

# 2020 NYC Energy Conservation Code Commercial Prescriptive

vs.

## ENERGY STAR Multifamily New Construction Version 1.1 Prescriptive

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	2020 NYCECC Commercial Prescriptive		ESMFNC v1.1 Prescriptive		NYCECC C406 Additional Efficiency Package Option		Notes
<b>Cooling Equipment (Dwelling Units and Common Spaces)</b>					<b>More efficient HVAC equipment performance in accordance with Section C406.2.</b>		
Air conditioners (air cooled, split system)	< 65,000 Btu/h	13 SEER	13 SEER		14.3 SEER		
Room AC, with louvered sides	< 6,000 Btu/h < 6-8,000 Btu/h < 8-14,000 Btu/h < 14-20,000 Btu/h	11.0 CEER 11.0 CEER 10.9 CEER 10.7 CEER	< 6,000 Btu/h < 6-8,000 Btu/h < 8-14,000 Btu/h < 14-20,000 Btu/h	12.1 CEER & ENERGY STAR 12.1 CEER & ENERGY STAR 12.0 CEER & ENERGY STAR 11.8 CEER & ENERGY STAR	< 6,000 Btu/h < 6-8,000 Btu/h < 8-14,000 Btu/h < 14-20,000 Btu/h	12.1 CEER 12.1 CEER 12.0 CEER 11.8 CEER	
Room AC, without louvered sides	< 6,000 Btu/h < 6-8,000 Btu/h < 8-11,000 Btu/h < 11-14,000 Btu/h	10.0 CEER 10.0 CEER 9.6 CEER 9.5 CEER	< 6,000 Btu/h < 6-8,000 Btu/h < 8-11,000 Btu/h < 11-14,000 Btu/h	11.0 CEER & ENERGY STAR 11.0 CEER & ENERGY STAR 10.6 CEER & ENERGY STAR 10.5 CEER & ENERGY STAR	< 6,000 Btu/h < 6-8,000 Btu/h < 8-11,000 Btu/h < 11-14,000 Btu/h	11.0 CEER 11.0 CEER 10.6 CEER 10.5 CEER	
Through-the-wall (air cooled)	< 30,000 Btu/h	12 SEER	12 SEER		13.2 SEER		
PTAC, standard size	14.0 - (0.3 X Cap/1000) EER		13.8 - (0.3 X Cap/1000) EER		15.4 - (0.33 X Cap/1000) EER		
<b>Heating Equipment (Dwelling Units and Common Spaces)</b>					<b>More efficient HVAC equipment performance in accordance with Section C406.2.</b>		
Electric Resistance	No Requirement		Dwelling Unit: Not permitted Common Space: Total heating capacity ≤ 12 kBtu/h (3.5 kW) per enclosed space and has automatic thermostatic controls		No Requirement		
Gas PTAC	80% AFUE/Et		80% AFUE/Et		88% AFUE/Et		
Gas furnace (<225 kBtu/h)	80% AFUE/Et		Dwelling Unit: 95% AFUE & ENERGY STAR Common Space: 78% AFUE or 80% Et		88% AFUE/Et		ES: Must be ENERGY STAR certified
Oil furnace (<225 kBtu/h)	83% AFUE or 80% Et		85% AFUE & ENERGY STAR		91% AFUE or 88% Et		ES: Must be ENERGY STAR certified
HW Gas boiler (<300 kBtu/h)	82% AFUE		90% AFUE ENERGY STAR		90% AFUE		ES: Must be ENERGY STAR certified
HW Oil boiler (<300 kBtu/h)	84% AFUE		86% AFUE		92.4% AFUE		
<b>Heat Pump (Dwelling Units and Common Spaces)</b>					<b>More efficient HVAC equipment performance in accordance with Section C406.2.</b>		
Heat pump (air cooled, split system)	< 65,000 Btu/h	8.2 HSPF / 14 SEER / 12.1 EER / 12.3 IEER	8.5 HSPF / 15 SEER / 12 EER		9 HSPF / 15.4 SEER / 13.3 EER / 13.53 IEER		
PTHP (standard size)	Cooling: 14.0 - (0.3 X Cap/1000) EER		Cooling: 14.0 - (0.3 X Cap/1000) EER		Cooling: 15.4 - (0.33 X Cap/1000) EER		
	Heating: 3.7 - (0.052 x Cap/1000) COP		Heating: 3.7 - (0.052 x Cap/1000) COP		Heating: 4.07 - (0.057 x Cap/1000) COP		
WLHP (<17,000 Btu/h)	Cooling: 12.2 EER		Cooling: 14.0 EER		Cooling: 13.4 EER		
	Heating: 4.3 COP		Heating: 4.2 COP		Heating: 4.7 COP		
<b>Central Heating Equipment</b>					<b>More efficient HVAC equipment performance in accordance with Section C406.2.</b>		
Central gas HW boiler	300 - 2,500 kBtu/h	80% Et	86% Et (89% Et if paired with in-unit WLHP)		300 - 2,500 kBtu/h	88% Et	
	> 2,500 kBtu/h	82% Ec			> 2,500 kBtu/h	90% Ec	
Central oil HW boiler	300 - 2,500 kBtu/h	82% Et			300 - 2,500 kBtu/h	90% Et	
	> 2,500 kBtu/h	84% Ec			> 2,500 kBtu/h	92.4% Ec	
Central VRF heat pumps	65 - 135 kBtu/h	Cooling: 14.6 IEER	65 - 135 kBtu/h	Cooling: 12.9 IEER	65 - 135 kBtu/h	Cooling: 16 IEER	
	65 - 135 kBtu/h	Heating: 3.3 COP, 47F	65 - 135 kBtu/h	Heating: 3.3 COP, 47F	65 - 135 kBtu/h	Heating: 3.6 COP, 47F	

