

Int. No. 1490-B

By Council Member Sanchez (by request of the Mayor)

A Local Law to amend the administrative code of the city of New York, in relation to conforming the New York city energy conservation code to the New York state energy code with amendments unique to construction in the city, and to repeal section 28-1001.2 of such administrative code relating to such conforming amendments

Be it enacted by the Council as follows:

1 Section 1. Statement of findings and purpose. The New York State Energy Conservation
2 Construction Code (the “New York State Energy Code”) is promulgated by the State Fire
3 Prevention and Building Code Council pursuant to Article 11 of the New York State Energy Law.
4 In accordance with Article 11, the New York City Energy Conservation Code is stricter than the
5 New York State Energy Code. The purpose of this local law is to conform the New York City
6 Energy Conservation Code to recent changes in the New York State Energy Code with local law
7 amendments unique to construction in the city.

8 § 2. The definition of “NEW YORK STATE ENERGY CODE” in section 28-1001.1.1 of
9 the administrative code of the city of New York, as amended by local law number 48 for the year
10 2020, is amended to read as follows:

11 **NEW YORK STATE ENERGY CODE.** The term “New York State Energy Code” means the
12 New York State Energy Conservation Construction Code, constituting part 1240 of title 19 of the
13 New York codes, rules and regulations (19 NYCRR Part 1240), and the publications incorporated
14 by reference in such part, promulgated on [~~February 12, 2020~~] October 1, 2025, by the State Fire
15 Prevention and Building Code Council pursuant to Article 11 of the New York State Energy Law.

16
17 § 3. Section 28-1001.2 of the administrative code of the city of New York is REPEALED
18 and a new Section 28-1001.2 is added to read as follows:

1 § 28-1001.2 New York city amendments to the New York state energy code. The following
2 New York city amendments to the New York state energy code are hereby adopted as set forth in
3 Sections 28-1001.2.1 and 28-1001.2.2.

4 § 28-1001.2.1 New York city amendments to commercial and residential chapters of the
5 New York state energy code.

6 Chapter 1 [CE] and Chapter 1 [RE]

7 Delete Chapter C1 and Chapter R1 in their entirety and replace with a new Chapter 1 to
8 read as follows:

9 CHAPTER 1

10 ADMINISTRATION

11 INTRODUCTORY STATEMENT

12 The *New York City Energy Conservation Code* (“NYCECC”) is comprised of the publication
13 entitled the *2025 Energy Conservation Construction Code of New York State* (“ECCCNYS”)
14 with amendments as enacted into law by the city. Reflecting these amendments to the
15 ECCCNYS, the NYCECC is divided into provisions relevant to commercial buildings and
16 provisions relevant to residential buildings as follows:

17 1. The provisions of the NYCECC for commercial buildings are reflected in the state
18 publications incorporated by reference in 19 NYCRR Sections 1240.3 and 1240.5, as
19 amended by Sections 28-1001.2.1 and 28-1001.2.2 of the Administrative Code. Such
20 state publications include (i) Chapters 1 [CE], 2 [CE], 3 [CE], 4 [CE], 5 [CE] and 6
21 [CE] of ECCCNYS; (ii) the New York State-specific version of the publication entitled
22 “Standard 90.1, Energy Standard for Buildings Except Low-Rise Residential
23 Buildings,” published by the International Code Council, as incorporated in the
24 ECCCNYS (“2025 NYS ASHRAE 90.1”); and (iii) reference standards incorporated
25 by reference in subdivision (c) of 19 NYCRR Section 1240.3.

26 2. The provisions of the NYCECC for residential buildings are reflected in the state
27 publications incorporated by reference in 19 NYCRR Section 1240.4, as amended by
28 Sections 28-1001.2.1 of the Administrative Code. Such state publications include (i)
29 Chapters 1 [RE], 2 [RE], 3 [RE], 4 [RE], 5 [RE] 6 [RE] and Appendix RF of the
30 ECCCNYS; and (ii) the referenced standards incorporated by reference in subdivision
31 (b) of 19 NYCRR Section 1240.4.

32 SECTION ECC 101

33 SCOPE AND GENERAL REQUIREMENTS

34 101.1 General. These provisions shall be known and cited as the “New York City Energy
35 Conservation Code,” “NYCECC” or “ECC,” and are referred to herein as “this code.” All

1 section numbers in this code shall be deemed to be preceded by the designation “ECC.”
2 Administration and enforcement of this code shall be in accordance with Title 28 of the
3 Administrative Code.

4 **101.1.1 Titles.**

5 The publication entitled 2025 Energy Conservation Construction Code of New York State
6 shall be known as the “ECCCNYS.”

7 The New York State-specific version of the publication entitled “Standard 90.1, Energy
8 Standard for Buildings Except Low-Rise Residential Buildings,” published by the
9 International Code Council, as incorporated in the ECCCNYS shall be known as “2025
10 NYS ASHRAE 90.1.” All references in this code to “2025 NYC ASHRAE 90.1” reflect
11 New York City amendments to 2025 NYS ASHRAE 90.1 as amended by Section 28-
12 1001.2.2 of the Administrative Code.

13 The ECCCNYS, as contained in Part 1240 of Title 19 of the New York Codes, Rules and
14 Regulations, along with the New York City amendments to such ECCCNYS shall be
15 known collectively as the “New York City Energy Conservation Code” or “NYCECC.”

16 **101.1.2 References.** Where reference is made within this code to the *Building Code of New*
17 *York State, Existing Building Code of New York State, Fire Code of New York State, Fuel*
18 *Gas Code of New York State, Mechanical Code of New York State, Plumbing Code of New*
19 *York State, Property Maintenance Code of New York State, or Residential Code of New*
20 *York State*, the reference shall be deemed to be to the analogous provision of the *New York*
21 *City Construction Codes (Title 28 of the Administrative Code), the 1968 Building Code*
22 *(Chapter 1 of Title 27 of the Administrative Code), the New York City Fire Code (Title 29*
23 *of the Administrative Code) or the New York City Electrical Code (Chapter 11 of Title 28*
24 *of the Administrative Code).*

25 **101.2 Scope.** This code regulates the design and construction of commercial buildings and
26 residential buildings, as defined in Chapter C2 and Chapter R2 of this code, accessory
27 structures, building sites, and associated systems and equipment, as well as the repair, addition,
28 alteration, or change of occupancy thereto for the use and conservation of energy and clean
29 energy features, including the reduction in greenhouse gas emissions, over the life of each such
30 commercial and residential building.

31 **101.2.1 Statutory limitations.** In the event of an addition to, or alteration of, an existing
32 building or building system in an existing building that does not include a change of
33 occupancy, nothing in the this code shall be interpreted to require any unaltered portion of
34 such existing building or building system to comply with this code.

35 **101.2.2 Occupancy classifications.** For determination of occupancy classification and use
36 within this code, a comparable occupancy classification shall be made to the *New York City*
37 *Building Code.*

38 **101.2.3 Reconciliation with New York State Energy Conservation Construction**

1 Code. Whenever any provision of the *New York State Energy Conservation Construction*
2 *Code* provides for a more stringent requirement than imposed by this code, the more
3 stringent requirement shall govern. The department may interpret provisions of this code
4 that are (1) in addition to the provisions of the *New York State Energy Conservation*
5 *Construction Code* or (2) more stringent than the provisions of such Code.

6 **101.2.4 Other laws.** The provisions of this code shall not be deemed to nullify any federal,
7 state or local law, rule or regulation relating to any matter as to which this code does not
8 provide, including but not limited to Articles 320 and 321 of Chapter 3 of Title 28 of the
9 *Administrative Code*. Where the energy efficiency, energy use, or water use of covered
10 products or equipment is subject to federal preemption pursuant to the *Energy Policy and*
11 *Conservation Act*, the requirements set forth by the Department of Energy in the *Code of*
12 *Federal Regulations* take precedence over any requirement in this Code.

13 **101.2.5 Exceptions.** This code shall not apply to the alterations of existing buildings set
14 forth in items 1 through 7, provided that the alteration will not increase the energy usage
15 of the building:

16 1. Storm windows installed over existing fenestration.

17 2. Glass-only replacements in an existing sash and frame, provided that the U-factor
18 and the solar heat gain coefficient (SHGC) shall be equal to or lower than before
19 the glass replacement.

20 3. Surface-applied window film installed on existing single-pane fenestration
21 assemblies reducing solar heat gain, provided that this code does not require the
22 glazing or fenestration to be replaced.

23 4. Reroofing where neither the sheathing nor the insulation is exposed. Roofs without
24 insulation in the cavity and where the sheathing or insulation is exposed during
25 reroofing shall be insulated either above or below the sheathing.

26 5. Replacement of existing doors that separate conditioned space from the exterior shall
27 not require the installation of a vestibule or revolving door, provided that an existing
28 vestibule that separates a conditioned space from the exterior shall not be removed.

29 6. An alteration that replaces less than 10 percent of the luminaires in a space, provided
30 that such alteration does not increase the installed interior lighting power.

31 7. An alteration that replaces only the bulb and ballast within the existing luminaires in
32 a space, provided that such alteration does not increase the installed interior lighting
33 power.

34 **101.3 Intent.** This code shall regulate the design and construction of buildings for the use and
35 conservation of energy over the life of each building. This code is intended to provide
36 flexibility to permit the use of innovative approaches and techniques to achieve this objective.
37 This code is not intended to abridge safety, health or environmental requirements contained in

1 other applicable codes or ordinances. To the fullest extent feasible, use of modern technical
2 methods, devices and improvements that tend to minimize consumption of energy without
3 abridging reasonable requirements for the safety, health and security of the occupants or users
4 of buildings shall be permitted. As far as may be practicable, the improvement of energy
5 conservation construction practices, methods, equipment, materials and techniques shall be
6 encouraged.

7 Nothing in this section or in any other provision of this code shall be construed to permit the
8 commissioner to approve an application to waive, vary, modify or otherwise alter any provision
9 of this code if such alteration would make such provision less restrictive than a standard or
10 requirement of the ECCCNY, unless the applicant has obtained approval for such alteration
11 pursuant to Section 11-106 of the *New York State Energy Law*.

12 **101.4 Applicability.** The provisions of this code shall apply to the construction of buildings.
13 Where, in any specific case, different sections of this code specify different materials, methods
14 of construction or other requirements, the most restrictive provision shall govern. Where there
15 is a conflict between a general requirement and a specific requirement, the specific requirement
16 shall govern.

17 **101.4.1 Mixed occupancy.** Where a building, having not more than three stories above grade
18 plane, includes both commercial and residential occupancies, each occupancy shall be
19 separately considered and shall meet the applicable provisions of Chapters C2, C3, C4 and
20 C5 for commercial or the applicable provisions of the 2025 NYC ASHRAE 90.1, and
21 Chapters R2, R3, R4, and R5 for residential.

22 **101.5 Compliance.** Commercial buildings shall comply with the provisions of this code
23 applicable to commercial buildings. Residential buildings shall comply with the provisions of this
24 code applicable to residential buildings.

25 **101.5.1 Compliance software.** Where chosen by the applicant, compliance with the
26 NYCECC—Commercial Provisions or Residential Provisions, or portion thereof, or, if
27 applicable, with the 2025 NYC ASHRAE 90.1—can be demonstrated using either of the
28 following:

29 1. Computer software that is developed by the United States Department of Energy
30 (such as COMcheck®), specifically for the NYCECC or, if applicable, specifically
31 for the 2025 NYC ASHRAE 90.1, or

32 2. Other software expressly approved in writing by the New York Secretary of State
33 as acceptable for demonstrating compliance with the NYCECC or, if applicable,
34 for demonstrating compliance with the 2025 NYC ASHRAE 90.1.

35 **101.5.1.1 Other analysis tools.** Other performance analysis tools used to document
36 simulated building performance for a specified application or limited scope in
37 accordance with Section C407 are subject to the approval of the building official.

38 **101.5.1.2 Mandatory provisions.** The use of software to demonstrate compliance

1 with the commercial provisions, residential provisions, or 2025 NYC ASHRAE
2 90.1 as established by this code is not a defense to the failure to comply with any
3 mandatory provision of this code. When using software to demonstrate compliance
4 with the provisions of this code, compliance with all applicable mandatory
5 provisions of this code is required.

6 **101.5.2 Demonstration of compliance.** For building project applications required to be
7 submitted to the department, the following documentation, as further described in the rules
8 of the department, shall be required in order to demonstrate compliance with this code:

9 **101.5.2.1 Professional statement.** Any registered design professional or lead energy
10 professional filing an application or applications for a new building or alteration project
11 shall provide on a signed and sealed drawing a statement of compliance or exemption
12 in accordance with the rules of the department.

13 **101.5.2.2 Energy analysis.** For any application that is not exempt from this code and
14 for which a work permit is required in accordance with Article 105 of Chapter 1 of
15 Title 28 of the *Administrative Code*, an energy analysis shall be provided on a sheet or
16 sheets within the construction drawing set. The energy analysis shall identify the
17 compliance path followed, demonstrate how the design complies with this code and be
18 in a format as prescribed in the rules of the department. The energy analysis shall meet
19 the requirements of this code for the entire project. Projects that utilize trade-offs
20 among disciplines shall use DOE2-based energy modeling programs or other energy-
21 modeling programs as prescribed in the rules of the department and shall be signed and
22 sealed by a lead energy professional.

23 **101.5.2.3 Supporting documentation.** For any application that is not exempt from this
24 code and for which a work permit is required in accordance with Article 105 of Chapter
25 1 of Title 28 of the *Administrative Code*, supporting documentation shall be required
26 in the approved construction drawings. See Section ECC 103 for further requirements.

27 28 **SECTION ECC 102**

29 **ALTERNATIVE MATERIALS, METHODS OF CONSTRUCTION, DESIGNS OR** 30 **INSULATING SYSTEMS**

31 **102.1 General.** This code is not intended to prevent the use of any material, method of
32 construction, design or insulating system not specifically prescribed herein, provided that such
33 material, method of construction, design or insulating system has been approved by the
34 commissioner as (1) meeting the intent of this code, (2) achieving energy savings that are
35 equivalent to or greater than would be achieved using prescribed materials, methods of
36 construction, designs or insulating systems, and (3) meeting the requirements of Article 113 of
37 Chapter 1 of Title 28 of the *Administrative Code* and the *New York City Construction Codes*.

38 Nothing in this section shall be construed to permit the commissioner to approve an application

1 that would waive, vary, modify, or otherwise alter any provision, standard, or requirement of
2 this code if such alteration would make such provision less restrictive than a standard or
3 requirement of the ECCCNYs unless the applicant has obtained approval for such alteration
4 pursuant to Section 11-106 of the *New York State Energy Law*.

6 SECTION ECC 103

7 CONSTRUCTION DOCUMENTS

8 **103.1 General.** Construction documents shall be prepared in accordance with the provisions
9 of Chapter 1 of Title 28 of the *Administrative Code*, the *New York City Construction Codes*,
10 including this code, and the rules of the department.

11 **103.2 Supporting documentation on construction documents.** Supporting documentation
12 shall include those construction documents that demonstrate compliance with this code.

13 **103.2.1 Intent.** Supporting documentation shall accomplish the following:

- 14 1. Demonstrate conformance of approved drawings to the energy analysis for every
15 element and value of the energy analysis;
- 16 2. Demonstrate conformance of approved drawings to other mandatory requirements
17 of this code, including, but not limited to, sealing against air leakage from the
18 building envelope and from ductwork as applicable, insulation of ducts and piping
19 as applicable, mechanical and lighting controls with devices shown and operational
20 narratives for each, and additional requirements as set forth in this section;
- 21 3. Identify required progress inspections in accordance with the scope of work, this
22 code, the *Administrative Code*, the *New York City Building Code* and the rules of
23 the department; and
- 24 4. Comply with other requirements as may be set forth in the rules of the department.

25
26 **103.2.2 Detailed requirements.** Construction documents shall be drawn to scale upon
27 suitable material. Electronic media documents are permitted to be submitted in accordance
28 with department procedures. Construction documents for a project shall be fully
29 coordinated and of sufficient clarity to indicate the location, nature and extent of the work
30 proposed, and show in sufficient detail pertinent data and features of the building, building
31 systems and equipment as herein governed. Details shall include, but are not limited to, as
32 applicable, the following:

- 33 1. Energy Code compliance path.
- 34 2. Insulation materials and their R-values.
- 35 3. Fenestration U-factors and solar heat gain coefficients (SHGCs).
- 36 4. Area-weighted average U-factor and solar heat gain coefficient (SHGC)
37 calculations.
- 38 5. Air barrier and air sealing details, including the location of the air barrier.
6. Thermal bridges as identified in Section C402.7.

- 1 7. Mechanical system design criteria.
- 2 8. Mechanical and service water heating systems and equipment types, sizes and
- 3 efficiencies.
- 4 9. Economizer description.
- 5 10. Equipment and system controls.
- 6 11. Fan motor horsepower (hp) and controls.
- 7 12. Duct sealing, duct and pipe insulation and location.
- 8 13. Lighting fixture schedule with wattage and control narrative.
- 9 14. Location of daylight zones on floor plans.
- 10 15. Location of pathways for routing of raceways or cable from the on-site renewable
- 11 energy system to the electrical distribution equipment, where provided.
- 12 16. Location reserved for inverters, metering equipment and energy storage system
- 13 (ESS), and a pathway reserved for routing of raceways or conduit from the on-site
- 14 renewable energy system to the point of interconnection with the electrical service
- 15 and the ESS, where provided.
- 16 17. Location and layout of a designated area for ESS, where provided.
- 17 18. Rated energy capacity and rated power capacity of the installed or planned ESS.
- 18 19. Location of designated EVSE spaces, EV ready spaces, and EV capable spaces in
- 19 parking facilities and location of planned off-street loading spaces for future
- 20 medium or heavy-duty EVSE.
- 21 20. Location of pathways for routing of raceways or cable from the enclosure or outlet
- 22 of EV capable spaces to the electrical distribution equipment.

23 **103.3 Examination of documents.** In accordance with Article 104 of Chapter 1 of Title 28 of
24 the *Administrative Code*, the department shall examine or cause to be examined the
25 accompanying construction documents and shall ascertain by such examinations whether the
26 construction indicated and described is in accordance with the requirements of this code and
27 other pertinent laws, rules and regulations.

28 **103.4 Changes during construction.** For changes during construction refer to Section 28-
29 104.3 of the *Administrative Code*.

31 **SECTION ECC 104**

32 **INSPECTIONS**

33 **104.1 General.** Except as otherwise specifically provided, inspections required by this code or
34 by the department during the progress of work may be performed on behalf of the owner by an
35 approved agency. All inspections shall be performed at the sole cost and expense of the owner.
36 Refer to Article 116 of Chapter 1 of Title 28 of the *Administrative Code* for additional
37 provisions relating to inspections. In addition to any inspections otherwise required by this
38 code or the rules of the department, the following inspections shall be required:

- 39 1. Progress inspections. Progress inspections shall be performed in accordance with the
40 rules of the department.

1 2. Final inspection. Refer to Article 116 of Chapter 1 of Title 28 of the *Administrative*
2 *Code* and the rules of the department.

3 3. Issuance of Certificate of Compliance. Refer to Section 28-116.4.1 of the
4 *Administrative Code*.

5 The requirements of this section shall not prohibit the operation of any heating equipment or
6 appliances installed to replace existing heating equipment or appliances serving an occupied
7 portion of a structure, provided that a request for inspection of such heating equipment or
8 appliances has been filed with the department not more than 48 hours after such replacement
9 work is completed, and before any portion of such equipment or appliances is concealed by
10 any permanent portion of the structure.

11 **104.1.1 Approved agencies.** Refer to Article 114 of Chapter 1 of Title 28 of the
12 *Administrative Code* and the rules of the department.

13 **104.1.2 Inspection of prefabricated construction assemblies.** Prior to the issuance of a
14 work permit for a prefabricated construction assembly having concealed mechanical work,
15 the department shall require the submittal of an evaluation report by the manufacturer or
16 approved agency on each prefabricated construction assembly, indicating the complete
17 details of the mechanical system, including a description of the system and its components,
18 the basis upon which the system is being evaluated for energy use, test results and similar
19 information, and other data as necessary for the commissioner to determine conformance
20 to this code.

21 **104.1.2.1 Test and inspection records.** Required test and inspection records shall be
22 made available to the commissioner at all times during the fabrication of the mechanical
23 system and the erection of the building; or such records as the commissioner designates
24 shall be filed.

25 **104.2 Testing.** Envelope, heating, ventilating, air conditioning, service water heating, lighting
26 and electrical systems shall be tested as required in this code and in accordance with Sections
27 104.2.1 through 104.2.3. Except as otherwise required in this code or in the rules of the
28 department, tests shall be made by the permit holder and witnessed by an approved agency.

29 **104.2.1 New, altered, extended, renovated or repaired systems.** New envelope, heating,
30 ventilating, air conditioning, service water heating, lighting and electrical installations or
31 systems, and parts of existing systems that have been altered, extended, renovated or
32 repaired, shall be tested as prescribed herein or in the rules of the department to disclose
33 leaks and defects.

34 **104.2.2 Apparatus, instruments, material and labor for tests.** Apparatus, instruments,
35 material and labor required for testing an envelope, heating, ventilating, air conditioning,
36 service water heating, lighting or electrical installation or system, or part thereof, shall be
37 furnished by the permit holder.

38 **104.2.3 Reinspection and testing.** Where any work or installation does not pass an initial

1 test or inspection, the necessary corrections shall be made so as to achieve compliance with
2 the *New York City Construction Codes*, including this code. The work or installation shall
3 then be reinspected or retested by the approved agency.

4 **104.3 Sign-off of completed work.** In addition to the requirements of Article 116 of Chapter
5 1 of Title 28 of the *Administrative Code*, Section 103.4 of this code, and other requirements
6 for sign-off, the project team shall either certify that construction does not differ from the last
7 approved energy analysis or provide a whole-project as-built energy analysis and supporting
8 documents, signed and sealed, for approval prior to sign-off. The as-built energy analysis and
9 supporting documents shall reflect the materials, equipment and values actually used in the
10 construction of the project, and shall demonstrate compliance of the constructed project with
11 this code. Such signed and sealed documents may be accepted with less than full examination
12 by the department based on the professional certification of the registered design professional.

13 **104.4 Temporary connection.** The commissioner shall have the authority to allow the
14 temporary connection of an installation to the sources of energy for the purpose of testing the
15 installation or for use under a temporary certificate of occupancy.

16
17 **SECTION ECC 105**

18 **REFERENCED STANDARDS**

19 **105.1 Referenced standards.** The standards referenced in Chapters C2, C3, C4, and C5 of this
20 code shall be those that are listed in Chapter C6 of this code, and in the rules of the department
21 and such standards shall be considered part of the requirements of the commercial provisions
22 of this code to the prescribed extent of each such reference. The standards referenced in
23 Chapters R2, R3, R4, and R5, of this code shall be those that are listed in Chapter R6 of this
24 code, and in the rules of the department and such standards shall be considered part of the
25 requirements of the residential provisions of this code to the prescribed extent of each such
26 reference. The standards referenced in 2025 NYC ASHRAE 90.1 of this code shall be those
27 that are listed in Section 12 of 2025 NYC ASHRAE 90.1 of this code, and in the rules of the
28 department and such standards shall be considered part of the requirements of the commercial
29 provisions of this code to the prescribed extent of each such reference. Where differences occur
30 between provisions of this code and the referenced standards, the provisions of this code shall
31 apply. Refer to Article 103 of Chapter 1 of Title 28 of the *Administrative Code* for additional
32 provisions relating to referenced standards.

33 **CHAPTER C2**

34 **DEFINITIONS**

35 **SECTION C201**

36 **GENERAL**

1 **Section C201.3 Words and terms defined in other codes.**

2 Section C201.3 - Revise Section C201.3 to read as follows:

3 **C201.3 Words and terms defined in other codes.** Where italicized words and terms are not
4 defined in this code but are defined in the *New York City Building Code, New York City Fire*
5 *Code, New York City Fuel Gas Code, New York City Mechanical Code, and New York City*
6 *Plumbing Code*, such terms shall have the meanings ascribed to them in those codes.

7 **Section C201.4 Words and terms not defined.**

8 Section C201.4 – Revise Section C201.4 to read as follows:

9 **C201.4 Words and terms not defined.** Where words and terms are not italicized or are
10 italicized but not defined in this publication or in the publications listed in Section C201.3,
11 such words and terms shall have the meanings defined in applicable referenced standards,
12 statutes, or regulations or shall have the ordinarily accepted meanings such as the context
13 implies.

14 **SECTION C202**

15 **GENERAL DEFINITIONS**

16 Section C202 – Delete the definitions of “Building Code of New York State,” “Existing Building
17 Code of New York State,” “Fire Code of New York State,” “Fuel Gas Code of New York State,”
18 “Mechanical Code of New York State,” “Plumbing Code of New York State,” ”Property
19 Maintenance Code of New York State,” “Residential Code of New York State,” and “Uniform
20 Code.”

21 Section C202 – Add the definition of “2025 NYC ASHRAE 90.1” after the definition of “2025
22 NYS ASHRAE 90.1.” to read as follows:

23 **2025 NYC ASHRAE 90.1.** New York City amendments to 2025 NYS ASHRAE 90.1

24 Section C202 – Delete the definition of “Approval Or Approved,” “Approved Agency,” after the
25 definition of “Alteration.”

26 Section C202 – Add the definition of “Approval Or Approved,” “Approved Agency,” after the
27 definition of “Alteration,” to read as follows:

28 **APPROVAL OR APPROVED.** See Section 28-101.5 of the *Administrative Code*.

29 **APPROVED AGENCY.** See Section 28-101.5 of the *Administrative Code*.

30 Section C202 – Delete the definition of “Authority Having Jurisdiction,” after the definition of
31 “Area-Weighted Average.”

1 Section C202 – Add the definition of “Authority Having Jurisdiction,” after the definition of
2 “Area-Weighted Average,” to read as follows:

3 **AUTHORITY HAVING JURISDICTION.** The governmental unit or agency responsible
4 for administration and enforcement of the *New York City Construction Codes* and NYCECC.

5 Section C202 – Delete the definition of “Basement,” after the definition of “Automatic.”

6 Section C202 – Add the definition of “Basement Or Cellar, Energy Code,” after the definition of
7 “Automatic,”” to read as follows:

8 **BASEMENT OR CELLAR, ENERGY CODE.** A story that is not a story above grade plane.
9 See “Story above grade plane.”

10 Section C202 – Delete the definition of “Building Entrance,” “Building Official,” after the
11 definition of “Building Commissioning.”

12 Section C202 – Add the definition of “Building Entrance,” “Building Official” after the definition
13 of “Building Commissioning,” to read as follows:

14 **BUILDING ENTRANCE.** Any doorway, set of doors, revolving door, vestibule, or other
15 form of portal that is ordinarily used to gain access to the building or to exit from the building
16 by its users and occupants. This does not include doors solely used to directly enter mechanical,
17 electrical, or other building utility service equipment rooms.

18 **BUILDING OFFICIAL.** The commissioner of buildings of the City of New York or his or
19 her duly authorized representative. See Section 28-101.5 of the *Administrative Code*.

20 Section C202 – Delete the definition of “Building Thermal Envelope,” after the definition of
21 “Building System.”

22 Section C202 – Add the definition of “Building Thermal Envelope,” after the definition of
23 “Building System,” to read as follows:

24 **BUILDING THERMAL ENVELOPE.** The exterior walls, floors, slabs, ceilings, roofs,
25 fenestration, and any other building element assemblies (above and below grade) that enclose
26 conditioned space or provide a boundary between conditioned space and unconditioned space.

27 Section C202 – Delete the definition of “Chi-Factor (X-Factor),” after the definition of “Character-
28 Defining Features.”

29 Section C202 – Add the definition of “Chi-Factor (X-Factor),” after the definition of “Character-
30 Defining Features,” to read as follows:

31 **CHI-FACTOR (γ -FACTOR).** See “Thermal Bridge.”

32 Section C202 – Add the definition of “Clear Field Thermal Bridge,” “Clear Field U-Factor,”

1 after the definition of “Clean Water Pump,” to read as follows:

2 **CLEAR FIELD THERMAL BRIDGE.** See “Thermal Bridge.”

3 **CLEAR FIELD U-FACTOR.** See “Thermal Bridge.”

4 Section C202 – Add the definition of “Commissioner,” “Commissioning Plan,” after the definition
5 of “Commercial Building,” to read as follows:

6 **COMMISSIONER.** The commissioner of buildings of the city of New York, or his or her
7 duly authorized representative. See “Authority Having Jurisdiction” and “Building official”.

8 **COMMISSIONING PLAN.** See Section C408.2.1, Commissioning plan.

9 Section C202 – Delete the definition of “Energy Code,” after the definition of “Energy Analysis.”

10 Section C202 – Add the definition of “Energy Code,” after the definition of “Energy Analysis,” to
11 read as follows:

12 **ENERGY CODE.** *The New York City Energy Conservation Code.*

13 Section C202 – Delete the definition of “Fenestration,” after the definition of “Fault Detection and
14 Diagnostics (FDD) System.”

15 Section C202 – Add the definition of “Fenestration,” after the definition of “Fault Detection and
16 Diagnostics (FDD) System,” to read as follows:

17 **FENESTRATION. Products classified as either skylights or vertical fenestration.**

18 **Skylights.** Glass units or other transparent or translucent glazing material installed at a
19 slope of less than 60 degrees (1.05 rad) from horizontal, including unit skylights, tubular
20 daylighting devices and glazing materials in solariums, sunrooms, roofs, greenhouses and
21 sloped walls. A skylight includes the glazing assembly plus perimeter framing components.

22 **Vertical fenestration.** Window units that are fixed or operable, doors that are more than
23 half glazed, glazed block, and combination opaque and glazed doors composed of glass or
24 other transparent or translucent glazing materials, and installed at a slope of not less than
25 60 degrees (1.05 rad) from horizontal.

26 Section C202 – Add the definition of “Grade, Energy Finished,” “Grade Plane, Energy,” after the
27 definition of “General Lighting,” to read as follows:

28 **GRADE, ENERGY FINISHED.** The final top surface of lawns, walks, driveways, areaways,
29 or other non-vertical surfaces where the surface meets the foundation, slab edge or exterior
30 wall of a building.

31 **GRADE PLANE, ENERGY.** A reference plane representing the average of finished ground

1 level adjoining the building at exterior walls. Where the finished ground level slopes away
2 from the exterior walls, the reference plane shall be established by the lowest points within the
3 area between the building and the lot line or, where the lot line is more than 6 feet (1828.8 mm)
4 from the building, between the building and a point 6 feet (1828.8 mm) from the building.

5 Section C202 – Delete the definition of “HVAC Total System Performance Ratio (HVAC TSPR),”
6 after the definition of “Humidistatic Controls.”

7 Section C202 – Add the definition of “HVAC Total System Performance Ratio (HVAC TSPR),”
8 after the definition of “Humidistatic Controls,” to read as follows:

9 **HVAC TOTAL SYSTEM PERFORMANCE RATIO (HVAC TSPR).** The ratio of the sum
10 of a building’s annual heating and cooling load in thousands of Btus to the sum of annual site
11 energy consumption of the building HVAC systems in thousands of Btu.

12 Section C202 – Add the definition of “Integrated Seasonal Coefficient Of Performance (ISCOP),”
13 “Integrated Seasonal Moisture Removal Efficiency (ISMRE),” after the definition of “Integrated
14 Part Load Value (IPLV),” to read as follows:

15 **INTEGRATED SEASONAL COEFFICIENT OF PERFORMANCE (ISCOP).** A
16 seasonal efficiency number that is a combined value based on the formula listed in AHRI
17 Standard 920 of the 2 COP values for the heating season of a DX-DOAS unit water or air
18 source heat pump, expressed in W/W.

19 **INTEGRATED SEASONAL MOISTURE REMOVAL EFFICIENCY (ISMRE).** A
20 seasonal efficiency number that is a combined value based on the formula listed in AHRI
21 Standard 920 of the 4 dehumidification moisture removal efficiency (MRE) ratings required
22 for DX-DOAS units, expressed in lb of moisture/kWh.

23 Section C202 – Delete the definition of “Labeled” after the definition of “Isolation Devices.”

24 Section C202 – Add the definition of “Labeled,” after the definition of “Isolation Devices” to read
25 as follows:

26 **LABELED.** See Section 28-101.5 of the *Administrative Code*.

27 Section C202 – Add the definition of “Lead Energy Professional,” after the definition of “Large-
28 Diameter Ceiling Fan,” to read as follows:

29 **LEAD ENERGY PROFESSIONAL.** The registered design professional who signs and seals
30 the energy analysis for an entire project. Such individual may be the same registered design
31 professional who signs and seals the design drawings for the same project.

32 Section C202 – Add the definition of “Linear Thermal Bridge,” after the definition of “Liquid
33 Fuel,” to read as follows:

34 **LINEAR THERMAL BRIDGE.** See “Thermal Bridge.”

1 Section C202 – Delete the definition of “Listed” after the definition of “Liner System (Ls).”

2 Section C202 – Add the definition of “Listed,” after the definition of “Liner System (Ls),” to read
3 as follows:

4 **LISTED.** See Section 28-101.5 of the *Administrative Code*.

5 Section C202 – Delete the definition of “Market Value” after the definition of “Manual.”

6 Section C202 – Add the definition of “Moisture Removal Efficiency (MRE),” after the definition
7 of “Manual,” to read as follows:

8 **MOISTURE REMOVAL EFFICIENCY (MRE).** A ratio of the moisture removal capacity
9 in pounds of moisture per hour to the power input values in kilowatts at any given set of
10 standard rating conditions expressed in lb of moisture/kWh.

11 Section C202 – Add the definitions of “Point Thermal Bridge,” after the definition of “Physical
12 Renewable Energy Power Purchase Agreement,” to read as follows:

13 **POINT THERMAL BRIDGE.** See “Thermal Bridge.”

