



2020 DIGITAL: SAFETY, INNOVATION
& SUSTAINABILITY CONFERENCE

INTRODUCING THE COMMERCIAL PROVISIONS OF THE 2020 NYCECC

PRESENTED BY

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PRESENTATION DESCRIPTION

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 ECCCNY
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

2020 DIGITAL: SAFETY, INNOVATION & SUSTAINABILITY CONFERENCE

NYCECC REVISION PROCESS

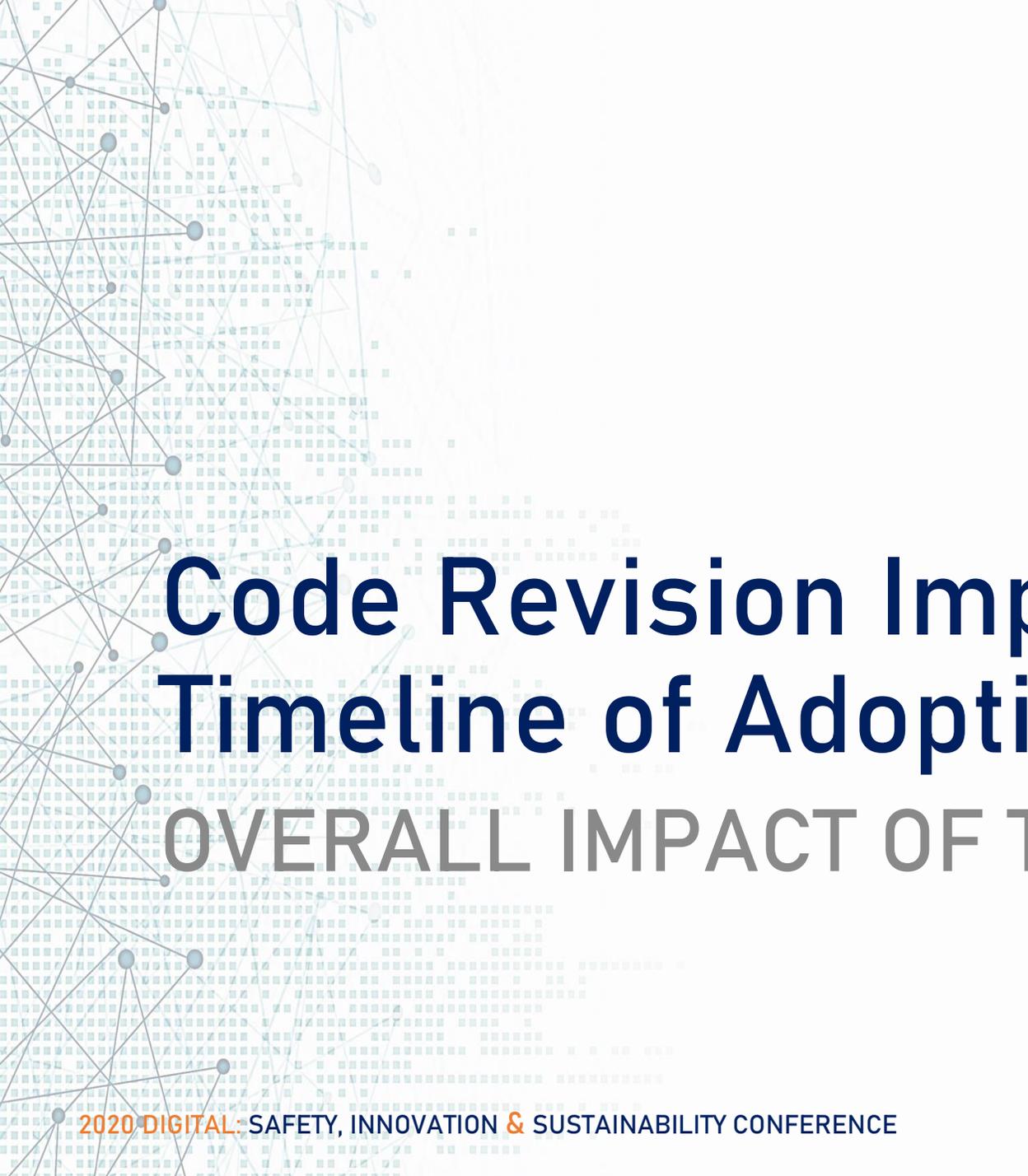
- NYS Executive Law: Building & Construction Codes
 - Carve out for municipalities with populations greater than 1 million
- NYS Energy Law: Energy Codes
 - Allows a municipality to have their own code if more stringent than State's code
 - NYC LL 85 of 2009 effective July 1, 2010 established NYC's first Energy Code

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, published in July, 2019, targeted an aggregate energy reduction of 20% compared to ASHRAE 90.1-2013.
 - 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 201
 - 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