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	2020 NYCECC Commercial Prescriptive		ESMFNC v1.1 Prescriptive		NYCECC C406 Additional Efficiency Package Option
<b>Service Water Heater</b>					<b>High-efficiency service water heating in accordance with Section C406.6.</b>
Gas, storage (≤ 75 kBtu/h)	≥ 20 gallons and ≤ 55 gallons	EF = 0.675 - 0.0015 x volume	≤55 Gal	0.67 EF	The building service water-heating system shall have one or more of the following that are sized to provide not less than 60 percent of the building's annual hot water requirements, or sized to provide 100 percent of the building's annual hot water requirements if the building shall otherwise comply with Section C403.9.5:1.  1. Waste heat recovery from service hot water, heat-recovery chillers, building equipment, or process equipment. 2. On-site renewable energy water-heating systems.
	> 55 gallons and ≤ 100 gallons	EF = 0.8012 - 0.00078 x volume	>55 Gal	0.77 EF	
Gas, instantaneous (50,000 to 200,000 Btu/h)	≥ 4,000 Btu/h/gal and < 2 gal	EF = 0.82 - 0.0019 x volume	≤55 Gal	0.67 EF	
Electric (≤ 12 kW)	≥ 20 gallons and ≤ 120 gallons	EF = 0.960 - 0.0003 x volume	≤55 Gal	0.95 EF	
Electric (> 12 kW)	Heat pump > 55 gallons and ≤ 120 gallons	EF = 2.057 - 0.00113 x volume	>55 Gal	2.0 EF	
Oil (≤ 105,000 Btu/h)	> 20 gallons and ≤ 50 gallons	EF = 0.68 - 0.0019 x volume	30 Gal	0.64 EF	
			40 Gal	0.62 EF	
			50 Gal	0.60 EF	
Oil (> 105,000 Btu/h)	< 4,000 Btu/h/gal	80% Et	60 Gal	0.58 EF	
			70 Gal	0.56 EF	
			80 Gal	0.54 EF	
Central Gas SHW Boiler	300-12,500 kBtu/h	80% Et	≥ 85% Et		
Central Oil SHW Boiler	300-12,500 kBtu/h	78% Et			

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	2020 NYCECC Commercial Prescriptive	ESMFNC v1.1 Prescriptive	Notes
<b>Domestic Hot Water Pipe Insulation</b>			
R-value	1-2" (≥ R-3 for DHW piping in dwelling units)	R-3 for DHW piping in dwelling units	
<b>Service Hot Water Heat Trap</b>			
Heat trap	<b>C404.3 Heat traps for hot water storage tanks.</b> Storage tank-type water heaters and hot water storage tanks that have vertical water pipes connecting to the inlet and outlet of the tank shall be provided with integral heat traps at those inlets and outlets or shall have pipe-configured heat traps in the piping connected to those inlets and outlets. Tank inlets and outlets associated with solar water heating system circulation loops shall not be required to have heat traps.	For in-unit storage water heaters, AHRI Certificate confirms the presence of a heat trap.	ES is stricter on in-unit DHW because it's integral, but ES has no heat trap req't for central DHW, so NYC is more strict there
<b>Thermostat</b>			
Thermostat type	<b>C403.4.2 Off-hour controls (Mandatory).</b> Each zone shall be provided with thermostatic setback controls that are controlled by either an automatic time clock or programmable control system.	Programmable thermostats for dwelling units.	
<b>Duct insulation for different duct locations</b>			
In unconditioned space	R-6	Not allowed in unconditioned space.	
Outside the building	R-8	Not allowed outside the building.	
Within building envelope	None (but must be separated from building exterior by at least R-8, per C403.11.1).	No insulation required.	
<b>Duct Leakage</b>			
Dwelling Units	Sealing required, but no testing required in 4+ story MFHR, but where required for LRMF, ≤ 4 CFM25 per 100 sq. ft. of CFA at Final.  <b>C403.11.2.1 Low-pressure duct systems (Mandatory).</b> Longitudinal and transverse joints, seams and connections of supply and return ducts ...shall be securely fastened and sealed with welds, gaskets, mastics (adhesives), mastic-plus-embedded-fabric systems or tapes.	See National Rater Field Checklist, Section 6.4  <b>Rough-in:</b> Tested per allowances below, with air handler & all ducts, building cavities used as ducts, & duct boots installed. In addition, all duct boots sealed to finished surface, Rater-verified at final. <b>No ducted returns:</b> The greater of ≤ 3 CFM25 per 100 sq. ft. of CFA or ≤ 30 CFM. Additionally, the Rater measured pressure difference between the space containing the air handler and the conditioned space, with the air handler running at high speed, is ≤ 5 Pa. For systems > 1 ton, increase by 1 Pa per half ton. <b>One or two ducted returns:</b> The greater of ≤ 4 CFM25 per 100 sq. ft. of CFA or ≤ 40 CFM. <b>Three or more ducted returns:</b> The greater of ≤ 6 CFM25 per 100 sq. ft. of CFA or ≤ 60 CFM.  <b>Final:</b> Tested per allowances below, with the air handler & all ducts, building cavities used as ducts, duct boots, & register grilles atop the finished surface (e.g., drywall, floor) installed. <b>No ducted returns:</b> The greater of ≤ 6 CFM25 per 100 sq. ft. of CFA or ≤ 60 CFM. Additionally, the Rater measured pressure difference between the space containing the air handler and the conditioned space, with the air handler running at high speed, is ≤ 5 Pa. For systems > 1 ton, increase by 1 Pa per half ton. <b>One or two ducted returns:</b> The greater of ≤ 8 CFM25 per 100 sq. ft. of CFA or ≤ 80 CFM. <b>Three or more ducted returns:</b> The greater of ≤ 12 CFM25 per 100 sq. ft. of CFA or ≤ 120 CFM.	