14 Section C202 – Add the definitions of “Pre-Engineered Metal Building,” “Professional
15 Certification,” “Project,” after the definition of “Process Application,” to read as follows:

16 **PRE-ENGINEERED METAL BUILDING.** A structure in which the steel components—
17 primary framing, secondary framing, and cladding—are designed and manufactured in a
18 factory according to specific project requirements and then shipped to the construction site for
19 assembly.

20 **PROFESSIONAL CERTIFICATION.** See Section 28-101.5 of the *Administrative Code*.

21 **PROJECT.** A design and construction undertaking comprised of work related to one or more
22 buildings and the site improvements. A project is represented by one or more work
23 applications, including construction documents compiled in accordance with Section 107 of
24 the *New York City Building Code*, that relate either to the construction of a new building or
25 buildings or to the demolition or alteration of an existing building or buildings. Applications
26 for a project may have different registered design professionals and different job numbers, and
27 may result in the issuance of one or more permits.

28 Section C202 – Delete the definition of “PSI-FACTOR (ψ -FACTOR)” after the definition of
29 “Proposed Design.”

30 Section C202 – Add the definition of “PSI-FACTOR (ψ -FACTOR),” after the definition of
31 “Proposed Design,” to read as follows:

32 **PSI-FACTOR (ψ -FACTOR).** See “Thermal Bridge.”

1 Section C202 – Delete the definitions of “Standard Reference Design” after the definition of “Solar
2 Heat Gain Coefficient (SHGC).”

3 Section C202 – Add the definition of “Spandrel Panel,” after the definition of “Solar Heat Gain
4 Coefficient (SHGC),” to read as follows:

5 **SPANDREL PANEL.** An opaque assembly within a fenestration framing system in a wall
6 that is part of the building thermal envelope. Such panels are considered to be a portion of the
7 opaque thermal envelope assembly.

8 Section C202 – Add the definitions of “Story,” “Story Above Grade Plane,” after the definition of
9 “Storefront,” to read as follows:

10 **STORY.** The portion of a building included between the upper surface of a floor and the upper
11 surface of the floor or roof next above. See the definitions of “Basement or Cellar, Energy
12 Code,” and “Grade Plane, Energy Code.” A story is measured as the vertical distance from top
13 to top of two successive tiers of beams or finished floor surfaces and, for the topmost story,
14 from the top of the floor finish to the top of the ceiling joists or, where there is not a ceiling, to
15 the top of the roof rafters.

16 **STORY ABOVE GRADE PLANE.** Any story having its finished floor surface entirely above
17 grade plane, or in which the finished surface of the floor next above is:

18 1. More than 6 feet (1828.8 mm) above average grade plane; or

19 2. More than 12 feet (3657.6 mm) above the finished ground level at any point.

20 Section C202 – Delete the definition of “Thermal Bridge” after the definition of “Thermal Block.”

21 Section C202 – Add the definitions of “Thermal Break Device,” “Thermal Bridge,” after the
22 definition of “Thermal Block,” to read as follows:

23 **THERMAL BREAK DEVICE.** A pre-manufactured, load-bearing building component
24 composed of multiple materials of differing thermal conductivities (e.g., steel, insulation, fiber-
25 reinforced polymers) designed to structurally connect building elements while reducing
26 thermal bridging. The thermal transmittance (U-value) or equivalent thermal conductivity
27 (λ_{eq}) of such elements shall be determined using physical testing in accordance with ASTM
28 C1363 or an approved equivalent calculation method. The calculated performance (U-value or
29 equivalent thermal conductivity) shall include the effects of all embedded components through
30 psi- or chi-value calculation methods.

31 **THERMAL BRIDGE.** An element or interface of elements that has higher thermal
32 conductivity than the surrounding building thermal envelope, which creates a path of least
33 resistance for heat transfer.

34 **CHI-FACTOR (γ -FACTOR).** The heat loss factor for a single thermal bridge
35 characterized as a point element of a building thermal envelope (Btu/h x °F) [W/K].

1 **CLEAR FIELD THERMAL BRIDGE.** Elements of a building envelope assembly
2 creating paths of decreased resistance for heat transfer which repeat at regular intervals,
3 such as metal or wood studs, girts, and purlins.

4 **CLEAR FIELD U-FACTOR.** Thermal performance factor that accounts for clear field
5 thermal bridge.

6 **LINEAR THERMAL BRIDGE.** a length-based element associated with horizontal,
7 vertical, or diagonal elements that penetrates the insulation in the building thermal
8 envelope and with a length measured along an exterior surface of the building thermal
9 envelope, such as balconies, parapet-, roof-, floor-, or fenestration intersections, and shelf
10 angles.

11 **POINT THERMAL BRIDGE.** An element that penetrates the insulation in the building
12 thermal envelope, such as columns or beams passing through envelope assemblies,
13 attachments, anchors, and connections not defined as clear field- or linear thermal bridges.
14 The cross-sectional area is measured at the external surface of the outermost penetrated
15 insulation layer.

16 **PSI-FACTOR (ψ -FACTOR).** The heat loss factor per unit length of a thermal bridge
17 characterized as a linear element of a building thermal envelope (Btu/h x ft x °F) [W/(m x
18 K)].

19 Section C202 – Delete the definitions of “Wall, Above-Grade,” “Wall, Below-Grade,” after the
20 definition of “Walk-In Freezer.”

21 Section C202 – Add the definitions of “Wall, Above-Grade,” “Wall, Below-Grade,” after the
22 definition of “Walk-In Freezer,” to read as follows:

23 **WALL, ABOVE-GRADE.** A wall associated with the building thermal envelope that is more
24 than 15 percent of the total surface area above adjoining grade plane and is on the exterior of
25 the building or any wall that is associated with the building thermal envelope that is not on the
26 exterior of the building. This includes, but is not limited to, areaways below grade, between-
27 floor spandrels, peripheral edges of floors, roof knee walls, dormer walls, gable end walls,
28 walls enclosing a mansard roof, mechanical equipment penetrations, and skylight shafts.

29 **WALL, BELOW-GRADE.** A wall associated with the basement or first story of the building
30 that is part of the building thermal envelope, has not less than 85 percent of the total surface
31 area below adjoining grade, and is on the exterior of the building.

32 **CHAPTER C3**

33 **GENERAL REQUIREMENTS**

34 **SECTION ECC C301**

35 **CLIMATE ZONES**

1 **Section C301.1 General.**

2 Section C301.1 - Revise Section C301.1 to read as follows:

3 **C301.1 General.** For projects in the city of New York, Climate Zone 4A shall be used in
4 determining the applicable requirements from Chapter C4.

5 **SECTION C303**

6 **MATERIALS, SYSTEMS AND EQUIPMENT**

7 **Section C303.1.1 Building thermal envelope insulation.**

8 Section C303.1.1 – Revise the Exception to Section C303.1.1 to read as follows:

9 **Exception:** For roof insulation installed above the deck, the R-value shall be labeled as
10 required by the material standards in *New York City Building Code*.

11 **Section C303.1.2 Insulation mark installation.**

12 Section C303.1.2 – Revise the Exception to Section C303.1.2 to read as follows:

13 **Exception:** For roof insulation installed above the deck, the R-value shall be labeled as
14 specified by the material standards in *New York City Building Code*.

15 **Section C303.1.3 Fenestration product rating.**

16 Section C303.1.3 – Revise Section C303.1.3 to read as follows:

17 **C303.1.3 Fenestration product rating.** Fenestration product rating. U-factors, solar heat gain
18 coefficient (SHGC), and visible transmittance (VT) of fenestration products shall be
19 determined as follows:

20 1. For windows, doors and skylights, U-factor, SHGC and VT ratings shall be determined
21 by a third party recognized by ANSI, ILAC or MiRa in accordance with NFRC 100 and
22 NFRC 200.

23 2. Where required for garage doors and rolling doors, U-factor ratings shall be determined
24 in accordance with either NFRC 100 or ANSI/DASMA 105.

25 U-factors, SHGC and VT shall be determined by an accredited, independent laboratory, and
26 certified by the manufacturer by a label affixed to the product or a label certificate specific to
27 the products in the project.

28 Manufactured products or shop fabricated units lacking an affixed label shall be assigned a
29 default U-factor from Table C303.1.3(1) or C303.1.3(2). Products lacking a label indicating
30 SHGC or VT shall be assigned a default SHGC or VT from Table C303.1.3(3).

1 Where labeled or default values are not indicated, a signed and dated certificate showing
 2 compliance through modeling performed using Lawrence Berkley National Labs
 3 WINDOW/THERM software at the sizes and boundary conditions prescribed in NFRC -
 4 100/200 shall be provided. The simulation shall be performed by a third-party recognized by
 5 ANSI, ILAC or MiRa. For Tubular Daylighting Devices, VTannual shall be measured and
 6 rated in accordance with NFRC 203.

7 Air infiltration rate shall be demonstrated by testing to ASTM E283. The test shall be
 8 conducted at an independent third-party laboratory recognized by ANSI, ILAC or MiRa, and
 9 shall be conducted within the previous 5 years.

10 **Section C303.1.5 Spandrel Panels.**

11 Section C303.1.5 – Add new Section C303.1.5 and Table C303.1.5 to read as follows:

12 **C303.1.5 Spandrel Panels.** U-factors of opaque assemblies within fenestration framing
 13 systems shall be determined in accordance with NFRC 100. U-factors shall be determined by
 14 an accredited, independent laboratory. Spandrel panels lacking a calculation shall be assigned
 15 a default U-factor from Table C303.1.5.

16 **TABLE C303.1.5**

17 **DEFAULT EFFECTIVE U-FACTORS FOR SPANDREL PANELS^a**

<u>RATED R-VALUE OF INSULATION BETWEEN FRAMING MEMBERS</u>		<u>None</u>	<u>R-4</u>	<u>R-7</u>	<u>R-10</u>	<u>R-15</u>	<u>R-20</u>	<u>R-25</u>	<u>R-30</u>
<u>Frame Type</u>	<u>Spandrel Panel</u>	<u>Default U-factor</u>							
<u>Aluminum without thermal break^b</u>	<u>Single glass pane, stone, or metal panel</u>	<u>U-0.445</u>	<u>U-0.285</u>	<u>U-0.259</u>	<u>U-0.247</u>	<u>U-0.236</u>	<u>U-0.230</u>	<u>U-0.226</u>	<u>U-0.224</u>
	<u>Double glazing with no low-e coatings</u>	<u>U-0.356</u>	<u>U-0.273</u>	<u>U-0.254</u>	<u>U-0.244</u>	<u>U-0.234</u>	<u>U-0.229</u>	<u>U-0.226</u>	<u>U-0.223</u>
	<u>Triple glazing or double glazing with low-e glass</u>	<u>U-0.313</u>	<u>U-0.263</u>	<u>U-0.249</u>	<u>U-0.241</u>	<u>U-0.233</u>	<u>U-0.228</u>	<u>U-0.225</u>	<u>U-0.223</u>
<u>Aluminum with thermal break^c</u>	<u>Single glass pane, stone, or metal panel</u>	<u>U-0.429</u>	<u>U-0.243</u>	<u>U-0.212</u>	<u>U-0.197</u>	<u>U-0.184</u>	<u>U-0.176</u>	<u>U-0.172</u>	<u>U-0.169</u>
	<u>Double glazing with no low-e coatings</u>	<u>U-0.328</u>	<u>U-0.228</u>	<u>U-0.205</u>	<u>U-0.193</u>	<u>U-0.182</u>	<u>U-0.175</u>	<u>U-0.171</u>	<u>U-0.168</u>
	<u>Triple glazing or double glazing with low-e glass</u>	<u>U-0.277</u>	<u>U-0.217</u>	<u>U-0.199</u>	<u>U-0.189</u>	<u>U-0.180</u>	<u>U-0.174</u>	<u>U-0.170</u>	<u>U-0.167</u>
<u>Structural glazing^d</u>	<u>Single glass pane, stone, or metal panel</u>	<u>U-0.428</u>	<u>U-0.217</u>	<u>U-0.180</u>	<u>U-0.161</u>	<u>U-0.145</u>	<u>U-0.136</u>	<u>U-0.130</u>	<u>U-0.126</u>
	<u>Double glazing with no low-e coatings</u>	<u>U-0.316</u>	<u>U-0.199</u>	<u>U-0.172</u>	<u>U-0.157</u>	<u>U-0.143</u>	<u>U-0.135</u>	<u>U-0.129</u>	<u>U-0.126</u>
	<u>Triple glazing or double glazing with low-e glass</u>	<u>U-0.257</u>	<u>U-0.186</u>	<u>U-0.165</u>	<u>U-0.152</u>	<u>U-0.140</u>	<u>U-0.133</u>	<u>U-0.128</u>	<u>U-0.125</u>
<u>No framing or insulation is continuous^e</u>	<u>Single glass pane, stone, or metal panel</u>	<u>U-0.445</u>	<u>U-0.160</u>	<u>U-0.108</u>	<u>U-0.082</u>	<u>U-0.058</u>	<u>U-0.045</u>	<u>U-0.037</u>	<u>U-0.031</u>
	<u>Double glazing with no low-e coatings</u>	<u>U-0.356</u>	<u>U-0.147</u>	<u>U-0.102</u>	<u>U-0.078</u>	<u>U-0.056</u>	<u>U-0.044</u>	<u>U-0.036</u>	<u>U-0.030</u>
	<u>Triple glazing or double glazing with low-e glass</u>	<u>U-0.313</u>	<u>U-0.139</u>	<u>U-0.098</u>	<u>U-0.076</u>	<u>U-0.055</u>	<u>U-0.043</u>	<u>U-0.035</u>	<u>U-0.030</u>

18 a. Extrapolation outside of the table and interpolation between values in the table shall

1 not be permitted. Assemblies with distance between framing less than 30 inches (762
2 mm), or not included in the default table, shall have a U-factor determined by testing in
3 compliance with ASTM C1363 or modeling in compliance with ANSI/NFRC 100.
4 Spandrel panel assemblies in the table do not include metal backpans. For designs with
5 metal backpans, multiply the U-factor by 1.20. U-factors for spandrel panels include a
6 3/4 in. air gap and 5/8 in. gypsum board with R-value of 0.56 for the interior finish. The
7 gypsum board is assumed to span between the window sill and a channel at the floor.

8 b. This frame type shall be used for systems that do not contain a non-metallic element
9 that separates the metal exposed to the exterior from the metal that is exposed to the
10 interior condition.

11 c. This frame type shall be used for systems where a urethane or other non-metallic
12 element separates the metal exposed to the exterior from the metal that is exposed to the
13 interior condition.

14 d. This frame type shall be used for systems that have no exposed mullion on the exterior.

15 e. This frame type shall be used for systems where there is no framing, or the insulation is
16 continuous across and uninterrupted by the framing (also known as mullion wrap).

17 **Section C303.2 Installation.**

18 Section C303.2 – Revise Section C303.2 to read as follows:

19 **C303.2 Installation.** Materials, systems and equipment shall be installed in accordance with
20 (i) the manufacturer’s instructions and (ii) the applicable provisions of the *New York City*
21 *Construction Codes.*

22 **CHAPTER C4**

23 **COMMERCIAL ENERGY EFFICIENCY**

24 **SECTION C401**

25 **GENERAL**

26 **Section C401.2.1 ECCCNY – Commercial Provisions.**

27 Section C401.2.1 – Delete Section C401.2.1 in its entirety and add a new Section C401.2.1 to read
28 as follows:

29 **C401.2.1 New York City Energy Conservation Code. Commercial Provisions.** Commercial
30 buildings shall comply with Sections C402 through C406 and Section C408. Dwelling units
31 and sleeping units in Group R-2 buildings without systems serving multiple units shall be
32 deemed to be in compliance with this chapter, provided that they comply with Section R406.

33 **Exception:** Additions, alterations, repairs and changes of occupancy to existing buildings that

1 comply with Chapter C5.

2 **Section C401.2.2 ASHRAE 90.1.**

3 Section C401.2.2 – Delete Section C401.2.2 in its entirety and add a new Section C401.2.2 to read
 4 as follows:

5 **C401.2.2 ASHRAE 90.1 Compliance Path.** Commercial buildings shall comply with the
 6 requirements of 2025 NYC ASHRAE 90.1.

7

8

SECTION C402

9

BUILDING THERMAL ENVELOPE REQUIREMENTS

10 **Table C402.1.2 Opaque Building Thermal Envelope Assembly Maximum Requirements, U-**
 11 **Factor Method^{a, b}**

12 Revise Table C402.1.2 to read as follows:

13

TABLE C402.1.2

14

OPAQUE BUILDING THERMAL ENVELOPE ASSEMBLY MAXIMUM
 15 **REQUIREMENTS, U-FACTOR METHOD^{a, b}**

<u>CLIMATE ZONE</u>	<u>4</u>		<u>5</u>		<u>6</u>	
	<u>All other</u>	<u>Group R</u>	<u>All other</u>	<u>Group R</u>	<u>All other</u>	<u>Group R</u>
<u>Roofs</u>						
<u>Insulation entirely above roof deck</u>	<u>U-0.030</u>	<u>U-0.030</u>	<u>U-0.030</u>	<u>U-0.030</u>	<u>U-0.028</u>	<u>U-0.028</u>
<u>Pre-engineered Metal buildings</u>	<u>U-0.035</u>	<u>U-0.035</u>	<u>U-0.035</u>	<u>U-0.035</u>	<u>U-0.028</u>	<u>U-0.028</u>
<u>Attic and other</u>	<u>U-0.020</u>	<u>U-0.020</u>	<u>U-0.020</u>	<u>U-0.020</u>	<u>U-0.017</u>	<u>U-0.017</u>
<u>Walls, above grade^e</u>						
<u>Mass^f</u>	<u>U-0.090</u>	<u>U-0.080</u>	<u>U-0.080</u>	<u>U-0.071</u>	<u>U-0.071</u>	<u>U-0.067</u>
<u>Pre-engineered Metal building</u>	<u>U-0.048</u>	<u>U-0.048</u>	<u>U-0.048</u>	<u>U-0.048</u>	<u>U-0.048</u>	<u>U-0.046</u>
<u>Metal framedⁱ</u>	<u>U-0.061</u>	<u>U-0.061</u>	<u>U-0.052</u>	<u>U-0.052</u>	<u>U-0.47</u>	<u>U-0.043</u>
<u>Wood framed and other</u>	<u>U-0.061</u>	<u>U-0.061</u>	<u>U-0.048</u>	<u>U-0.048</u>	<u>U-0.048</u>	<u>U-0.048</u>
<u>Walls, below grade</u>						
<u>Below-grade wall^c</u>	<u>C-0.119</u>	<u>C-0.092</u>	<u>C-0.119</u>	<u>C-0.092</u>	<u>C-0.092</u>	<u>C-0.063</u>
<u>Floors</u>						
<u>Mass^d</u>	<u>U-0.057</u>	<u>U-0.051</u>	<u>U-0.053</u>	<u>U-0.051</u>	<u>U-0.051</u>	<u>U-0.051</u>
<u>Joist/framing</u>	<u>U-0.033</u>	<u>U-0.033</u>	<u>U-0.033</u>	<u>U-0.033</u>	<u>U-0.027</u>	<u>U-0.027</u>

Slab-on-grade floors						
<u>Unheated slabs</u>	<u>F-0.52</u>	<u>F-0.52</u>	<u>F-0.52</u>	<u>F-0.51</u>	<u>F-0.51</u>	<u>F-0.434</u>
<u>Heated slabs</u>	<u>F-0.62</u>	<u>F-0.62</u>	<u>F-0.62</u>	<u>F-0.62</u>	<u>F-0.62</u>	<u>F-0.602</u>
Opaque doors						
<u>Nonswinging door</u>	<u>U-0.31</u>	<u>U-0.31</u>	<u>U-0.31</u>	<u>U-0.31</u>	<u>U-0.31</u>	<u>U-0.31</u>
<u>Swinging door^g</u>	<u>U-0.37</u>	<u>U-0.37</u>	<u>U-0.37</u>	<u>U-0.37</u>	<u>U-0.37</u>	<u>U-0.37</u>
<u>Garage door <14% glazing^h</u>	<u>U-0.31</u>	<u>U-0.31</u>	<u>U-0.31</u>	<u>U-0.31</u>	<u>U-0.31</u>	<u>U-0.31</u>

- 1 For SI: 1 pound per square foot = 4.88 kg/m², 1 pound per cubic foot = 16 kg/m³.
- 2 a. Where assembly U-factors, C-factors and F-factors are established in 2025 NYC ASHRAE
- 3 90.1, such opaque assemblies shall be a compliance alternative where those values meet the
- 4 criteria of this table, provided that the construction, excluding the cladding system on walls,
- 5 complies with the appropriate construction details from 2025 NYC ASHRAE 90.1.
- 6 b. Where U-factors have been established by testing in accordance with ASTM C1363, such
- 7 opaque assemblies shall be a compliance alternative where those values meet the criteria of this
- 8 table. The R-value of continuous insulation shall be permitted to be added to or subtracted from
- 9 the original tested design.
- 10 c. Where heated slabs are below grade, below-grade walls shall comply with the U-factor
- 11 requirements for above-grade mass walls.
- 12 d. “Mass floors” shall be in accordance with Section C402.1.3.4.
- 13 e. Reserved.
- 14 f. “Mass walls” shall be in accordance with Section C402.1.3.4.
- 15 g. Swinging door U-factors shall be determined in accordance with NFRC-100.
- 16 h. Garage doors having a single row of fenestration shall have an assembly U-factor less than or
- 17 equal to 0.44, provided that the fenestration area is not less than 14 percent and not more than
- 18 25 percent of the total door area.
- 19 i. This refers to cold-formed steel studs or joists at 16” or 24” on-center.

20 **Section C402.1.2.1 Methods of determining U-, C- and F-factors.**

21 Section C402.1.2.1 - Revise Section C402.1.2.1 to read as follows:

22 **C402.1.2.1 Methods of determining U-, C- and F-factors.** Where assembly U-factors, C-

23 factors and F-factors and calculation procedures are established in 2025 NYC ASHRAE 90.1

24 Appendix A for opaque assemblies, such opaque assemblies shall be a compliance alternative

25 provided they meet the criteria of Table C402.1.2 and the construction, excluding cladding

26 system on walls, complies with the applicable construction details from 2025 NYC ASHRAE

27 90.1 Appendix A. Where U-factors have been established by testing in accordance with ASTM

28 C1363, such opaque assemblies shall be a compliance alternative provided they meet the

29 criteria of Table C402.1.4. The R-value of continuous insulation shall be permitted to be added

30 to or subtracted from the original tested design. Airspaces used for assembly evaluations shall

31 comply with Section C402.2.7.

32 **Section C402.1.2.1.6 Cold-formed steel assemblies.**

33 Section C402.1.2.1.6 – Revise Section C402.1.2.1.6 to read as follows:

1 **C402.1.2.1.6 Cold-formed steel assemblies.** U-factors for building thermal envelopes
 2 containing cold-formed steel framed ceiling and walls shall be permitted to be determined in
 3 accordance with Table A3.3.3.1 in 2025 NYC ASHRAE 90.1. Where the steel-framed wall
 4 contains no cavity insulation and uses continuous insulation to satisfy the U-factor maximum,
 5 the steel-framed wall member spacing is permitted to be installed at any on-center spacing.

6 **Section C402.1.2.1.7 Spandrel Panels.**

7 Section C402.1.2.1.7 – Revise Section C402.1.2.1.7 to read as follows:

8 **C402.1.2.1.7 Spandrel Panels.** U-factors of opaque assemblies within fenestration framing
 9 systems shall be determined in accordance with ASTM C1363, ANSI/NFRC 100, or the default
 10 values in Table C303.1.5.

11 **Table C402.1.2.1.7 Effective U-Factors For Spandrel Panels.^a**

12 Table C402.1.2.1.7 – Delete Table C402.1.2.1.7 in its entirety.

13 **Table C402.1.3 Opaque Building Thermal Envelope Insulation Component Minimum**
 14 **Requirements, R-Value Method.^a**

15 Revise Table C402.1.3 to read as follows:

16 **TABLE C402.1.3**
 17 **OPAQUE BUILDING THERMAL ENVELOPE INSULATION COMPONENT**
 18 **MINIMUM REQUIREMENTS, R-VALUE METHOD^a**

<u>CLIMATE ZONE</u>	<u>4</u>		<u>5</u>		<u>6</u>	
	<u>All other</u>	<u>Group R</u>	<u>All other</u>	<u>Group R</u>	<u>All other</u>	<u>Group R</u>
<u>Roofs</u>						
<u>Insulation entirely above roof deck</u>	<u>R-33ci</u>	<u>R-33ci</u>	<u>R-33ci</u>	<u>R-33ci</u>	<u>R-35ci</u>	<u>R-35ci</u>
<u>Pre-engineered Metal buildings^b</u>	<u>R-19ca + R-11 LS</u>	<u>R-19ca + R-11 LS</u>	<u>R-19ca + R-11 LS</u>	<u>R-19ca + R-11 LS</u>	<u>R-30ca + R-11 LS</u>	<u>R-25ca + R-11 + R-11 LS</u>
<u>Attic and other</u>	<u>R-53ca</u>	<u>R-53ca</u>	<u>R-53ca</u>	<u>R-53ca</u>	<u>R-60ca</u>	<u>R-60ca</u>
<u>Walls, above grade</u>						
<u>Mass^f</u>	<u>R-13.3ci</u>	<u>R-13.3ci</u>	<u>R-13.3ci</u>	<u>R-15.2ci</u>	<u>R-15.2ci</u>	<u>R-17.5ci</u>
<u>Pre-engineered Metal building</u>	<u>R-13ca+14.9ci</u>	<u>R-13ca+14.9ci</u>	<u>R-13ca + R-14.9ci</u>	<u>R-13ca + R-14.9ci</u>	<u>R-13ca + R-14.9ci</u>	<u>R-13ca + R-15.8ci</u>
<u>Metal framed^j</u>	<u>R-13ca+8.5ci</u>	<u>R-13ca +8.5ci</u>	<u>R-13ca+7.5ci</u>	<u>R-13ca+7.5ci</u>	<u>R-13ca+7.5ci</u>	<u>R-13ca+7.5ci</u>

<u>Wood framed and other</u>	<u>R-13ca+4.5ci</u> or <u>R-19ca+1.5ci</u>	<u>R-13ca+4.5ci</u> or <u>R-19ca+1.5ci</u>	<u>R-11 + R-10ci</u> or <u>R-19 + R-5ci</u> or <u>R-21 + R-4ci</u>	<u>R-11 + R-10ci</u> or <u>R-19 + R-5ci</u> or <u>R-21 + R-4ci</u>	<u>R-11 + R-10ci</u> or <u>R-19 + R-5ci</u> or <u>R-21 + R-4ci</u>	<u>R-11 + R-12ci</u> or <u>R-19 + R-7ci</u> or <u>R-21 + R-5ci</u>
<u>Walls, below grade</u>						
<u>Below-grade wall^d</u>	<u>R-7.5ci</u>	<u>R-10ci</u>	<u>R-7.5ci</u>	<u>R-10ci</u>	<u>R-10ci</u>	<u>R-15ci</u>
<u>Floors</u>						
<u>Mass^e</u>	<u>R-14.6ci</u>	<u>R-16.7ci</u>	<u>R-16.7ci</u>	<u>R-16.7ci</u>	<u>R-16.7ci</u>	<u>R-16.7ci</u>
<u>Joist/framing</u>	<u>R-30ca</u>	<u>R-30ca</u>	<u>R-30ca</u>	<u>R-30ca</u>	<u>R-38ca</u>	<u>R-38ca</u>
<u>Slab-on-grade floors</u>						
<u>Unheated slabs</u>	<u>R-15 for 24" below</u>	<u>R-15 for 24" below</u>	<u>R-15 for 24" below</u>	<u>R-20 for 24" below</u>	<u>R-20 for 24" below</u>	<u>R-20 for 48" below</u>
<u>Heated slabs^g</u>	<u>R-20 for 48" below</u> <u>+ R-5 full slab</u>	<u>R-20 for 48" below</u> <u>+ R-5 full slab</u>	<u>R-20 for 48" below</u> <u>+ R-5 full slab</u>	<u>R-20 for 48" below</u> <u>+ R-5 full slab</u>	<u>R-20 for 48" below</u> <u>+ R-5 full slab</u>	<u>R-15 full slab</u>

1 For SI: 1 inch = 25.4 mm, 1 pound per square foot = 4.9 kg/m², 1 pound per cubic foot = 16 kg/m³.
2 ci = Continuous Insulation, NR = No Requirement, LS = Liner System, ca = Cavity insulation.

- 3 a. Assembly descriptions can be found 2025 NYC ASHRAE 90.1 Appendix A.
4 b. Where using R-value compliance method, a thermal spacer block shall be provided,
5 otherwise use the U-factor compliance method in Table C402.1.2.
6 c. Reserved.
7 d. Where heated slabs are below grade, below-grade walls shall comply with the exterior
8 insulation requirements for heated slabs.
9 e. "Mass floors" shall be in accordance with Section C402.1.3.4.
10 f. "Mass walls" shall be in accordance with Section C402.1.3.4.
11 g. The first value is for perimeter insulation and the second value is for full, under-slab
12 insulation. Perimeter and full-slab insulation components shall be installed in accordance
13 with Section C402.2.4.
14 h. The first value is cavity insulation; the second value is continuous insulation. Therefore;
15 "R-13ca+R-8.5ci" means R-13 cavity insulation and R-8.5 continuous insulation; "R-
16 53ca" means R-53 cavity insulation and no continuous insulation.
17 i. Where the required R-value in Table C402.1.3 is met by using continuous insulation such
18 that cavity insulation is not required, the R-Value is applicable to any wall framing
19 spacing.
20 j. This refers to cold-formed steel studs or joists at 16" or 24" on-center.
21

22 **Section C402.1.5 Rooms containing fuel-burning appliances.**

23 Section C402.1.5 – Revise the exception to Section C402.1.5 to read as follows:

24 **Exception:** Fireplaces and stoves that comply with the *New York City Mechanical Code*, and

1 the fireplace blocking requirements of the *New York City Building Code*.

2 **Section C402.2.7 Airspaces.**

3 Section C402.2.7 – Revise Section C402.2.7 to read as follows:

4 **C402.2.7 Airspaces.** Where the R-value of an airspace is used for compliance in accordance
5 with Section C402.1, the airspace shall be enclosed in a cavity bounded on all sides by building
6 components and constructed to minimize airflow into and out of the enclosed airspace. Airflow
7 shall be deemed minimized where one of the following conditions occur:

8 1. The enclosed airspace is unventilated.

9 2. The enclosed airspace is bounded on at least one side by an anchored masonry veneer,
10 constructed in accordance with Chapter 14 of the *New York City Building Code* and
11 vented by veneer weep holes located only at the bottom of the airspace and spaced not
12 less than 15 inches (381 mm) on center with top of the cavity airspace closed.

13 **Exception:** For ventilated cavities, the effect of ventilation of airspaces located on the exterior
14 side of the continuous air barrier and adjacent to and behind the exterior wall-covering material
15 shall be determined in accordance with ASTM C1363 modified with an airflow entering the
16 bottom and exiting the top of the airspace at an air movement rate of not less than 70
17 mm/second.

18 **Section C402.2.8 Fireplaces.**

19 Section C402.2.8 – Revise Section C402.2.8 to read as follows:

20 **C402.2.8 Fireplaces.** New wood-burning fireplaces shall have tight-fitting flue dampers or
21 doors, and outdoor combustion air as required by the fireplace construction provisions of the
22 *New York City Construction Codes*, as applicable. Where using tight-fitting doors on factory-
23 built fireplaces listed and labeled in accordance with UL 127, the doors shall be tested and
24 listed for the fireplace.

25 **Table C402.5 Building Envelope Fenestration Maximum U-Factor And SHGC**
26 **Requirements**

27 Revise Table C402.5 to read as follows:

28 **TABLE C402.5**
29 **BUILDING ENVELOPE FENESTRATION MAXIMUM U-FACTOR**
30 **AND SHGC REQUIREMENTS^c**
31

	<u>4</u>	<u>5</u>	<u>6</u>
<u>CLIMATE ZONE</u>	<u>Vertical fenestration</u>		
	<u>U-factor^a</u>		

	<u>Below 95'^d</u>	<u>Above 95'^d</u>		
<u>Metal framing, Fixed fenestration</u>	<u>U-0.30</u>	<u>U-0.34</u>	<u>U-0.34</u>	<u>U-0.34</u>
<u>Metal framing, Operable fenestration</u>	<u>U-0.40</u>	<u>U-0.42</u>	<u>U-0.43</u>	<u>U-0.41</u>
<u>Nonmetal framing, all fenestration</u>	<u>U-0.28</u>	<u>U-0.28</u>	<u>U-0.27</u>	<u>U-0.27</u>
<u>Entrance doors</u>	<u>U-0.63</u>		<u>U-0.63</u>	<u>U-0.63</u>
	<u>SHGC^b</u>			
<u>PF < 0.2</u>	<u>0.33</u>		<u>0.33</u>	<u>0.34</u>
<u>0.2 ≤ PF < 0.5</u>	<u>0.40</u>		<u>0.40</u>	<u>0.41</u>
<u>PF ≥ 0.5</u>	<u>0.53</u>		<u>0.53</u>	<u>0.54</u>
	<u>Skylights</u>			
<u>U-factor</u>	<u>U-0.48</u>		<u>U-0.48</u>	<u>U-0.48</u>
<u>SHGC^b</u>	<u>0.38</u>		<u>0.38</u>	<u>0.38</u>

- 1 a. U-factor shall be rated in accordance with NFRC 100. U-factor shall reflect project-specific
- 2 sizes, and include framing components plus glazing. SHGC shall be rated in accordance
- 3 with NRFC 200.
- 4 b. SHGC shall reflect project-specific sizes, and include framing components plus glazing.
- 5 SHGC of the center-of-glass shall be an acceptable alternative for determining compliance
- 6 with the SHGC requirements for the overall fenestration area.
- 7 c. Fixed fenestration shall include glazed curtain walls, pre-fabricated storefronts and factory
- 8 assembled fixed window units.
- 9 d. Where a portion of the fenestration frame is installed at or above 95 feet (29 m) above grade,
- 10 the unit may meet the requirements for 95 feet (29 m) and above.