EFFECTIVE DATE

- 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

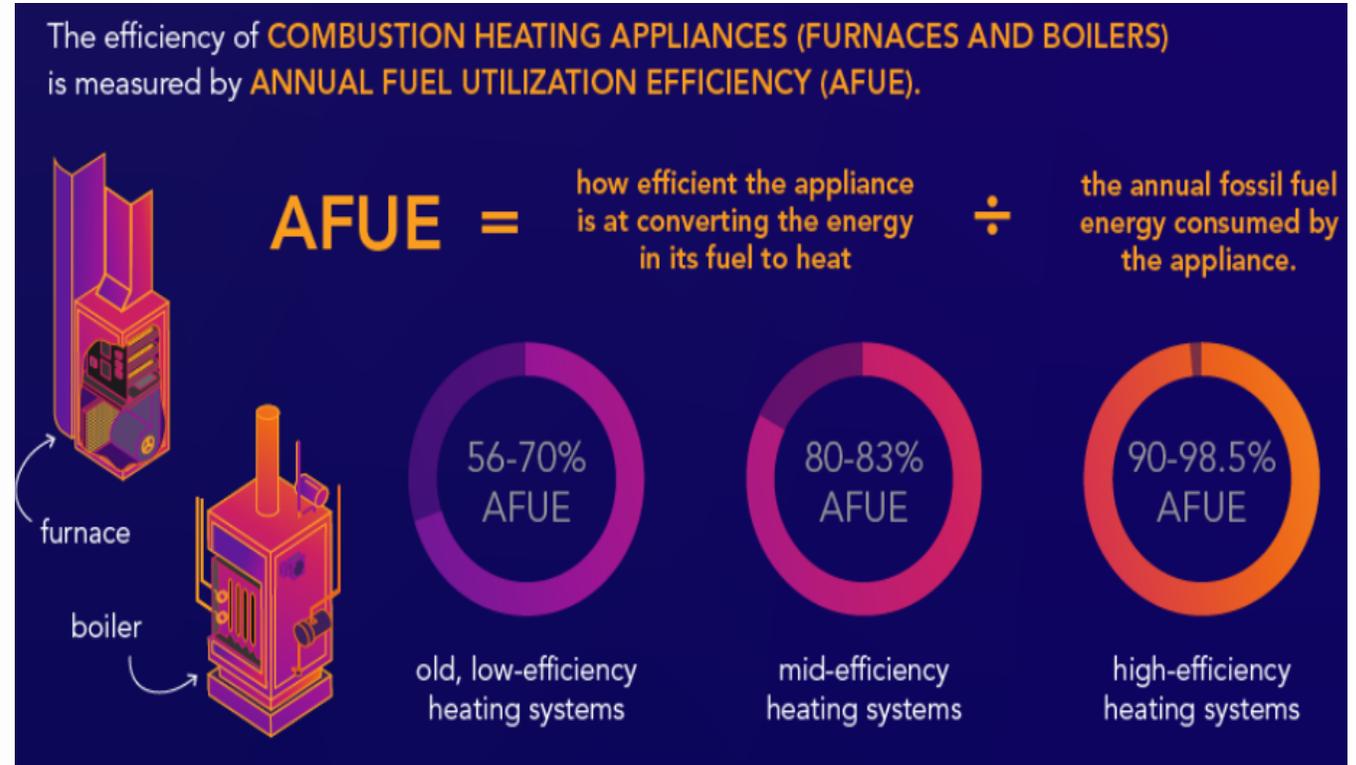


Photo source: <https://www.energy.gov/articles/energy-saver-101-infographic-home-heating>

CHANGES FROM THE 2018 IECC

- Changes in economizer requirements:
 - Economizers are required on certain systems:
 - Individual systems $\geq 54,000$ 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 $\geq 270,000$ 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)



Photo source: US Department of Energy: Energy Saver Program

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 FROM ASHRAE 90.1-2016

- 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'



Photo source: US Department of Energy Building Energy Codes Program

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%



Photo source: US Department of Energy Building America Solution Center

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 $\geq 10,000$ 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

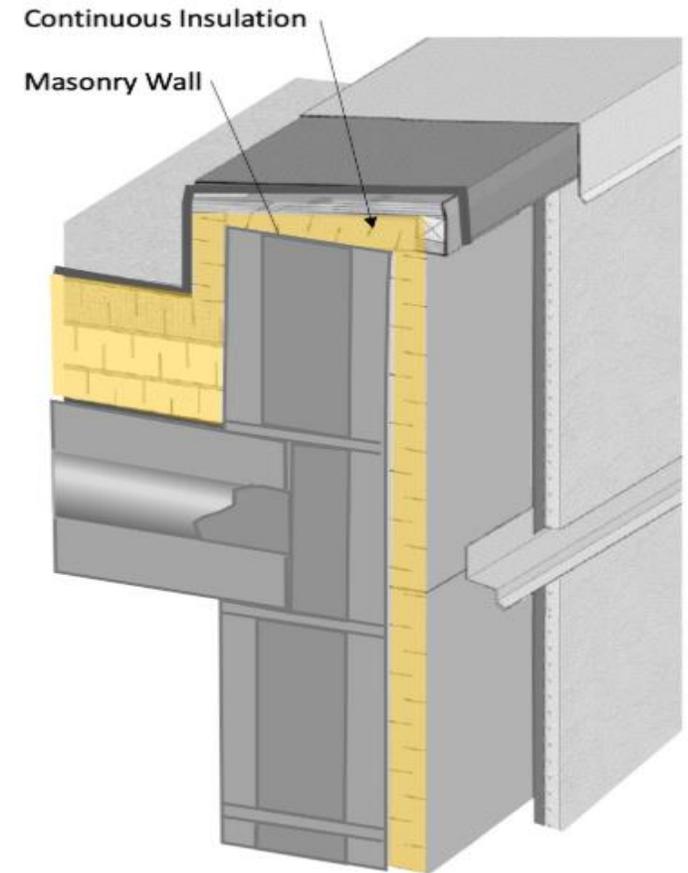
- **R-14.6ci** (all other), **R-16.7ci** (Group R) – (from R-10ci)