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Central Exhaust	No sealing or duct leakage testing requirements for exhaust ductwork.	See National Rater Field Checklist, Section 6.7  Duct leakage of central exhaust systems that serve four or more dwelling units meet one of the following two options:  <b>Rough-in:</b> Tested including horizontal run-outs, trunks, branches, and take-offs up to, but not including, the grilles, the leakage does not exceed 25% of exhaust fan flow.  <b>Final:</b> Tested inclusive of all ductwork between the fan and the grilles, the leakage does not exceed 30% of exhaust fan flow.	
<b>Equipment Controls</b>			
Shutoff Dampers	<b>C403.7.7 Shutoff dampers (Mandatory).</b> Outdoor air intake and exhaust openings and stairway and shaft vents shall be provided with Class I motorized dampers... <b>Stairway and shaft vent dampers shall be installed with automatic controls configured to open upon the activation of any fire alarm initiating device of the building's fire alarm system or the interruption of power to the damper.</b>	Stair and elevator shaft vents equipped with motorized dampers that are capable of being automatically closed during normal building operation and are interlocked to open as required by fire and smoke detection systems.	
Freeze Protection Systems	<b>C403.12.3 Freeze protection system controls.</b> Freeze protection systems, such as heat tracing of outdoor piping and heat exchangers, including self-regulating heat tracing, shall include automatic controls configured to shut off the systems when outdoor air temperatures are above 40°F (4°C) or when the conditions of the protected fluid will prevent freezing.	Freeze protection systems, such as heat tracing of piping and heat exchangers, including self-regulating heat tracing, and garage / plenum heaters include automatic controls that are verified to shut off the systems when pipe wall or garage / plenum temperatures are above 40°F.	
		Where heat tracing is installed for freeze-protection, controls must be based on pipe wall temperature and a minimum of R-3 pipe insulation is also required.	
Snow- and ice-melting systems	<b>C403.12.2 Snow- and ice-melt system controls.</b> Snow- and ice-melting systems shall include automatic controls capable of shutting off the system when the pavement temperature is above 50°F (10°C) and no precipitation is falling and an automatic or manual control that will allow shutoff when the outdoor temperature is above 40°F (4°C).	Snow- and ice-melting systems include automatic controls that are verified to shut off the systems when the pavement temperature is above 50°F and no precipitation is falling, and an automatic or manual control is installed that is verified to shut off the system when the outdoor temperature is above 40°F, so that the potential for snow or ice accumulation is negligible.	
<b>Hydronic Controls</b>			
Zone Controls	<b>C403.4.1 Thermostatic controls (Mandatory).</b> The supply of heating and cooling energy to each zone shall be controlled by individual thermostatic controls capable of responding to temperature within the zone.	All terminal heating and cooling distribution equipment are separated from the riser or distribution loop by a control valve or terminal distribution pump, so that heated or cooled fluid is not delivered to the dwelling unit distribution equipment when there is no call from the thermostat.	
Pressure balancing	<b>C408.2.2.2 Hydronic systems balancing.</b> Individual hydronic heating and cooling coils shall be equipped with means for balancing and measuring flow.	Terminal units are equipped with pressure independent balancing valves or pressure independent control valves.	ES more strict because it requires pressure-independent
Pipe Insulation	<b>C403.11.3 Piping insulation.</b> Piping serving as part of a heating or cooling system shall be thermally insulated in accordance with Table C403.11.3.	Piping of a heating or cooling system is insulated in accordance with ASHRAE 90.1-2007, Table 6.8.3, including where passing through planks or any other penetrations.	