11

12 **Section C402.5.2 Minimum skylight fenestration area.**

13 Section C402.5.2 – Revise the first paragraph of Section C402.5.2 to read as follows:

14 **C402.5.2 Minimum skylight fenestration area.** Skylights shall be provided in enclosed

15 spaces greater than 2500 square feet (232.3 m²) in floor area, directly under a roof with not

16 less than 75 percent of the ceiling area with a ceiling height greater than 15 feet (4572 mm),

17 and used as an office, lobby, atrium, concourse, corridor, storage space, gymnasium/exercise

18 center, convention center, automotive service area, space where manufacturing occurs,

19 nonrefrigerated warehouse, retail store, distribution/sorting area, transportation depot, parking

20 garage, or workshop. The total toplit daylight zone shall be not less than half the floor area and

1 shall comply with one of the following:

2 **Section C402.5.3.4 Area-weighted U-factor.**

3 Section C402.5.3.4 – Revise Section C402.5.3.4 to read as follows:

4 **C402.5.3.4 Area-weighted U-factor.** An area-weighted average combining vertical fixed
5 fenestration and vertical operable fenestration in accordance with Equation 4-4a shall be
6 permitted to demonstrate compliance with the U-factor requirements for those categories
7 in Table C402.5. Entrance door and skylight U-factors shall be permitted to be averaged
8 separately by fenestration product category. All U-factors shall be rated in accordance with
9 NFRC 100.

10
$$\Sigma[(U1 * A1) \dots (Un * An)] \leq (U_{\text{fixed}} * A_{\text{fixed}} + U_{\text{operable}} * A_{\text{operable}}) \text{ (Equation 4-4a)}$$

11 where:

12 U1 = rated U-factor of the 1st vertical fenestration assembly

13 A1 = area of the 1st vertical fenestration assembly

14 Un = rated U-factor of the nth vertical fenestration assembly

15 An = area of the nth vertical fenestration assembly

16 U_{fixed} = U-factor for vertical fixed fenestration in Table C402.4

17 A_{fixed} = total area of the vertical fixed fenestration assemblies

18 U_{operable} = U-factor for vertical operable fenestration in Table C402.4

19 A_{operable} = total area of the vertical operable fenestration assemblies.

20
21 **Section C402.6.2 Air leakage compliance.**

22 Section C402.6.2. Delete Section C402.6.2, Section C402.6.2.1, Section C402.6.2.2, Section
23 C402.6.2.3, Section C402.6.2.3.1 and Section C402.6.2.3.2 in their entirety and add new Section
24 C402.6.2, Section C402.6.2.1, Section C402.6.2.2, Section C402.6.2.2.1 and Section C402.6.2.2.2
25 to read as follows:

26 **C402.6.2 Air leakage compliance.** Air leakage of the building thermal envelope shall be
27 tested by an approved third party in accordance with Section C402.6.2.1 and C402.6.2.2. The
28 measured air leakage shall not be greater than **0.35** cubic feet per minute per square foot (1.8
29 L/s/m²) of the building thermal envelope area at a pressure differential of 0.3 inch (7.6 mm)
30 water gauge (75 Pa) with the calculated building thermal envelope surface area being the sum
31 of the above- and below-grade building thermal envelope.

32
33 **C402.6.2.1 Whole building test method and reporting.** The whole building thermal
34 envelope shall be tested by an approved third party in accordance with ASTM E779, ASTM
35 E1827, ASTM E3158 or an equivalent approved method. Air leakage shall be measured
36 following a multi-point regression method and then averaged from depressurization and
37 pressurization tests. A report that includes the tested surface area, floor area, air by volume,
38 stories above grade, and air leakage rates shall be submitted to the building official and the
39 building owner

40 **Exceptions:**

1 1. For buildings greater than 50 000 square feet (4645.2 m²), portions of the building
2 shall be permitted to be tested following the procedures for a guarded test in ASTM
3 E3158 and the measured air leakage shall be area-weighted by the surface areas of
4 the building thermal envelope in each portion. The weighted average tested air
5 leakage shall not be greater than the whole building leakage limit. The following
6 portions of the building shall be tested:

7 1.1 The entire building thermal envelope area of stories that have any
8 conditioned spaces directly under a roof.

9 1.2 The entire building thermal envelope area of stories that have a building
10 entrance, a floor over unconditioned space, or a loading dock, or that are below
11 grade.

12 1.3 Representative above-grade portions of the building totaling not less than
13 25 percent of the wall area enclosing the remaining conditioned space.

14 2. Hospital, Museum and other occupancies approved by the commissioner may be
15 permitted to satisfy the requirements of this section by performing a pressurization
16 test.

17 **C402.6.2.2 Building thermal envelope design and construction verification criteria.**

18 The installation of the continuous air barrier shall be verified by the building official, a
19 registered design professional or approved agency in accordance with the following:

20 1. A review of the construction documents and other supporting data shall be
21 conducted to assess compliance with the requirements in Section C402.6.1.

22 2. Inspection of continuous air barrier components and assemblies shall be
23 conducted during construction to verify compliance with the requirements
24 of Section C402.6.2.2.1 and C402.6.2.2.2. The air barrier shall remain
25 accessible for inspection and repair.

26 3. A final inspection report shall be provided for inspections completed by the
27 registered design professional or an approved agency. The inspection report
28 shall be provided to the building owner or owner's authorized agent and the
29 building official. The report shall identify deficiencies found during
30 inspection and details of corrective measures taken.

31 **C402.6.2.2.1 Materials.** Materials with an air permeability not greater than 0.004
32 cfm/ft² (0.02 L/s × m²) under a pressure differential of 0.3 inch (7.6 mm) water gauge
33 (75 Pa) when tested in accordance with ASTM E2178 shall comply with this section.
34 Materials in Items 1 through 16 shall be deemed to comply with this section, provided
35 that joints are sealed and materials are installed as air barriers in accordance with the
36 manufacturer's instructions:

37 1. Plywood with a thickness of not less than ³/₈ inch (9.5 mm).

38 2. Oriented strand board having a thickness of not less than ³/₈ inch (9.5 mm).

39 3. Extruded polystyrene insulation board having a thickness of not less than ¹/₂ inch
40 (12.7 mm).

- 1 4. Foil-back polyisocyanurate insulation board having a thickness of not less than 1/2
2 inch (12.7 mm).
- 3 5. Closed-cell spray foam having a minimum density of 1.5 pcf (2.4 kg/m³) and having
4 a thickness of not less than 1.5 inches (38.1 mm).
- 5 6. Open-cell spray foam with a density between 0.4 and 1.5 pcf (6 and 2.4 kg/m³) and
6 having a thickness of not less than 4.5 inches (114.3 mm).
- 7 7. Exterior or interior gypsum board having a thickness of not less than 1/2 inch (12.7
8 mm).
- 9 8. Cement board having a thickness of not less than 1/2 inch (12.7 mm).
- 10 9. Built-up roofing membrane.
- 11 10. Modified bituminous roof membrane.
- 12 11. Single-ply roof membrane.
- 13 12. A Portland cement/sand parge, or gypsum plaster having a thickness of not
14 less than 5/8 inch (15.9 mm).
- 15 13. Cast-in-place and precast concrete.
- 16 14. Fully grouted concrete block masonry.
- 17 15. Sheet steel or aluminum.

18
19 **C402.6.2.2 Assemblies.** Assemblies of materials and components with an average air
20 leakage not greater than 0.04 cfm/ft² (0.2 L/s × m²) under a pressure differential of 0.3
21 inch (7.6 mm) of water gauge (75 Pa) where tested in accordance with ASTM E2357,
22 ASTM E1677, ASTM D8052 or ASTM E283 shall comply with this section.
23 Assemblies listed in Items 1 through 3 below shall be deemed to comply, provided that
24 joints are sealed and the requirements of Section C402.6.1.2 are met:

- 25 1. Concrete masonry walls coated with either one application of block filler or 2
26 applications of a paint or sealer coating.
- 27 2. Masonry walls constructed of clay or shale masonry units with a nominal width
28 greater than or equal to 4 inches (101.6 mm).
- 29 3. A Portland cement/sand parge, stucco or plaster not less than 1/2 inch (12.7 mm)
30 in thickness.

31 **Section C402.6.4 Doors and access openings to shafts, chutes, stairways and elevator lobbies.**

32 Section C402.6.4 – Revise Exceptions 1 and 2 from Section C402.6.4 to read as follows:

33 **Exceptions:**

- 34 1. Door openings required to comply with the duct and air transfer opening
35 requirements of the *New York City Building Code*.
- 36 2. Doors and door openings required to comply with UL 1784 by the *New York City*
37 *Building Code*.

1 **Section C402.6.6 Vestibules.**

2 Section C402.6.6 – Revise all the exceptions from Section C402.6.6 to read as follows:

3 **Exceptions:** Vestibules are not required for the following:

- 4 1. Doors not intended to be used by the public, such as doors to mechanical or
5 electrical equipment rooms, or intended solely for employee use.
- 6 2. Doors opening directly from a sleeping unit or dwelling unit.
- 7 3. Doors that open directly from a space less than 3000 square feet (278.7 m²) in area,
8 in buildings less than 75 feet (22.9 m) in height.
- 9 4. Revolving doors.
- 10 5. Doors used primarily to facilitate vehicular movement or material handling and
11 adjacent personnel doors.
- 12 6. Doors that open directly from a space less than 1000 square feet (92.9 m²) in area,
13 in buildings 75 feet (22.9 m) and greater in height.

14 **Section C402.7 Thermal bridges in above-grade walls.**

15 Section C402.7 – Delete Section C402.7, Section C402.7.1, Section C402.7.2, Section C402.7.3,
16 Section C402.7.4 and Section C402.7.5 in their entirety and add new C402.7, Section C402.7.1,
17 Section C402.7.2, Section C402.7.2.1, Section C402.7.2.2, Section C402.7.2.3, Section
18 C402.7.2.4, Section C402.7.2.4.1 and Section C402.7.2.5 to read as follows:

19 **C402.7 Thermal bridging documentation and mitigation.** Where present, intersections
20 listed in Section C402.7.1 that create thermal bridges shall be detailed in construction
21 documents. Thermal bridges shall be mitigated in accordance with Section C402.7.2.
22

23 **Exceptions:**

- 24 1. Assemblies not enclosing conditioned space.
- 25 2. Clear field thermal bridges.
- 26 3. Thermal bridges in uninsulated assemblies.
- 27 4. Linear- and point thermal bridges having a material thermal conductivity less than
28 3.0 Btu·in/h·ft²·°F (0.433 W/(m·K)).
- 29 5. Alterations except as required under section C503

30 **C402.7.1 Thermal bridge details.** The following intersections shall be evaluated for
31 thermal bridges and be detailed in construction documents:

- 32 1. Structural framing and members.
- 33 2. Cladding attachment systems
- 34 3. Assembly intersections:
 - 35 a. Roof edge, parapet
 - 36 b. Intermediate floor to wall intersection
 - 37 c. Intermediate floor balcony or overhang to opaque wall intersection
 - 38 d. Intermediate floor balcony in contact with vertical fenestration

- e. Cladding support
- f. Wall to vertical fenestration intersection

C402.7.2 Thermal bridges in above-grade walls. Thermal bridges in above-grade walls shall comply with this section or an approved design accordance with Section 102.

Exceptions: Blocking, coping, flashing, and other similar materials for attachment of roof coverings.

C402.7.2.1 Balconies and floor decks. Balconies and concrete floor decks shall not penetrate the building thermal envelope. Such assemblies shall be separately supported or shall be supported by structural attachments or elements that minimize thermal bridging through the building thermal envelope.

Exceptions: Balconies and concrete floor decks shall be permitted to penetrate the building thermal envelope where one of the following applies:

1. An area-weighted U-factor is used for above-grade wall compliance which includes a U-factor of 0.8 Btu/h·ft²·°F (1.38W/m × K) for the area of the above-grade wall penetrated by the concrete floor deck in accordance with Section C402.1.2.1.5.
2. An approved thermal break device with an R-value of not less than R-10 insulation material is installed in accordance with the manufacturer's instructions.
3. An approved design in accordance with Section 102 where the above-grade wall U-factor used for compliance accounts for all balcony and concrete floor deck thermal bridges.

C402.7.2.2 Cladding supports. Linear elements supporting opaque cladding shall be offset from the structure with attachments that allow the continuous insulation, where present, to pass behind the cladding support element except at the point of attachment.

Exceptions:

1. An approved design in accordance with Section 102 where the above-grade wall U-factor used for compliance accounts for the cladding support element thermal bridge.
2. Anchoring for curtain wall and window wall systems where curtain wall and window wall systems comply with Section C402.7.2.4.

C402.7.2.3 Structural beams and columns. Structural steel and concrete beams and columns that project through the building thermal envelope shall be covered with not less than R-5 insulation for not less than 2 feet (609.6 mm) beyond the interior or exterior surface of an insulation component within the building thermal envelope.

1 **Exception:**

- 2 1. Where an approved thermal break device is installed in accordance with the
3 manufacturer's instructions.
- 4 2. An approved design in accordance with Section 102 where the above-grade
5 wall U-factor used to demonstrate compliance accounts for the beam or
6 column thermal bridge.

7 **C402.7.2.4 Vertical fenestration.** Vertical fenestration. Vertical fenestration
8 intersections with above-grade walls shall comply with one or more of the
9 following:

- 10 1. Where above-grade walls include continuous insulation, the plane of the
11 exterior glazing layer or, for metal frame fenestration, a non-metal thermal
12 break in the frame shall be positioned within 2 inches (50.8 mm) of the interior
13 or exterior surface of the continuous insulation.
- 14 2. Where above-grade walls do not include continuous insulation, the plane of the
15 exterior glazing layer or, for metal frame fenestration, a non-metal thermal
16 break in the frame shall be positioned within the thickness of the integral or
17 cavity insulation.
- 18 3. The surface of the rough opening, not covered by the fenestration frame, shall
19 be insulated with insulation of not less than R-3 material or covered with a
20 wood buck that is not less than 1.5 inches (38.1 mm) thick.

21 **Exceptions:**

- 22 1. Where an approved design in accordance with Section 102 for the above-
23 grade wall U-factor used for compliance accounts for thermal bridges at the
24 intersection with the vertical fenestration.
- 25 2. Doors.

26 **C402.7.2.4.1 vertical fenestration with spandrels.** Vertical fenestration
27 with spandrels shall comply with one of the following:

- 28 1. For the intersection between vertical fenestration and opaque
29 spandrel in a shared framing system, manufacturer's data for the
30 spandrel U-factor shall account for thermal bridges.
- 31 2. Use Default values as listed in C303.1.5.

32 **C402.7.2.5 Parapets.** Parapets shall comply with one or more of the following as
33 applicable:

- 34 1. Where continuous insulation is installed on the exterior side of the above-grade
35 wall and the roof is insulated with insulation entirely above deck, the
36 continuous insulation shall extend up both sides of the parapet not less than 2
37 feet (609.6 mm) above the roof covering or to the top of the parapet, whichever
38 is less. Parapets that are an integral part of a fire-resistance rated wall, and the

1 exterior continuous insulation applied to the parapet, shall comply with the fire
2 resistance ratings of the building code.

3 2. Where continuous insulation is installed on the exterior side of the above-grade
4 wall and the roof insulation is below the roof deck, the continuous insulation
5 shall extend up the exterior side of the parapet to not less than the height of the
6 top surface of the roof assembly.

7 3. Where continuous insulation is not installed on the exterior side of the above-
8 grade wall and the roof is insulated with insulation entirely above deck, the
9 wall cavity or integral insulation shall extend into the parapet up to the exterior
10 face of the roof insulation or equivalent R-value insulation shall be installed
11 not less than 2 feet (609.6 mm) horizontally inward on the underside of the
12 roof deck.

13 4. Where continuous insulation is not installed on the exterior side of the above-
14 grade wall and the roof insulation is below the roof deck, the wall and roof
15 insulation components shall be continuous and adjacent to each other at the
16 roof-ceiling-wall intersection.

17 5. Where a thermal break device with not less than R-10 insulation material
18 aligned with the above-grade wall and roof insulation is installed in accordance
19 with the manufacturer's instructions.

20 **Exception:** An approved design in accordance with Section 102 where the above-
21 grade wall U-factor used for compliance accounts for the parapet thermal bridge.

22 **SECTION C403**

23 **BUILDING MECHANICAL SYSTEMS**

24 **Section C403.1.3 Electric-resistance space heating.**

25 Section C403.1.3 – Revise exception 5 from Section C403.1.3 to read as follows:

26 **5. Makeup air for commercial kitchen exhaust systems required to be tempered by Section 508 of**
27 **the *New York City Mechanical Code* is permitted to be heated by electric resistance.**

28 **Section C403.2.2 Ventilation.**

29 Section C403.2.2 – Revise Section C403.2.2 to read as follows:

30 **C403.2.2 Ventilation.** Ventilation, either natural or mechanical, shall be provided in
31 accordance with Chapter 4 of the *New York City Mechanical Code*. Where mechanical
32 ventilation is provided, the system shall provide the capability to reduce the outdoor air supply
33 to the minimum required by Chapter 4 of the *New York City Mechanical Code*.
34

1 **Section C403.3.4.1 Boiler oxygen concentration controls.**

2 Section C403.3.4.1 – Delete the exception Section C403.3.4.1.

3 **Section C403.3.5 Buildings with high efficiency space heating gas boiler systems.**

4 Section C403.3.5 – Add new Section C403.3.5 to read as follows:

5 **C403.3.5 Buildings with high efficiency space heating gas boiler systems.** New buildings
6 where space heating is served by one or more gas hot water boilers with a minimum thermal
7 efficiency (Et) of 90 percent when rated in accordance with the test procedures in Table
8 C403.3.2(6) shall comply with this section, unless otherwise approved by the authority having
9 jurisdiction. The hot water distribution system shall be designed so that the coils and other heat
10 exchangers are selected such that at outdoor design conditions, the hot water return temperature
11 entering the boilers is 120°F (49°C) or less when the boiler is firing.

12 **Section C403.4.1.1 Heat pump supplementary heat.**

13 Section C403.4.1.1 – Revise item 1 from Section C403.4.1.1 to read as follows:

14 1. The vapor compression cycle cannot provide necessary heating energy to satisfy the
15 thermostat setting where controls are installed such that supplementary heat shall operate
16 only when the outdoor air temperature is less than 17°F (-8.3°C) and supplemental heat
17 capacity does not exceed 25 percent of total the design load.

18 **Section C403.4.6 Demand responsive controls.**

19 Section C403.4.6 – Revise item 2 from Section C403.4.6 to read as follows:

20 2. Automatically decreasing the zone operating heating set point by the following values: 1°F
21 (0.5°C), 2°F (1°C), 3°F (1.5°C), and 4°F (2°C) while maintaining the minimum room
22 temperature requirements of the *New York City Building Code*.

23 Section C403.4.6 – Revise exception 1 and 2 from Section C403.4.6 to read as follows:

24 1. Group I occupancies in accordance with the *New York City Building Code*.

25 2. Group H occupancies in accordance with the *New York City Building Code*.

26 **Section C403.6.1 Variable air volume and multiple-zone systems.**

27 Section C403.6.1 – Revise item 3 from Section C403.6.1 to read as follows:

28 3. The outdoor airflow rate required to meet the minimum ventilation requirements of Chapter
29 4 of the *New York City Mechanical Code*.

30 **Section C403.6.6 Multiple-zone VAV system ventilation optimization control.**

1 Section C403.6.6 – Revise Section C403.6.6 to read as follows:

2 **C403.6.6 Multiple-zone VAV system ventilation optimization control.** Multiple-zone VAV
3 systems with direct digital control of individual zone boxes reporting to a central control panel
4 shall have automatic controls configured to reduce outdoor air intake flow below design rates
5 in response to changes in system ventilation efficiency (Ev) as defined by the *New York City*
6 *Mechanical Code*.

7 Exceptions:

8 1. VAV systems with zonal transfer fans that recirculate air from other zones without directly
9 mixing it with outdoor air, dual-duct dual-fan VAV systems, and VAV systems with fan-
10 powered terminal units.

11 2. Systems where total design exhaust airflow is more than 70 percent of total design outdoor
12 air intake flow requirements.

13 **Section C403.7.1 Demand control ventilation.**

14 Section C403.7.1 – Revise Item 2 from Section C403.7.1 to read as follows:

15 2. Spaces larger than 250 square feet (23.2 m²) in Climate Zones 5 and 6 and spaces larger than
16 500 square feet (46.5 m²) in climate zone 4 that have a design occupant load of 15 people or
17 greater per 1000 square feet (92.9 m²) of floor area, as established in the *New York City*
18 *Mechanical Code*, and are served by systems with one or more of the following:

19 2.1 An air-side economizer

20 2.2 Automatic modulating control of the outdoor air damper.

21 2.3. A design outdoor airflow greater than 3,000 cfm (1416 L/s).

22 Section C403.7.1 – Revise exception 5 from Section C403.7.1 to read as follows:

23 5. Spaces with one of the following occupancy classifications as defined in the *New York City*
24 *Mechanical Code*: correctional cells, education laboratories, barber, beauty and nail salons, or
25 bowling alley seating areas.

26 **Section C403.7.2 Parking garage ventilation controls.**

27 Section C403.7.2 – Revise Section C403.7.2 to read as follows:

28 **C403.7.2 Parking garage ventilation controls.** Ventilation systems employed in enclosed
29 parking garages shall comply with *New York City Mechanical Code* and the following:

30 1. Separate ventilation systems and control systems shall be provided for each parking
31 garage section.

1 2. Control systems for each parking garage section shall be capable of and configured to
2 reduce fan airflow to not less than 0.05 cfm per square foot [0.00025 m³ / (s × m²)] of
3 the floor area served and not more than 20 percent of the design capacity.

4 3. The ventilation system for each parking garage section shall have controls and devices
5 that result in fan motor demand of not more than 30 percent of design wattage at 50
6 percent of the design airflow.

7 **Exception:** Garage ventilation systems serving a single parking garage section having a
8 total ventilation system motor nameplate horsepower (ventilation system motor nameplate
9 kilowatt) not exceeding 5 hp (3.7 kW) at fan system design conditions and where the
10 parking garage section has no mechanical cooling or mechanical heating.

11 Nothing in this section shall be construed to require more than one parking garage section in
12 any parking structure.

13 **Section C403.7.4.2 Spaces other than nontransient dwelling units.**

14 Section C403.7.4.2 – Revise Section C403.7.4.2 to read as follows:

15 **C403.7.4.2 Spaces other than nontransient dwelling units.** -Where the supply airflow
16 rate of a fan system serving a space other than a nontransient dwelling unit exceeds the
17 values specified in Tables C403.7.4.2(1) and C403.7.4.2(2), the system shall include an
18 energy recovery system enthalpy recovery ratio of not less than 50 percent, at design
19 conditions. Where an air economizer is required, the energy recovery system shall include
20 a bypass or controls that permit operation of the economizer as required by Section C403.5.

21 **Exception:** An energy recovery ventilation system shall not be required in any of the
22 following conditions:

23 1. Where energy recovery systems are prohibited by the Section 514.2 of the *New*
24 *York City Mechanical Code.*

25 2. Laboratory fume hood systems that include at least one of the following features:

26 2.1. Variable-air-volume hood exhaust and room supply systems configured to
27 reduce exhaust and makeup air volume to 50 percent or less of design
28 values.

29 2.2. Direct makeup (auxiliary) air supply equal to or greater than 75 percent of
30 the exhaust rate, heated not warmer than 2°F (1.1°C) above room setpoint,
31 cooled to not cooler than 3°F (1.7°C) below room setpoint, with no
32 humidification added, and no simultaneous heating and cooling used for
33 dehumidification control.

34 3. Systems serving spaces that are heated to less than 60°F (15.5°C) and that are not
35 cooled.

36 4. Heating and energy recovery where more than 60 percent of the outdoor heating
37 energy is provided from site-recovered or site-solar energy in climate zones 5.

1 5. Systems in climate zone 4 requiring dehumidification that employ series energy
2 recovery and have a minimum SERR of 0.40.

3 6. Where the sum of the airflow rates exhausted and relieved within 30 feet (9144 mm)
4 of each other is less than 75 percent of the design ventilation outdoor air flow rate,
5 excluding exhaust air that is any of the following:

6 6.1. Used for another energy recovery system.

7 6.2. Not allowed by ASHRAE Standard 170 for use in energy recovery systems
8 with leakage potential.

9 6.3. Prohibited by the *New York City Mechanical Code*.

10 6.4. Part of Class 4 as defined in ASHRAE 62.1.

11 7. Systems expected to operate less than 20 hours per week at the outdoor air
12 percentage covered by Table C403.7.4.2(1).

13 8. Systems exhausting toxic, flammable, paint, or corrosive fumes or dust.

14 9. Commercial kitchen hoods used for collecting and removing grease vapors and
15 smoke.

16 **Section C403.7.5 Kitchen exhaust systems.**

17 Section C403.7.5 – Revise exception 2 from Section C403.7.5 to read as follows:

18 2. Where allowed by the *New York City Mechanical Code*, an energy recovery ventilation
19 system is installed on the kitchen exhaust with a sensible heat recovery effectiveness of not
20 less than 40 percent on not less than 50 percent of the total exhaust hood airflow.

21 **Section C403.7.7 Shutoff dampers.**

22 Section C403.7.7 – Revise Section C403.7.7 to read as follows:

23 **C403.7.7 Shutoff dampers.** Outdoor air intake and exhaust openings and stairway and shaft
24 vents shall be provided with Class I motorized dampers. The dampers shall have an air leakage
25 rate not greater than 4 cfm/ft² (20.3 L/s × m²) of damper surface area at 1.0 inch (25.4 mm)
26 water gauge (249 Pa) and shall be labeled by an approved agency when tested in accordance
27 with AMCA 500D for such purpose.

28 Outdoor air intake and exhaust dampers shall be installed with automatic controls configured
29 to close when the systems or spaces served are not in use or during unoccupied period warm-
30 up and setback operation, unless the systems served require outdoor or exhaust air in
31 accordance with the *New York City Mechanical Code* or the dampers are opened to provide
32 intentional economizer cooling.

33 Stairway and elevator shaft vent dampers shall be installed with automatic controls configured
34 to open upon the activation of any fire alarm initiating device of the building's fire alarm
35 system or the interruption of power to the damper, or by thermostatic control systems.

1 **Exception:** Nonmotorized gravity dampers shall be an alternative to motorized dampers
2 for exhaust and relief openings as follows:

3 1. In buildings less than three stories in height above grade plane.

4 2. In buildings of any height located in Climate Zones 0, 1, 2 or 3.

5 3. Where the design exhaust capacity is not greater than 300 cfm (142 L/s).

6 Nonmotorized gravity dampers shall have an air leakage rate not greater than 20 cfm/ft² (101.6
7 L/s × m²) where not less than 24 inches (609.6 mm) in either dimension and 40 cfm/ft² (203.2
8 L/s × m²) where less than 24 inches (609.6 mm) in either dimension. The rate of air leakage
9 shall be determined at 1.0 inch (25.4 mm) water gauge (249 Pa) when tested in accordance
10 with AMCA 500D for such purpose. The dampers shall be labeled by an approved agency.

11 **Section C403.13.1 Duct and plenum insulation and sealing.**

12 Section C403.13.1 – Revise Section C403.13.1 to read as follows:

13 **C403.13.1 Duct and plenum insulation and sealing.** Supply and return air ducts and plenums
14 shall be insulated with not less than R-6 insulation where located in unconditioned spaces and
15 where located outside the building with not less than R-8 insulation in Climate Zone 4 and not
16 less than R-12 insulation in Climate Zones 5 and 6. Ducts located underground beneath
17 buildings shall be insulated as required in this section or have an equivalent thermal
18 distribution efficiency. Underground ducts utilizing the thermal distribution efficiency method
19 shall be listed and labeled to indicate the R-value equivalency. Where located within a building
20 thermal envelope assembly, the duct or plenum shall be separated from the building exterior
21 or unconditioned or exempt spaces by not less than R-8 insulation in Climate Zone 4 and not
22 less than R-12 insulation in Climate Zones 5 and 6.

23 **Exceptions:**

24 1. Where located within equipment.

25 2. Where the design temperature difference between the interior and exterior of the duct or
26 plenum is not greater than 15°F (8°C).

27 Ducts, air handlers and filter boxes shall be sealed. Joints and seams shall comply with the
28 *New York City Mechanical Code.*

29 **Section C403.13.2 Duct construction.**

30 Section C403.13.2 – Revise Section C403.13.2 to read as follows:

31 **C403.13.2 Duct construction.** Ductwork shall be constructed and erected in accordance with
32 the *New York City Mechanical Code.*

1 **Section C403.13.2.1 Low-pressure duct systems.**

2 Section C403.13.2.1 – Revise Section C403.13.2.1 to read as follows:

3 **C403.13.2.1 Low-pressure duct systems.** Longitudinal and transverse joints, seams and
4 connections of supply and return ducts operating at a static pressure less than or equal to 2
5 inches (50.8 mm) water gauge (498 Pa) shall be securely fastened and sealed with welds,
6 gaskets, mastics (adhesives), mastic-plus-embedded-fabric systems or tapes installed in
7 accordance with the manufacturer’s instructions. Pressure classifications specific to the duct
8 system shall be clearly indicated on the construction documents in accordance with the *New*
9 *York City Mechanical Code*.

10 **Exception:** Locking-type longitudinal joints and seams, other than the snap-lock and button-
11 lock types, need not be sealed as specified in this section.

12 **Section C403.13.2.2 Medium-pressure duct systems.**

13 Section C403.13.2.2 – Revise Section C403.13.2.2 to read as follows:

14 **C403.13.2.2 Medium-pressure duct systems.** Ducts and plenums designed to operate at a
15 static pressure greater than 2 inches (50.8 mm) water gauge (498 Pa) but less than 3 inches
16 (76.2 mm) water gauge (747 Pa) shall be insulated and sealed in accordance with Section
17 C403.12.1. Pressure classifications specific to the duct system shall be clearly indicated on the
18 construction documents in accordance with the *New York City Mechanical Code*.

19 **Section C403.13.3 Piping insulation.**

20 Section C403.13.3 – Revise Section C403.13.3 to read as follows:

21 **C403.13.3 Piping insulation.** Piping serving as part of a heating or cooling system shall be
22 thermally insulated in accordance with Table C403.13.3(1) or C403.13.3(2).

23 **Exceptions:**

24 1. Factory-installed piping within HVAC equipment tested and rated in accordance with a
25 test procedure referenced by this code.

26 2. Factory-installed piping within room fan-coils and unit ventilators tested and rated
27 according to AHRI 440 (except that the sampling and variation provisions of Section
28 6.5 shall not apply) and AHRI 840, respectively.

29 3. Piping that conveys fluids that have a design operating temperature range between 60°F
30 (15°C) and 105°F (41°C).

31 4. Strainers, control valves, and balancing valves associated with piping 1 inch (25.4 mm)
32 or less in diameter.

1 5. Direct buried piping that conveys fluids at or below 60°F (15°C).

2 6. In radiant heating systems, sections of piping intended by design to radiate heat.

3
4 **SECTION C404**

5 **SERVICE WATER HEATING**

6 **Table C404.5.2.1 Internal Volume Of Various Water Distribution Tubing.**

7 Table C404.5.2.1 – Delete Table C404.5.2.1 in its entirety and add new Table C404.5.2.1 to
8 read as follows:

9 **TABLE C404.5.2.1**
10 **INTERNAL VOLUME OF VARIOUS WATER DISTRIBUTION TUBING**

<u>Nominal Size (inches)</u>	<u>Copper Type L</u>	<u>Copper Type K</u>
<u>3/8</u>	<u>0.97</u>	<u>0.84</u>
<u>1/2</u>	<u>1.55</u>	<u>1.45</u>
<u>3/4</u>	<u>3.22</u>	<u>2.90</u>
<u>1</u>	<u>5.49</u>	<u>5.17</u>
<u>1 1/4</u>	<u>8.36</u>	<u>8.09</u>
<u>1 1/2</u>	<u>11.83</u>	<u>11.45</u>
<u>2</u>	<u>20.58</u>	<u>20.04</u>

11 For SI: 1 foot = 304.8 mm, 1 inch = 25.4 mm, 1 liquid ounce = 0.030 L, 1 oz/ft² = 305.15 g/m².
12 N/A = Not Available.

13
14 **SECTION C405**

15 **ELECTRICAL POWER AND LIGHTING SYSTEMS**

16 **Section C405.1 General.**

17 Section C405.1 – Revise Section C405.1 to read as follows:

18 **C405.1 General.** Electrical power and lighting systems and generation shall comply with this
19 section. General lighting consists of all lighting included when calculating the total connected
20 interior lighting power in accordance with Section C405.3.1 and which does not require
21 specific application controls in accordance with Section C405.2.5.

1 Lighting controls shall be commissioned and completed in accordance with the requirements
2 of Section C408.3 .

3 **Exception:** Dwelling units and sleeping units that comply with Section C405.2.10, Section
4 C405.3.3 and Section C405.6.

5 **Section C405.2.1 Occupant sensor controls.**

6 Section C405.2.1 – Revise Section C405.2.1 to read as follows:

7 **C405.2.1 Occupant sensor controls.** Occupant sensor controls shall be installed to control
8 lights in the following space types:

9 1. Classrooms/lecture/training rooms.

10 2. Computer rooms, data centers.

11 3. Conference/meeting/multipurpose rooms.

12 4. Copy/print rooms.