■ Heated slabs

- **R-20** for 48" below + **R-5 full slab** – (from R-15 for 48")

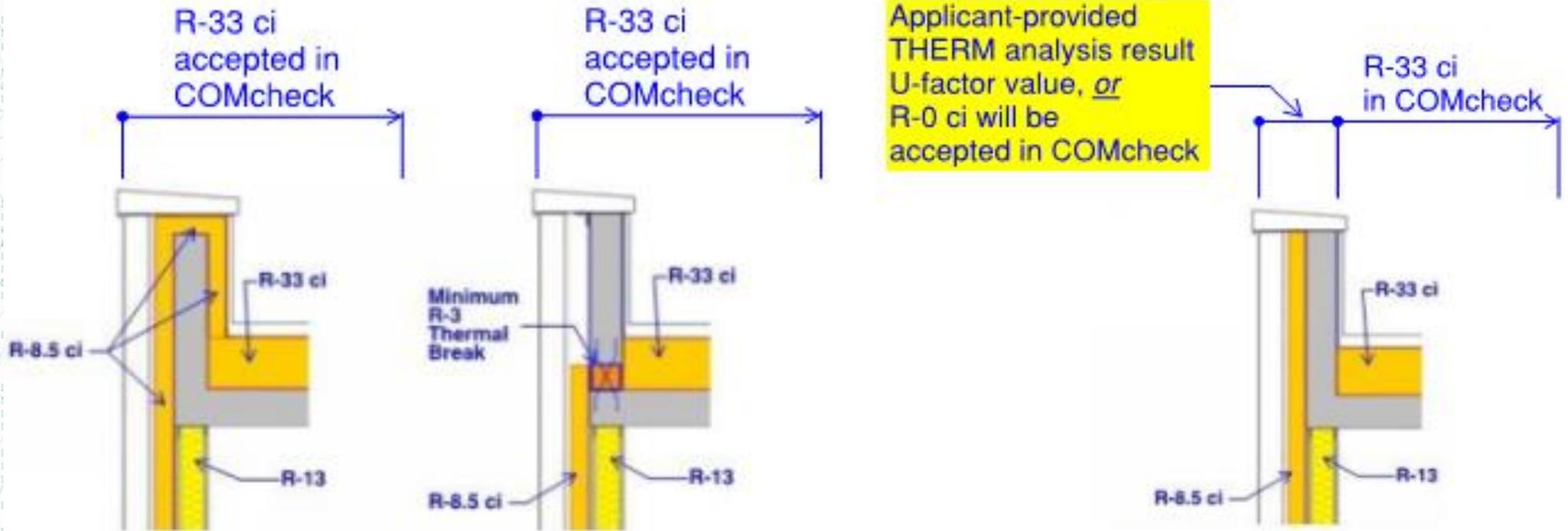
NEW REQUIREMENTS FOR BALCONIES + PARAPETS

- 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)



Photo source: Lighting Resource Guide, www.energycodes.gov,

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**

NEW DEFAULT SPANDREL U-FACTORS

- 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^a

FRAME TYPE	SPANDREL PANEL	RATED R-VALUE OF INSULATION BETWEEN FRAMING MEMBERS						
		R-4	R-7	R-10	R-15	R-20	R-25	R-30
Aluminum without Thermal Break ^b	Single glass pane, stone, or metal panel	0.242	0.222	0.212	0.203	0.198	0.195	0.193
	Double glass with no low-e coatings	0.233	0.218	0.209	0.202	0.197	0.194	0.192
	Triple or low-e glass	0.226	0.214	0.207	0.200	0.196	0.194	0.192
Aluminum with Thermal Break ^c	Single glass pane, stone, or metal panel	0.211	0.186	0.173	0.162	0.155	0.151	0.149
	Double glass with no low-e coatings	0.200	0.180	0.170	0.160	0.154	0.151	0.148
	Triple or low-e glass	0.191	0.176	0.167	0.159	0.153	0.150	0.148
Structural Glazing ^d	Single glass pane, stone, or metal panel	0.195	0.163	0.147	0.132	0.123	0.118	0.114
	Double glass with no low-e coatings	0.180	0.156	0.142	0.129	0.122	0.117	0.114
	Triple or low-e glass	0.169	0.150	0.138	0.127	0.121	0.116	0.113
No framing or Insulation is Continuous ^e	Single glass pane, stone, or metal panel	0.148	0.102	0.078	0.056	0.044	0.036	0.031
	Double glass with no low-e coatings	0.136	0.097	0.075	0.054	0.043	0.035	0.030
	Triple or low-e glass	0.129	0.093	0.073	0.053	0.042	0.035	0.030

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).