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	2020 NYCECC Commercial Prescriptive	ESMFNC v1.1 Prescriptive	Notes
Pump Motor Efficiency	<b>C405.7 Electric motors (Mandatory).</b> Electric motors shall meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4) when tested and rated in accordance with the DOE 10 CFR 431.	For circulating pumps serving hydronic heating or cooling systems with three-phase motors, 1 horse-power or larger, motors meet or exceed efficiency standards for NEMA Premium™ motors.	NYC applies to more motors, but ES might require higher efficiency for these motors
Pump Controls	<p><b>C403.4.4 Part-load controls.</b> Hydronic systems greater than or equal to 300,000 Btu/h (146.5 kW) in design output capacity supplying heated or chilled water to comfort conditioning systems shall include controls that are configured to do all of the following:</p> <p>3. Automatically vary pump flow on heating-water systems, chilled-water systems and heat rejection loops serving water-cooled unitary air conditioners as follows:</p> <p>3.1 Where pumps operate continuously or operate based on a time schedule, pumps with nominal output motor power of 2 hp or more shall have a variable speed drive.</p> <p>3.2. Where pumps have automatic direct digital control configured to operate pumps only when zone heating or cooling is required, a variable speed drive shall be provided for pumps with motors having the same or greater nominal output power indicated in Table C403.4.4 based on the climate zone and system served.</p> <p>4. Where a variable speed drive is required by Item 3 of this Section, pump motor power input shall be not more than 30 percent of design wattage at 50 percent of the design waterflow. Pump flow shall be controlled to maintain one control valve nearly wide open or to satisfy the minimum differential pressure.</p>	If 5 horse-power or large, [circulating pumps serving hydronic heating or cooling systems with three-phase motors], also installed with variable frequency drives.	NYC is more strict in scenarios where VFD is required
<b>Filtration</b>			
Dwelling Units	Ducts, air handlers and filter boxes shall be sealed. Joints and seams shall comply with Section 603.9 of the New York City Mechanical Code.	<p>MERV 6+ filter(s) are installed in each ducted mechanical system serving an individual dwelling unit and located to facilitate access &amp; regular service by the occupant or building owner.</p> <p>All return air and mechanically supplied outdoor air passes through filter prior to conditioning.</p> <p>Filter access panel includes gasket and fits snugly against the exposed edge of filter when closed to prevent bypass.</p>	NYC may have filter requirements from other codes

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<b>Combustion Appliances</b>		
Combustion Appliances	<p><b>C402.5.3 Rooms containing fuel-burning appliances.</b> In Climate Zones 3 through 8, where combustion air is supplied through openings in an exterior wall to a room or space containing a space-conditioning fuel-burning appliance, one of the following shall apply:</p> <ol style="list-style-type: none"> <li>1.The room or space containing the appliance shall be located outside of the building thermal envelope.</li> <li>2.The room or space containing the appliance shall be enclosed and isolated from conditioned spaces inside the building thermal envelope. Such rooms shall comply with all of the following:               <ol style="list-style-type: none"> <li>2.1.The walls, floors and ceilings that separate the enclosed room or space from conditioned spaces shall be insulated to be not less than equivalent to the insulation requirement of below-grade walls as specified in Table C402.1.3 or C402.1.4.</li> <li>2.2.The walls, floors and ceilings that separate the enclosed room or space from conditioned spaces shall be sealed in accordance with Section C402.5.1.1.</li> <li>2.3.The doors into the enclosed room or space shall be fully gasketed.</li> <li>2.4.Water lines and ducts in the enclosed room or space shall be insulated in accordance with Section C403</li> <li>2.5.Where an air duct supplying combustion air to the enclosed room or space passes through conditioned space, the duct shall be insulated to an R-value of not less than R-8.</li> </ol> </li> </ol> <p>Exception: Fireplaces and stoves complying with the New York City Mechanical Code, and the fireplace fireblocking requirements of the New York City Building Code.</p>	<p>Furnaces, boilers, and water heaters located within the building's pressure boundary are mechanically drafted or direct-vented. If mechanically drafted, the minimum volume of combustion air required for safe operation by the manufacturer and/or code shall be met or exceeded and make-up air sources must be mechanically closed when the combustion appliance is not in operation. Naturally drafted equipment is only allowed if located in a space outside the pressure boundary, where the envelope assemblies separating it from conditioned space are insulated and air-sealed.</p> <p>No unvented combustion appliances other than cooking ranges or ovens are located inside the building's pressure boundary. For cooking ranges and ovens, local mechanical exhaust meeting ASHRAE 62.2-2010 must be met according to Rater Checklist Item 8.1.</p> <p>Fireplaces located with the building's pressure boundary are direct-vented.</p>