13 5. Lounges/breakrooms.

14 6. Cafeteria and fast food dining areas.

15 7. Medical supply rooms in a healthcare facility.

16 8. Enclosed offices.

17 9. Laundry/washing areas.

18 10. Open plan office areas.

19 11. Restrooms.

20 12. Storage rooms.

21 13. Telemedicine rooms in a healthcare facility.

22 14. Locker rooms.

23 15. Corridors/transition areas/stairways.

24 16. Warehouse storage areas.

25 17. Other spaces 300 square feet (27.9 m²) or less that are enclosed by floor-to-ceiling
26 height partitions.

1 18. Janitorial closets.

2 **Section C405.2.1.1 Occupant sensor control function.**

3 Section C405.2.1.1 – Revise Section C405.2.1.1 to read as follows:

4 **C405.2.1.1 Occupant sensor control function.** Occupant sensor controls in warehouses
5 storage areas shall comply with Section C405.2.1.2. Occupant sensor controls in open plan
6 office areas, cafeteria dining areas, and fast food dining areas, 300 square feet (27.9 m²) or
7 greater in area shall comply with Section C405.2.1.3. Occupant sensor controls in corridors
8 shall comply with Section C405.2.1.4. Occupant sensor control function for egress
9 illumination shall comply with Section C405.2.1.5. Occupant sensor controls for all other
10 spaces specified in Section C405.2.1 shall comply with the following:

11 1. They shall automatically turn off lights within 15 minutes after all occupants have left the
12 space.

13 2. They shall be manual-on or controlled to automatically turn on the lighting to not more
14 than 50-percent power of full power.

15 3. They shall incorporate a manual control to allow occupants to turn off lights.

16 **Exceptions:**

17 1. Full automatic-on controls with no manual control shall be permitted in corridors, interior
18 parking areas, stairways, restrooms, locker rooms, lobbies, library stacks and areas where
19 manual operation would endanger occupant safety or security.

20 2. Manual-on controls shall be required for classrooms (not including shop classrooms,
21 laboratory classrooms, and preschool classrooms), conference/meeting rooms, employee
22 lunch and break rooms, and offices smaller than 200 square feet (18.6 m²) in area. Such
23 sensors and controls shall not have an override switch that converts from manual-on to
24 automatic-on functionality, and may have a grace period of up to 30 seconds to turn on the
25 lighting automatically after the sensor has turned off the lighting if occupancy is detected.

26 3. Remote location of this local control device or devices shall be permitted for reasons of
27 safety or security when each remote control device has an indicator pilot light as part of or
28 next to the control device and the light is clearly labeled to identify the controlled lighting.

29 **Section C405.2.1.2 Occupant sensor control function in warehouse storage areas.**

30 Section C405.2.1.2 – Revise Item 2 from Section C405.2.1.2 to read as follows:

31 2. Occupant sensors shall automatically reduce lighting power within each controlled area to
32 an unoccupied setpoint of not more than 30 percent of full power within 15 minutes after
33 all occupants have left the controlled area.

1 **Section C405.2.1.3 Occupant sensor control function in open plan office areas.**

2 Section C405.2.1.3 – Delete Section C405.2.1.3 in its entirety, add new Section C405.2.1.3 to read
3 as follows:

4 **C405.2.1.3 Occupant sensor control function in open plan office areas, cafeteria dining**
5 **areas, and fast-food dining areas.** Occupant sensor controls in open plan office spaces,
6 cafeteria dining areas, and fast-food dining areas less than 300 square feet (27.9 m²) in area
7 shall comply with Section C405.2.1.1. Occupant sensor controls in all other open plan office
8 spaces, cafeteria dining spaces, and fast food dining spaces shall comply with all of the
9 following:

10 1. The controls shall be configured so that general lighting can be separated into control zones
11 with floor areas not greater than 600 square feet (55.7 m²) within the open plan office space
12 or dining space. Where a through aisle traverses a control zone or separates two control
13 zones, the luminaires serving the aisle shall be controlled separately from the general
14 lighting in the control zones.

15 2. General lighting in each control zone shall be permitted to automatically turn on upon
16 occupancy within the control zone. General lighting in other unoccupied zones within the
17 open plan office space shall be permitted to turn on to not more than 20 percent of full
18 power or remain unaffected.

19 3. The controls shall automatically turn off general lighting in all control zones within 15
20 minutes after all occupants have left the open plan office space.

21 **Exception:** Where general lighting is turned off by time-switch control complying with
22 Section C405.2.2.1.

23 4. General lighting in each control zone shall turn off or uniformly reduce lighting power to
24 an unoccupied setpoint of not more than 20 percent of full power within 15 minutes after
25 all occupants have left the control zone.

26 **Section C405.2.1.4 Occupant sensor control function in corridors.**

27 Section C405.2.1.4 – Revise Section C405.2.1.4 to read as follows:

28 **C405.2.1.4 Occupant sensor control function in corridors.** Occupant sensor controls in
29 corridors shall uniformly reduce lighting power to an occupied setpoint not more than 50
30 percent of full power within 15 minutes after all occupants have left the space.

31 **Exception:** Corridors provided with less than two footcandles of illumination on the floor at
32 the darkest point with all lights on.

33 **Section C405.2.1.5 Occupant sensor control function for egress illumination.**

34 Section C405.2.1.5 – Revise Section C405.2.1.5 to read as follows:

1 **C405.2.1.5 Occupant sensor control function for egress illumination.** In new buildings,
2 luminaires serving the exit access and providing means of egress illumination required by the
3 New York City Building Code, including luminaires that function as both normal and
4 emergency means of egress illumination, operating under normal conditions shall be controlled
5 by a combination of listed emergency relay and occupancy sensors, or signal from another
6 building control system, that automatically reduces the lighting power by at least 50% percent
7 when unoccupied for a period longer than 15 minutes.

8 **Exceptions:**

9 1. Means of egress illumination serving the exit access that does not exceed 0.02 watts per
10 square foot of building area is exempt from this requirement.

11 2. Emergency lighting designated to meet the requirements of the New York City Building
12 Code .

13 **Section C405.2.2.1 Time-switch control function.**

14 Section C405.2.2.1 – Revise Item 7 from Section C405.2.2.1 to read as follows:

15 7. For spaces where schedules are not defined time switch controls are programmed by default
16 to a schedule that turns off lights not less than 12 hours per day.

17 **Section C405.2.4.1 Daylight-responsive control function.**

18 Section C405.2.4.1 – Revise exceptions 1 and 2 from Section C405.2.4.1 to read as follows:

19 **Exceptions:**

20 1. Within each space, up to 100 watts of lighting within the primary sidelit daylight zone
21 is permitted to be controlled together with lighting in a primary sidelit daylight zone
22 facing a different cardinal orientation.

23 2. Within each space, up to 100 watts of lighting within the secondary sidelit daylight zone
24 is permitted to be controlled together with lighting in a secondary sidelit daylight zone
25 facing a different cardinal orientation.

26 **Section C405.2.7.2 Building facade and landscape lighting.**

27 Section C405.2.7.2 – Revise Section C405.2.7.2 to read as follows:

28 **C405.2.7.2 Building facade and landscape lighting.** Building facade and landscape lighting
29 shall automatically shut off when sufficient daylight is present or not later than 1 hour after
30 building or business closing until not earlier than 1 hour before building or business opening.
31 For buildings that operate 24 hours, building façade lighting shall shut off at midnight.

32 **Exception:** Designated areas in zones 3 and 4 during special events may be permitted to extend

1 hours of façade lighting at the discretion of the commissioner.

2 **Section C405.2.9 Interior parking area.**

3 Section C405.2.9 – Revise Item 1 from Section C405.2.9 to read as follows:

4 1. Lighting power of each luminaire shall be automatically reduced by not less than 30 percent
5 when there is no activity detected within a lighting zone for 15 minutes. Lighting zones for
6 this requirement shall be no larger than 3600 square feet (334.5 m²).

7 Section C405.2.9 – Revise Item 3 from Section C405.2.9 to read as follows:

8 3. The power to luminaires within 20 feet (6096 mm) of perimeter wall openings or skylights
9 shall automatically reduce in response to daylight by at least 50 percent.

10 **Section C405.2.10.1 Sleeping units and dwelling units in hotels, motels and vacation**
11 **timeshare properties.**

12 Section C405.2.10.1 – Revise Item 2 from Section C405.2.10.1 to read as follows:

13 2. Lighting controls that automatically turn off all lighting and switched receptacles within
14 15 minutes after all occupants have left the unit.

15 **Section C405.2.10.2 Sleeping units in congregate living facilities.**

16 Section C405.2.10.2 – Revise Item 1 from Section C405.2.10.2 to read as follows:

17 1. Lighting in bathrooms shall be controlled by an occupant sensor control that automatically
18 turns off lights within 15 minutes after all occupants have left the space.

19 **Section C405.3.1 Total connected interior lighting power.**

20 Section C405.3.1 – Revise exception 19 from Section C405.3.1 to read as follows:

21 19. Lighting in dwelling units.

22 **Section C405.3.2.1 Building Area Method.**

23 Section C405.3.2.1 – Revise Item 2 from Section C405.3.2.1 to read as follows:

24 2. Determine the floor area for each building area type listed in Table C405.3.2(1) and multiply
25 this area by the applicable value from Table C405.3.2(1) to determine the lighting power
26 (watts) allowed for each building area type. Dwelling units are excluded from lighting
27 power allowance calculations by application of Section C405.3.3. The area of dwelling units
28 is not included in the calculation.

29 **Section C405.3.2.2 Space-by-Space Method.**

1 Section C405.3.2.2 – Revise Item 2 from Section C405.3.2.2 to read as follows:

2 2. Determine the total floor area of all the spaces of each space type and multiply by the value
3 for the space type in Table C405.3.2(2) to determine the lighting power (watts) allowed for
4 each space type. Dwelling units are excluded from lighting power allowance calculations
5 by application of Section C405.3.3. The area of dwelling units is not included in the
6 calculation.

7 **Table C405.3.2(1) Interior Lighting Power Allowances: Building Area Method.**

8 Table C405.3.2(1) – Revise Table C405.3.2(1) to read as follows:

9 **TABLE C405.3.2(1)**
10 **INTERIOR LIGHTING POWER ALLOWANCES:**
11 **BUILDING AREA METHOD**

<u>BUILDING AREA TYPE</u>	<u>LPD (watts/ft²)</u>
<u>Automotive facility</u>	<u>0.64</u>
<u>Convention center</u>	<u>0.64</u>
<u>Courthouse</u>	<u>0.74</u>
<u>Dining: bar lounge/leisure</u>	<u>0.69</u>
<u>Dining: cafeteria/fast food</u>	<u>0.66</u>
<u>Dining: family</u>	<u>0.61</u>
<u>Dormitory</u>	<u>0.52</u>
<u>Exercise center</u>	<u>0.65</u>
<u>Fire station</u>	<u>0.50</u>
<u>Gymnasium</u>	<u>0.67</u>
<u>Health care clinic</u>	<u>0.68</u>
<u>Hospital</u>	<u>0.86</u>
<u>Hotel/Motel</u>	<u>0.53</u>
<u>Library</u>	<u>0.78</u>
<u>Manufacturing facility</u>	<u>0.60</u>
<u>Motion picture theater</u>	<u>0.43</u>
<u>Multiple-family</u>	<u>0.46</u>
<u>Museum</u>	<u>0.56</u>
<u>Office</u>	<u>0.62</u>

12

(continued)

TABLE C405.3.2(1)—continued
INTERIOR LIGHTING POWER ALLOWANCES:
BUILDING AREA METHOD

<u>BUILDING AREA TYPE</u>	<u>LPD (watts/ft²)</u>
<u>Parking garage</u>	<u>0.12</u>
<u>Penitentiary</u>	<u>0.65</u>
<u>Performing arts theater</u>	<u>0.82</u>
<u>Police station</u>	<u>0.62</u>
<u>Post office</u>	<u>0.62</u>
<u>Religious building</u>	<u>0.66</u>
<u>Retail</u>	<u>0.78</u>
<u>School/university</u>	<u>0.67</u>
<u>Sports arena</u>	<u>0.73</u>
<u>Town hall</u>	<u>0.67</u>
<u>Transportation</u>	<u>0.51</u>
<u>Warehouse</u>	<u>0.41</u>
<u>Workshop</u>	<u>0.83</u>

For SI: 1 watt per square foot = 10.76 w/m².

Table C405.3.2(2) Interior Lighting Power Allowances: Space-By-Space Method.

Table C405.3.2(2) – Revise Table C405.3.2(2) to read as follows:

TABLE C405.3.2(2)
INTERIOR LIGHTING POWER ALLOWANCES: SPACE-BY-SPACE METHOD

<u>COMMON SPACE TYPES^a</u>	<u>LPD (watts/ft²)</u>
<u>Atrium</u>	
<u>Less than 40 feet (12.2 m) in height</u>	<u>0.41</u>
<u>Greater than 40 feet (12.2 m) in height</u>	<u>0.51</u>
<u>Audience seating area</u>	
<u>In an auditorium</u>	<u>0.57</u>
<u>In a gymnasium</u>	<u>0.23</u>

<u>In a motion picture theater</u>	<u>0.27</u>
<u>In a penitentiary</u>	<u>0.28</u>
<u>In a performing arts theater</u>	<u>1.09</u>
<u>In a religious building</u>	<u>0.72</u>
<u>In a sports arena</u>	<u>0.27</u>
<u>Otherwise</u>	<u>0.33</u>
<u>Banking activity area</u>	<u>0.56</u>
<u>Breakroom (See Lounge/breakroom)</u>	
<u>Classroom/lecture hall/training room</u>	
<u>In a penitentiary</u>	<u>0.74</u>
<u>Otherwise</u>	<u>0.72</u>
<u>Computer room, data center</u>	<u>0.75</u>
<u>Conference/meeting/multipurpose room</u>	<u>0.88</u>
<u>Confinement cells</u>	<u>0.52</u>
<u>Copy/print room</u>	<u>0.50</u>
<u>Corridor</u>	
<u>In a facility for the visually impaired (and not used primarily by the staff)^b</u>	<u>0.71</u>
<u>In a hospital</u>	<u>0.61</u>
<u>Otherwise</u>	<u>0.44</u>
<u>Courtroom</u>	<u>1.06</u>
<u>Dining area</u>	
<u>In bar/lounge or leisure dining</u>	<u>0.62</u>
<u>In cafeteria or fast food dining</u>	<u>0.36</u>
<u>In a facility for the visually impaired (and not used primarily by the staff)^b</u>	<u>1.22</u>
<u>In family dining</u>	<u>0.52</u>
<u>In a penitentiary</u>	<u>0.35</u>
<u>Otherwise</u>	<u>0.42</u>

<u>Electrical/mechanical room</u>	<u>0.39</u>
<u>Emergency vehicle garage</u>	<u>0.41</u>
<u>Food preparation area</u>	<u>0.92</u>
<u>Guestroom^{c, d}</u>	<u>0.41</u>
<u>Laboratory</u>	
<u>In or as a classroom</u>	<u>1.04</u>
<u>Otherwise</u>	<u>1.21</u>
<u>Laundry/washing area</u>	<u>0.43</u>
<u>Loading dock, interior</u>	<u>0.51</u>
<u>Lobby</u>	
<u>For an elevator</u>	<u>0.52</u>
<u>In a facility for the visually impaired (and not used primarily by the staff)^b</u>	<u>1.44</u>
<u>In a motion picture theater</u>	<u>0.20</u>
<u>In a performing arts theater</u>	<u>0.82</u>
<u>Otherwise</u>	<u>0.80</u>
<u>Locker room</u>	<u>0.43</u>
<u>Lounge/breakroom</u>	
<u>In a healthcare facility</u>	<u>0.53</u>
<u>Mother's wellness room</u>	<u>0.68</u>
<u>Otherwise</u>	<u>0.44</u>
<u>Office</u>	
<u>Enclosed</u>	<u>0.73</u>
<u>Open plan</u>	<u>0.56</u>
<u>Parking area daylighting transition zone</u>	<u>1.06</u>
<u>Parking area, interior[†]</u>	<u>0.11</u>

<u>Patient room</u>	<u>0.78</u>
<u>Pharmacy area</u>	<u>1.23</u>
<u>Restroom</u>	
<u>In a facility for the visually impaired (and not used primarily by the staff)^b</u>	<u>0.81</u>
<u>Otherwise</u>	<u>0.74</u>
<u>Sales area</u>	<u>0.85</u>
<u>Seating area, general</u>	<u>0.21</u>
<u>Security screening general areas</u>	<u>0.64</u>
<u>Security screening in transportation facilities</u>	<u>0.93</u>
<u>Security screening transportation waiting area</u>	<u>0.56</u>
<u>Stairway (see Space containing stairway)</u>	
<u>Stairwell</u>	<u>0.47</u>
<u>Storage room</u>	<u>0.35</u>
<u>Vehicular maintenance area</u>	<u>0.53</u>
<u>Workshop</u>	<u>1.09</u>
<u>BUILDING TYPE SPECIFIC SPACE TYPES^a</u>	<u>LPD (watts/ft²)</u>
<u>Automotive (see Vehicular maintenance area)</u>	
<u>Convention Center—exhibit space</u>	<u>0.50</u>
<u>Dormitory—living quarters^{c, d}</u>	<u>0.46</u>
<u>Facility for the visually impaired^b</u>	
<u>In a chapel (and not used primarily by the staff)</u>	<u>0.58</u>
<u>In a recreation room (and not used primarily by the staff)</u>	<u>1.20</u>
<u>Fire station—sleeping quarters</u>	<u>0.19</u>
<u>Gaming establishments</u>	
<u>High limits game</u>	<u>1.68</u>
<u>Slots</u>	<u>0.54</u>
<u>Sportsbook</u>	<u>0.82</u>
<u>Table Games</u>	<u>1.09</u>

<u>Gymnasium/fitness center</u>	
<u>In an exercise area</u>	<u>0.50</u>
<u>In a playing area</u>	<u>0.75</u>
<u>Healthcare facility</u>	
<u>In an exam/treatment room</u>	<u>1.16</u>
<u>In an imaging room</u>	<u>0.94</u>
<u>In a medical supply room</u>	<u>0.54</u>
<u>In a nursery</u>	<u>0.87</u>
<u>In a nurse's station</u>	<u>0.75</u>
<u>In an operating room</u>	<u>1.87</u>
<u>In a patient room^c</u>	<u>0.45</u>
<u>In a physical therapy room</u>	<u>0.82</u>
<u>In a recovery room</u>	<u>0.89</u>
<u>In a telemedicine room</u>	<u>1.44</u>
<u>Library</u>	
<u>In a reading area</u>	<u>0.77</u>
<u>In the stacks</u>	<u>1.18</u>
<u>Manufacturing facility</u>	
<u>In a detailed manufacturing area</u>	<u>0.75</u>
<u>In an equipment room</u>	<u>0.61</u>
<u>In an extra-high-bay area (greater than 50 feet (15.2 m) floor-to-ceiling height)</u>	<u>0.73</u>
<u>In a high-bay area (25–50 feet (7.6–15.2 m) floor-to-ceiling height)</u>	<u>0.58</u>
<u>In a low-bay area (less than 25 feet (7.6 m) floor-to-ceiling height)</u>	<u>0.61</u>
<u>Museum</u>	
<u>In a general exhibition area</u>	<u>0.31</u>
<u>In a restoration room</u>	<u>0.77</u>
<u>Performing arts theater—dressing room</u>	<u>0.35</u>
<u>Post office—sorting area</u>	<u>0.66</u>
<u>Religious buildings</u>	

<u>In a fellowship hall</u>	<u>0.50</u>
<u>In a worship/pulpit/choir area</u>	<u>0.75</u>
<u>Retail facilities</u>	
<u>In a dressing/fitting room</u>	<u>0.45</u>
<u>Hair salon</u>	<u>0.65</u>
<u>Nail salon</u>	<u>0.75</u>
<u>In a mall concourse</u>	<u>0.57</u>
<u>Massage space</u>	<u>0.81</u>
<u>Sports arena—playing area</u>	
<u>For a Class I facility^c</u>	<u>2.26</u>
<u>For a Class II facility^d</u>	<u>1.45</u>
<u>For a Class III facility^e</u>	<u>1.08</u>
<u>For a Class IV facility^f</u>	<u>0.72</u>
<u>Sports arena—pools</u>	
<u>For a Class I facility</u>	<u>2.20</u>
<u>For a Class II facility</u>	<u>1.47</u>
<u>For a Class III facility</u>	<u>0.99</u>
<u>For a Class IV facility</u>	<u>0.59</u>
<u>Transportation facility</u>	
<u>Airport hanger</u>	<u>1.36</u>
<u>Passenger loading area</u>	<u>0.71</u>
<u>In a baggage/carousel area</u>	<u>0.28</u>
<u>In an airport concourse</u>	<u>0.31</u>
<u>At a terminal ticket counter</u>	<u>0.40</u>
<u>Warehouse—storage area</u>	
<u>For medium to bulky, palletized items</u>	<u>0.27</u>
<u>For smaller, hand-carried items</u>	<u>0.65</u>

- 1 For SI: 1 foot = 304.8 mm, 1 watt per square foot = 10.76 w/m².
- 2 a. In cases where both a common space type and a building area specific space type are listed,
- 3 the building area specific space type shall apply.

- b. A ‘Facility for the Visually Impaired’ is a facility that is licensed or will be licensed by local or state authorities for senior long-term care, adult daycare, senior support or people with special visual needs.
- c. Class I facilities consist of professional facilities; and semiprofessional, collegiate, or club facilities with seating for 5,000 or more spectators.
- d. Class II facilities consist of collegiate and semiprofessional facilities with seating for fewer than 5,000 spectators; club facilities with seating for between 2,000 and 5,000 spectators; and amateur league and high school facilities with seating for more than 2,000 spectators.
- e. Class III facilities consist of club, amateur league and high school facilities with seating for 2,000 or fewer spectators.
- f. Class IV facilities consist of elementary school and recreational facilities; and amateur league and high school facilities without provision for spectators.
- g. The wattage of lighting in daylight transition zones and ramps without parking is excluded.

Section C405.4 Horticultural lighting.

Section C405.4 – Revise Section C405.4 to read as follows:

C405.4 Horticultural lighting. Permanently installed luminaires for horticultural lighting shall have a photosynthetic photon efficacy of not less than 2.1 micromoles per joule (μmol/J). Luminaires for horticultural lighting in greenhouses shall be controlled by a device that automatically turns off the luminaire when sufficient daylight is available. Luminaires for horticultural lighting shall be controlled by a device that automatically turns off the luminaire at specific programmed times.

Section C405.5.1 Total connected exterior lighting power.

Section C405.5.1 – Revise Exception 15 from Section C405.5.1 to read as follows

15. Lighting of the exterior means of egress as required by the New York City Building Code.

Table C405.5.2(2) Lighting Power Allowances For Building Exteriors.

Table C405.5.2(2) – Revise Table C405.5.2(2) to read as follows:

TABLE C405.5.2(2)

LIGHTING POWER ALLOWANCES FOR BUILDING EXTERIORS

	<u>LIGHTING ZONES</u>			
	<u>Zone 1</u>	<u>Zone 2</u>	<u>Zone 3</u>	<u>Zone 4</u>
<u>Base Site Allowance</u>	<u>160 W</u>	<u>280 W</u>	<u>400 W</u>	<u>560 W</u>
<u>Uncovered Parking Areas</u>				
<u>Parking area, exterior</u>	<u>0.015 W/ft²</u>	<u>0.026 W/ft²</u>	<u>0.037 W/ft²</u>	<u>0.05- W/ft²</u>
<u>Building Grounds</u>				

<u>Walkways and ramps</u>	<u>0.50 W/linear foot</u>	<u>0.50 W/linear foot</u>	<u>0.55 W/linear foot</u>	<u>0.60 W/linear foot</u>
<u>Plaza areas</u>	<u>0.028 W/ft²</u>	<u>-0.049 W/ft²</u>	<u>0.070 W/ft²</u>	<u>0.098 W/ft²</u>
<u>Dining areas</u>	<u>0.156 W/ft²</u>	<u>0.273 W/ft²</u>	<u>0.390 W/ft²</u>	<u>0.546 W/ft²</u>
<u>Stairways</u>	<u>Exempt</u>	<u>Exempt</u>	<u>Exempt</u>	<u>Exempt</u>
<u>Pedestrian tunnels</u>	<u>0.063 W/ft²</u>	<u>0.110 W/ft²</u>	<u>0.157 W/ft²</u>	<u>0.220 W/ft²</u>
<u>Landscaping</u>	<u>0.014 W/ft²</u>	<u>0.025 W/ft²</u>	<u>0.036 W/ft²</u>	<u>0.04 W/ft²</u>
<u>Building Entrances and Exits</u>				
<u>Pedestrian and vehicular entrances and exits</u>	<u>5.6 W/linear foot of opening</u>	<u>9.8 W/linear foot of opening</u>	<u>14 W/linear foot of opening</u>	<u>19.6 W/linear foot of opening</u>
<u>Entry canopies</u>	<u>0.072 W/ft²</u>	<u>0.126 W/ft²</u>	<u>0.180 W/ft²</u>	<u>0.252W/ft²</u>
<u>Loading docks</u>	<u>0.104 W/ft²</u>	<u>0.182 W/ft²</u>	<u>0.260 W/ft²</u>	<u>0.35 W/ft²</u>
<u>Sales Canopies</u>				
<u>Free-standing and attached</u>	<u>0.20 W/ft²</u>	<u>0.35 W/ft²</u>	<u>0.50 W/ft²</u>	<u>0.70 W/ft²</u>
<u>Outdoor Sales</u>				
<u>Open areas (including vehicle sales lots)</u>	<u>0.072 W/ft²</u>	<u>0.126 W/ft²</u>	<u>0.180 W/ft²</u>	<u>0.252 W/ft²</u>
<u>Street frontage for vehicle sales lots in addition to “open area” allowance</u>	<u>No allowance</u>	<u>7 W/linear foot</u>	<u>7 W/linear foot</u>	<u>14.4 W/linear foot</u>

1 For SI: 1 foot = 304.8 mm, 1 watt per square foot = W/0.0929 m².

2 W = watts.

3 **Section C405.6 Dwelling electrical meter.**

4 Section C405.6 – Delete Section C405.6 in its entirety, add new Section C405.6, Section C405.6.1
5 and C405.6.2 to read as follows:

6 **C405.6 Electrical meter.** Electrical service within buildings shall comply with the following:

7 **C405.6.1 Dwelling electrical meter.** Each dwelling unit located in a Group R-2 building
8 shall have a separate electrical meter.

9 **C405.6.2 Electrical meters for tenant spaces in covered buildings.** Each covered tenant
10 space in a new building shall be equipped with a separate meter or sub-meter to measure

1 the electrical consumption of such space when let or sublet. The terms covered building,
2 meter, sub-meter, tenant space and covered tenant space shall have the same meanings as
3 defined in Section 28-311.2 of the NYC Administrative Code.

4 **Section C405.10.1 Elevator cabs.**

5 Section C405.10.1 – Delete Section C405.10.1 in its entirety, add new Section C405.10.1, Section
6 C405.10.1.1, Section C405.10.1.1.1, Section C405.10.1.1.2 and Section C405.10.1.1.3 to read as
7 follows:

8 **C405.10.1 Elevator equipment and cabs.** For the luminaires in each elevator cab, not
9 including signals and displays, the sum of the lumens divided by the sum of the watts shall be
10 not less than 35 lumens per watt. Ventilation fans in elevators that do not have their own air-
11 conditioning system shall not consume more than 0.33 watts/cfm at the maximum rated speed
12 of the fan. Controls shall be provided that will de-energize ventilation fans and lighting systems
13 when the elevator is stopped, unoccupied and with its doors closed for over 15 minutes.

14 **C405.10.1.1 Power conversion system.** New traction elevators with a rise of 75 feet (22.9
15 m) or more in new buildings shall have a power conversion system that complies with
16 Sections C405.10.1.1.1 through C405.10.1.1.3.

17 **C405.10.1.1.1 Motor.** Induction motors with a Class IE2 efficiency rating, as
18 defined by IEC EN 60034-30, or alternative technologies, such as permanent
19 magnet synchronous motors that have equal or better efficiency, shall be used.

20 **C405.10.1.1.2 Transmission.** Transmissions shall not reduce the efficiency of the
21 combined motor/transmission below that shown for the Class IE2 motor for
22 elevators with capacities below 4,000 pounds (1814 kg). Gearless machines shall
23 be assumed to have a 100 percent transmission efficiency.

24 **C405.10.1.1.3 Drive.** Potential energy released during motion shall be recovered
25 with a regenerative drive that supplies electrical energy to the building electrical
26 system.

27 **Section C405.12 Automatic receptacle control.**

28 Section C405.12- Delete Section C405.12 and Section C405.12.1 in their entirety.

29 **Section C405.13 Energy monitoring.**

30 Section C405.13- Delete Section C405.13, Section C405.13.1, Section C405.13.2, Table
31 C405.13.2, Section C405.13.3, Section C405.13.4, Section C405.13.5, Section C405.13.6, Section
32 C405.13.7, Section C405.13.8, Table C405.13.8, Section C405.13.9, Section C405.13.10, Section
33 C405.13.11 and Section C405.14 in their entirety.

34 **Section C405.12 Commercial kitchen equipment.**

1 Section C405.12 – Add new Section C405.12, Table C405.12(1), Table C405.12(2), Table
 2 C405.12(3), Table C405.12(4) and Table C405.12(5) to read as follows:

3
 4 **C405.12 Commercial kitchen equipment.** Commercial kitchen equipment shall comply
 5 with the minimum efficiency requirements of Tables C405.12(1) through C405.12(5).
 6

7 **TABLE C405.12(1)**
 8 **MINIMUM EFFICIENCY REQUIREMENTS: COMMERCIAL FRYERS**
 9 **(This table is intended to be a restatement of the legally binding provisions found in Title**
 10 **10 CFR Part 431 included here as a convenience to the users of this code)**

	<u>HEAVY-LOAD COOKING ENERGY EFFICIENCY</u>	<u>IDLE ENERGY RATE</u>	<u>TEST PROCEDURE</u>
<u>Standard Open Deep-Fat Gas Fryers</u>	$\geq 50\%$	$\leq 9,000$ Btu/hr	<u>ASTM Standard F1361-17</u>
<u>Standard Open Deep-Fat Electric Fryers</u>	$\geq 83\%$	≤ 800 watts	
<u>Large Vat Open Deep-Fat Gas Fryers</u>	$\geq 50\%$	$\leq 12,000$ Btu/hr	<u>ASTM Standard F2144-17</u>
<u>Large Vat Open Deep-Fat Electric Fryers</u>	$\geq 80\%$	$\leq 1,100$ watts	

11
 12 **TABLE C405.12(2)**
 13 **MINIMUM EFFICIENCY REQUIREMENTS: COMMERCIAL HOT FOOD HOLDING**
 14 **CABINETS**

15 **(This table is intended to be a restatement of the legally binding provisions found in Title**
 16 **10 CFR Part 431 included here as a convenience to the users of this code)**

<u>PRODUCT INTERIOR VOLUME (CUBIC FEET)</u>	<u>MAXIMUM IDLE ENERGY CONSUMPTION RATE (WATTS)</u>	<u>TEST PROCEDURE</u>
$0 < V < 13$	$\leq 21.5 V$	<u>ASTM Standard F2140-11</u>
$13 \leq V < 28$	$\leq 2.0 V + 254.0$	
$28 \leq V$	$\leq 3.8 V + 203.5$	

17
 18 **TABLE C405.12(3)**
 19 **MINIMUM EFFICIENCY REQUIREMENTS: COMMERCIAL STEAM COOKERS**
 20 **(This table is intended to be a restatement of the legally binding provisions found in Title**
 21 **10 CFR Part 431 included here as a convenience to the users of this code)**

<u>FUEL TYPE</u>	<u>PAN CAPACITY</u>	<u>COOKING ENERGY EFFICIENCY^a</u>	<u>IDLE RATE</u>	<u>TEST PROCEDURE</u>
Electric Steam	<u>3-pan</u>	<u>50%</u>	<u>400 watts</u>	<u>ASTM Standard F1484-18</u>
	<u>4-pan</u>	<u>50%</u>	<u>530 watts</u>	
	<u>5-pan</u>	<u>50%</u>	<u>670 watts</u>	
	<u>6-pan and larger</u>	<u>50%</u>	<u>800 watts</u>	
Gas Steam	<u>3-pan</u>	<u>38%</u>	<u>6,250 Btu/h</u>	
	<u>4-pan</u>	<u>38%</u>	<u>8,350 Btu/h</u>	
	<u>5-pan</u>	<u>38%</u>	<u>10,400 Btu/h</u>	
	<u>6-pan and larger</u>	<u>38%</u>	<u>12,500 Btu/h</u>	

a. Cooking Energy Efficiency is based on heavy load (potato) cooking capacity.