Area of Building (sqft)	Height of Building	2020 NYCECC Air Leakage Requirement
< 10,000	Any	Visual Inspection
≥ 10,000 to 25,000	≤ 75 ft	Blower door test
≥ 10,000 to 25,000	> 75 ft	ABC Plan or Blower door test
25,000 to < 50,000	≤ 75 ft	Blower door test
25,000 to < 50,000	> 75 ft	ABC Plan or Blower door test
≥ 50,000	any	ABC Plan or Blower door test

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

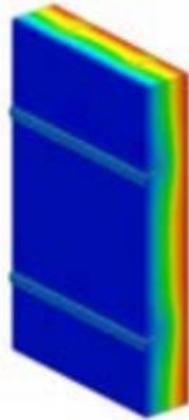


Figure 6: Example clear field assembly

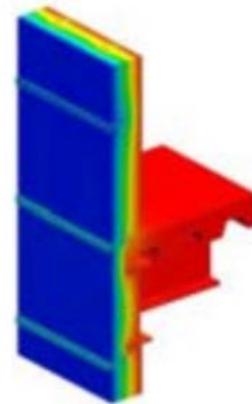


Figure 7: Example linear transmittance of a floor slab detail

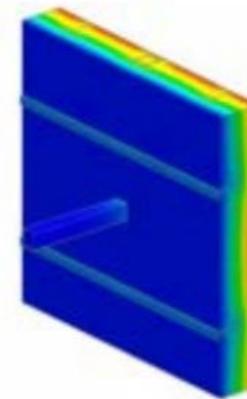


Figure 8: Example point transmittance of a beam penetration detail

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

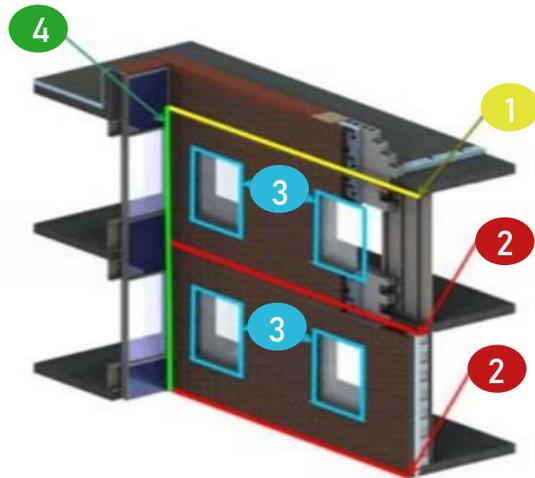
- The linear thermal bridges listed in the corresponding table (Table R402.6 or Table C402.6) must be documented in a table including the following items:
 - Linear thermal bridge type
 - Total length of each bridge throughout entire thermal envelope
 - Identification of a relevant detail showing a cross-section through the thermal bridge
 - Ψ -value for each thermal bridge
 - The Ψ -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

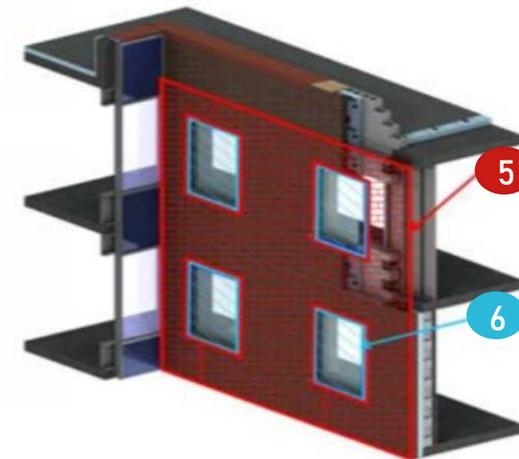
Example Documentation for Linear Thermal Bridge

Linear Thermal Bridge Type	Total Length	Detail Location	Ψ -value
Balcony	260 feet	A-450	0.50
Fenestration Perimeter	1074 feet	A-452	0.32
Shelf Angle	83 feet	A-500	0.41

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 Ar
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



Chillers



Heat Pumps



Computer Room AC



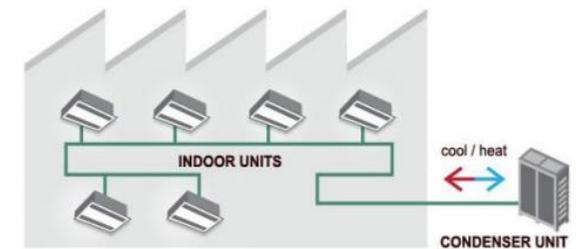
Dedicated Outdoor Air*



Rooftop AC Units



Cooling Towers



Variable Refrigerant Flow



Resource & Form Updates TO ALIGN WITH THE 2020 NYCECC

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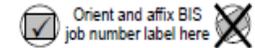
FORM CHANGES: TR8