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	All other	Group R	Common Area	Dwelling Unit	All other	Group R
<b>Roofs</b>					<b>Enhanced envelope performance in accordance with Section C406.7.</b>	
Insulation entirely above roof deck	U-0.030 R-33ci	U-0.030 R-33ci	U-0.039 R-25ci	U-0.027 R-36ci	U-0.026 R-38ci	U-0.026 R-38ci
Attic and other	U-0.020 R-53	U-0.020 R-53	U-0.027 R-38	U-0.027 R-38	U-0.017 R-61	U-0.017 R-61
<b>Walls, above grade</b>					<b>Enhanced envelope performance in accordance with Section C406.7.</b>	
Mass	U-0.099	U-0.086	U-0.104	U-0.064	U-0.084	U-0.073
Metal framed	U-0.061	U-0.061	U-0.064		U-0.052	U-0.052
Wood framed and other	U-0.061	U-0.061	U-0.064		U-0.051	U-0.052
<b>Walls, below grade</b>					<b>Enhanced envelope performance in accordance with Section C406.7.</b>	
	U-0.119	U-0.092	C-0.119		U-0.101	U-0.078
Below-grade wall	R-7.5ci	R-10ci	R-7.5ci	R-7.5ci	R-8.6ci	R-11.5ci
<b>Floors</b>					<b>Enhanced envelope performance in accordance with Section C406.7.</b>	
Mass	U-0.057	U-0.051	U-0.076	U-0.033	U-0.048	U-0.043
Joist/framing	U-0.033	U-0.033	U-0.033	U-0.033	U-0.028	U-0.028
<b>Slab-on-grade floors</b>					<b>Enhanced envelope performance in accordance with Section C406.7.</b>	
Unheated slabs	R-15 perimeter (for 24" below)	R-15 perimeter (for 24" below)	R-10 (for 24" below)	R-10 (for 24" below)	R-17 perimeter (for 24" below)	R-17 perimeter (for 24" below)
Heated slabs	R-20 perimeter (for 48" below) R-5 under	R-20 perimeter (for 48" below) R-5 under	R-10 (for 24" below)	R-10 (for 24" below) ?	R-23 perimeter (for 48" below) R-5.75 under	R-23 perimeter (for 48" below) R-5.75 under
<b>Opaque doors</b>					<b>Enhanced envelope performance in accordance with Section C406.7.</b>	
Nonswinging	R-4.75	R-4.75	R-4.75	U-0.17	R-5.46	R-5.46
Swinging door	U-0.50	U-0.50	U-0.61	U-0.17	U-0.43	U-0.43
Garage door <14% glazing	U-0.31	U-0.31			U-0.31	U-0.31