TABLE C405.12(4)

MINIMUM EFFICIENCY REQUIREMENTS: COMMERCIAL DISHWASHERS
(This table is intended to be a restatement of the legally binding provisions found in Title 10 CFR Part 431 included here as a convenience to the users of this code)

<u>MACHINE TYPE</u>	<u>HIGH TEMP EFFICIENCY REQUIREMENTS</u>		<u>LOW TEMP EFFICIENCY REQUIREMENTS</u>		<u>TEST PROCEDURE</u>
	<u>Idle Energy Rate^a</u>	<u>Water Consumptionⁿ_b</u>	<u>Idle Energy Rate^a</u>	<u>Water Consumptionⁿ_b</u>	
<u>Under Counter</u>	<u>≤ 0.50 kW</u>	<u>≤ 0.86 GPR</u>	<u>≤ 0.50 kW</u>	<u>≤ 1.19 GPR</u>	<u>ASTM F1696-18</u>
<u>Stationary Single Tank Door</u>	<u>≤ 0.70 kW</u>	<u>≤ 0.89 GPR</u>	<u>≤ 0.60 kW</u>	<u>≤ 1.18 GPR</u>	
<u>Pot, Pan, and Utensil</u>	<u>≤ 1.20 kW</u>	<u>≤ 0.58 GPSF</u>	<u>≤ 1.00 kW</u>	<u>≤ 0.58 GPSF</u>	
<u>Single Tank Conveyor</u>	<u>≤ 1.50 kW</u>	<u>≤ 0.70 GPR</u>	<u>≤ 1.50 kW</u>	<u>≤ 0.79 GPR</u>	<u>ASTM F1920-15</u>
<u>Multiple Tank Conveyor</u>	<u>≤ 2.25 kW</u>	<u>≤ 0.54 GPR</u>	<u>≤ 2.00 kW</u>	<u>≤ 0.54 GPR</u>	
<u>Single Tank Flight Type</u>	<u>Reported</u>	<u>GPH ≤ 2.975x + 55.00</u>	<u>Reported</u>	<u>GPH ≤ 2.975x + 55.00</u>	
<u>Multiple</u>	<u>Reported</u>	<u>GPH ≤ 4.96x</u>	<u>Reported</u>	<u>GPH ≤ 4.96x</u>	

<u>Tank Flight Type</u>		<u>±</u> <u>17.00</u>		<u>±</u> <u>17.00</u>	
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- 1 a. Idle results shall be measured with the door closed and represent the total
2 idle energy consumed by the machine including all tank heater(s) and
3 controls. Booster heater (internal or external) energy consumption should
4 not be part of this measurement unless it cannot be separately monitored
5 per US EPA Energy Star Commercial Dishwasher Specification Version
6 2.0.
7 b. GPR = gallons per rack; GPSF = gallons per square foot of rack; GPH
8 = gallons per hour; x = sf of conveyer belt (i.e., W*L)/min (maximum
9 conveyor speed

10 **TABLE C405.12(5)**
11 **MINIMUM EFFICIENCY REQUIREMENTS: COMMERCIAL OVENS**
12 **(This table is intended to be a restatement of the legally binding provisions found in Title**
13 **10 CFR Part 431 included here as a convenience to the users of this code)**

<u>FUEL TYPE</u>	<u>CLASSIFICA TION</u>	<u>IDLE RATE</u>	<u>COOKING- ENERGY EFFICIENCY, %</u>	<u>TEST PROCEDU RE</u>
<u>Convection Ovens</u>				
<u>Gas</u>	<u>Full-Size</u>	<u>≤ 12,000 Btu/h</u>	<u>≥ 46</u>	<u>ASTM F1496 - 13</u>
<u>Electric</u>	<u>Half-Size</u>	<u>≤ 1.0 Btu/h</u>	<u>≥ 71</u>	
	<u>Full-Size</u>	<u>≤ 1.60 Btu/h</u>		
<u>Combination Ovens</u>				
<u>Gas</u>	<u>Steam Mode</u>	<u>≤ 200P^a + 6,511 Btu/h</u>	<u>≥ 41</u>	<u>ASTM F2861 - 17</u>
	<u>Convection Mode</u>	<u>≤ 150P^a + 5,425 Btu/h</u>	<u>≥ 56</u>	
<u>Electric</u>	<u>Steam Mode</u>	<u>≤ 0.133P^a + 0.6400 kW</u>	<u>≥ 55</u>	
	<u>Convection Mode</u>	<u>≤ 0.080P^a + 0.4989 kW</u>	<u>≥ 76</u>	
<u>Rack Ovens</u>				
<u>Gas</u>	<u>Single</u>	<u>≤ 25,000 Btu/h</u>	<u>≥ 48</u>	<u>ASTM F2093 - 18</u>
	<u>Double</u>	<u>≤ 30,000 Btu/h</u>	<u>≥ 52</u>	

- 14 a. P = Pan Capacity: The number of steam table pans the combination
15 oven is able to accommodate as per the ASTM F1495–05 standard
16 specification.

17 **Section C405.13 Automatic receptacle control.**

18 Section C405.13 – Add new Section C405.13 and Section C405.13.1 to read as follows:

1 **C405.13 Automatic receptacle control.** The following shall have automatic receptacle control
2 complying with Section C405.13.1:

3 1. At least 50 percent of all 125V, 15- and 20-amp receptacles installed in the following space
4 types:

5 1.1 Enclosed offices.

6 1.2 Conference rooms.

7 1.3 Rooms used primarily for copy or print functions.

8 1.4 Breakrooms.

9 1.5 Classrooms.

10 1.6 Open plan office areas.

11 1.7 Individual workstations, including those installed in modular partitions and module
12 office workstation systems.

13 2. At least 25 percent of branch circuit feeders installed for modular furniture not shown on
14 the construction documents.

15 **C405.13.1 Automatic receptacle control function.** Automatic receptacle controls shall
16 comply with the following:

17 1. Either split controlled receptacles shall be provided with the top receptacle controlled,
18 or a controlled receptacle shall be located within 12 inches (304.8 mm) of each
19 uncontrolled receptacle.

20 2. One of the following methods shall be used to provide control:

21 2.1. A scheduled basis using a time-of-day operated control device that turns
22 receptacle power off at specific programmed times and can be programmed
23 separately for each day of the week. The control device shall be configured to
24 provide an independent schedule for each portion of the building of not more than
25 5000 square feet (464.5 m²) and not more than one floor. The occupant shall be
26 able to manually override an area for not more than 2 hours. Any individual
27 override switch shall control the receptacles in a portion of the building not more
28 than 5000 feet (1524 m).

29 2.2. An occupant sensor control that shall turn off receptacles within 15 minutes of all
30 occupants leaving a space.

31 2.3. An automated signal from another control or alarm system that shall turn off
32 receptacles within 15 minutes after determining that the area is unoccupied.

33 3. All controlled receptacles shall be permanently marked in accordance with the New
34 York City Electrical Code and be uniformly distributed throughout the space.

35 4. Plug-in devices shall not comply.

36 **Exceptions:** Automatic receptacle controls are not required for the following:

37 1. Receptacles specifically designated for equipment requiring continuous operation
38 (24 hours per day, 365 days per year).

2. Spaces where an automatic control would endanger the safety or security of the room or building occupants.
3. Within a single modular office workstation, noncontrolled receptacles are permitted to be located more than 12 inches (304.8 mm), but not more than 72 inches (1828.8 mm) from the controlled receptacles serving that workstation.

Section C405.14 Energy monitoring.

Section C405.14 – Add new Section C405.14, Section C405.14.1, Section C405.14.2, Table C405.14.2, Section C405.14.3, Section C405.14.4, Section C405.14.5, Section C405.14.6, Section C405.14.7, Section C405.14.8, Table C405.14.8, Section C405.14.9, Section C405.14.10 and Section C405.14.11 to read as follows:

C405.14 Energy monitoring. New buildings with a gross conditioned floor area of 10 000 square feet (929 m²) or larger shall be equipped to measure, monitor, record and report energy consumption in accordance with Sections C405.14.1 through C405.14.6 for load categories indicated in Table C405.14.2 and Sections C405.14.7 through C405.14.11 for end-use categories indicated in Table C405.14.8.

Exceptions:

1. Dwelling units in R-2 occupancies.
2. Individual tenant spaces are not required to comply with this section provided that the space has its own utility services and meters and has less than 5000 square feet (464.5 m²) of conditioned floor area.

C405.14.1 Electrical energy metering.

For electrical energy supplied to the building and its associated site, including but not limited to site lighting, parking, recreational facilities and other areas that serve the building and its occupants, meters or other measurement devices shall be provided to collect energy consumption data for each end-use category required by Section C405.14.2.

C405.14.2 End-use electric metering categories. Meters or other approved measurement devices shall be provided to collect energy use data for each end-use category indicated in Table C405.14.2. Where multiple meters are used to measure any end-use category, the data acquisition system shall total all of the energy used by that category. Not more than 5 percent of the design load for each of the end-use categories indicated in Table C405.14.2 shall be permitted to be from a load that is not within that category.

Exceptions:

1. HVAC and water heating equipment serving only an individual dwelling unit shall not require end-use metering.
2. End-use metering shall not be required for fire pumps, stairwell pressurization fans or any system that operates only during testing or emergency.
3. End-use metering shall not be required for an individual tenant space having a floor area not greater than 2500 square feet (232.3 m²) where a dedicated source meter complying with Section C405.14.3 is provided.

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TABLE C405.14.2
ELECTRICAL ENERGY USE CATEGORIES

<u>LOAD CATEGORY</u>	<u>DESCRIPTION OF ENERGY USE</u>
<u>Total HVAC system</u>	<u>Heating, cooling and ventilation, including but not limited to fans, pumps, boilers, chillers and water heating. Energy used by 120-volt equipment, or by 208/120-volt equipment that is located in a building where the main service is 480/277-volt power, is permitted to be excluded from total HVAC system energy use.</u>
<u>Interior lighting</u>	<u>Lighting systems located within the building.</u>
<u>Exterior lighting</u>	<u>Lighting systems located on the building site but not within the building.</u>
<u>Plug loads</u>	<u>Devices, appliances and equipment connected to convenience receptacle outlets.</u>
<u>Process load</u>	<u>Any single load that is not included in an HVAC, lighting or plug load category and that exceeds 5 percent of the peak connected load of the whole building, including but not limited to data centers, manufacturing equipment and commercial kitchens.</u>
<u>Building operations and other miscellaneous loads</u>	<u>The remaining loads not included elsewhere in this table, including but not limited to vertical transportation systems, automatic doors, motorized shading systems, ornamental fountains, fireplaces, swimming pools, spas and snow-melt systems.</u>
<u>Electric hot water heating for uses other than space conditioning</u>	<u>Electricity used to generate hot water.</u> <u>Exception: Electric water heating with design capacity that is less than 10 percent of the building service rating.</u>
<u>Electric vehicle charging</u>	<u>Electric vehicle charging loads that are powered through the building's electrical service.</u>

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C405.14.3 Electrical Meters. Meters or other measurement devices required by this section shall be configured to automatically communicate energy consumption data to the data acquisition system required by Section C405.14.4. Source meters shall be allowed to be any digital-type meter. Lighting, HVAC or other building systems that can self-monitor their energy consumption shall be permitted instead of meters. Current sensors shall be permitted, provided that they have a tested accuracy of ± 2 percent. Required metering systems and

1 equipment shall have the capability to provide at least hourly data that is fully integrated into
2 the data acquisition system and graphical energy report in accordance with Sections
3 C405.14.4 and C405.14.5. Nonintrusive load monitoring (NILM) packages that extract
4 energy consumption data from detailed electric waveform analysis shall be permitted to
5 substitute for individual meters if the equivalent data is available for collection in Section
6 C405.14.4 and reporting in Section C405.14.5.

7 **C405.14.4 Electrical energy data acquisition system.** A data acquisition system shall
8 have the capability to store the data from the required meters and other sensing devices for a
9 minimum of 36 months. The data acquisition system shall have the capability to store real-
10 time energy consumption data and provide hourly, daily, monthly and yearly logged data for
11 each end-use category required by Section C405.14.2. The data acquisition system
12 shall have the capability of providing building total peak electric demand and the time(s) of
13 day and time(s) per month at which the peak occurs. Peak demand shall be integrated over
14 the same time period as the underlying whole-building meter reading rate.

15 **C405.14.5 Graphical energy report.** A permanent and readily available reporting
16 mechanism shall be provided in the building for access by building operation and
17 management personnel. The reporting mechanism shall have the capability to graphically
18 provide the energy consumption for each end-use category required by Section C405.14.2
19 not less than every hour, day, month and year for the previous 36 months.

20 **C405.14.6 Renewable energy.** On-site renewable energy sources shall be metered with no
21 less frequency than nonrenewable energy systems in accordance with Section 405.14.3.

22 **C405.14.7 Nonelectrical energy submetering.** For all nonelectrical energy supplied to
23 the building and its associated site that serves the building and its occupants, submeters or
24 other measurement devices shall be provided to collect energy consumption data for each
25 end-use category required by Section C405.14.8.

26 Exceptions:

- 27 1. HVAC and water heating equipment serving only an individual dwelling unit shall not
28 require end-use submetering.
- 29 2. End-use submetering shall not be required for fire pumps, stairwell pressurization fans
30 or any system that operates only during testing or emergency.
- 31 3. End-use submetering shall not be required for an individual tenant space having a floor
32 area not greater than 2500 square feet (232.3 m²) where a dedicated source meter
33 complying with Section C405.14.9 is provided.
- 34 4. Equipment powered primarily by solid fuels serving loads other than building heating
35 and service water heating loads.

36 **C405.14.8 End-use nonelectrical submetering categories.** Submeters or other approved
37 measurement devices shall be provided to collect energy use data for each end-use category
38 indicated in Table C405.14.8. Where multiple submeters are used to measure any end-use
39 category, the data acquisition system shall total all of the energy used by that category. Not
40 more than 5 percent of the design load for each of the end-use categories indicated in Table
41 C405.14.8 shall be permitted to be from a load that is not within that category.

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TABLE C405.14.8
NONELECTRICAL ENERGY USE CATEGORIES

<u>END USE CATEGORY</u>	<u>DESCRIPTION OF END USE</u>
<u>Total HVAC system</u>	<u>Heating and cooling systems, including but not limited to boilers, chillers and furnaces. District heating and cooling energy entering the building’s distribution system shall be monitored at the point of entry to the building distribution system.</u>
<u>Process loads</u>	<u>Any single load that is not included in the HVAC or service water heating categories where the rated fuel gas or fuel oil input of the load and that is not less than 5 percent of the sum of the rated fuel gas or fuel oil input of all monitored equipment, including but not limited to manufacturing equipment, process equipment, commercial kitchens, and commercial laundry equipment.</u>
<u>Other miscellaneous loads</u>	<u>The remaining loads not included elsewhere in this table, including but not limited to fireplaces, swimming pools, spas, gas lighting, and snow-melt systems.</u>
<u>Service water heating</u>	<u>Fuel used to heat potable water. Exception: Water heating with design capacity that is less than 10 percent of the sum of the rated fuel gas or fuel oil input of all monitored equipment.</u>

3 **C405.14.9 Nonelectrical submeters.** Submeters or other measurement devices required
4 by this section shall be configured to automatically communicate energy consumption data
5 to the data acquisition system required by Section C405.14.10. Source submeters shall be
6 allowed to be any digital-type meter that can provide a digital output to the data acquisition
7 system. Required submetering systems and equipment shall be fully integrated into the data
8 acquisition system and graphical energy report that updates at least hourly in accordance
9 with Sections C405.14.10 and C405.14.11.

10 **C405.14.10 Nonelectrical energy data acquisition system.** A data acquisition system
11 shall have the capability to store the data from the required submeters and other sensing
12 devices for not less than 36 months. The data acquisition system shall have the capability to
13 store real-time energy consumption data and provide hourly, daily, monthly and yearly
14 logged data for each end-use category required by Section C405.14.8. The data acquisition
15 system shall have the capability of providing building total nonelectrical peak demand and
16 the time(s) of day and time(s) per month at which the peak occurs. Where applicable as
17 determined by the authority having jurisdiction (AHJ), peak demand shall be integrated over
18 the same time period as the underlying whole-building meter reading rate.

19 **C405.14.11 Graphical energy report.** A permanent and readily accessible reporting
20 mechanism shall be provided in the building that is accessible by building operation and
21 management personnel. The reporting mechanism shall have the capability to graphically

1 provide the nonelectrical energy consumption for each end-use category required by Section
2 C405.14.8 not less than every hour, day, month and year for the previous 36 months. The
3 graphical report shall incorporate natural gas interval data from the submeter or the ability to
4 enter gas utility bills into the report.

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6 **Section C405.17 Electrification Ready.**

7 Section C405.17 – Delete Section C405.17 in its entirety.

8 **SECTION C406**

9 **ADDITIONAL EFFICIENCY, RENEWABLE AND LOAD MANAGEMENT**
10 **REQUIREMENTS**

11 **Section C406.1.1.2 Building core/shell and build-out construction**

12 Section C406.1.1.2- Delete item 3.3 of Section C406.1.1.2.

13 **Section C406.2.1.6 E06 Improve fenestration.**

14 Section C406.2.1.6- Revise Section C406.2.1.6 to read as follows:

15 **C406.2.1.6 6 E06 Improve fenestration. Reserved**

16 **Section C406.2.3.1.3 W03 Efficient fossil fuel water heater.**

17 Section C406.2.3.1.3 - Revise Section C406.2.3.1.3 to read as follows:

18 **C406.2.3.1.3 W03 Efficient fossil fuel water heater. Reserved**

19 **Section C406.2.3.1.4 Combination service water heating systems.**

20 Section C406.2.3.1.4 - Revise Section C406.2.3.1.3 to read as follows:

21 **C406.2.3.1.4 Combination service water heating systems.** Where service water heating employs
22 both energy recovery and heat pump water heating, W01 may be combined with W02 and receive
23 the sum of both credits.

24 **Section C406.2.6.1 Q01 Efficient elevator equipment.**

25 Section C406.2.6.1 - Revise Section C406.2.6.1 to read as follows:

26 **C406.2.6.1 Q01 Efficient elevator equipment. Reserved**

27 **Section C406.2.6.2 Q02 Efficient commercial kitchen equipment.**

1 Section C406.2.6.2 - Revise Section C406.2.6.2 to read as follows:

2 **C406.2.6.2 Q02 Efficient commercial kitchen equipment. Reserved**

3 **Table C406.2.6.2(1) Minimum Efficiency Requirements: Commercial Fryers.**

4 Table C406.2.6.2(1) – Delete Table C406.2.6.2(1) in its entirety.

5 **Table C406.2.6.2(2) Minimum Efficiency Requirements: Commercial Steam Cookers.**

6 Table C406.2.6.2(2) – Delete Table C406.2.6.2(2) in its entirety.

7 **Table C406.2.6.2(3) Minimum Efficiency Requirements: Commercial Dishwashers.**

8 Table C406.2.6.2(3) – Delete Table C406.2.6.2(3) in its entirety.

9 **Table C406.2.6.2(4) Minimum Efficiency Requirements: Commercial Ovens.**

10 Table C406.2.6.2(4) – Delete Table C406.2.6.2(4) in its entirety.

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SECTION C407
SIMULATED BUILDING PERFORMANCE

15 **Section C407 Simulated Building Performance.**

16 Section C407 – Delete Section C407 in its entirety and add new Section C407 to read as follows:

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SECTION C407
RESERVED

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SECTION C408

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MAINTENANCE INFORMATION AND SYSTEM COMMISSIONING

22

23 **Section C408.2 Mechanical systems, renewable energy, and service water-heating systems**
24 **commissioning and completion requirements.**

25 Section C408.2 – Revise Section C408.2 to read as follows:

26 **C408.2 Mechanical systems, renewable energy, and service water-heating systems**
27 **commissioning and completion requirements.** Prior to the final mechanical and plumbing
28 inspections, the *approved agency* shall provide evidence of mechanical systems
29 commissioning and completion in accordance with the provisions of this section.

1 Construction document notes shall clearly indicate provisions for commissioning and
2 completion requirements in accordance with this section and are permitted to refer to
3 specifications for further requirements. Copies of all documentation shall be given to the owner
4 or owner's authorized agent and made available to the building official upon request in
5 accordance with Sections C408.2.4 and C408.2.5.

6 Mechanical systems, renewable energy, and service water heating systems shall include
7 but are not limited to, at a minimum, the following heating, ventilating, air conditioning,
8 service water heating, indoor air quality and refrigeration systems (mechanical and/or
9 passive) and associated controls:

- 10 1. Heating, cooling, air handling and distribution, ventilation, and exhaust systems, and
11 their related air quality monitoring systems.
- 12 2. Air, water, and other energy recovery systems.
- 13 3. Manual or automatic controls, whether local or remote, on energy using systems
14 including but not limited to temperature controls, setback sequences, and occupancy-
15 based control, including energy management functions of the building management
16 system.
- 17 4. Plumbing, including insulation of piping and associated valves, domestic and process
18 water pumping, and mixing systems.
- 19 5. Mechanical heating systems and service water heating systems.
- 20 6. Refrigeration systems.
- 21 7. Renewable energy and energy storage systems.
- 22 8. Other systems, equipment and components that are used for heating, cooling or
23 ventilation and that affect energy use.

24 **Exceptions:** The following systems are exempt:

- 25 1. Buildings with less than 10 000 square feet (929 m2) gross conditioned floor area
26 and combined heating, cooling and service water heating capacity of less than
27 960,000 Btu/h (281 kW).
- 28 2. Components within dwelling units and sleeping units served by one of the following
29 systems:
 - 30 2.1. Simple unitary or packaged HVAC equipment listed in Table C403.3.2(1),
31 C403.3.2(2), C403.3.2(4) or C403.3.2(5), each serving one zone and controlled
32 by a single thermostat in the zone served.
 - 33 2.2. Two-pipe heating systems installed in the dwelling, serving one or more zones
34 .
- 35 3. Renewable energy systems being installed with a generating capacity of less than
36 25 kW.

37

38 **Section C408.2.1 Commissioning plan.**

39 Section C408.2.1 – Revise Item 2 of Section C408.2.1 to read as follows:

- 40 2. A listing of the specific equipment, appliances or systems to be tested their full sequences
41 of operation, and a description of the tests to be performed, including prerequisite activities

1 and reference to specific checklists or worksheets which are necessary or required by the
2 department.

3 **Section C408.2.2 Systems adjusting and balancing.**

4 Section C408.2.2 – Revise Section C408.2.2 to read as follows:

5 **C408.2.2 Systems adjusting and balancing.** HVAC systems shall be balanced in accordance
6 with ASHRAE 111, “Testing, Adjusting, and Balancing of Building HVAC Systems” or other
7 accepted engineering standards. Air and water flow rates shall be measured and adjusted to
8 deliver final flow rates within the tolerances provided in the product specifications. Test and
9 balance activities shall include air system and hydronic system balancing.

10 **Section C408.2.2.1 Air systems balancing.**

11 Section C408.2.2.1 – Delete exception from Section C408.2.2.1.

12 **Section C408.2.3.1 Air systems balancing.**

13 Section C408.2.2.1 – Revise exception from Section C408.2.3.1 to read as follows:

14 **Exception:** Unitary or packaged HVAC equipment listed in the tables in Section C403.3.2 that
15 do not require supply air economizers shall only be required to demonstrate functioning under
16 full-load and part-load conditions.

17 **Section C408.2.4 Preliminary commissioning report.**

18 Section C408.2.4 – Revise the first sentence of Section C408.2.4 to read as follows:

19 A preliminary report of commissioning test procedures and results shall be completed and
20 certified by the approved agency and provided to the building owner or owner’s authorized
21 agent.

22 **Section C408.2.4.1 Acceptance of report.**

23 Section C408.2.4.1 – Revise Section C408.2.4 to read as follows:

24 **C408.2.4.1 Acceptance of report.** Buildings, or portions thereof, shall not be considered as
25 acceptable for a final inspection pursuant to Chapter 1 of this code until the building official
26 has received a letter of transmittal from the building owner acknowledging that the building
27 owner or owner’s authorized agent has received the Preliminary Commissioning Report.

28 **Section C408.2.5 Documentation requirements.**

29 Section C408.2.5 – Delete Section C408.2.5, Section C408.2.5.1 and Section C408.2.5.2 and add
30 new Section C408.2.5, Section C408.2.5.1, Section C408.2.5.2, Section C408.2.5.3, and Section
31 C408.2.5.4 to read as follows:

1 **C408.2.5 Documentation requirements.** The construction documents shall specify that the
2 documents described in Sections C408.2.5.1 through C408.2.5.3 be provided to the building
3 owner or owner's authorized agent within 90 days of the date of receipt of the certificate of
4 occupancy or letter of completion. The construction documents shall also specify that the Final
5 Commissioning Report be provided to the building owner or owner's authorized agent in
6 accordance with the requirements of Section C408.2.5.4

7 **C408.2.5.1 Drawings.** Construction documents shall include the location and performance
8 data on each piece of equipment.

9 **C408.2.5.2 Manuals.** An operating and maintenance manual shall be provided and include all
10 of the following:

11 1. Submittal data stating equipment size and selected options for each piece of equipment
12 requiring maintenance.

13 2. Manufacturer's operation manuals and maintenance manuals for each piece of
14 equipment requiring maintenance, except equipment not furnished as part of the project.
15 Required routine maintenance actions shall be clearly identified.

16 3. Name and address of at least one service agency.

17 4. HVAC and service hot water controls system maintenance and calibration information,
18 including wiring diagrams, schematics and control sequence descriptions. Desired or
19 field-determined set points shall be permanently recorded on control drawings at control
20 devices or, for digital control systems, in system programming instructions.

21 5. Submittal data indicating all selected options for each piece of lighting equipment and
22 lighting controls.

23 6. Operation and maintenance manuals for each piece of lighting equipment. Required
24 routine maintenance actions, cleaning and recommended relamping shall be clearly
25 identified.

26 7. A schedule for inspecting and recalibrating all lighting controls.

27 8. A narrative of how each system is intended to operate, including recommended set
28 points.

29 **C408.2.5.3 System balancing report.** A written report describing the activities and
30 measurements completed in accordance with Section C408.2.2.

31 **C408.2.5.4 Final commissioning report.** Within 30 months for new buildings 500 000 gross
32 square feet (46 451.5 m²) or greater, excluding R-2 occupancies, or within 18 months for R-2
33 occupancies and all other buildings, of the issuance of the certificate of occupancy or letter of
34 completion, an approved agency shall prepare a report of test procedures and results, including
35 test procedures and results performed after occupancy, identified as the "Final Commissioning

1 Report,” provide such report to the building owner, and submit a certification to the department
2 with applicable fees in accordance with department rules. The owner of a building 500 000
3 gross square feet (46 451.5 m²) or greater may apply for an extension of time to the building
4 official based on good cause, in accordance with department rules. Such report shall include
5 the following:

6 1. Results of functional performance tests.

7 2. Disposition of deficiencies found during testing, including details of corrective
8 measures used or proposed.

9 3. Functional performance test procedures used during the commissioning process
10 including measurable criteria for test acceptance, provided herein for repeatability.

11 Exception: Deferred tests that cannot be performed at the time of report preparation due to
12 climatic conditions.

13 **Section C408.3.1 Functional testing.**

14 Section C408.3.1 – Revise the first sentence of Section C408.3.1 to read as follows:

15 Prior to passing final inspection, the approved agency shall provide evidence that the lighting
16 and receptacle control systems have been tested to ensure that control hardware and software
17 are calibrated, adjusted, programmed and in proper working condition in accordance with the
18 construction documents and manufacturer’s instructions.

20 **Section C408.4 Air barrier commissioning. .**

21 Section C408.4 – Add new Section C408.4, Section C408.4.1, Section C408.4.2, and Section
22 C408.4.3 to read as follows:

23 **C408.4 Air barrier commissioning.** For new buildings or additions that are 10 000 gross
24 square feet (929 m²) and greater, prior to passing final inspection, the approved agency shall
25 provide evidence of air barrier commissioning and substantial completion in accordance with
26 the provisions of Sections C408.4.1 through C408.4.3.

27 **C408.4.1 Documentation.** Construction documents shall include documentation of the
28 continuous air barrier components included in the design and a field inspection checklist that
29 includes all requirements necessary for maintaining air barrier continuity and durability in
30 accordance with Section C402.6.

31 **C408.4.2 Field inspections.** Reports from field inspections during project construction
32 showing compliance with continuous air barrier requirements including proper material
33 handling and storage, use of approved materials and material substitutes, proper material and
34 surface preparation, and air barrier continuity shall be provided to the owner and, upon request,

1 to the building official. Air barrier continuity shall be determined by testing or inspecting each
2 type of unique air barrier joint or seam in the building envelope for continuity and defects.

3 **C408.4.3 Report.** A Final Commissioning Report indicating compliance with the continuous
4 air barrier requirements shall be provided to the building owner and, upon request, to the
5 building official.

7 **CHAPTER C5**

8 **EXISTING BUILDINGS**

9 **SECTION ECC C501**

10 **GENERAL**

11 **Section C501.1 Scope.**

12 Section C501.1 – Revise Section C501.1 to read as follows:

13 **C501.1 Scope.** The provisions of this chapter shall control the alteration, repair, addition and
14 change of occupancy of existing buildings and structures. This chapter shall not apply to
15 alterations required to comply with new building provisions as determined by 28-101.4.5 of
16 the New York City Administrative Code.

18 **Section C501.2 Compliance.**

19 Section C501.2 – Revise Section C501.2 to read as follows:

20 **C501.2 Compliance.** Additions, alterations, repairs, and changes of occupancy to, or
21 relocation of, existing buildings and structures shall comply with Sections C502, C503, C504
22 and C505 of this code, as applicable, and with the provisions for alterations, repairs, additions
23 and changes of occupancy or relocation, respectively, in the New York City Construction
24 Codes, the New York City Fire Code, and the New York City Electrical Code.

25 Exception: Additions, alterations, repairs or changes of occupancy complying with 2025 NYC
26 ASHRAE 90.1.

28 **Section C501.6 Change in space conditioning.**

29 Section C501.6 – Revise Section C501.6 to read as follows:

30 **C501.6 Change in space conditioning.** Any nonconditioned or low-energy building or space

1 that is altered to become conditioned space shall be required to comply with Section C502.

2 Exception: Where the component performance alternative in Section C402.1.4 is used to
3 comply with this section, the proposed UA shall be not greater than 110 percent of the target
4 UA.

5 **SECTION ECC C502**

6 **ADDITIONS**

7 **Section C502.1 General.**

8 Section C502.1 – Revise Section C502.1 to read as follows:

9 **C502.1 General.** Additions to an existing building, building system or portion thereof shall
10 conform to the provisions of this code as those provisions relate to new construction without
11 requiring the unaltered portion of the existing building or building system to comply with this
12 code. Additions shall not create an unsafe or hazardous condition or overload existing building
13 systems. An addition shall be deemed to comply with this code if the addition alone complies
14 or if the existing building and addition comply with this code as a single building. Altered
15 portions of the building filed in conjunction with an addition shall comply with section C503.

16 **Section C502.3.1 Vertical fenestration area.**

17 Section C502.3.1 – Revise Item 1 of Section C502.3.1 to read as follows:

18 1. Where an addition has a new vertical fenestration area that results in a total building
19 fenestration area less than or equal to that permitted by Section C402.5.1, the addition shall
20 comply with Section C402.1.4, C402.5.3.

21 Section C502.3.1 – Revise Item 3 of Section C502.3.1 to read as follows:

22 3. Where an addition has vertical fenestration that results in a total building vertical
23 fenestration area exceeding that permitted by Section C402.5.1.2, the addition shall comply
24 with Section C402.1.4.

25 **Section C502.3.2 Skylight area.**

26 Section C502.3.2 – Revise Item 1 of Section C502.3.2 to read as follows:

27 1. Where an addition has new skylight area that results in a total building fenestration area
28 less than or equal to that permitted by Section C402.5.1, the addition shall comply with Section
29 C402.1.4.

30 Section C502.3.2 – Revise Item 3 of Section C502.3.2 to read as follows:

31 3. Where an addition has skylight area that results in a total building skylight area exceeding

1 that permitted by Section C402.5.1.2, the addition shall comply with Section C402.1.4.

2 **Section C502.3.4 Service water-heating systems.**

3 Section C502.3.4 – Revise Section C502.3.4 to read as follows:

4 **C502.3.4 Service water-heating systems.** New service water-heating equipment, controls and
5 service water-heating piping shall comply with Section C404 and Section C408.

6 **Section C502.3.7 Additional energy efficiency credits.**

7 Section C502.3.7 – Delete exception 5 from Section C502.3.7.

8 **SECTION ECC C503**

9 **ALTERATIONS**

10 **Section C503.1 General.**

11 Section C503.1– Revise Section C503.1 to read as follows:

12 **C503.1 General.** Alterations to any building or structure shall comply with the requirements
13 of Section C503. Alterations shall be such that the existing building or structure is not less
14 conforming to the provisions of this code than the existing building or structure was prior to
15 the alteration. Alterations to an existing building, building system or portion thereof shall
16 conform to the provisions of this code as those provisions relate to new construction without
17 requiring the unaltered portions of the existing building or building system to comply with this
18 code. Subsequent subsections of Section C503 shall not be construed as limiting the scope of
19 Section C503.1 through omission. Alterations shall not create an unsafe or hazardous condition
20 or overload existing building systems.

21 **Exception:** The following types of work need not comply with the requirements for new
22 construction, provided that the energy use of the building is not increased:

23 1. Storm windows installed over existing fenestration.

24 2. Surface-applied window film installed on existing single-pane fenestration assemblies
25 reducing solar heat gain, provided that the code does not require the glazing or
26 fenestration to be replaced.

27 5. Roof recover.

28 4. Roof replacement where roof assembly insulation is integral to or located below the
29 structural roof deck.

30 6. Roofs without insulation in the cavity and where the sheathing or insulation is exposed
31 during reroofing shall be insulated either above or below the sheathing.

1 5. Air barriers shall not be required for roof recover and roof replacement where the
2 alterations or renovations to the building do not include alterations, renovations or
3 repairs to the remainder of the building thermal envelope.

4 6. Replacement of existing doors that separate conditioned space from the exterior shall
5 not require the installation of a vestibule or revolving door, provided, however, that an
6 existing vestibule that separates such conditioned space from the exterior shall not be
7 removed.

8 **Section C503.2 Building thermal envelope.**

9 Section C503.2 – Revise Section C503.2 to read as follows:

10 **C503.2 Building thermal envelope.** Alterations of existing building thermal envelope
11 assemblies shall comply with this section. New building thermal envelope assemblies that are
12 part of the alteration shall comply with Section C402. An area-weighted average U-factor for
13 new and altered portions of the building thermal envelope shall be permitted to satisfy the U-
14 factor requirements in Section C402.1.4. The existing R-value of insulation shall not be
15 reduced or the U-factor of a building thermal envelope assembly be increased as part of a
16 building thermal envelope alteration.