Changes to TR8 Form (Admin)



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

This form must be typewritten



1	Location Information <i>Required for all applications.</i>	
House No(s)	Street Name	BIN No(s)
Work on Floor(s)		
2	Applicant Information <i>Required for all applications.</i>	
Choose all that apply: <input type="checkbox"/> Design Applicant 3A, 4 <input type="checkbox"/> Progress Inspections Applicant 3B-D, 5-6		
Last Name	First Name	Middle Initial
Business Name	Business Telephone	
Business Address	Business Fax-Email Address	
City	State	Zip
License Type	choose one: <input type="checkbox"/> P.E. <input type="checkbox"/> R.A.	Mobile Telephone
		License Number



FORM CHANGES: TR8

Changes to TR8 Form (Envelope)

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

Y	N	Progress Inspections	Table Reference in 1RCNY §5000-01(h) (1) and (2)
<input type="checkbox"/>	<input type="checkbox"/>	Protection of exposed foundation insulation	(IA1), (IIA1)
<input type="checkbox"/>	<input type="checkbox"/>	Insulation placement and <i>R</i> -values	(IA2), (IIA2)
<input type="checkbox"/>	<input type="checkbox"/>	Fenestration and door <i>U</i> -factor and product ratings	(IA3), (IIA3)
<input type="checkbox"/>	<input type="checkbox"/>	Fenestration air leakage	(IA4), (IIA4)
<input type="checkbox"/>	<input type="checkbox"/>	Fenestration areas	(IA5), (IIA5)
<input type="checkbox"/>	<input type="checkbox"/>	Air sealing and insulation — visual barrier — visual inspection	(IA6), (IIA6)
<input type="checkbox"/>	<input type="checkbox"/>	Air sealing and insulation — testing barrier — testing	(IA7), (IIA7)
<input type="checkbox"/>	<input type="checkbox"/>	Loading dock weather seals	(IIA8)
<input type="checkbox"/>	<input type="checkbox"/>	Air barrier continuity plan testing	(IIA8)
<input type="checkbox"/>	<input type="checkbox"/>	Vestibules	(IIA9)

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

<input type="checkbox"/>	<input type="checkbox"/>	Fireplaces	(IB1), (IIB1)
<input type="checkbox"/>	<input type="checkbox"/>	Ventilation and air distribution system	(IB2)
<input type="checkbox"/>	<input type="checkbox"/>	Shutoff dampers	(IIB2)
<input type="checkbox"/>	<input type="checkbox"/>	HVAC-R and service water heating equipment	(IB3), (IIB3)
<input type="checkbox"/>	<input type="checkbox"/>	HVAC-R and service water heating system controls	(IB4), (IIB4)
<input type="checkbox"/>	<input type="checkbox"/>	HVAC-R and service water piping design and insulation and sealing	(IB5), (IIB5)
<input type="checkbox"/>	<input type="checkbox"/>	Duct leakage testing, insulation and design	(IB6), (IIB6)

FORM CHANGES: TR8

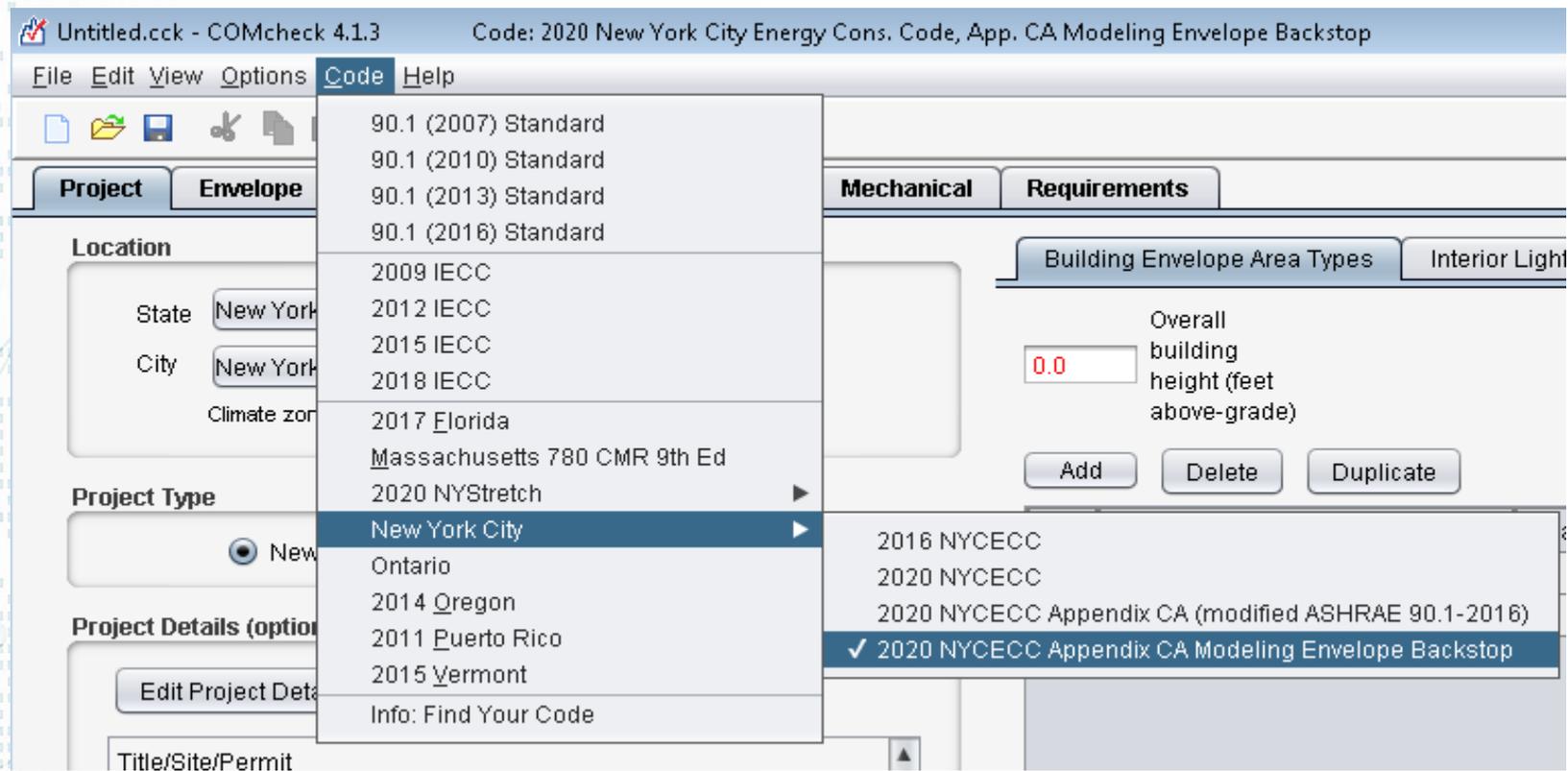
Changes to TR8 Form (lighting/power)