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	2020 NYCECC Commercial Prescriptive		ESMFC v1.1 Prescriptive		NYCECC C406 Additional Efficiency Package Option	
	All other	Group R	Common Area	Dwelling Unit	All other	Group R
<b>Thermal bridging - Insulation cannot be traded off for UA calculation</b>					<b>Enhanced envelope performance in accordance with Section C406.7.</b>	
Insulated ceilings with attic space above (i.e., non-cathedralized)	No additional requirement beyond attic insulation above		Grade I insulation extends to the inside face of the exterior wall below and is $\geq$ R-21 (superseded by Prescriptive R-38 requirement). Attic access panels and drop-down stairs insulated $\geq$ R-10 or equipped with durable $\geq$ R-10 cover.			
Attic platforms	N/A		Insulation beneath attic platforms (e.g., HVAC platforms, walkways) $\geq$ R-21.			
Slabs on grade	No additional requirement beyond slab insulation above		100% of slab edge insulated to $\geq$ R-5 at the depth specified by Table 502.2(1) of the 2009 IECC and aligned with the thermal boundary of the walls.			
Balconies	In new construction, balconies and parapets that interrupt the building thermal envelope shall... have a thermal resistance equivalent to the continuous insulation component required in the adjacent wall assembly... OR incorporate a minimum R-3 thermal break *All other thermal bridges shall be documented		For elevated concrete slabs (i.e., podiums and projected balconies, but not intermediate slab floor edges) 100% of the slab edge insulated to $\geq$ R-5. For podiums, insulation must be installed for the full height of the podium wall. Alternatively for balconies, a UA calculation for the wall assembly that includes a penalty for this uninsulated projected slab must be performed to demonstrate compliance.			
Floor insulation for elevated concrete slabs	No additional requirement beyond floor insulation above		For elevated concrete slabs (i.e., podiums, but not intermediate floor slabs), floor insulation meets the U-factor specified in Table 502.1.2 of the 2009 IECC for Group R when dwelling units are above the slab, and for 'All Other' when common space is above the slab.			
Above-grade walls	No additional requirement beyond wall insulation above		At above-grade walls and rim / band joists separating conditioned from unconditioned space, one of the following options used: #1) Continuous rigid insulation, insulated siding, or combination of the two is $\geq$ R-3 #2) Structural Insulated Panels OR; Insulated Concrete Forms OR; Double-wall framing #3) Option only for wood-framed walls $\leq$ 3 stories: 'advanced framing' details including A) Corners insulated $\geq$ R-6 to edge, AND B) Headers above windows & doors insulated $\geq$ R-3 for 2x4 framing or equivalent cavity width, and $\geq$ R-5 for all other assemblies (e.g., with 2x6 framing), AND C) Interior / exterior wall intersections insulated to same R-value as rest of exterior wall.			
<b>Infiltration</b>						
Buildings <10,000 ft <sup>2</sup>	Visual inspection and material/assembly/fenestration testing OR <0.40 CFM75/ft <sup>2</sup> of enclosure (whole building test)		Visual inspection of air sealing details and fully-aligned air barriers as per National Rater Field Checklist	Visual inspection of air sealing details and fully-aligned air barriers as per National Rater Field Checklist AND <0.30 CFM50/ft <sup>2</sup> of enclosure (dwelling tests)	Reduced air infiltration in accordance with Section C406.8 Air infiltration shall be verified by whole-building pressurization testing conducted in accordance with ASTM E779 or ASTM E1827 by an independent third party. The measured air-leakage rate of the building envelope shall not exceed 0.25 cfm/ft <sup>2</sup> (2.0 L/s × m <sup>2</sup> ) under a pressure differential of 0.3 inches water column (75 Pa), with the calculated surface area being the sum of the above-and below-grade building envelope.	
Buildings 10,000-50,000 ft <sup>2</sup> and <u>≤</u> 75 ft tall	<0.40 CFM75/ft <sup>2</sup> of enclosure (whole building test) OR <0.30 CFM50/ft <sup>2</sup> of enclosure (dwelling tests, R-2 occupancy)					
Buildings 10,000-50,000 ft <sup>2</sup> and <u>≥</u> 75 ft tall	Visual inspection as per an Air Barrier Continuity Plan and material/assembly/fenestration testing OR <0.40 CFM75/ft <sup>2</sup> of enclosure					
Buildings >50,000 ft <sup>2</sup>	(whole building test) OR <0.30 CFM50/ft <sup>2</sup> of enclosure (dwelling tests, R-2 occupancy)					

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	2020 NYCECC Commercial Prescriptive		ESMFNC v1.1 Prescriptive		
<b>Fenestration</b>					
Non-metal framing	All	U-0.28	All	U-0.30	
Metal framing fixed	Below 95'	U-0.30	Dwelling Unit Class R, LC, CW	U-0.30	Window Types are not directly comparable
	95' and above	U-0.36	Dwelling Unit Class AW or Common Area	U-0.36	Window Types are not directly comparable
Metal framing operable	Below 95'	U-0.40	Dwelling Unit Class R, LC, CW	U-0.30	Window Types are not directly comparable
	95' and above	U-0.42	Dwelling Unit Class AW or Common Area	U-0.43	Window Types are not directly comparable
Curtainwall fixed	All	U-0.36	Dwelling Unit Class R, LC, CW	U-0.30	
			Dwelling Unit Class AW or Common Area	U-0.36	
Entrance doors	All	U-0.77	≤½ lite	U-0.25	
			>½ lite	U-0.30	
Skylights	All	U-0.48	U-0.6		
Window SHGC	PF < 0.2	0.36	All	0.40	
	0.2 ≤ PF < 0.5	0.43			
	PF ≥ 0.5	0.58			
Entrance doors SHGC	PF < 0.2	0.36	>½ lite	0.40	
	0.2 ≤ PF < 0.5	0.43	≤½ lite	0.25	
	PF ≥ 0.5	0.58			
Skylights SHGC	All	0.38	Dwelling Unit: NR / Common Area: 0.40		