17 Exception: Where the existing building exceeds the fenestration area limitations of Section
18 C402.5.1 prior to alteration, the building is exempt from Section C402.5.1 provided that there
19 is no increase in fenestration area.

20 **Section C503.2.1 Roof replacement.**

21 Section C503.2.1 – Revise the exception from Section C503.2.1 to read as follows:

22 **Exceptions:** Where replacement of ceiling finishes exposes cavities of the roof-ceiling
23 construction, that is part of the building thermal envelope, the cavities shall be insulated to full
24 depth with insulation that complies with Section C303.1.4 and having a minimum nominal
25 value of R-3.5 per inch.

26 **Section C503.2.2 Vertical fenestration.**

27 Section C503.2.2 – Revise Section C503.2.2 to read as follows:

28 **C503.2.2 Vertical fenestration.** The addition of vertical fenestration that results in a total
29 building fenestration area less than or equal to that specified in Section C402.5.1 shall comply
30 with Section C402.1.4, C402.5.3. The addition of vertical fenestration that results in a total
31 building fenestration area greater than Section C402.5.1 shall comply with Section C402.5.1.1
32 for the space adjacent to the new fenestration only. Alterations that result in a total building
33 vertical fenestration area exceeding that specified in Section C402.5.1.1 shall comply with
34 Section C402.1.4.

35 **Section C503.2.3 Skylight area.**

1 Section C503.2.3 – Revise Section C503.2.3 to read as follows:

2 **C503.2.3 Skylight area.** New skylight area that results in a total building skylight area less
3 than or equal to that specified in Section C402.5.1 shall comply with Section C402.1.4 and
4 Section C402.5. The addition of skylight area that results in a total building skylight area
5 greater than Section C402.5.1 shall comply with Section C402.5.1.2 for the space adjacent to
6 the new skylights. Alterations that result in a total building skylight area exceeding that
7 specified in Section C402.5.1.2 shall comply with Section C402.1.4.

8 **Section C503.2.4 Above-grade wall alterations.**

9 Section C503.2.4 – Revise Item 2 of Section C503.2.4 to read as follows:

10 2. Where wall cavities are exposed, the cavities shall be insulated to full depth with insulation
11 complying with Section C303.1.4 and having a minimum nominal value of R-3.5 per inch.

12 **Section C503.3 Heating and cooling systems.**

13 Section C503.3 – Revise Section C503.3 to read as follows:

14 **C503.3 Heating and cooling systems.** New heating, cooling, piping and duct systems that are
15 part of the alteration shall comply with Sections C403 and C408. Alterations to heating,
16 cooling duct, and piping systems shall comply with Sections C403 and C408.

17 **Section C503.3.4 Controls.**

18 Section C503.3.4 – Revise Section C503.3.4 to read as follows:

19 **C503.3.4 Controls.** New HVACR systems that are part of the alteration shall be provided with
20 controls that comply with Section C403.4. Altered controls shall comply with Section C403.4.
21 Where controls are altered for more than 50% of the terminal distribution elements of a heating
22 or cooling system, the controls for all commonly served terminal distribution elements and the
23 associated, immediately upstream plant equipment shall comply with section C403.4 as new.

24 Exceptions:

25 1. Controls for terminal distribution elements located in a space occupied by a different tenant
26 than the altered space.

27 2. Control provisions of section C403.4 which are impossible to achieve without an alteration
28 of otherwise unaltered non-control elements of the associated, immediately upstream plant
29 equipment.

30 **Section C503.3.5 System sizing.**

31 Section C503.3.3 – Revise Section C503.3.5 to read as follows:

1 **C503.3.5 System sizing.** New heating, cooling and ventilation systems that is part of an
2 alteration shall be sized in accordance with Section C403.1.1 based on the existing building
3 features as modified by the alteration.

4 Exception:

5 1. Where it is demonstrated to the building official that compliance with this section would
6 result in heating or cooling equipment that is deemed by the commissioner incompatible with
7 the rest of the heating or cooling system.

8 2. Where it has been demonstrated to the building official that the additional capacity will be
9 needed in the future.

10 **Section C503.6 Additional energy efficiency credit requirements for alterations.**

11 Section C503.6 – Revise exception 3 from Section C503.6 to read as follows:

12 **3. Reserved. Section C505.1 General..**

13 Section C505.1 – Delete the exception to Section C505.1.

14 **Section C505.2.1 Building thermal envelope.**

15 Section C505.2.1 – Revise Section C505.2.1 to read as follows:

16 **C505.2.1 Building thermal envelope.** Where a change of occupancy results in a fenestration
17 area greater than the maximum fenestration area allowed by Section C402.5.1, the building
18 shall comply with Section C402.1.4, with a proposed EPF that shall be not greater than 110
19 percent of the target UA.

20 **Exception:** Where the change of occupancy or use is made to a building or a portion of the
21 building that is less than 2000 square feet (185.8 m²), the new occupancy is exempt from
22 Section C402.5.1, provided that there is not an increase in fenestration area.

23 **Table C505.2.2—Building Mechanical Systems.**

24 Table C505.2.2– Revise Table C505.2.2 to read as follows:

25 **TABLE C505.2.2—BUILDING MECHANICAL SYSTEMS**

<u>ENERGY USE INTENSITY RANK</u>	<u>NEW YORK CITY BUILDING CODE OCCUPANCY CLASSIFICATION AND USE</u>
<u>High</u>	<u>A-2, B (laboratories), I-2</u>
<u>Medium</u>	<u>A-1, A-3,a A-4, A-5, B,^b E, I-1, I-3, I-4, M</u>

<u>Low</u>	A-3 (places of religious worship), R-1, R-2, R-3,c S-1, S-2, F, H, U
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- 1 a. Excluding places of religious worship.
- 2 b. Excluding laboratories.
- 3 c. Buildings three stories or less in height above grade plane shall comply with Section R505.

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5 **Table C505.2.3—Service Water Heating.**

6 Table C505.2.3– Revise Table C505.2.3 to read as follows:

7 **TABLE C505.2.3—SERVICE WATER HEATING**

<u>ENERGY USE INTENSITY RANK</u>	<u>NEW YORK CITY BUILDING CODE OCCUPANCY CLASSIFICATION AND USE</u>
<u>High</u>	<u>A-2, I-1, I-2, R-1</u>
<u>Low</u>	<u>All other occupancies and uses</u>

8 **Table C505.2.4—Lighting.**

9 Table C505.2.4– Revise Table C505.2.4 to read as follows:

10 **TABLE C505.2.4—LIGHTING**

<u>ENERGY USE INTENSITY RANK</u>	<u>NEW YORK CITY BUILDING CODE OCCUPANCY CLASSIFICATION AND USE</u>
<u>High</u>	<u>B (laboratories), B (outpatient healthcare), I-2, M</u>
<u>Medium</u>	<u>A-2, A-3 (courtrooms), B,a I-1, I-3, I-4, R-1, R-2, R-3,b R-4, S-1, S-2</u>
<u>Low</u>	<u>A-1, A-3,c A-4, E</u>

- 11 **a. Excluding laboratories and outpatient healthcare.**
- 12 **b. Buildings three stories or less in height above grade plane shall comply with Section**
- 13 **R505.**
- 14 **c. Excluding courtrooms.**

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CHAPTER C6

CHAPTER R2

DEFINITIONS

SECTION R201

GENERAL

Section R201.1 Scope.

Section R201.1 – Revise Section R201.1 to read as follows:

R201.1 Scope. Unless stated otherwise, the words and terms provided in italics within this code shall have the meanings as defined in Section R202, C202, or as defined within the chapter or appendix where the word or term is found, except as provided in Sections R201.3 and R201.4.

Section R201.3 Terms defined in other codes.

Section R201.3 – Revise Section R201.3 to read as follows:

R201.3 Terms defined in other codes. Where italicized words and terms are not defined in this code but are defined in the New York City Construction Codes, New York City Fire Code, or New York City Electrical Code, such words and terms shall have the meanings ascribed to them in such other codes.

SECTION R202

GENERAL DEFINITIONS

Section R202 – Delete the definitions of “Building Code of New York State,” “Existing Building Code of New York State,” “Fire Code of New York State,” “Fuel Gas Code of New York State,” “Mechanical Code of New York State,” “Plumbing Code of New York State,” “Property Maintenance Code of New York State,” “Residential Code of New York State,” and “Uniform Code.”

Section R202 – Add the definition of “2025 NYC ASHRAE 90.1,” after the definition of “2025 NYS ASHRAE 90.1,” to read as follows:

2025 NYC ASHRAE 90.1. New York City amendments to 2025 NYS ASHRAE 90.1.

Section R202 – Delete the definitions of “Approved” and “Approved agency” after the definition

1 of “Alteration.”

2 Section R202 – Add the definitions of “Approved” and “Approved agency,” after the definition of
3 “Alteration,” to read as follows:

4 **APPROVED.** See Section 28-101.5 of the Administrative Code.

5 **APPROVED AGENCY.** See Section 28-101.5 of the Administrative Code.

6 Section R202 – Delete the definitions of “Area-weighted average” and “Authority having
7 jurisdiction” after the definition of “Approved source.”

8 Section R202 – Add the definitions of “Area-weighted average” and “Authority having
9 jurisdiction,” after the definition of “Approved source,” to read as follows:

10 **AREA WEIGHTED AVERAGE.** A mathematical technique for combining different amounts of
11 various components, based on proportional relevance, into a single number. Weighted averaging
12 may be used where there is more than one insulation or thermal resistance value for floor, wall,
13 ceiling insulation, or fenestration in a building. As an example, the area weighted average for
14 window fenestration U-factors equals $(Area\ 1 \times U\text{-factor}\ 1) + (Area\ 2 \times U\text{-factor}\ 2) + \dots / Total$
15 Area = weighted average fenestration U-factor.

16 **AUTHORITY HAVING JURISDICTION.** The governmental unit or agency responsible for
17 administration and enforcement of the New York City Building Codes and NYCECC.

18 Section R202 – Delete the definition of “Basement wall” after the definition of “Balanced
19 ventilation system.”

20 Section R202 – Add the definitions of “Basement or cellar, Energy Code,” “Basement wall,” and
21 “Below-grade wall,” after the definition of “Balanced ventilation system,” to read as follows:

22 **BASEMENT OR CELLAR, ENERGY CODE.** A story that is not a story above grade plane.
23 See the definition of “Story above grade plane.”

24 **BASEMENT WALL.** See “Below-grade wall.”

25 **BELOW-GRADE WALL.** A wall where 50 percent or more of the total surface area is below
26 the adjoining grade and enclosing conditioned space.

27 Section R202 – Delete the definition of “Building official” after the definition of “Building.”

28 Section R202 – Add the definition of “Building official,” after the definition of “Building,” to read
29 as follows:

30 **BUILDING OFFICIAL.** The Commissioner or his or her duly authorized representative. See
31 Section 28-101.5 of the Administrative Code.

32 Section R202 – Delete the definition of “Building Thermal Envelope” after the definition of
33 “Building System.”

34 Section R202 – Add the definition of “Building Thermal Envelope,” after the definition of

1 “Building System,” to read as follows:

2 **BUILDING THERMAL ENVELOPE.** The exterior walls, floors, ceilings, slabs, roofs,
3 fenestration, and any other building element assemblies (above or below grade) that enclose
4 conditioned space or provide a boundary between conditioned space and exempt or
5 unconditioned space.

6 Section R202 – Add the definition of “Commissioner,” after the definition of “Commercial
7 building,” to read as follows:

8 **COMMISSIONER.** The commissioner of buildings of the city of New York, or his or her duly
9 authorized representative. (See “Authority Having Jurisdiction” and “Building official.”)

10 Section R202 – Delete the definition of “Enclosed Reflective Airspace” after the definition of
11 “Emittance.”

12 Section R202 – Add the definition of “Embodied Carbon” and “Enclosed Reflective Airspace,”
13 after the definition of “Emittance,” to read as follows:

14 **EMBODIED CARBON:** The total greenhouse gas emissions associated with the life cycle of
15 building materials and products, excluding operational emissions from the building itself.

16 **ENCLOSED REFLECTIVE AIRSPACE.** An unventilated cavity with at least 1 low-
17 emittance surface adjacent to an empty air space bounded on all sides by building components.

18 Section R202 – Delete the definitions of “Energy code” and “Energy cost” after the definition of
19 “Energy analysis.”

20 Section R202 – Add the definition of “Energy code,” after the definition of “Energy analysis,” to
21 read as follows:

22 **ENERGY CODE.** The New York City Energy Conservation Code.

23 Section R202 – Delete the definition of “Grade Plane” after the definition of “Fuel oil.”

24 Section R202 – Add the definition of “Grade Plane, Energy,” after the definition of “Fuel Oil,” to
25 read as follows:

26 **GRADE PLANE, ENERGY.** A reference plane representing the average of the finished ground
27 level adjoining the building at all exterior walls. Where the finished ground level slopes away
28 from the exterior walls, the reference plane is established by the lowest points within the area
29 between the building and the lot line or, where the lot line is more than 6 feet (1828.8 mm) from
30 the building, between the structure and a point 6 feet (1828.8 mm) from the building.

31 Section R202 – Delete the definition of “Labeled” after the definition of “Knee Wall.”

32 Section R202 – Add the definitions of “Labeled” and “Lead Energy professional,”” after the
33 definition of “Knee Wall,” to read as follows:

34 **LABELED.** See Section 28-101.5 of the Administrative Code.

35 **LEAD ENERGY PROFESSIONAL.** The registered design professional who signs and seals the
36 energy analysis for an entire project. Such individual may be the same registered design

- 1 professional who signs and seals the design drawings for the same project.
- 2 Section R202 – Delete the definition of “Listed” after the definition of “Liquid Fuel.”
- 3 Section R202 – Add the definition of “Listed,”” after the definition of “Liquid Fuel,” to read as
4 follows:
- 5 LISTED. See Section 28-101.5 of the Administrative Code.
- 6 Section R202 – Delete the definition of “Market value” after the definition of “Manual.”
- 7 Section R202 – Add the definitions of “Professional certification” and “Project,” after the
8 definition of “Plenum,” to read as follows:
- 9 **PROFESSIONAL CERTIFICATION.** See Section 28-101.5 of the Administrative Code.
10 **PROJECT.** A design and construction undertaking comprised of work related to 1 or more
11 buildings and the site improvements. A project is represented by 1 or more plan/work
12 applications, including construction documents compiled in accordance with Section 107 of the
13 New York City Building Code, that relate either to the construction of a new building or
14 buildings or to the demolition or alteration of an existing building or buildings. Applications for
15 a project may have different registered design professionals and different job numbers and may
16 result in the issuance of 1 or more permits.
- 17 Section R202 – Delete the definition of “Solar Heat Gain Coefficient (SHGC)” after the definition
18 of “Sleeping unit.”
- 19 Section R202 – Add the definition of “Solar Heat Gain Coefficient (SHGC),” after the definition
20 of “Sleeping unit,” to read as follows:
- 21 **SOLAR HEAT GAIN COEFFICIENT (SHGC).** The ratio of the solar heat gain entering the
22 space through the fenestration assembly to the incident solar radiation. Solar heat gain includes
23 directly transmitted solar heat and absorbed solar radiation that is then re-radiated, conducted or
24 transferred by convection into the space.
- 25 Section R202 – Add the definitions of “Story,” “Story above grade plane,” “Substantial Energy
26 Alteration,” and “Substantially complete building permit application,” after the definition of
27 “Steep slope,” to read as follows:
- 28 **STORY.** The portion of a building included between the upper surface of a floor and the upper
29 surface of the floor or roof next above. See the definitions of “Basement or Cellar, Energy Code”
30 and “Grade plane, Energy Code.” A story is measured as the vertical distance from top to top of
31 2 successive tiers of beams or finished floor surfaces and, for the topmost story, from the top of
32 the floor finish to the top of the ceiling joists or, where there is not a ceiling, to the top of the roof
33 rafters.
- 34 **STORY ABOVE GRADE PLANE.** Any story having its finished floor surface entirely above
35 grade plane, or any story in which the finished surface of the floor next above is:
36 1. More than 6 feet (1828.8 mm) above average grade plane; or
37 2. More than 12 feet (3657.6 mm) above the finished ground level at any point.
- 38 Section R202 – Add the definition of “Thermal Bridges,” after the definition of “Testing unit

1 enclosure area,” to read as follows:

2 **THERMAL BRIDGES.** A structural element or interface of elements that has higher thermal
3 conductivity than the surrounding building thermal envelope, which creates a path of decreased
4 resistance for heat transfer.

5 **CHI-FACTOR (γ -FACTOR).** The heat loss factor for a single thermal bridge
6 characterized as a point element of a building thermal envelope (Btu/h x °F) [W/K].

7 **CLEAR FIELD THERMAL BRIDGE.** Elements of a building envelope assembly
8 creating paths of decreased resistance for heat transfer which repeat at regular intervals,
9 such as metal or wood studs, girts, and purlins.

10 **LINEAR THERMAL BRIDGE.** A length-based element associated with horizontal,
11 vertical, or diagonal elements that penetrates the insulation in the building thermal
12 envelope and with a length measured along an exterior surface of the building thermal
13 envelope, such as balconies, parapet-, roof-, floor-, or fenestration intersections, and shelf
14 angles.

15 **POINT THERMAL BRIDGE.** An element that penetrates the insulation in the building
16 thermal envelope, such as columns or beams passing through envelope assemblies,
17 attachments, anchors, and connections not defined as clear field- or linear thermal
18 bridges. The cross-sectional area is measured at the external surface of the outermost
19 penetrated insulation layer.

20 **PSI-FACTOR (ψ -FACTOR).** The heat loss factor per unit length of a thermal bridge
21 characterized as a linear element of a building thermal envelope (Btu/h x ft x °F) [W/(m x K)].

22 **CHAPTER R3**

23 **GENERAL REQUIREMENTS**

24 **SECTION ECC R301**

25 **CLIMATE ZONES**

26 **Section R301.1 General.**

27 Section R301.1 – Revise Section R301.1 to read as follows:

28 **R301.1 General.** For projects in the city of New York, Climate Zone 4A shall be used in
29 determining the applicable requirements from Chapter R4.

30 **SECTION R303**

31 **MATERIALS, SYSTEMS AND EQUIPMENT**

32 **Section R303.1.1 Building thermal envelope insulation.**

33 Section R303.1.1 – Revise the Exception to Section R303.1.1 to read as follows:

34 **Exception:** For roof insulation installed above the deck, the R-value shall be labeled as
35 required by the material standards specified in the New York City Building Code.

1 **Section R303.1.2 Insulation mark installation.**

2 Section R303.1.2 – Revise the Exception to Section R303.1.2 to read as follows:

3 **Exception:** For roof insulation installed above the deck, the R-value shall be labeled as
4 required by the material standards in the New York City Building Code

5 **Section R303.1.3 Fenestration product rating.**

6 Section R303.1.3 – Revise Section R303.1.3 to read as follows:

7 **R303.1.3 Fenestration product rating.** U-factors of fenestration products such as windows,
8 doors, and skylights shall be determined in accordance with NFRC 100.

9 **Exception:** Where required, garage door U-factors shall be determined in accordance with
10 either NFRC 100 or ANSI/DASMA 105.

11 U-factors shall be determined by a third-party accredited, independent laboratory, recognized by
12 ANSI, ILAC, or MiRa and labeled and certified by the manufacturer.

13 Products lacking such a labeled U-factor shall be assigned a default U-factor from Table
14 R303.1.3(1) or Table R303.1.3(2). The solar heat gain coefficient (SHGC) and visible
15 transmittance (VT) of glazed fenestration products such as windows, glazed doors, and
16 skylights shall be determined in accordance with NFRC 200 by an accredited, independent
17 laboratory and labeled and certified by the manufacturer. Products lacking such a labeled
18 SHGC or VT shall be assigned a default SHGC or VT from Table R303.1.3(3).

19 **Section R303.1.6 Airspaces.**

20 Section R303.1.6 – Revise Section R303.1.6 to read as follows:

21 **R303.1.6 Airspaces.** Where the R-value of an enclosed reflective airspace or enclosed
22 nonreflective airspace is used for compliance with this code, the airspace shall be enclosed in
23 a cavity bounded on all sides by building components and constructed to minimize airflow into
24 and out of the enclosed airspace. Airflow shall be deemed minimized where one of the
25 following conditions occurs:

26 1. The enclosed airspace is unventilated.

27 2. The enclosed airspace is bounded on 1 or more sides by an anchored masonry veneer,
28 constructed in accordance with the *New York City Building Code*, and vented by veneer
29 weep holes located only at the bottom portion of the airspace and spaced not less than 15
30 inches (381 mm) on center with the top of the cavity airspace closed.

31 **Exception:** For ventilated cavities, the effect of the ventilation of airspaces located on the
32 exterior side of the continuous air barrier and adjacent to and behind the exterior wall covering
33 material shall be determined in accordance with ASTM C1363, modified with an airflow

1 entering the bottom and exiting the top of the airspace at an air movement rate of not less than
2 70 millimeters per second.

3 **Section R303.2 Installation.**

4 Section R303.2 – Revise Section R303.2 to read as follows:

5 **R303.2 Installation.** Materials, systems, and equipment shall be installed in accordance with
6 the manufacturer’s instructions and the provisions of the New York City Construction Codes.

7 **CHAPTER R4**

8 **RESIDENTIAL ENERGY EFFICIENCY**

9 **SECTION R401**

10 **GENERAL**

11 **Section R401.3 Certificate.**

12 Section R401.3 – Revise Section R401.3 to read as follows:

13 **R401.3 Certificate.** A permanent certificate shall be completed by the builder or other
14 approved party and posted on a wall in the space where the furnace is located, a utility room,
15 or an approved location inside the building. Where located on an electrical panel, the certificate
16 shall not cover or obstruct the visibility of the circuit directory label, service disconnect label,
17 or other required labels. The certificate shall indicate the following:

- 18 1. The predominant R-values of insulation installed in or on ceilings, roofs, walls, foundation
19 components such as slabs, below-grade walls, crawl space walls, and floors, and ducts
20 outside conditioned spaces.
- 21 2. U-factors of fenestration and the solar heat gain coefficient (SHGC) of fenestration. Where
22 there is more than 1 value for any component of the building thermal envelope, the
23 certificate shall indicate both the value covering the largest area and the area weighted
24 average value if available.
- 25 3. The results from any required duct system and building thermal envelope air leakage testing
26 performed on the building.
- 27 4. The types, sizes and efficiencies of heating, cooling and service water-heating equipment.
28 Where a gas-fired unvented room heater, electric furnace, or baseboard electric heater is
29 installed in the residence, the certificate shall indicate “gas-fired unvented room heater,”
30 “electric furnace,” or “baseboard electric heater,” as appropriate. An efficiency shall not be
31 indicated for gas-fired unvented room heaters, electric furnaces and electric baseboard
32 heaters.

- 1 5. Where on-site photovoltaic panel systems have been installed, the array capacity, inverter
2 efficiency, panel tilt, and orientation.
- 3 6. For buildings where an Energy Rating Index score is determined in accordance with Section
4 R406, the Energy Rating Index score, both with and without any on-site generation.
- 5 7. The code edition under which the structure was permitted, the compliance path used, and,
6 where applicable, the additional efficiency measures selected for compliance with Section
7 R408.
- 8 8. The location and dimensions of a solar-ready zone, where one is provided.

9 **SECTION R402**

10 **BUILDING THERMAL ENVELOPE**

11 **Section R402.1 General.**

12 Section R402.1 – Revise Section R402.1 to read as follows:

13 **R402.1 General.** The building thermal envelope shall comply with the requirements of one of
14 the following:

- 15 1. Sections R402.1.1 through R402.1.4, R402.1.6, and R402.2 through R402.7.
- 16 2. Sections R402.1.1, R402.1.5, R402.1.6, and R402.2 through R402.7.

17 **Section R402.1.1 General.**

18 Section R402.1.1 – Revise Section R402.1.1 to read as follows:

19 **R402.1.1 Vapor retarder.** Wall assemblies in the building thermal envelope shall comply
20 with the vapor retarder requirements of the New York City Building Code, as applicable.

21 **Table R402.1.2 Insulation and Fenestration Requirements by Component^a**

22 Revise Table R402.1.2 to read as follows:

23 **TABLE R402.1.2**

24 **MAXIMUM ASSEMBLY U-FACTORS AND FENESTRATION REQUIREMENTS^a**

<u>Climate Zone</u>	<u>4</u>	<u>5</u>	<u>6</u>
<u>VERTICAL FENESTRATION U-FACTOR</u>	<u>0.27</u>	<u>0.27^c</u>	<u>0.27^c</u>
<u>SKYLIGHT U-FACTOR</u>	<u>0.50</u>	<u>0.50</u>	<u>0.50</u>
<u>GLAZED VERTICAL FENESTRATION</u> <u>SHGC^{c,d,f}</u>	<u>0.40</u>	<u>NR</u>	<u>NR</u>

<u>SKYLIGHT SHGC^d</u>	<u>0.40</u>	<u>NR</u>	<u>NR</u>
<u>CEILING U-FACTOR</u>	<u>0.026</u>	<u>0.026</u>	<u>0.026</u>
<u>INSULATION ENTIRELY ABOVE ROOF DECK</u>	<u>0.032</u>	<u>0.032</u>	<u>0.032</u>
<u>WOOD FRAME WALL U-FACTOR</u>	<u>0.045</u>	<u>0.045</u>	<u>0.045</u>
<u>MASS WALL U-FACTOR^b</u>	<u>0.056</u>	<u>0.060</u>	<u>0.060</u>
<u>FLOOR U-FACTOR</u>	<u>0.033</u>	<u>0.033</u>	<u>0.033</u>
<u>BELOW-GRADE WALL U-FACTOR</u>	<u>0.050</u>	<u>0.050</u>	<u>0.050</u>
<u>UNHEATED SLAB F-FACTOR^d</u>	<u>0.48</u>	<u>0.48</u>	<u>0.48</u>
<u>HEATED SLAB F-FACTOR^d</u>	<u>0.55</u>	<u>0.55</u>	<u>0.55</u>
<u>CRAWL SPACE WALL U-FACTOR</u>	<u>0.042</u>	<u>0.055</u>	<u>0.055</u>

For SI: 1 foot = 304.8 mm.

a. Nonfenestration U-factors and F-factors shall be obtained from measurement, calculation, an approved source, or Appendix RF.

b. Mass walls shall be in accordance with Section R402.2.6. Where more than half the insulation is on the interior, the mass wall U-factor shall not exceed 0.56.

c. Reserved

d. F-factors for slabs shall correspond to the R-values of Table R402.1.3 and the installation conditions of Section R402.2.10.1.

Table R402.1.3 Insulation and Fenestration Requirements by Component^a

Revise Table R402.1.3 to read as follows:

TABLE R402.1.3
INSULATION MINIMUM R-VALUES AND FENESTRATION REQUIREMENTS BY
COMPONENT^a

<u>Climate Zone</u>	<u>4</u>	<u>5</u>	<u>6</u>
<u>VERTICAL FENESTRATION U-FACTOR^f</u>	<u>0.27</u>	<u>0.27</u>	<u>0.27</u>
<u>SKYLIGHT^b U-FACTOR</u>	<u>0.50</u>	<u>0.50</u>	<u>0.50</u>
<u>GLAZED VERTICAL FENESTRATION SHGC^h</u>	<u>0.40</u>	<u>NR</u>	<u>NR</u>
<u>SKYLIGHT SHGC</u>	<u>0.40</u>	<u>NR</u>	<u>NR</u>
<u>CEILING R-VALUE^g</u>	<u>49 ca</u>	<u>49ca</u>	<u>49ca</u>
<u>INSULATION ENTIRELY ABOVE ROOF DECK</u>	<u>30ci</u>	<u>30ci</u>	<u>30ci</u>
<u>WOOD FRAME WALL R-VALUE^d</u>	<u>30ca or 20ca +5ci or 13ca+10ci 20ci</u>	<u>30ca or 20ca+5ci or 13ca+10ci or 20ci</u>	<u>30ca or 20ca+5ci or 13ca+10ci or 20ci</u>
<u>MASS WALL R-VALUE^e</u>	<u>15ci/20ci</u>	<u>15ci/20ci</u>	<u>15ci/20ci</u>
<u>FLOOR R-VALUE^g</u>	<u>30ca or 19ca+7.5ci or 20ci</u>	<u>30ca or 19ca+7.5ci or 20ci</u>	<u>30ca or 19ca+7.5ci or 20ci</u>
<u>BELOW-GRADE WALL R-VALUE^b</u>	<u>15ci or 19ca or 13ca +5ci</u>	<u>15ci or 19ca or 13ca +5ci</u>	<u>15ci or 19ca or 13ca +5ci</u>
<u>UNHEATED SLAB R-VALUE & DEPTH^c</u>	<u>10ci, 4 ft.</u>	<u>10ci, 4 ft.</u>	<u>10ci, 4 ft.</u>
<u>HEATED SLAB R-VALUE & DEPTH^c</u>	<u>10ci 4 ft and R-10 full slab</u>	<u>10ci, 4ft and R-10 full slab</u>	<u>10ci, 4ft and R-10 full slab</u>

CRAWL SPACE WALL R-VALUE ^b	15ci or 19ca or 13ca +5ci	<u>15ci or 19ca</u> <u>or 13ca +5ci</u>	<u>15ci or 19ca</u> <u>or 13ca +5ci</u>
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- 1 a. R-values are minimums. U-factors and SHGC are maximums. Where insulation is installed in a cavity that is less
2 than the label or design thickness of the insulation, the installed R-value of the insulation shall be not less than the
3 R-value specified in the table.
4 b. “15ci or 19ca” means R-15 continuous insulation (ci) on the interior or exterior surface of the wall or R-19 cavity
5 insulation on the interior side of the wall. 13ca+5ci means R-13 cavity insulation on the interior of the basement
6 wall plus R-5 continuous insulation on the interior or exterior of the home.
7 c. Slab insulation shall be installed in accordance with Section R402.2.10.1.
8 d. The first value is cavity insulation, the second value is continuous insulation. Therefore, as an example,
9 “13ca+10ci” means R-13 cavity insulation plus R-10 continuous insulation.
10 e. Mass walls shall be in accordance with Section R402.2.6 The second R-value applies where more than half of the
11 insulation is on the interior of the mass wall.
12 f. Reserved
13 g. “30ca or 20ca+5ci or 20ci” means R-30- cavity insulation alone or R-20 cavity insulation with R-5 continuous
14 insulation or R-20 continuous insulation alone

15 **Section R402.1.5 Component performance alternative.**

16 Section R402.1.5 – Revise Section R402.1.5 to read as follows:

17 **R402.1.5 Component performance alternative.** Where the proposed total *building thermal*
18 *envelope* thermal conductance (TC_p) is less than or equal to the reference total *building thermal*
19 *envelope* thermal conductance (TC_r) using factors in Table R402.1.2, the *building* shall be
20 considered to be in compliance with Table R402.1.2. The total thermal conductance (TC) shall
21 be determined in accordance with Equation 4-1. Proposed *U*-factors and slab-on-grade *F*-
22 factors shall be taken from 2025 NYC ASHRAE Standard 90.1 Appendix A or determined
23 using a method consistent with the ASHRAE *Handbook of Fundamentals* and shall include
24 the thermal bridging effects of framing materials. In addition to TC compliance, the SHGC
25 requirements of Table R402.1.2 and the maximum *fenestration U*-factors of Section R402.6
26 shall be met.

27 Equation 4-1 $TC_p \leq TC_r$

28 where:

29 $TC_p = U_pA + F_pP$ $TC_r = U_rA + F_rP$

30 U_pA = the sum of proposed *U*-factors times the assembly areas in the proposed building.

31 F_pP = the sum of the proposed *F*-factors times the slab-on-grade perimeter lengths in the
32 proposed building.

33 U_rA = the sum of *U*-factors in Table R402.1.2 times the same assembly areas as in the proposed
34 building.

35 F_rP = the sum of *F*-factors in Table R402.1.2 times the same slab-on-grade perimeter lengths as
36 in the proposed building.

37 **Section R402.1.6 Rooms containing fuel-burning appliances.**

1 Section R402.1.6 – Revise Section R402.1.6 to read as follows:

2 **R402.1.6 Rooms containing fuel-burning appliances.** In Climate Zones 3 through 8, where
3 open combustion air ducts provide combustion air to open combustion fuel-burning appliances,
4 the appliances and combustion air opening shall be located outside the building thermal
5 envelope or enclosed in a room that is isolated from inside the building thermal envelope. Such
6 rooms shall be sealed and insulated in accordance with the building thermal envelope
7 requirements of Table R402.1.3, where the walls, floors, and ceilings shall meet a minimum
8 of the below-grade wall R-value requirement. The door into the room shall be fully gasketed
9 and any water lines and ducts in the room insulated in accordance with Section R403. The
10 combustion air duct shall be insulated where it passes through conditioned space to an R-value
11 of not less than R-8.

12 **Exceptions:**

- 13 1. Direct vent appliances with both intake and exhaust pipes installed continuous to the outside.
14 2. Fireplaces and stoves complying with Section R402.4.2 and the New York City Mechanical
15 Code.

16 **Section R402.2.7 Steel-frame ceilings, walls, and floors.**

17 Section R402.2.7 – Revise Section R402.2.7 to read as follows:

18 **R402.2.7 Steel-frame ceilings, walls, and floors.** Steel-frame ceilings, walls, and floors shall
19 comply with the ceiling, wood frame wall, and floor *U*-factor requirements of Table R402.1.2.
20 *R*-values in table R402.1.3 may not be applied. The calculation of the *U*-factor for steel-framed
21 ceilings and walls in a building thermal envelope assembly shall be determined in accordance
22 with section RF102.3.