- 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

<input type="checkbox"/>	<input type="checkbox"/>	Electrical energy consumption Metering	(IC1), (IIC1)
<input type="checkbox"/>	<input type="checkbox"/>	Lighting in dwelling units	(IIC2)
<input type="checkbox"/>	<input type="checkbox"/>	Interior lighting power	(IC2), (IIC3)
<input type="checkbox"/>	<input type="checkbox"/>	Exterior lighting power	(IIC4)
<input type="checkbox"/>	<input type="checkbox"/>	Lighting controls	(IIC5)
<input type="checkbox"/>	<input type="checkbox"/>	Electrical motors and elevators	(IIC6)
<input type="checkbox"/>	<input type="checkbox"/>	Maintenance information	(ID1), (IID1)
<input type="checkbox"/>	<input type="checkbox"/>	Permanent certificate	(ID2)
<input type="checkbox"/>	<input type="checkbox"/>	Solar ready Electric vehicle service equipment requirements	(ID3)

MAJOR COMcheck CHANGES

2020 NYCECC – 3 ComCheck options



MAJOR COMcheck CHANGES (ASHRAE)

Additional Efficiency Package – for ASHRAE path

Untitled.cck - COMcheck 4.1.4 Code: 2020 New York City Energy Conservation Code, Appendix CA (modified 90.1-2016)

File Edit View Options Code Help

Project Envelope Interior Lighting Exterior Lighting Mechanical Requirements

Location

State: New York
City: New York
Climate zone: 4a

Project Type

New Construction Addition Alterations

Compliance Options

Efficiency Option: Unspecified
Air Barrier Option:
Project Details (optional):
Edit Project Details

Building Envelope Area Types Interior Lighting Method and Areas Exterior Lighting Areas

125 Overall building height (feet above-grade)

Add Delete Duplicate

	Building Type	Area Description	Area	Wft2	Space Conditioning
1	Multifamily		55000	0.49	Residential

COMcheck CHANGES (FENESTRATION)

Building Envelope Area Types | Interior Lighting Method and Areas | Exterior Lighting Areas

Overall building height (feet above-grade): 100

Add Delete Duplicate

Building Type	Area Description
1 Multifamily	

Asset

Window 1 Click here to select As...

- Metal Frame
 - Fixed, < 95' above-grade
- Wood Frame
 - Fixed, >= 95' above-grade
- Vinyl/Fiberglass Frame
 - Operable, < 95' above-grade
- Curtain Wall
 - Operable, >= 95' above-grade
- Other

	or Perimeter	R-Value	R-Value	U-Factor	Factor ^(a)
Roof 1: Insulation Entirely Above Deck, [Bldg. Use 1 - Hotel]	85465	---	30.0	0.032	0.030
NORTH					
Tower: Steel-Framed, 16" o.c., [Bldg. Use 2 - Hotel]	80263	0.0	4.4	0.138	0.061
1-4 Tower Fixed: Curtain Wall:Fixed, Perf. Specs.: Product ID <95 Fixed, SHGC 0.40, VT 0.44, < 95' above-grade, [Bldg. Use 2 - Hotel] (b)	8123	---	---	0.450	0.360
1-4 Tower Oper: Curtain Wall:Operable, Perf. Specs.: Product ID < 95 Oper, SHGC 0.40, VT 0.44, < 95' above-grade, [Bldg. Use 2 - Hotel] (b)	2520	---	---	0.450	0.400
5-11 Tower Fixed: Curtain Wall:Fixed, Perf. Specs.: Product ID > 95 Fixed > > >, SHGC 0.40, VT 0.44, >= 95' above-grade, [Bldg. Use 2 - Hotel] (b)	24368	---	---	0.450	0.360