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	2020 NYCECC Commercial Prescriptive	ESMFNC v1.1 Prescriptive	NYCECC C406 Additional Efficiency Package Option
<b>Lighting</b>			<b>Reduced lighting power in accordance with Section C406.3.</b>
Dwelling Units	R404.1 Not less than 90 percent of the <u>permanently installed lighting fixtures</u> shall use lamps with an efficacy of at least 65 lumens per watt, or have a total luminaire efficacy of at least 45 lumens per watt.	ENERGY STAR light bulbs or fixtures in 90% of ANSI / RESNET / ICC Standard 301-defined Qualifying Light Fixture Locations.  LPD ≤ 0.75 W/SF  Senior housing only: LPD ≤ 1.3 W/SF	
Common Area	Interior lighting power allowance - see Tables C405.3.2(2)  Lobby / elevator: LPD ≤ 0.9 W/SF Active storage: LPD ≤ 0.43 W/SF Inactive storage: LPD ≤ 0.43 W/SF Exercise area: LPD ≤ 0.5 W/SF Corridor / transition: LPD ≤ 0.58 W/SF Stairs - active: LPD ≤ 0.5 W/SF Restroom: LPD ≤ 0.75 W/SF Laundry room: LPD ≤ 0.43 W/SF Office: LPD ≤ 0.85 W/SF Lounge / recreation / community: LPD ≤ 0.44 W/SF Electrical / mechanical: LPD ≤ 0.39 W/SF Workshop: LPD ≤ 1.09 W/SF	RESNET Tier 1 or Tier 2 light bulbs or fixtures in 90% of locations;  LPD limits from ASHRAE 90.1-2007: Lobby / elevator: LPD ≤ 1.3 W/SF Active storage: LPD ≤ 0.8 W/SF Inactive storage: LPD ≤ 0.3 W/SF Exercise area: LPD ≤ 0.9 W/SF Corridor / transition: LPD ≤ 0.5 W/SF Stairs - active: LPD ≤ 0.6 W/SF Restroom: LPD ≤ 0.9 W/SF Laundry room: LPD ≤ 1.3 W/SF Office: LPD ≤ 1.1 W/SF Lounge / recreation / community: LPD ≤ 1.2 W/SF Electrical / mechanical: LPD ≤ 1.5 W/SF Workshop: LPD ≤ 1.9 W/SF	Interior lighting power allowance - see Tables C405.3.2(2)  Lobby / elevator: LPD ≤ 0.81 W/SF Active storage: LPD ≤ 0.39 W/SF Inactive storage: LPD ≤ 0.39 W/SF Exercise area: LPD ≤ 0.45 W/SF Corridor / transition: LPD ≤ 0.52 W/SF Stairs - active: LPD ≤ 0.45 W/SF Restroom: LPD ≤ 0.67 W/SF Laundry room: LPD ≤ 0.39 W/SF Office: LPD ≤ 0.765 W/SF Lounge / recreation / community: LPD ≤ 0.40 W/SF Electrical / mechanical: LPD ≤ 0.35 W/SF Workshop: LPD ≤ 0.98 W/SF
Exterior	Exterior lighting power allowance - see Table C405.4.2(2)  Parking area, interior: LPD ≤ 0.11 W/SF	RESNET Tier 1 or Tier 2 light bulbs or fixtures in 90% of locations;  Shared garages only: LPD ≤ 0.24 W/SF	
Controls	Interior: occupant sensors and daylight-responsive controls  Exterior: daylight shutoff and/or time-switch	Common space (except building lobby and areas required for safety): verified operation of occupancy sensors or automatic bi-level lighting controls.  Exterior: automatic switching on timers or photocell controls (except fixtures operating 24/7, required for security, or located on dwelling unit balconies).	Enhanced digital lighting controls in accordance with Section C406.4.
<b>Appliances</b>			
Appliances	NA	ENERGY STAR refrigerators, dishwashers, clothes washers, and clothes dryers	
<b>Plumbing Fixtures</b>			
Lavatory, private	1.5 gpm at 60 psi	<u>WaterSense</u> 1.5 gpm	
Lavatory, public	0.5 gpm at 60 psi	NA	
Shower head	2.0 gpm at 80 psi	<u>WaterSense</u> 2.0 gpm	
Sink faucet	2.2 gpm at 60 psi	NA	
Urinal	0.5 gallon per flushing cycle	NA	
Water Closet	1.28 gallons per flushing cycle or equivalent dual flush	NA	

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	2020 NYCECC Commercial Prescriptive	ESMFNC v1.1 Prescriptive	NYCECC C406 Additional Efficiency Package Option
<b>Whole Building Metering</b>			
Building-level Energy Consumption Data Records	<p>Each new building shall have a measurement device capable of recording electrical energy use every 60 minutes and the capability to report that use on an hourly, daily, monthly and annual basis. The measurement device shall be capable of retaining the recorded data for 36 months.</p> <p>(Exceptions: buildings less than 25,000 SF, Group R buildings with less than 10,000 SF of common area, and fuel use for on-site emergency equipment.) (C405.12)</p>	<p>For buildings 50,000 SF and larger, a strategy that enables the collection of monthly or annual building-level energy consumption data (electricity, natural gas, chilled water, steam, fuel oil, propane, etc.) has been confirmed.</p> <p>Strategies include:</p> <ul style="list-style-type: none"> <li>- an agreement with the utility companies to provide the aggregated building-level data, in a spreadsheet format or directly through Portfolio Manager;</li> <li>- OR evidence that securing signed utility data release forms will be a mandatory component of all lease agreements;</li> <li>- OR installation of a building-level energy monitor, data acquisition system, or utility-owned energy meter. If an energy monitor is installed, the builder shall provide the building operator with the manufacturer's documentation and operations manual.</li> </ul>	