23 **Section R402.2.9 Basement Walls.**

24 **Section R402.2.9 – Delete Section R402.2.9 in its entirety and add a new Section R402.2.9 to**
25 **read as follows:**

26 **R402.2.9 Below-grade walls.** Below-grade walls shall be insulated in accordance with Table
27 R402.1.3.

28 Exception: Below-grade walls associated with unconditioned basements or cellars where the
29 following requirements are met:

- 30 1. The floor overhead, including the underside stairway stringer leading to the basement
31 or cellar, is insulated in accordance with Section R402.1.3 and applicable provisions of
32 Sections R402.2 and R402.2.8.
33 2. There are no uninsulated ductwork, domestic hot water piping, or hydronic heating
34 surfaces exposed to the basement or cellar.

1 3. There are no HVAC supply or return diffusers serving the basement or cellar.

2 4. The walls surrounding the stairway and adjacent to conditioned space are insulated in
3 accordance with Section R402.1.3 and applicable provisions of Section R402.2.

4 5. The door(s) leading to the basement or cellar from conditioned spaces are insulated in
5 accordance with Section R402.1.3 and applicable provisions of Section R402.2 and
6 weather-stripped in accordance with Section R402.5.

7 6. The building thermal envelope separating the basement or cellar from adjacent
8 conditioned spaces complies with Section R402.5.

9 **Section R402.2.9.1 Basement wall insulation installation.**

10 Section R402.2.9.1 – Delete Section R402.2.9.1 in its entirety and add a new Section R402.2.9.1
11 to read as follows:

12 **R402.2.9.1 Below-grade wall insulation installation.** Where below-grade walls are insulated,
13 the insulation shall be installed from the top of the below-grade wall down to 10 feet (3048
14 mm) below grade or to the basement or cellar floor, whichever is less, or in accordance with
15 the proposed design or the rated design, as applicable.

16 **Section R402.2.10.1 Slab-on-grade floor insulation installation.**

17 Section R402.2.10.1 – Delete Section R402.2.10.1 in its entirety and add a new Section
18 R402.2.10.1 to read as follows:

19 **R402.2.10.1 Slab-on-grade floor insulation installation.** For buildings complying with
20 Section R401.2.1, the slab edge continuous insulation shall extend downward from the top of
21 the slab on the outside or inside of the foundation wall. Insulation located below grade shall be
22 extended the vertical distance provided in Table R402.1.3 but need not exceed the footing
23 depth in accordance with Chapter 18 of the New York City Building Code. Where a proposed
24 design includes insulation extending away from the building, the insulation shall be protected
25 by pavement or by not less than 10 inches (254 mm) of soil. The top edge of the insulation
26 installed between the exterior wall and the edge of the interior slab shall be permitted to be cut
27 at a 45-degree (0.79 rad) angle away from the exterior wall. Full-slab insulation shall be
28 continuous under the entire area of the slab-on-grade floor, except at structural column
29 locations and service penetrations. Slab edge insulation required at the heated slab perimeter
30 shall not be required to extend below the bottom of the heated slab and shall be continuous
31 with the full slab insulation.

32 **Section R402.2.11.1 Crawl space wall insulation installations.**

33 Section R402.2.11.1 – Revise the last paragraph of Section R402.5.1 to read as follows:

34 Exposed earth in crawl space foundations shall be covered with a continuous Class I vapor
35 retarder in accordance with the *New York City Building Code*, as applicable. Joints of the vapor

1 retarder shall overlap by 6 inches (152.4 mm) and be sealed or taped. The edges of the vapor
 2 retarder shall extend not less than 6 inches (152.4 mm) up stem walls and shall be attached to
 3 the stem walls.

4 **Section R402.5.1 Building thermal envelope.**

5 Section R402.5.1 – Delete Section R402.5.1 in its entirety and add a new Section R402.5.1 to read
 6 as follows:

7 **R402.5.1 Building thermal envelope.** The *building thermal envelope* shall comply with
 8 Sections R402.5.1.1 through R402.5.1.4. The sealing methods between dissimilar materials
 9 shall allow for differential expansion and contraction.

10 **Section R402.5.1.1 Installation.**

11 Section R402.5.1.1 – Delete Section R402.5.1.1 in its entirety and add a new Section R402.5.1.1
 12 to read as follows:

13 **R402.5.1.1 Installation.** The components of the *building thermal envelope* as indicated in
 14 Table R402.5.1.1 shall be installed in accordance with the manufacturer’s instructions and the
 15 criteria indicated in Table R402.5.1.1, as applicable to the method of construction. Where
 16 required by the *building official*, an *approved* agency shall inspect all components and verify
 17 compliance. The inspection shall include an open wall visual inspection of all components
 18 included in Table R402.5.1.1. and such components shall be installed so that the insulation
 19 material uniformly fills each cavity side-to-side and top-to-bottom, without gaps or voids
 20 around obstructions, and is split, installed, or fitted tightly around wiring and other penetrations
 21 in the cavity. No more than 2 percent of the total insulated area shall contain gaps or voids in
 22 the insulation or be compressed below the thickness required to attain the labeled R-value.

23 **Table R402.5.1.1 Insulation and Fenestration Requirements by Component^a**

24 Revise Table R402.5.1.1 to read as follows:

25 **TABLE R402.5.1.1**

26 **AIR BARRIER, AIR SEALING AND INSULATION INSTALLATION^a**

<u>COMPONENT</u>	<u>AIR BARRIER, AIR SEALING CRITERIA</u>	<u>INSULATION INSTALLATION CRITERIA</u>
<u>General requirements</u>	<u>A continuous air barrier shall be installed in the building thermal envelope.</u> <u>Breaks or joints in the air barrier shall be sealed.</u>	<u>Air-permeable insulation shall not be used as a sealing material.</u> <u>Insulation shall be installed so that the insulation material uniformly fills each cavity side-to-side and top-to-bottom, without substantial gaps or voids around obstructions, and is split, installed, or fitted tightly around wiring and other penetrations in the cavity. Not more than 2 percent of the total insulated area shall be compressed below the thickness required to attain the labeled R-value or</u>

		<u>contain gaps or voids in the insulation.</u>
<u>Ceiling/attic</u>	<u>An air barrier shall be installed in any dropped ceiling or soffit to separate it from unconditioned space.</u> <u>Access openings, drop down stairs or knee wall doors to unconditioned attic spaces shall be sealed with gasketing materials that allow for repeated entrance over time.</u>	<u>The insulation in any dropped ceiling/soffit shall be aligned with the air barrier. Access hatches and doors shall be installed and insulated in accordance with Section R402.2.5.</u> <u>Eave baffles shall be installed in accordance with Section R402.2.4.</u>
<u>Walls</u>	<u>The junction of the foundation and sill plate shall be sealed.</u> <u>The junction of the top plate and the top of exterior walls shall be sealed.</u> <u>Knee walls shall be sealed.</u>	<u>Cavities within corners and headers of frame walls shall be insulated by completely filling the cavity with a material having a thermal resistance, R-value, of not less than R-3 per inch.</u> <u>Exterior building thermal envelope insulation for framed walls shall be installed in substantial contact and continuous alignment with the air barrier.</u>
<u>Knee wall</u>	<u>Knee walls shall have an air barrier between conditioned and unconditioned space</u>	<u>Insulation installed in a knee wall assembly shall be installed in accordance with Section R402.2.3.</u> <u>Air-permeable insulation shall be enclosed inside an air barrier assembly.</u>
<u>Windows, skylights and doors</u>	<u>The rough opening gap between framing and the frames of skylights, windows and doors, shall be sealed in accordance with fenestration manufacturer's instructions.</u>	<u>Insulation shall not be required in the rough opening gap except as required by the fenestration manufacturer's instructions.</u>
<u>Rim joists</u>	<u>Rim joists shall include an air barrier.^b</u> <u>The junctions of the rim board to the sill plate and the rim board and the subfloor shall be air sealed.</u>	<u>Rim joists shall be insulated so that the insulation maintains permanent contact with the exterior rim board.^b</u>
<u>Floors, including cantilevered floors and floors above garages</u>	<u>Floor framing members that are part of the building thermal envelope shall be air sealed to maintain a continuous air barrier.</u> <u>Air permeable floor cavity insulation shall be enclosed.</u>	<u>Floor insulation shall be installed in accordance with the requirements of Section R402.2.8.</u>
<u>Basement or cellar, crawl space and slab foundations</u>	<u>Exposed earth in unvented crawl spaces shall be covered with a Class I vapor retarder/air barrier in accordance with Section R402.2.11.</u> <u>Penetrations through concrete foundation walls and slabs shall be air sealed.</u> <u>Class 1 vapor retarders shall not be used as an air barrier on below-grade walls and shall be installed in accordance with the New York City Building Code.</u>	<u>Crawl space insulation, where provided instead of floor insulation, shall be installed in accordance with Section R402.2.11.</u> <u>Conditioned basement or cellar foundation wall insulation shall be installed in accordance with Section R402.2.9.1.</u> <u>Slab-on-grade floor insulation shall be installed in accordance with Section R402.2.10.</u>
<u>Shafts, penetrations</u>	<u>Duct and flue shafts to exterior or unconditioned space shall be sealed.</u> <u>Utility penetrations of the air barrier shall be caulked, gasketed or otherwise sealed and shall allow for expansion, contraction of materials and mechanical vibration.</u>	<u>Insulation shall be fitted tightly around utilities passing through shafts and penetrations in the building thermal envelope to maintain required R-value</u>

<u>Narrow cavities</u>	<u>Narrow cavities of 1 inch (25.4 mm) or less that are not able to be insulated shall be air sealed.</u>	<u>Batts to be installed in narrow cavities shall be cut to fit or narrow cavities shall be filled with insulation that on installation readily conforms to the available cavity space.</u>
<u>Garage separation</u>	<u>Air sealing shall be provided between the garage and conditioned spaces.</u>	<u>Insulated portions of the garage separation assembly shall be installed in accordance with Sections R303 and R402.2.8.</u>
<u>Recessed lighting</u>	<u>Recessed light fixtures installed in the building thermal envelope shall be air sealed in accordance with Section R402.5.4.</u>	<u>Recessed light fixtures installed in the building thermal envelope shall be airtight and IC rated and shall be buried in or surrounded with insulation.</u>
<u>Plumbing, wiring or other obstructions</u>	<u>All holes created by wiring, plumbing or other obstructions in the air barrier assembly shall be air sealed.</u>	<u>Insulation shall be installed to fill the available space and surround wiring, plumbing, or other obstructions, unless the required R-value can be met by installing insulation and air barrier systems completely to the exterior side of the obstructions.</u>
<u>Showers, tubs and fireplaces adjacent to the building thermal envelope</u>	<u>An air barrier shall separate insulation in the building thermal envelope from the shower, tub or fireplace assemblies.</u>	<u>Exterior framed walls adjacent to showers, tubs and fireplaces shall be insulated.</u>
<u>Electrical, communication and other equipment boxes, housings and enclosures</u>	<u>Boxes, housing and enclosures that penetrate the air barrier shall be caulked, taped, gasketed or otherwise sealed to the air barrier element being penetrated.</u> <u>All concealed openings into the box, housing or enclosure shall be sealed.</u> <u>Alternatively, air-sealed boxes shall be installed in accordance with Section R402.5.5.</u>	<u>Boxes, housing and enclosures shall be buried in or surrounded by insulation.</u>
<u>HVAC register boots</u>	<u>HVAC supply and return register boots shall be sealed to the subfloor, wall covering or ceiling penetrated by the boot.</u>	<u>HVAC supply and return register boots located within a building thermal envelope assembly shall be buried in or surrounded by insulation.</u>
<u>Concealed sprinklers</u>	<u>Where required to be sealed, concealed fire sprinklers shall only be sealed in a manner that is recommended by the manufacturer. Caulking or other adhesive sealants shall not be used to fill voids between fire sprinkler cover plates and walls or ceilings.</u>	
<u>Common walls or double walls separating attached single-family dwellings or townhouses</u>	<u>An interior air barrier shall be provided. Air sealing at the intersections with building thermal envelope shall be provided.</u> <u>Where installed in a fire resistance-rated wall assembly, air sealing materials shall comply with one of the following:</u> <u>1. Be in accordance with an approved design for the fire-resistance-rated assembly.</u> <u>2. Be supported by approved data that shows the assembly as installed complies with the required fire resistance rating.</u>	<u>Insulation materials recognized in the approved common wall or double-wall design and installed in accordance with the approved design shall be permitted to be used.</u>

- 1 a. Inspection of log walls shall be in accordance with the provisions of ICC 400.
- 2 b. Insulation full enclosure is not required in unconditioned/ventilated attic spaces and at rim
- 3 joists.

1 **Section R402.5.1.2 Air leakage testing.**

2 Section R402.5.1.2 – Delete Section R402.5.1.2 in its entirety and add a new Section R402.5.1.2
3 to read as follows:

4 **R402.5.1.2 Air leakage testing.** The building shall be tested for air leakage in accordance with
5 Sections R402.5.1.3 and R402.5.1.4. Where required by the building official, testing shall be
6 conducted by an approved third party. A written report of the results of the test shall be signed
7 by the party conducting the test and provided to the building official. Testing shall be
8 performed at any time after creation of all penetrations of the building thermal envelope have
9 been sealed.

10 Exception: For heated sunrooms, heated attached private garages, and heated detached private
11 garages accessory to 1- and 2-family dwellings and townhouses not more than 3 stories above
12 grade plane in height, building thermal envelope tightness and insulation installation shall be
13 considered acceptable where the items in Table R402.5.1.1, applicable to the method of
14 construction, are field verified. Where required by the building official, an approved third party
15 independent from the installer shall inspect both air barrier and insulation installation criteria.
16 Heated attached private garage space and heated detached private garage space shall be
17 thermally isolated from all other habitable, conditioned spaces in accordance with Sections
18 R402.2.13 and R402.4.5, as applicable.

19 **Section R402.5.1.3 Maximum air leakage rate.**

20 Section R402.5.1.3 – Delete Section R402.5.1.3 in its entirety and add a new Section R402.5.1.3
21 to read as follows:

22 **R402.5.1.3 Maximum air leakage rate.** The maximum air leakage rate for any building under
23 any compliance path shall not exceed 3.0 air changes per hour. Testing shall be conducted in
24 accordance with ANSI/RESNET/ICC 380, ASTM E779, or ASTM E1827 and reported at a
25 pressure differential of 0.2 inch (5.08 mm) water gauge (50 Pa).

26 **Exception:** Buildings over 50 000 square feet (4645.2 m²) may comply with the testing
27 requirements of section C402.6.

28 **Section R402.5.1.4 Testing procedure.**

29 Section R402.1.4 – Add a new Section R402.5.1.4 to read as follows:

30 **R402.5.1.4 Testing procedure.** Testing shall be conducted by an approved agency. A written
31 report of the results of the test shall be signed by the party conducting the test and provided to
32 the building official. Testing shall be performed at any time after creation of all penetrations
33 of the building thermal envelope have been sealed. The written report shall include:

34 1. The name and place of business of the party conducting the test;

35 2. The address of the building that was tested;

1 3. The conditioned floor area of the dwelling, calculated in accordance with ANSI/BOMA
2 Z65.1, except that conditioned floor area shall include areas where the ceiling height is
3 less than 5 feet (1524 mm);

4 4. Measurement of the air volume lost at an internal pressurization of 0.2 inches (5.08 mm)
5 water gauge (50 Pa);

6 5. The air leakage rate in air changes per hour or cubic feet per minute per square foot of
7 dwelling unit enclosure area;

8 6. The date(s) of the test;

9 7. A certification by the party conducting the test of the accuracy of the test results; and

10 8. The signature of the party conducting the test.

11 During testing:

12 1. Exterior windows, exterior doors, fireplace doors, and stove doors shall be closed, but
13 not sealed, beyond the intended weatherstripping or other infiltration control measures.

14 2. Dampers including exhaust, intake, makeup air, backdraft, and flue dampers shall be
15 closed, but not sealed, beyond intended infiltration control measures.

16 3. Interior doors, where installed at the time of the test, shall be open.

17 4. Exterior or interior terminations for continuous ventilation systems and heat recovery
18 ventilators shall be closed and sealed.

19 5. Heating and cooling systems, where installed at the time of the test, shall be turned off.

20 6. Supply and return registers, where installed at the time of the test, shall be fully open.

21 **Section R402.6 Maximum fenestration U-factor and SHGC.**

22 Section R402.6 – Delete Section R402.6 in its entirety and add a new Section R402.6 to read as
23 follows:

24 **R402.6 Maximum fenestration U-factor and SHGC.** The area-weighted average maximum
25 fenestration U-factor permitted using tradeoffs from Section R402.1.5 or R405 shall be 0.40
26 for vertical fenestration and 0.72 for skylights.

27 **Exception:** The maximum U-factor for fenestration shall not be required in storm shelters
28 complying with ICC 500.

29 **Section R402.7 Thermal bridges.**

1 Section R402.7 – Add new Sections R402.7, R402.7.1, R402.7.2, and R402.7.3, and Table R402.7,
 2 to read as follows:

3 **R402.7 Thermal bridges.** Applications for construction document approval shall include
 4 documentation of thermal bridges.

5 **R402.7.1 Clear field thermal bridges.** Where otherwise not included in pre-calculated assembly
 6 U-factors, C-factors, or F-factors outlined in Appendix A of 2025 NYC ASHRAE 90.1, clear
 7 field thermal bridges in a wall, roof, or floor assembly shall be noted as such in the drawings.

8 **R402.7.2 Point thermal bridges.** Point thermal bridges greater than or equal in area to 8 in²
 9 (5161 mm²) and not associated with HVAC or electrical systems shall be noted as thermal
 10 bridges in the drawings.

11 **R402.7.3 Linear thermal bridges.** Construction documents shall include the following
 12 documentation in tabular format for linear thermal bridges listed in Table R402.7:

- 13 1. Linear thermal bridge type.
- 14 2. Aggregate length of each type of linear thermal bridge.
- 15 3. Relevant detail in the construction documents showing a cross-section through the thermal
 16 bridge.
- 17 4. Ψ-value for each thermal bridge from Table R402.7.

18 **Exception:** Where linear thermal bridges have been tested or modeled using methods approved
 19 by the department, alternate values may be used as long as supporting documentation is
 20 provided.

21 **Table R402.7**
 22 **AVERAGE THERMAL TRANSMITTANCE FOR UNMITIGATED LINEAR**
 23 **THERMAL BRIDGES**

<u>Type of Thermal Bridge</u>	<u>Ψ-value^a [Btu/hr • ft • F]</u>	<u>Ψ- value^a W/mK</u>
<u>Steel Frame, Steel Stud, Poured-in-place Concrete, Concrete Block, Curtain-wall</u>		
<u>Balcony</u>	<u>0.50</u>	<u>0.871</u>
<u>Floor^d</u>	<u>0.44</u>	<u>0.755</u>
<u>Slab to Ground</u>	<u>n/a</u>	<u>n/a</u>
<u>Fenestration Perimeter Transition^c</u>	<u>0.32</u>	<u>0.550</u>
<u>Parapet</u>	<u>0.42</u>	<u>0.735</u>
<u>Eaves</u>	<u>n/a</u>	<u>n/a</u>
<u>Shelf Angle</u>	<u>0.41</u>	<u>0.713</u>
<u>Wood Frame Construction</u>		
<u>Balcony</u>	<u>n/a</u>	<u>n/a</u>
<u>Floor^d</u>	<u>0.336</u>	<u>0.582</u>
<u>Slab to Ground</u>	<u>n/a</u>	<u>n/a</u>
<u>Fenestration Perimeter Transition^c</u>	<u>0.15</u>	<u>0.26</u>
<u>Parapet</u>	<u>0.032</u>	<u>0.056</u>

Eaves	n/a	n/a
Shelf Angle	0.186	0.322

1 a. Psi-values are derived from the ASHRAE Research Project 1365 and BC
2 Hydro Building Envelope Thermal Bridging Guide Version 1.2 - September
3 2018, and are based on poor performing details.

4 b. This value is for an intermediate floor. Ground to Slab thermal bridging is applicable
5 for all buildings.

6 c. Fenestration Perimeter Transition is the thermal bridge between any fenestration frame
7 and the typical wall, roof, or floor assembly it abuts or is mounted within. For each unique
8 window or door installation type, provide a minimum of 1 typical-installation detail showing
9 either the head, jamb, or sill detail of the window or door frame and the abutting wall, roof, or
10 floor construction, including all structural and insulation layers, blocking, flashing, and cladding.

11 **SECTION R403**

12 **SYSTEMS**

13 **Section R403.3.3 Ductwork located outside conditioned space.**

14 Section R403.3.3 – Revise Section R403.3.3 to read as follows:

15 **R403.3.3 Ductwork located outside conditioned space.** New ductwork shall not be located
16 outside conditioned space. Existing and return ductwork located outside conditioned space
17 shall be insulated to an R-value of not less than R-8 for ducts 3 inches (76.2 mm) in diameter
18 and larger and not less than R-6 for ducts smaller than 3 inches (76.2 mm) in diameter.
19 Ductwork buried beneath a building shall be insulated as required per this section or have an
20 equivalent thermal distribution efficiency. Underground ductwork utilizing the thermal
21 distribution efficiency method shall be listed and labeled to indicate the R-value equivalency.

22 **Section R403.3.6 Sealing.**

23 Section R403.3.6 – Revise Section R403.3.6 to read as follows:

24 **R403.3.6 Sealing.** Ductwork, air-handling units, and filter boxes shall be sealed. Joints and
25 seams shall comply with the New York City Mechanical Code, as applicable.

26 **Section R403.4 Mechanical system piping insulation.**

27 Section R403.4 – Revise Section R403.4 to read as follows:

28 **R403.4 Mechanical system piping insulation.** Piping serving as part of a heating or cooling
29 system capable of carrying fluids greater than 105°F (41°C) or less than 60°F (15°C) shall be
30 thermally insulated in accordance with Table R403.4. The thickness and conductivity of the
31 insulation must result in an R-value of not less than R-3.

32 **Table R403.4 MINIMUM PIPE INSULATION THICKNESS (in inches).**

1 Table R403.4 – Add Table R403.4.1 and Table R403.2 to read as follows:

2 **TABLE R403.4.1**

3 **MINIMUM PIPE INSULATION THICKNESS (in inches)^{a, c}**

FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		INCHES OR R-VALUE	NOMINAL PIPE OR TUBE SIZE (inches)				
	Conductivity × Btu × in./(h × ft² × °F)^b	Mean Rating Temperature, °F		≤ 1	1 to < 1½	1½ to < 4	4 to < 8	≥ 8
<u>> 350</u>	<u>0.32–0.34</u>	<u>250</u>	<u>Inches</u>	<u>4.5</u>	<u>5.0</u>	<u>5.0</u>	<u>5.0</u>	<u>5.0</u>
			<u>R-value</u>	<u>R-32</u>	<u>R-36</u>	<u>R-34</u>	<u>R-26</u>	<u>R-21</u>
<u>251–350</u>	<u>0.29–0.32</u>	<u>200</u>	<u>Inches</u>	<u>3.0</u>	<u>4.0</u>	<u>4.5</u>	<u>4.5</u>	<u>4.5</u>
			<u>R-value</u>	<u>R-20</u>	<u>R-29</u>	<u>R-32</u>	<u>R-24</u>	<u>R-20</u>
<u>201–250</u>	<u>0.27–0.30</u>	<u>150</u>	<u>Inches</u>	<u>2.5</u>	<u>2.5</u>	<u>2.5</u>	<u>3.0</u>	<u>3.0</u>
			<u>R-value</u>	<u>R-17</u>	<u>R-17</u>	<u>R-17</u>	<u>R-15</u>	<u>R-13</u>
<u>141–200</u>	<u>0.25–0.29</u>	<u>125</u>	<u>Inches</u>	<u>1.5</u>	<u>1.5</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>
			<u>R-value</u>	<u>R-9</u>	<u>R-9</u>	<u>R-11</u>	<u>R-10</u>	<u>R-9</u>
<u>105–140</u>	<u>0.21–0.28</u>	<u>100</u>	<u>Inches</u>	<u>1.0</u>	<u>1.0</u>	<u>1.5</u>	<u>1.5</u>	<u>1.5</u>
			<u>R-value</u>	<u>R-5</u>	<u>R-9</u>	<u>R-8</u>	<u>R-8</u>	<u>R-7</u>
<u>40–60</u>	<u>0.21–0.27</u>	<u>75</u>	<u>Inches</u>	<u>0.5</u>	<u>0.5</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>
			<u>R-value</u>	<u>R-2</u>	<u>R-2</u>	<u>R-5</u>	<u>R-5</u>	<u>R-4</u>
<u>< 40</u>	<u>0.20–0.26</u>	<u>50</u>	<u>Inches</u>	<u>0.5</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.5</u>
			<u>R-value</u>	<u>R-6</u>	<u>R-9</u>	<u>R-9</u>	<u>R-8</u>	<u>R-7</u>

4 For SI: 1 inch = 25.4 mm, °C = [(°F) – 32]/1.8.

5 a. For piping smaller than 1.5 inches (38.1 mm) and located in partitions within conditioned
6 spaces, reduction of these thicknesses by 1 inch (25.4 mm) shall be permitted (before thickness
7 adjustment required in Note b) but not to a thickness less than 1 inch (25.4 mm).

8 b. For insulation outside the stated conductivity range, the minimum thickness (T) shall be
9 determined as follows:

10
$$T = r[(1 + t/r)^{K/k} - 1]$$

11 where:

12 T = Minimum insulation thickness.

13 r = Actual outside radius of pipe.

14 t = Insulation thickness listed in the table for applicable fluid temperature and pipe size.

1 K = Conductivity of alternate material at mean rating temperature indicated for the
 2 applicable fluid temperature (Btu × in/h × ft² × °F).

3 k = The upper value of the conductivity range listed in the table for the applicable fluid
 4 temperature.

5 c. For direct-buried heating and hot water system piping, reduction of these thicknesses by
 6 1.5 inches (38.1 mm) shall be permitted (before thickness adjustment required in Note b but not
 7 to thicknesses less than 1 inch (25.4 mm).

8 **TABLE R403.4.2**

9 **MINIMUM PIPE INSULATION R-Value^a**

<u>FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)</u>	<u>NOMINAL PIPE OR TUBE SIZE (inches)</u>				
	<u><1</u>	<u>1 TO <1 1/2</u>	<u>1 1/2 TO <4</u>	<u>4 TO <8</u>	<u>≥8</u>
	<u>Minimum Insulation R-Value</u>				
<u>>350</u>	<u>R32</u>	<u>R36</u>	<u>R34</u>	<u>R26</u>	<u>R21</u>
<u>251-350</u>	<u>R20</u>	<u>R29</u>	<u>R32</u>	<u>R24</u>	<u>R20</u>
<u>201-250</u>	<u>R17</u>	<u>R17</u>	<u>R17</u>	<u>R15</u>	<u>R13</u>
<u>141-200</u>	<u>R9</u>	<u>R9</u>	<u>R11</u>	<u>R10</u>	<u>R9</u>
<u>105-140</u>	<u>R5</u>	<u>R9</u>	<u>R8</u>	<u>R8</u>	<u>R7</u>
<u>40-60</u>	<u>R2</u>	<u>R2</u>	<u>R5</u>	<u>R5</u>	<u>R4</u>
<u>≤40</u>	<u>R6</u>	<u>R9</u>	<u>R9</u>	<u>R8</u>	<u>R7</u>

10 For SI: R-1 = RSI-0.176228, °C = [(°F)-32]/1.8.

11 a. The R-value of cylindrical piping insulation shall be determined as follows:

12
$$R = (ro(\ln(ro/ri)))/k$$

13 where:

14 R = The interior R-value of the cylindrical piping insulation in Btu x ft2 x °F/h

15 ro = The outer radius of the piping insulation in inches

16 ri = The inner radius of the piping insulation in inches

17 k = the thermal conductivity of the insulation material in Btu x in/h x ft2 x °F

18 **Section R403.5.3 Drain water heat recovery units.**

19 Section R403.5.3 – Revise Section R403.5.3 to read as follows:

20 **R403.5.3 Drain water heat recovery units.** Where installed, drain water heat recovery units
 21 shall have a minimum efficiency of 40 percent if installed for equal flow or a minimum

1 efficiency of 52 percent if installed for unequal flow. Drain water heat recovery units shall
 2 comply with CSA B55.2 and be tested and labeled in accordance with CSA B55.1. Potable
 3 water-side pressure loss of drain water heat recovery units shall be less than 3 psi (20.7 kPa)
 4 for individual units connected to 1 or 2 showers. Potable water-side pressure loss of drain water
 5 heat recovery units shall be less than 2 psi (13.8 kPa) for individual units connected to 3 or
 6 more showers.

7 **Section R403.5.5 Supply of service hot water.**

8 Section R403.5.5 – Add Section R403.5.5, Table R403.5.5, Section R403.5.5.1, Table R403.5.5.1,
 9 Sections R403.5.5.1.1, R403.5.5.2, R403.5.5.3, and R403.5.5.4, and Table R403.5.5.4 to read as
 10 follows:

11 **R403.5.5 Supply of heated water.** In new buildings, heated water supply piping shall be in
 12 accordance with one of the following:

13 **1. Maximum allowable pipe length method.** The maximum allowable pipe length from the
 14 nearest source of heated water to the termination of the fixture supply pipe shall be in
 15 accordance with the maximum pipe length in Table R403.5.5. Where the length contains
 16 more than one size of pipe, the largest size shall be used for determining the maximum
 17 allowable length of the piping in Table R403.5.5.

18 **2. Maximum allowable pipe volume method.** The water volume in the piping shall be
 19 calculated in accordance with Table R403.5.5. The maximum volume of hot or tempered
 20 water in the piping to public lavatory faucets shall be 2 ounces. For fixtures other than public
 21 lavatory faucets, the maximum volume shall be 64 ounces for hot or tempered water from
 22 a waterheater or boiler and 24 ounces for hot or tempered water from a circulation loop pipe
 23 or an electrically heat-traced pipe.

24 **3. Drain water heat recovery units.** New buildings shall include a drain water heat recovery
 25 unit in accordance with R403.5.3.

26 **4. Recirculation Systems.** Projects shall include a recirculation system with no more than 0.5
 27 gallon (1.9 liter) storage. The storage limit shall be measured from the point where the
 28 branch feeding the fixture branches off the recirculation loop to the fixture. Recirculation
 29 systems must be based on an occupant-controlled switch or an occupancy sensor, installed
 30 in each bathroom which is located beyond a 0.5 gallon stored-volume range from the water
 31 heater.

32 **Table R403.5.5**
 33 **Pipe Volume and Maximum Piping Lengths**

<u>Nominal Pipe or Tube Size (inch)</u>	<u>VOLUME (Liquid Ounces Per Foot Length)</u>	<u>Maximum Pipe or Tube Length</u>	
		<u>System without a circulation loop or heat- traced line (feet)</u>	<u>System with a circulation loop or heat-traced line (feet)</u>
<u>1/4^a</u>	<u>0.33</u>	<u>50</u>	<u>16</u>
<u>5/16^a</u>	<u>0.5</u>	<u>50</u>	<u>16</u>

<u>3/8^a</u>	<u>0.75</u>	<u>50</u>	<u>16</u>
<u>1/2</u>	<u>1.5</u>	<u>43</u>	<u>16</u>
<u>5/8</u>	<u>2</u>	<u>32</u>	<u>12</u>
<u>3/4</u>	<u>3</u>	<u>21</u>	<u>8</u>
<u>7/8</u>	<u>4</u>	<u>16</u>	<u>6</u>
<u>1</u>	<u>5</u>	<u>13</u>	<u>5</u>
<u>1 1/4</u>	<u>8</u>	<u>8</u>	<u>3</u>
<u>1 1/2</u>	<u>11</u>	<u>6</u>	<u>2</u>
<u>2 or larger</u>	<u>18</u>	<u>4</u>	<u>1</u>

1 a. The flow rate for one-quarter inch (6.35 mm) size pipe or tube is limited to 0.5 gpm (0.032
2 (L/s); for five-sixteenths inch (7.9 mm) size, it is limited to 1 gpm (0.063 L/s); for three-eighths
3 inch (9.5 mm) size, it is limited to 1.5 gpm (0.095 L/s).

4 b. The volume shall be the sum of the internal volumes of pipe, fittings, valves, meters and
5 manifolds between the source of hot water and the termination of the fixture supply pipe.
6 The volume contained within fixture shutoff valves, flexible water supply connectors to a
7 fixture fitting, or a fixture fitting shall not be included in the water volume determination.
8 Where hot or tempered water is supplied by a circulation loop pipe or a heat-traced pipe,
9 the volume shall include the portion of the fitting on the branch pipe that supplies water to
10 the fixture.

11 **Section R403.6 Mechanical ventilation.**

12 Section R403.6 – Revise Section R403.6 to read as follows:

13 **R403.6 Mechanical ventilation.** The buildings and dwelling units complying with Section
14 R402.5.1.1 shall be provided with mechanical ventilation that complies with the requirements
15 of the New York City Mechanical Code, as applicable, or with other approved means of
16 ventilation. Outdoor air intakes and exhausts shall have automatic or gravity dampers that close
17 when the ventilation system is not operating.

18 **Section R403.6.1 Heat or energy recovery ventilation.**

19 Section R403.6.1 – Revise Section R403.6.1 to read as follows:

20 **R403.6.1 Heat or energy recovery ventilation.** Dwelling units shall be provided with a heat
21 recovery or energy recovery ventilation system installed per manufacturer’s instructions.