COMcheck CHANGES (ENV. BACKSTOP)



COMcheck Software Version 4.1.4.1

Envelope Compliance Certificate

Project Information

Energy Code: 2020 New York City Energy Cons. Code, App. CA **Modeling Envelope Backstop**
Project Title:
Location: New York, New York
Climate Zone: 4a
Project Type: New Construction
Vertical Glazing / Wall Area: 49%
Performance Sim. Specs: EnergyPlus 8.1.0.009 (EPW: USA_NY_New.York-LaGuardia.AP.725030_TMY3.epw)

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.

Name - Title

Signature

Date

FORM CHANGES: EN1 (LL97)

LL97 Calculator – based on modeled energy data

4B	Carbon Emissions Information (LL97)	
	tCO ₂ e Limits for 2024-2029	tCO ₂ e Limits for 2030-2034
tCO ₂ e Limit (LL97)	1,131	643
tCO ₂ e for this Building	1,463	
Does this building comply with LL97?	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.	
<p>**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. **</p>		

FORM CHANGES: EN1 (SOURCE ENERGY)

Appendix G – allows compliance with Source Energy

4A	Performance Cost Index - Appendix G ONLY		4B	Performance Source Energy Index - Appendix G ONLY	
	Baseline Building	Proposed Building		Baseline Building	Proposed Building
Building Performance Factor	0.639	Weighted Average	Building Performance Factor	0.649	Weighted Average
Baseline Regulated Cost	\$ 1,515,954.40	\$ 1,228,801.90	Baseline Regulated Source Energy	6,012,631	6,133,027
Baseline Unregulated Cost	\$ 70,302.10	\$ 70,302.10	Baseline Unregulated Source Energy	1,792,704	1,792,704
Total Energy Cost	\$ 1,586,256.50	\$ 1,299,104.00	Total Source Energy	7,805,334	7,925,731
Performance Cost Index	0.655	0.819	Performance Source Energy Index	0.729	1.015

FORM CHANGES: EN1 (BPF, Envelope Backstop)

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

4C Weighted BPF			4D Weighted Envelope Backstop (results from ComCheck)	
Space Classification	Modeled Area	Weighted BPF (energy cost)		Backstop threshold
All Other	8,750	0.639	Baseline Threshold (Weighted Average)	-12.3
Dormitory	2,000	Weighted BPF (source energy)	Proposed Design	-11.0
Healthcare/hospital	-	0.649		
Hotel/motel	45,000			
Multifamily	80,000			
Office	944			
Restaurant	3,788			
Retail	-			
School	-			
Warehouse	-			
TOTAL	140,482			

FORM CHANGES: EN1 (LIGHTING POWER)

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

6d.1		Interior LPD: Space-by-Space Method											
Compliance based on Section 11 ECB													
Space Type (Table 9.6.1)	Total Area Space/Blg Type (ft ²)	Baseline Case			Additional Power Allowance?		Proposed Case						
		Auto. Controls (Yes/No)	Daylight Ctrls (Yes/No)	Baseline LPD (W/ft ²)	Type	Add'l LPD (W/ft ²)	Auto. Controls (Yes/No)	Daylight Ctrls (Yes/No)	Proposed LPD (W/ft ²)	Add'l LPD (W/ft ²)	Supporting Doc. Location	Model Output Report	
Unfinished: Post construction buildout	20,000	Yes	Yes	0.20	None	0.00	Yes	No	0.15	0.00			
Lobby - all other	5,000	Yes	No	0.90	Decorative	0.90	Yes	No	1.20	0.90			

FORM CHANGES: EN1 (HVAC)