**Notes**

ENERGY STAR requires building-level for other fuels too

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	2020 NYCECC Commercial Prescriptive	ESMFNC v1.1 Prescriptive	
<b>Dwelling-Unit &amp; Common Space Mechanical Ventilation System</b>			
Dwelling Units	<p><b>C403.2.2 Ventilation (Mandatory).</b> Ventilation, either natural or mechanical, shall be provided in accordance with Chapter 4 of the New York City Mechanical Code. Where mechanical ventilation is provided, the system shall provide the capability to reduce the outdoor air supply to the minimum required by Chapter 4 of the New York City Mechanical Code.</p>	<p>Ventilation rate meets ASHRAE 62.2-2010 (Note: Natural ventilation does not meet the requirements)            Fan ≤3 sone if intermittent, ≤2 if continuous, or exempted.            If system utilizes the dwelling unit HVAC fan, then the installed fan type is ECM / ICM, or the controls will reduce the standalone ventilation run-time by accounting for hours when the HVAC system is heating or cooling.</p>	
Common Area		<p>Ventilation rate meets ASHRAE 62.1-2010.</p>	
OA intakes	<p><b>C403.7.7 Shutoff dampers (Mandatory).</b> Outdoor air intake ...            Exception: Shutoff dampers are not required in ventilation or exhaust systems that are required by the New York City Mechanical Code to have fans that operate continuously, 24 hours per day, 7 days per week. Outdoor air intake and exhaust dampers shall be installed with automatic controls configured to close when the systems or spaces served are not in use or during unoccupied period warm-up and setback operation, unless the systems served require outdoor or exhaust air in accordance with the New York City Mechanical Code or the dampers are opened to provide intentional economizer cooling.</p>	<p>No outdoor air intakes connected to return side of the dwelling unit HVAC system, unless controls are installed to operate intermittently &amp; automatically based on a timer and to restrict intake when not in use (e.g., motorized damper).</p>	ES possibly more strict if NYC utilizes exception
Fan Efficiency	<p><b>C403.8.3 Fan efficiency (Mandatory).</b> Fans shall have a fan efficiency grade (FEG) of not less than 67, as determined in accordance with AMCA 205 by an approved, independent testing laboratory and labeled by the manufacturer. The total efficiency of the fan at the design point of operation shall be within 15 percentage points of the maximum total efficiency of the fan.</p>	<p>In-unit bathroom fans or in-line fans are ENERGY STAR certified if used as part of the dwelling-unit mechanical ventilation system.</p>	Different efficiency metrics used
Fan Motor Efficiency	<p><b>C405.7 Electric motors (Mandatory).</b> Electric motors shall meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4) when tested and rated in accordance with the DOE 10 CFR 431.</p>	<p>If &gt;1 HP, they are installed with NEMA TM Premium Motors.</p>	Different efficiency metrics used
Fan Motor Efficiency (for fractional HP)	<p><b>C403.8.4 Fractional hp fan motors (Mandatory).</b> Motors for fans that are not less than 1/12hp (0.062 kW) and less than 1 hp (0.746 kW) shall be <b>electronically commutated motors (ECM)</b> or shall have a minimum motor efficiency of 70 percent, rated in accordance with DOE 10 CFR 431.</p> <p>These motors shall have the means to adjust motor speed for either balancing or remote control. The use of belt-driven fans to sheave adjustments for airflow balancing instead of a varying motor speed shall be permitted.</p>	<p>If central exhaust fans, ≤ 1 HP, are installed as part of the dwelling-unit mechanical ventilation system, then they are direct-drive, <b>ECM</b>, with variable speed controllers.</p>	

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	2020 NYCECC Commercial Prescriptive	ESMFNC v1.1 Prescriptive	Notes
<b>Local Mechanical Exhaust</b>			
Dwelling Units		In each dwelling unit kitchen and bathroom, a system is installed that exhausts directly to the outdoors and meets or exceeds ASHRAE 62.2-2010 rates. Kitchen exhaust must be vented to the outside; recirculating range hoods do not meet the requirement. Bathroom exhaust must meet the following manufacturer-rated sound level standard: ≤ 2 Sones, if continuous.	NYC may have ventilation requirements from other codes
Common Area+A7		Measured exhaust rate meets or exceeds ASHRAE 62.1-2010.	NYC may have ventilation requirements from other codes
Garage	<b>Section C403.7.2 Enclosed parking garage ventilation controls (Mandatory)</b> Enclosed parking garages used for storing or handling automobiles operating under their own power shall employ contamination-sensing devices and automatic controls configured to stage fans or modulate fan average airflow rates to 50 percent or less of design capacity, or intermittently operate fans less than 20 percent of the occupied time or as required to maintain acceptable contaminant levels in accordance with New York City Mechanical Code provisions. Failure of contamination-sensing devices shall cause the exhaust fans to operate continuously at design airflow.	Where a garage exhaust ventilation system is installed, it is equipped with controls that sense CO and NO2.  [Requires minimum of 0.05 cfm/ft2 during standby mode & 0.75 cfm/ft2 otherwise]	Somewhat similar, although NYC has some exceptions for smaller systems