IA6), (IIA6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Air sealing and insulation—testing barrier—testing (IA7), (IIA7)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loading dock weather seals (IIA8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Air barrier continuity plan testing (IIA8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vestibules (IIA9)</td>
</tr>
</tbody>
</table>

Note: Table Reference in NYCNY §5000-01(h) (1) and (2)
FORM CHANGES: TR8

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

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
MAJOR COMcheck CHANGES

2020 NYCECC – 3 ComCheck options
MAJOR COMcheck CHANGES (ASHRAE)

Additional Efficiency Package – for ASHRAE path
COMcheck CHANGES (FENESTRATION)
COMcheck CHANGES (ENV. BACKSTOP)

COMcheck Software Version 4.1.4.1
Envelope Compliance Certificate

Project Information
Project Title: Modeling Envelope Backstop
Location: New York, New York
Climate Zone: 4a
Project Type: New Construction
Vertical Glazing / Wall Area: 49%

Qualifies for 2020 NYCECC, App. CA Modeling: Envelope design -9% (allowable margin = -15.0%)

Envelope Compliance Statement
Compliance Statement: The proposed envelope design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed envelope systems have been designed to meet the 2020 New York City Energy Cons. Code, App. CA Modeling Envelope Backstop requirements in COMcheck Version 4.1.4.1 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.
**FORM CHANGES: EN1 (LL97)**

LL97 Calculator – based on modeled energy data

<table>
<thead>
<tr>
<th></th>
<th>Carbon Emissions Information (LL97)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>tCO₂e Limits for 2024-2029</td>
</tr>
<tr>
<td>tCO₂e Limit (LL97)</td>
<td>1,131</td>
</tr>
<tr>
<td>tCO₂e for this Building</td>
<td>1,463</td>
</tr>
<tr>
<td>Does this building comply with LL97?</td>
<td>This building is subject to meeting LL97 of 2019. By 2024, this proposed design may not comply with the requirements of LL97 based on the estimated carbon emissions.</td>
</tr>
</tbody>
</table>

**Total carbon emissions (tCO₂e) for this building is an estimate based on the modeled annual energy usage and gross square footage. The performance of the building will be affected by construction quality, occupancy, and operational impacts. Actual carbon emissions may be higher or lower than this estimate.**

---

2020 DIGITAL: SAFETY, INNOVATION & SUSTAINABILITY CONFERENCE

NYC Buildings

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Appendix G – allows compliance with Source Energy

<table>
<thead>
<tr>
<th>Performance Cost Index - Appendix G ONLY</th>
<th>4B Performance Source Energy Index - Appendix G ONLY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline Building</td>
</tr>
<tr>
<td></td>
<td>Baseline Building</td>
</tr>
<tr>
<td>Building Performance Factor</td>
<td>0.639</td>
</tr>
<tr>
<td>Baseline Regulated Cost</td>
<td>$1,515,954.40</td>
</tr>
<tr>
<td>Baseline Unregulated Cost</td>
<td>$70,302.10</td>
</tr>
<tr>
<td>Total Energy Cost</td>
<td>$1,586,256.50</td>
</tr>
<tr>
<td>Performance Cost Index</td>
<td>0.655</td>
</tr>
</tbody>
</table>
## FORM CHANGES: EN1 (BPF, Envelope Backstop)

- Weighted BPF Calculator (Appendix G)
- Envelope Backstop values (from COMcheck)

### Weighted BPF and Envelope Backstop Values

<table>
<thead>
<tr>
<th>Space Classification</th>
<th>Modeled Area</th>
<th>Weighted BPF (energy cost)</th>
<th>Weighted BPF (source energy)</th>
<th>Baseline Threshold (Weighted Average)</th>
<th>Proposed Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Other</td>
<td>8,750</td>
<td>0.639</td>
<td>-</td>
<td>-12.3</td>
<td></td>
</tr>
<tr>
<td>Dormitory</td>
<td>2,000</td>
<td></td>
<td>Weighted BPF (source energy)</td>
<td>-11.0</td>
<td></td>
</tr>
<tr>
<td>Healthcare/hospital</td>
<td>-</td>
<td>0.649</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Hotel/motel</td>
<td>45,000</td>
<td></td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Multifamily</td>
<td>80,000</td>
<td></td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Office</td>
<td>944</td>
<td></td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Restaurant</td>
<td>3,788</td>
<td></td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Retail</td>
<td>-</td>
<td></td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>School</td>
<td>-</td>
<td></td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Warehouse</td>
<td>-</td>
<td></td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>140,482</strong></td>
<td></td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
**FORM CHANGES: EN1 (LIGHTING POWER)**

- Updated space type for ‘unfinished spaces’
- New columns for additional power allowances (decorative, retail, RCR, additional controls)

<table>
<thead>
<tr>
<th>Space Type (Table 9.6.1)</th>
<th>Total Area Space/Blg Type (ft²)</th>
<th>Baseline Case</th>
<th>Additional Power Allowance?</th>
<th>Proposed Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unfinished: Post construction buildout</td>
<td>20,000</td>
<td>Yes</td>
<td>0.20</td>
<td>None</td>
</tr>
<tr>
<td>Lobby - all other</td>
<td>5,000</td>
<td>Yes</td>
<td>0.90</td>
<td>Decorative</td>
</tr>
</tbody>
</table>
FORM CHANGES: EN1 (HVAC)

- Partially automated HVAC documentation (macro based)

<table>
<thead>
<tr>
<th>HVAC Cover Sheet</th>
<th>Proposed Building Classification (auto-populated + drop-down)</th>
<th>Baseline systems correspond to Section 11 ECB</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Condenser Cooling Source</td>
<td>Heating System Classification</td>
</tr>
<tr>
<td>Residential</td>
<td>Air/None</td>
<td>Heat Pump</td>
</tr>
<tr>
<td>VRF</td>
<td>ACCU-1 through 8</td>
<td>Res-Sys</td>
</tr>
<tr>
<td>Nonresidential - &lt; 3 floors and &lt; 25,000 ft²</td>
<td>Air/None</td>
<td>Fossil Fuel</td>
</tr>
<tr>
<td>Packaged/split-system air conditioner</td>
<td>RTU-1</td>
<td>RTU-1</td>
</tr>
<tr>
<td>Nonresidential - 4-5 floors and &lt; 25,000 ft²</td>
<td>Packaged terminal heat pump</td>
<td>PTHP</td>
</tr>
<tr>
<td>PTHP</td>
<td>Hotel-Sys</td>
<td></td>
</tr>
</tbody>
</table>
### Partially automated HVAC documentation

<table>
<thead>
<tr>
<th>Description</th>
<th>Units</th>
<th>Description</th>
<th>Units</th>
<th>Supporting Doc. Location</th>
<th>Model Output Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Description</td>
<td>NA</td>
<td>System B: PTHP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Packaged terminal heat pump</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Name in Model</td>
<td>Hotel-Sys</td>
<td>Hotel-Sys</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Cooling Capacity</td>
<td>25,000 BTU/h</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Table 6.8.1 Unitary Cooling Capacity Range</em></td>
<td>&gt;17,000 and &lt;55,000 BTU/h</td>
<td></td>
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<tr>
<td><em>Unitary Cooling Eff.</em></td>
<td>9.5 EER</td>
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<tr>
<td><em>Unitary Cooling Part-load Eff. (if applicable)</em></td>
<td>IER</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Total Heating Capacity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Table 6.8.1 Unitary Heating Capacity Range</em></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><em>Unitary Heating Efficiency</em></td>
<td>2.94 COP</td>
<td></td>
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</tr>
</tbody>
</table>
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