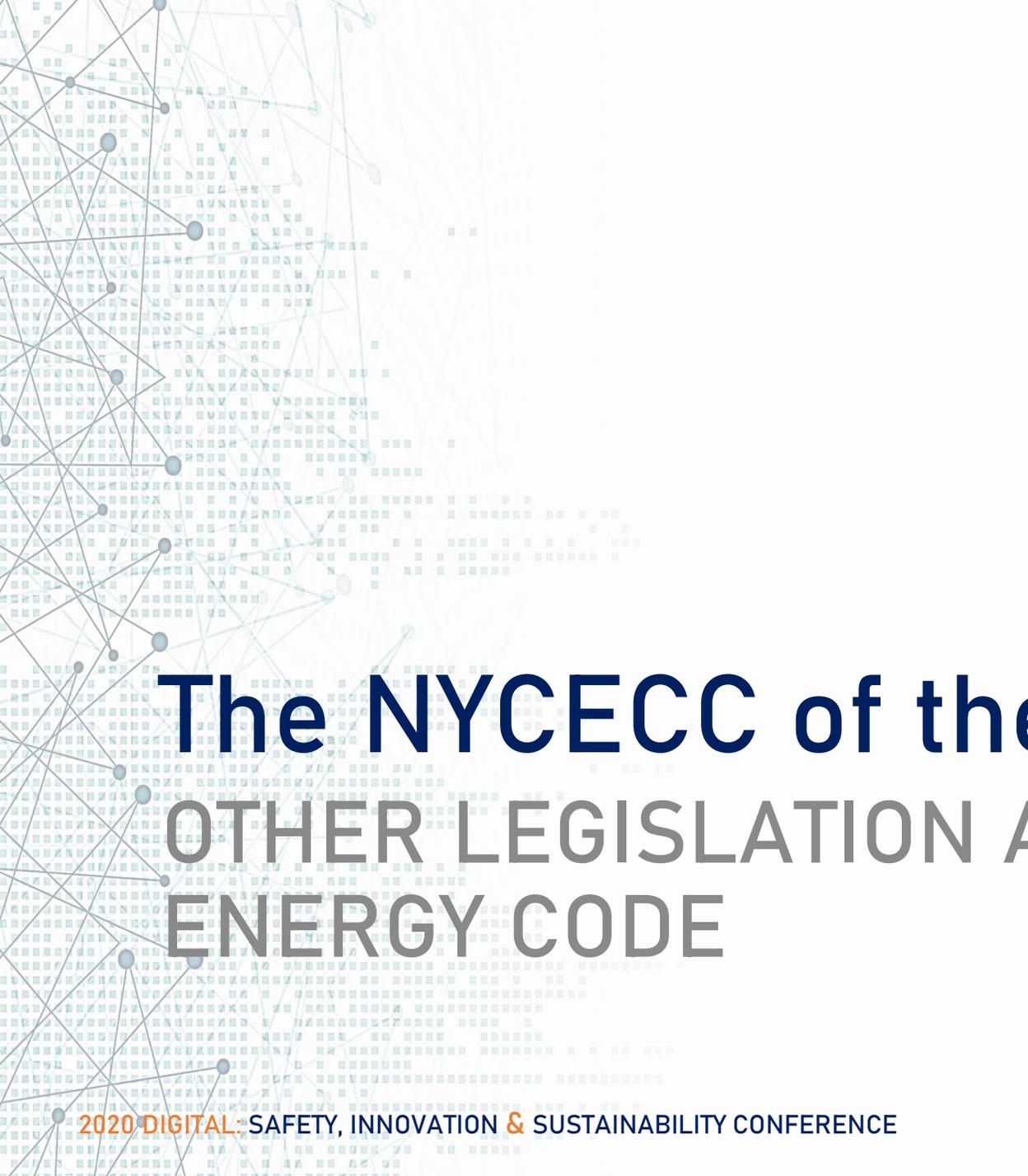
- Partially automated HVAC documentation (macro based)

HVAC Cover Sheet					Proposed Building Classification (auto-populated + drop-down)			Baseline systems correspond to Section 11 ECB
This column not used for Section 11 projects	Proposed System Design	System Name in Mechanical Schedule	System Name in Model Reports (baseline)	System Name in Model Reports (proposed)	Condenser Cooling Source	Heating System Classification	Zone Classification	
Residential	VRF	ACCU-1 through 8	Res-Sys	Res-Sys	Air/None	Heat Pump	Single-Zone Residential	System 8: PTHP
Nonresidential - < 3 floors and < 25,000 ft2	Packaged/split-system air conditioner	RTU-1	RTU-1	RTU-1	Air/None	Fossil Fuel	Single-Zone Non-Residential	System 11: Packaged rooftop AC
Nonresidential - 4-5 floors and < 25,000 ft2	Packaged terminal heat pump	PTHP	Hotel-Sys	Hotel-Sys	Air/None	Heat Pump	Single-Zone Residential	System 8: PTHP

FORM CHANGES: EN1 (HVAC)

■ Partially automated HVAC documentation

6i	Air-Side HVAC					
	HVAC System / Group (BASELINE DESIGN)		HVAC System / Group (PROPOSED DESIGN)			
	Description	Units	Description	Units	Supporting Doc. Location	Model Output Report
System Description	NA		Packaged terminal heat pump			
	System 8: PTHP					
System Name in Model	Hotel-Sys		Hotel-Sys			
# of Similar Systems						
Total Cooling Capacity	25,000	BTU/h		BTU/h		
*Table 6.8.1 Unitary Cooling Capacity Range	>=17,000 and <65,000		BTU / h			
*Unitary Cooling Eff.	9.5	EER		EER		
*Unitary Cooling Part-load Eff. (if applicable)		IEER		IEER		
Total Heating Capacity		BTU/h		BTU/h		
*Table 6.8.1 Unitary Heating Capacity Range		Et				
*Unitary Heating Efficiency	2.94	COP		COP		



The NYCECC of the Future

OTHER LEGISLATION AFFECTING THE ENERGY CODE

2020 DIGITAL: SAFETY, INNOVATION & SUSTAINABILITY CONFERENCE

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