22 **Exception:** A balanced ventilation system complying with the *New York City Mechanical*
23 *Code* and sections R403.6.1.1 through R403.6.1.3 using the return side of the building’s
24 heating and/or cooling system air handler to supply outdoor air shall be permitted to comply
25 with this section. When the outdoor air supply is ducted to the heating and/or cooling system
26 air handler, the mixed air temperature shall not be less than that permitted by the heating
27 equipment manufacturer’s installation instructions. Heating and/or cooling system air handlers
28 used to distribute outdoor air shall be field-verified to not exceed an efficacy of 45 W/CFM if
29 using furnaces for heating and 58 W/CFM if using other forms of heating. In the balanced

1 system design, an equivalent exhaust air flow rate shall be provided simultaneously by 1 or
 2 more exhaust fans, located remotely from the source of supply air. The balanced system's
 3 exhaust and supply fans shall be interlocked for operation, sized to provide equivalent air flow
 4 at a rate greater than or equal to that determined by Table R403.6.1(1) and shall have their fan
 5 capacities adjusted for intermittent run time per Table R403.6.1(2). Continuous operation of
 6 the balanced ventilation system shall not be permitted.

7 **Section R403.6.1.1 Whole-house mechanical ventilation (balanced ventilation option) system**
 8 **design.**

9 Section R403.6.1.1 – Add new Section R403.6.1.1 to read as follows:

10 **R403.6.1.1 Whole-house mechanical ventilation (balanced ventilation option) system**
 11 **design.** The whole-house ventilation system shall consist of 1 or more supply or exhaust
 12 fans, or a combination of such, and associated ducts and controls. Local exhaust or supply
 13 fans are permitted to serve as such a system. Outdoor air ducts connected to the return side
 14 of an air handler shall be considered as providing supply ventilation.

15 **Section R403.6.1.2 System controls.**

16 Section R403.6.1.2 – Add new Section R403.6.1.2 to read as follows:

17 **R403.6.1.2 System controls.** The whole-house ventilation system shall be provided with
 18 controls that enable manual override.

19 **Section R403.6.1.3 Mechanical ventilation rate.**

20 Section R403.6.1.3 – Add new Section R403.6.1.3 to read as follows:

21 **R403.6.1.3 Mechanical ventilation rate.** The whole-house mechanical ventilation
 22 system is permitted to operate intermittently where the system has controls that enable
 23 operation for not less than 25 percent of each 4-hour segment and the ventilation rate
 24 prescribed in Table R403.6.1 (1) is multiplied by the factor determined in accordance
 25 with Table R403.6.1(2).

26 **Table R403.6.1(1) Continuous Whole-House Mechanical Ventilation System Airflow Rate**
 27 **Requirements.**

28 Table R403.6.1(1) – Add new Table R403.6.1(1) to read as follows:

29
 30 **TABLE R403.6.1(1) CONTINUOUS WHOLE-HOUSE MECHANICAL VENTILATION**
 31 **SYSTEM AIRFLOW RATE REQUIREMENTS**

<u>DWELLING UNIT</u> <u>FLOOR AREA</u> <u>(square feet)</u>	<u>NUMBER OF BEDROOMS</u>				
	<u>0 – 1</u>	<u>2 – 3</u>	<u>4 – 5</u>	<u>6 – 7</u>	<u>> 7</u>
	<u>Airflow in CFM</u>				
<u>< 1,500</u>	<u>30</u>	<u>45</u>	<u>60</u>	<u>75</u>	<u>90</u>
<u>1,501 – 3,000</u>	<u>45</u>	<u>60</u>	<u>75</u>	<u>90</u>	<u>105</u>

<u>3,001 – 4,500</u>	<u>60</u>	<u>75</u>	<u>90</u>	<u>105</u>	<u>120</u>
<u>4,501 – 6,000</u>	<u>75</u>	<u>90</u>	<u>105</u>	<u>120</u>	<u>135</u>
<u>6,001 – 7,500</u>	<u>90</u>	<u>105</u>	<u>120</u>	<u>135</u>	<u>150</u>
<u>> 7,500</u>	<u>105</u>	<u>120</u>	<u>135</u>	<u>150</u>	<u>165</u>

For SI: 1 square foot = 0.0929 m², 1 cubic foot per minute = 0.0004719 m³/s

Table R403.6.1(2) Intermittent Whole-House Mechanical Ventilation Rate Factors.

Table R403.6.1(2) – Add new Table R403.6.1(2) to read as follows:

TABLE R403.6.1(2) INTERMITTENT WHOLE-HOUSE MECHANICAL VENTILATION RATE FACTORS^{a,b}

<u>RUN-TIME PERCENTAGE IN EACH</u>	<u>25%</u>	<u>33%</u>	<u>50%</u>	<u>66%</u>	<u>75%</u>	<u>100%</u>
<u>4-HOUR</u>						
<u>SEGMENT</u>						
<u>Factor^a</u>	<u>4</u>	<u>3</u>	<u>2</u>	<u>1.5</u>	<u>1.3</u>	<u>1.0</u>

a. For ventilation system run time values between those given, the factors are permitted to be determined by interpolation.

b. Extrapolation beyond the table is prohibited.

Section R403.6.3 Testing.

Section R403.6.3 – Revise Section R403.6.3 to read as follows:

R403.6.3 Testing. Mechanical ventilation systems shall be tested and verified to provide the minimum ventilation flow rates required by Section R403.6 in accordance with ANSI/RESNET/ICC 380. Testing shall be conducted by an approved agency. A written report of the results of the test shall be signed by the party conducting the test and provided to the building official.

Exceptions:

1. Kitchen range hoods that are ducted to the outside with ducting having a diameter of 6-inches (152.4 mm) or larger, a length of 10 feet (3048 mm) or less duct, and not more than 2 90-degree (1.57 rad) elbows or equivalent shall not require testing.
2. A test by an approved agency shall not be required where the ventilation system has an integrated diagnostic tool used for airflow measurement and a user interface that communicates the installed airflow rate.
3. Where tested in accordance with Section R403.6.4, testing of each mechanical ventilation system is not required.

Section R403.8 Systems serving multiple dwelling units.

1 Section R403.8 – Revise Section R403.8 to read as follows:

2 **R403.8 Systems serving multiple dwelling units.** Except for systems complying with Section
3 R403.9, systems serving multiple dwelling units shall comply with Sections C403, C404, and
4 C408 of the *New York City Energy Conservation Code* instead of Section R403.

5 **Exception:** Systems complying with Section R403.9.

6 **SECTION R404**

7 **SYSTEMS**

8 **Section R404.1.2 Exterior lighting power requirements.**

9 Section R404.1.2 – Revise Section R404.1.2 to read as follows:

10 **R404.1.2 Exterior lighting power requirements.** The total exterior connected lighting power
11 shall be not greater than the exterior lighting power allowance calculated in accordance with
12 Section R404.1.3. The total exterior connected lighting power shall be the total maximum rated
13 wattage of all lighting that is powered through the energy service for the building.

14 Exceptions: Lighting used for the following applications shall not be included.

- 15 1. Lighting approved for safety reasons.
- 16 2. Emergency lighting that is automatically off during normal operations.
- 17 3. Exit signs.
- 18 4. Specialized signal, directional and marker lighting associated with transportation.
- 19 5. Lighting for athletic playing areas.
- 20 6. Temporary lighting.
- 21 7. Lighting used to highlight features of art, public monuments and the national flag.
- 22 8. Lighting for water features and swimming pools.
- 23 9. Lighting controlled from within sleeping units and dwelling units.
- 24 10. Lighting of the exterior means of egress as required by the New York City Building
25 Code.

26 **Section R404.2.1 Habitable spaces.**

27 Section R404.2.1 – Revise Section R404.2.1 to read as follows:

1 **R404.2.1 Habitable spaces.** All permanently installed luminaires in habitable spaces shall be
2 controlled with a manual dimmer or with an automatic shutoff control that automatically turns
3 off lights within 15 minutes after all occupants have left the space and shall incorporate a
4 manual control to allow occupants to turn the lights on or off.

5 **Section R404.2.2 Specific locations.**

6 Section R404.2.2 – Revise Section R404.2.2 to read as follows:

7 **R404.2.2 Specific locations.** All permanently installed luminaires in garages, unfinished
8 basements, laundry rooms, and utility rooms shall be controlled by an automatic shutoff control
9 that automatically turns off lights within 15 minutes after all occupants have left the space and
10 shall incorporate a manual control to allow occupants to turn the lights on or off.

11 **Section R404.5 Dwelling unit electrical meter.**

12 Section R404.1 – Revise Section R403.3.3 to read as follows:

13 **R404.5 Dwelling unit electrical meter.** In all buildings having individual dwelling units,
14 provisions shall be made to determine the electrical energy consumed by each unit by
15 separately metering individual dwelling units.

16 **Section R404.6 Electrical vehicle service equipment capable.**

17 Section R404.6 – Add new Section R404.6 to read as follows:

18 **R404.6 Electrical vehicle service equipment capable.** 1- or 2-family dwellings and
19 townhouses with parking area provided on the building site shall provide a 208/240V 40-amp
20 outlet for each dwelling unit or panel capacity and conduit for the future installation of such
21 an outlet. Outlet or conduit termination shall be adjacent to the parking area. For residential
22 occupancies where there is a common parking area, provide either:

23 1. Panel capacity and conduit for the future installation of 208/240V 40-amp
24 outlets for 5 percent of the total parking spaces, but not less than one outlet, or

25 2. 208/240V 40-amp outlets for 5 percent of the total parking spaces, but not less
26 than one outlet.

27 **SECTION R405**

28 **SIMULATED BUILDING PERFORMANCE**

29 **Section R405.2 Simulated building performance compliance.**

30 Section R405.2 – Revise Section R405.2 to read as follows:

31 **R405.2 Simulated building performance compliance.** Compliance based on simulated building

1 performance analysis requires that a building comply with the following:

2 1. The requirements of the sections indicated within Table R405.2.

3 2. The proposed total building thermal envelope thermal conductance (TCp) shall be less than
4 or equal to the required total building thermal envelope TCr using the prescriptive U-factors
5 and F-factors from Table R402.1.2 multiplied by 1.15 in accordance with Equation 4-2 and
6 Section R402.1.5.

7 Equation 4-2 TCProposed design \leq 1.15 \times TCPrescriptive reference design

8 3. The annual site energy use expressed in Btu or Btu per square foot of conditioned floor area
9 of the dwelling unit shall be less than or equal to 80 percent of the annual site energy use
10 expressed in Btu or Btu per square foot of conditioned floor area of the standard reference
11 design. For each dwelling unit with greater than 5000 square feet (464.5 m²) of living space
12 located above grade plane, the annual site energy use expressed in Btu or Btu per square
13 foot of conditioned floor area of the dwelling unit shall be reduced by an additional 5 percent
14 of annual site energy use, expressed in Btu or Btu per square foot of conditioned floor area
15 of the standard reference design.

16 **Section R405.4.2 Residence specifications.**

17 Section R405.4.2 – Revise Section R405.4.2 to read as follows:

18 **R405.4.2 Residence specifications.** The standard reference design, proposed design and as-built
19 dwelling unit shall be configured and analyzed as specified by Table R405.4.2(1). Table
20 R405.4.2(1) shall include, by reference, all notes contained in Table R402.1.3. Proposed U-
21 factors and slab-on-grade F-factors shall be taken from Appendix RF, 2025 NYC ASHRAE 90.1
22 Appendix A, or determined using a method consistent with the ASHRAE Handbook of
23 Fundamentals and shall include the thermal bridging effects of framing materials.

24 **SECTION R408**

25 **ADDITIONAL EFFICIENCY CREDITS**

26 **Section R408.2 Additional energy efficiency credit requirements.**

27 Section R408.2 – Revise Section R408.2 to read as follows:

28 **R408.2 Additional energy efficiency credit requirements.** Residential buildings shall earn not
29 less than 10 credits from not less than 2 measures specified in Table R408.2. 5 additional credits
30 shall be earned for buildings with more than 5000 square feet (464.5 m²) of living space located
31 above grade plane. To earn credit as specified in Table R408.2 for the applicable climate zone,
32 each measure selected for compliance shall comply with the applicable subsections of Section
33 R408. Each dwelling unit or sleeping unit shall comply with the selected measure to earn credit.
34 Interpolation of credits between measures shall not be permitted.

1 **Table R408.2 Additional energy efficiency credit requirements.**

2 Table R408.2 – Revise Table R408.2 to read as follows:

3 **TABLE R408.2 CREDITS FOR ADDITIONAL ENERGY EFFICIENCY**

MEASURE NUMBER	MEASURE DESCRIPTION	Climate Zone 4	Climate Zone 5	Climate Zone 6
		R408.2.1.1(1)	≥ 2.5% Reduction in total TC	1
R408.2.1.1(2)	≥ 5% reduction in total TC	2	2	2
R408.2.1.1(3)	> 7.5% reduction in total TC	2	2	3
R408.2.1.1(4)	> 10% reduction in total TC	3	4	4
R408.2.1.1(5)	> 15% reduction in total TC	4	5	6
R408.2.1.1(6)	> 20% reduction in total TC	5	7	8
R408.2.1.1(7)	> 30% reduction in total TC	8	11	12
R408.2.1.2(1)	U-factor and SHGC for vertical fenestration per Table R408.2.1.2	2	1	1
R408.2.1.4	Reduced air leakage	2	3	NA
R408.2.2(1) ^a	Ground source heat pump	15	15	17
R408.2.2(2) ^a	High Performance Cooling (Option 1)	2	1	1
R408.2.2(3) ^a	High Performance Cooling (Option 2)	2	1	1
R408.2.2(10) ^a	High Performance Heat pump with electric resistance backup (Option 1)	12	NA	NA
R408.2.2(14) ^a	High Performance Heat pump with electric resistance backup (Option 2)	12	12	13
R408.2.3(3) ^a	Electric water heaters (Option 1)	7	4	3
R408.2.3(4) ^a	Electric water heaters (Option 2)	6	4	3
R408.2.3(5)(a) ^a	Electric water heaters (Option 3)	6	5	4
R408.2.3(5)(b) ^a	Electric water heaters (Option 4)	7	5	5
R408.2.3(6) ^a	Electric water heaters (Option 5)	7	4	3
R408.2.3(7)(a) ^a	Solar hot water heating system (Option 1)	9	5	4
R408.2.3(7)(b) ^a	Solar hot water heating system (Option 2)	6	6	5
R408.2.4(1) ^a	Ductless or hydronic thermal distribution	7	10	10
R408.2.4(2) ^a	100% of duct systems in conditioned space	6	9	9
R408.2.4(3) ^a	≥ 80% of ductwork inside conditioned space	5	7	7
R408.2.4(4) ^a	Reduced total duct system leakage	1	1	2
R408.2.5(2) ^a	≤ 2.0 ACH50 with ERV or HRV installed	4	8	5
R408.2.5(4) ^a	≤ 1.5 ACH50 with ERV or HRV installed	6	10	9
R408.2.5(5) ^a	≤ 1.0 ACH50 with ERV or HRV installed	7	12	12
R408.2.6 ^a	Embodied Carbon	1	1	0
R408.2.7	On-site renewable energy measures	11	9	8
R408.2.8 ^a	Demand responsive thermostat	1	1	1

4 NA = Not Applicable.

5 a. Where the measure is selected, each dwelling unit, sleeping unit and common area where the
6 measure is applicable must have the measure installed.

- 1 b. Where multiple heating or cooling systems are installed, credits shall be determined using a
2 weighted average of the square footage served by each system.
3 c. Where the measure is selected, each dwelling unit and sleeping unit must comply with the
4 measure.
5 d. Where the measure is selected, each dwelling unit shall be served by a water heater meeting
6 the applicable requirements. Where multiple service water heating systems are installed, credits
7 shall be determined using a weighted average of the square footage served by each system.
8 e. Eleven credits are available for Climate Zone 4 where the following measure is used: gas
9 furnace and heat pump (Option 3): greater than or equal to 95% AFUE fuel gas furnace and 7.8
10 HSPF2, 15.2 SEER2 and 10.0 EER2 air source heat pump.

11 **Section R408.2.1.3 Roof solar reflectance index.**

12 Section R408.2.1.3 – Revise Section R408.2.1.3 to read as follows:

13 **R408.2.1.3 Roof solar reflectance index. Reserved.**

14 **Section R408.2.1.3.1 Aged solar reflectance..**

15 Section R408.2.1.3.1 – Revise Section R408.2.1.3.1 to read as follows:

16 **R408.2.1.3.1 Aged solar reflectance. Reserved.**

17 **Section R408.2.2 More efficient HVAC equipment performance options.**

18 Section R408.2.2 – Revise Section R408.2.2 to read as follows:

19 **R408.2.2 More efficient HVAC equipment performance options.** Heating and cooling
20 equipment shall meet one of the following measures as applicable for the climate zone where
21 heating and cooling efficiencies are represented by Annual Fuel Utilization Efficiency (AFUE),
22 Coefficient of Performance (COP), Energy Efficiency Ratio (EER and EER2), Heating Season
23 Performance Factor (HSPF2) and Seasonal Energy Efficiency Ratio (SEER2). Where multiple
24 heating or cooling systems are installed serving different zones, credits shall be earned based on
25 the weighted average of square footage of the zone served by the system. HVAC options:
26 1. Ground source heat pump: Greater than or equal to 16.1 EER and 3.1 COP ground source heat
27 pump.
28 2. Cooling (Option 1): Greater than or equal to 15.2 SEER2 and 12.0 EER2 air conditioner.
29 3. Cooling (Option 2): Greater than or equal to 16.0 SEER2 and 12.0 EER2 air conditioner.
30 4. Heat pump (Option 2): Greater than or equal to 8.1 HSPF2 and 15.2 SEER2 air source heat
31 pump capable of meeting a capacity ratio \geq 70 percent of heating capacity at 5°F (-15°C) versus
32 rated heating capacity at 47°F (8.3°C).

33 **Section R408.2.2.1 More efficient HVAC equipment for Climate Zone 4.**

34 Section R408.2.2.1 – Revise Section R408.2.2.1 to read as follows:

35 **R408.2.2.1 More efficient HVAC equipment for Climate Zone 4.** For Climate Zone 4, the
36 following HVAC option shall also apply:

1 1. Heat pump (Option 1): Greater than or equal to 7.8 HSPF2, 15.2 SEER2 and 11.7 EER2 air
2 source heat pump.

3 **Table R408.2.3 Additional energy efficiency credit requirements..**

4 Table R408.2.3 – Revise Table R408.2.3 to read as follows:

5 **TABLE R408.2.3—SERVICE WATER HEATING EFFICIENCIES**

MEASURE NUMBER	WATER HEATER	SIZE AND DRAW PATTERN	TYPE	EFFICIENCY
R408.2.3(3)	Electric water heaters (Option 1)	All storage volumes, low, medium, or high	Integrated HPWH	UEF ≥ 3.30
R408.2.3(4)	Electric water heaters (Option 2)	All storage volumes, low, medium, or high	Integrated HPWH, 120 volt/15 amp circuit	UEF ≥ 2.20
R408.2.3(5)(a)	Electric water heaters (Option 3)	All storage volumes, low, medium, or high	Split-system HPWH	UEF ≥ 2.20
R408.2.3(5)(b)	Electric water heaters (Option 4)	All storage volumes, low, medium, or high	Split-system HPWH	UEF ≥ 3.75
R408.2.3(6)	Electric water heaters (Option 5)	Rated input capacity > 12 kW	—	COP ≥ 3.00
R408.2.3(7)(a)	Solar water heaters (Option 1)	All storage volumes, all draw patterns	Electric backup	SUEF ≥ 3.00
R408.2.3(7)(b)	Solar water heaters (Option 2)	All storage volumes, all draw patterns	Gas backup	SUEF ≥ 1.80

6 For SI: 1 British thermal unit per hour = 0.2931 W.

7 UEF = Uniform Energy Factor, Et = Thermal Efficiency, COP = Coefficient of Performance.

8 **Section R408.2.3.1 Compact hot water distribution system option.**

9 Section R408.2.3.1 – Revise Section R408.2.3.1 to read as follows:

10 **R408.2.3.1 Compact hot water distribution system option. Reserved.**

11 **Section R408.2.3.1.1 Water volume determination.**

12 Section R408.2.3.1.1 – Revise Section R408.2.3.1.1 to read as follows:

13 **R408.2.3.1.1 Water volume determination. Reserved.**

14 **Section R408.2.6 Energy efficient appliances.**

15 Section R408.2.6 – Revise Section R408.2.6 to read as follows:

16 **R408.2.6 Embodied Energy/Carbon Tracking.** Where the following building materials are
17 used, the applicant shall provide documentation as described below in order to obtain a credit
18 for additional energy efficiency:

19 1. Concrete Masonry Units . To obtain a credit for Embodied Energy/Carbon Tracking for
20 Concrete Masonry Units, the applicant shall include the following information as part of
21 the Energy Analysis submitted with the construction documentation:

22 1.1 Environmental Product Declaration (EPD) for the proposed product showing the
23 embodied carbon of the CMU product (Units: Units: kgCO2e/m3)

- 1 1.2 The listed embodied carbon of the CMU product per the EPD (Units: kgCO₂e/m³);
- 2 1.3 The total quantity (Units: m³) of the CMU in the project;
- 3 1.4 The total embodied carbon of CMU (listed embodied carbon multiplied by
4 quantity) in the project versus the baseline embodied carbon of CMU (industry wide
5 baseline embodied carbon multiplied by quantity);
- 6 1.4.1 Industry Wide Baseline Embodied Carbon for Concrete Masonry Unit: 177
7 kgCO₂e/yr
- 8 1.5 The application does NOT need to demonstrate a reduction in embodied carbon
9 from the baseline in order to obtain the credit;
- 10 2. Poured in Place Concrete: To obtain a credit for Embodied Energy/Carbon Tracking for
11 Poured in Place Concrete, the applicant shall include the following information as part of
12 the Energy Analysis submitted with the construction documentation:
- 13 2.1 The type and specified compressive strength (psi) of the poured in place concrete
- 14 2.2 Environmental Product Declaration (EPD) for the proposed concrete showing the
15 embodied carbon of the CMU product (Units: Units: kgCO₂e/m³)
- 16 2.3 The listed embodied carbon of the poured in place concrete per the EPD (Units:
17 kgCO₂e/m³);
- 18 2.4 The total quantity (Units: y³) of the poured in place concrete in the project;
- 19 2.5 The total embodied carbon of poured in place concrete (listed embodied carbon
20 multiplied by quantity) in the project versus the baseline embodied carbon of poured in
21 place concrete (industry wide baseline embodied carbon multiplied by quantity);
- 22 2.5.1 Industry Wide Baseline Embodied Carbon for Poured in Place Concrete (Ready
23 Mix)
- 24 - 0-2500 psi: 175 kgCO₂e/y³
- 25 - 2501-3000 psi: 194 kgCO₂e/y³
- 26 - 3001-4000 psi: 238 kgCO₂e/y³
- 27 - 4001-5000 psi: 289 kgCO₂e/y³
- 28 - 5001-6000 psi: 304 kgCO₂e/y³
- 29 - 6001-8000 psi: 353kgCO₂e/y³

1 2.5.2 Industry Wide Baseline Embodied Carbon for Poured in Place Concrete
2 (Lightweight Concrete)

3 - 0-3000 psi: 365 kgCO₂e/y³

4 - 3001-4000 psi: 417 kgCO₂e/y³

5 - 4001-5000 psi: 461 kgCO₂e/y³

6 2.6 The application does NOT need to demonstrate a reduction in embodied carbon
7 from the baseline in order to obtain the credit;

8 **Table R408.2.6 Minimum Efficiency Requirements: Appliances.**

9 Table R408.2.6 – Delete Table R408.2.6 in its entirety.

10 **Section R408.2.7 Renewable energy.**

11 Section R408.2.7 – Revise Section R408.2.7 to read as follows:

12 **R408.2.7 Renewable energy.** Renewable energy resources shall be permanently installed and
13 have the rated capacity to produce not less than 1.0 watt of on-site renewable energy per square
14 foot of conditioned floor area. To qualify for this option, renewable energy certificate (REC)
15 documentation shall meet the requirements of Section R404.4. This credit is only applicable for
16 renewable energy infrastructure that exceeds the requirements of any current state or local law,
17 rule or regulation..

18 **Section R408.2.7 Renewable energy.**

19 Section R408.2.7 – Revise Section R408.2.7 to read as follows:

20 **R408.2.9 Opaque walls. Reserved.**

21 **CHAPTER R5**

22 **EXISTING BUILDINGS**

23 **SECTION R501**

24 **GENERAL**

25 **Section R501.1 Scope.**

26 Section R501.1 – Revise Section R501.1 to read as follows:

27 **R501.1 Scope.** The provisions of this chapter shall control the alteration, repair, addition, and
28 change of occupancy of existing buildings and structures. This chapter shall not apply to
29 alterations required to comply with new building provisions as determined by Section 28-
30

1 **Section R502.2.2 Heating and cooling systems.**

2 Section R502.2.2 – Revise Section R502.2.2 to read as follows:

3 **R502.2.2 Heating and cooling systems.** New heating, cooling, ventilation systems, and
4 ductwork that are part of an *addition* shall comply with Section R403.

5 **Exception:** Where ductwork from an existing heating and cooling system is extended to
6 an *addition*, Sections R403.3.7 and R403.3.8 shall not be required for those portions of the
7 system that have not been modified.

8 **SECTION R503**

9 **ALTERATIONS**

10 **Section R503.1.1.3 Above-grade wall alterations.**

11 Section R503.1.1.3 – Revise Section R503.1.1.3 to read as follows:

12 **R503.1.1.3 Above-grade wall alterations.** Above-grade wall alterations shall comply with
13 the following, as applicable:

14 1. Where wall cavities are exposed, the exposed cavities shall be insulated to full depth with
15 new or existing insulation that complies with Section R303.1.4 and having a minimum
16 nominal value of R-3.5 per inch. New cavities created shall be insulated in accordance with
17 Section R402.1. An interior vapor retarder shall be provided where required in accordance
18 with Chapter 14 of the New York City Building Code.

19 2. Where exterior wall coverings, recladding, or fenestration are added or replaced for the full
20 extent of any exterior facade of 1 or more elevations of the building, continuous insulation
21 shall be provided where required in accordance with Section R402.1. Where specified, the
22 continuous insulation shall also comply with the requirements of Chapter 14 of the New
23 York City Building Code, as applicable, and manufacturers’ instructions.

24 3. Where new interior finishes or exterior wall coverings are applied to the full extent of any
25 exterior wall assembly of mass construction, insulation shall be provided in accordance with
26 Section R402.1.

27 **Section R503.1.1.4 Floor alterations.**

28 Section R503.1.1.3 – Revise Section R503.1.1.3 to read as follows:

29 **R503.1.1.4 Floor alterations.** Where cavities in a floor or floor overhang are exposed and the
30 floor or floor overhang is part of the building thermal envelope, the cavities shall be insulated
31 to full depth with new or existing insulation that complies with Section R303.1.4. and having
32 a minimum nominal value of R-3.5 per inch. New cavities created in the floor or floor overhang
33 shall comply with Section R402.1. Where an unconditioned below-grade space is changed to

1 conditioned space, floors that are part of the building thermal envelope enclosing such space
2 shall comply with Section R502.

3 **Section R503.1.1.6 Air barrier.**

4 Section R503.1.1.6 – Revise Section R503.1.1.6 to read as follows:

5 **R503.1.1.6 Air barrier.** Altered building thermal envelope assemblies shall be provided with
6 an air barrier in accordance with Section R402.5. The air barrier shall be made continuous with
7 an existing air barrier where present in adjacent assemblies, provided access is unobstructed.
8 Testing requirements of Section R402.5.1.2 shall not be required.

9 **Section R503.1.2 Heating and cooling systems.**

10 Section R503.1.2 – Revise Section R503.1.2 to read as follows:

11 **R503.1.2 Heating and cooling systems.** New heating, cooling, ventilation systems, and
12 ductwork that are part of the alteration shall comply with Section R403 and this section.
13 Alterations to existing heating and cooling systems and ductwork shall comply with this
14 section.

15 **Exception:** Where ductwork from an existing heating and cooling system is extended,
16 Sections R403.3.7 and R403.3.8 shall not be required for those portions of the systems that
17 have not been modified.

18 **Section R503.1.2.1 Ductwork.**

19 Section R503.1.2.1 – Revise Section R503.1.2.1 to read as follows:

20 **R503.1.2.1 Ductwork.** HVAC ductwork newly installed as part of an *alteration* shall
21 comply with Section R403.

22 Exception: Sections R403.3.7 and R403.3.8 shall not be required for those portions of the
23 systems that have not been modified.

24 **Section R503.1.3 Service hot water systems.**

25 Section R503.1.3 – Revise Section R503.1.3 to read as follows:

26 **R503.1.3 Service hot water systems.** New service hot water systems that are part of the
27 alteration shall comply with Section R403.5.

28 **Exception:** Existing buildings complying with this section are exempt if the section requires
29 altering existing systems within the building.

30 **CHAPTER R6**
31 **REFERENCED STANDARDS**

1 APPENDIX RF
2 ALTERNATIVE BUILDING THERMAL ENVELOPE INSULATION R-VALUE
3 OPTIONS

4 SECTION RF102

5 ABOVE-GRADE WALL ASSEMBLIES

6 Section RF101.1 General.

7 Section RF101.1 – Revise Section RF101.1 to read as follows:

8 **RF101.1 General.** This appendix shall be used as a basis to determine alternative building
9 assembly and insulation component R-value solutions that comply with the maximum U-factors
10 and F-factors in Table R402.1.2. Alternative building assembly insulation solutions determined in
11 accordance with this appendix also shall comply with the requirements of Section 1405.3 of the
12 *New York City Building Code.*

13 Section RF102.3 Cold-formed steel frame walls.

14 Section RF102.3 – Revise Section RF102.3 to read as follows:

15 **RF102.3 Cold-formed steel frame walls.** Cold-formed above-grade wall assemblies shall
16 comply with both the cavity insulation and continuous insulation R-values and framing
17 conditions specified by Table RF102.3 where the tabulated U-factors are less than or equal to
18 those needed for compliance with Section R402.1.2. For assemblies not addressed by the
19 conditions of Table RF102.3, U-factors shall be determined by using accepted engineering
20 practice by testing, series path calculation method using the insulation/framing layer
21 adjustment factors in Table RF102.3.1, or in accordance with AISI S250 as modified herein:

22 i. Where the steel-framed wall contains no cavity insulation and uses continuous insulation to
23 satisfy the U-factor maximum, the steel-framed wall member spacing is permitted to be
24 installed at any on-center spacing.

25 ii. Where the steel-framed wall contains framing at 24 inches (609.6 mm)in. on center with a
26 23 percent framing factor or framing at 16 inches (406.4 mm)in. on-center with a 25 percent
27 framing factor, the next lower framing member spacing input values shall be used when
28 calculating using AISI S250.

29 iii. Where the steel-framed wall contains less than 23 percent framing factors, AISI S250 shall
30 be used without any modifications.

31 iv. Where the steel-framed wall contains other than standard C-shape framing members, the AISI
32 S250 calculation option for other than standard C-shape framing is permitted to be used.

33 Table RF102.3 Assembly U-factors for Steel-Frame Walls by Stud Spacing and Framing
34 Factor.

35 Table RF102.3 – Add new Table RF102.3 to read as follows:

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Table RF102.3 Assembly U-factors for Steel-Frame Walls by Stud Spacing and Framing Factor^{a,b}

Cavity Insulation Value	Base Wall U-factor at Framing	Overall U-Factor for Assembly of Base Wall Plus Continuous Insulation (Uninterrupted by Framing or Furring)																			
		Rated R-Value of Continuous Insulation																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	20	25	30	35	40
Steel Framing at 12 in. on Center (25% Framing Factor)—includes framing for tracks, blocking, headers, and jamb and king studs																					
0.9	0.351	0.260	0.206	0.171	0.146	0.127	0.113	0.102	0.092	0.084	0.078	0.072	0.067	0.063	0.059	0.056	0.044	0.036	0.030	0.026	0.023
11	0.156	0.135	0.119	0.106	0.096	0.088	0.081	0.075	0.069	0.065	0.061	0.057	0.054	0.052	0.049	0.047	0.038	0.032	0.027	0.024	0.022
13	0.149	0.130	0.115	0.103	0.094	0.086	0.079	0.073	0.068	0.064	0.060	0.057	0.053	0.051	0.048	0.046	0.037	0.032	0.027	0.024	0.021
15	0.144	0.126	0.112	0.101	0.092	0.084	0.077	0.072	0.067	0.063	0.059	0.056	0.053	0.050	0.048	0.046	0.037	0.031	0.027	0.024	0.021
19	0.137	0.121	0.108	0.097	0.089	0.081	0.075	0.070	0.065	0.061	0.058	0.055	0.052	0.049	0.047	0.045	0.037	0.031	0.027	0.024	0.021
21	0.135	0.119	0.106	0.096	0.088	0.080	0.074	0.069	0.065	0.061	0.057	0.054	0.051	0.049	0.047	0.045	0.036	0.031	0.027	0.024	0.021
25	0.131	0.116	0.104	0.094	0.086	0.079	0.073	0.068	0.064	0.060	0.057	0.054	0.051	0.048	0.046	0.044	0.036	0.031	0.027	0.023	0.021
30	0.127	0.113	0.101	0.092	0.084	0.078	0.072	0.067	0.063	0.059	0.056	0.053	0.050	0.048	0.046	0.044	0.036	0.030	0.026	0.023	0.021
Steel Framing at 16 in. on Center (22% Framing Factor)—includes framing for tracks, blocking, headers, and jamb and king studs																					
0.9	0.350	0.259	0.206	0.171	0.146	0.127	0.113	0.101	0.092	0.084	0.078	0.072	0.067	0.063	0.059	0.056	0.044	0.036	0.030	0.026	0.023
11	0.148	0.129	0.114	0.103	0.093	0.085	0.078	0.073	0.068	0.063	0.060	0.056	0.053	0.051	0.048	0.046	0.037	0.031	0.027	0.024	0.021
13	0.141	0.124	0.110	0.099	0.090	0.083	0.076	0.071	0.066	0.062	0.059	0.055	0.052	0.050	0.047	0.045	0.037	0.031	0.027	0.024	0.021
15	0.136	0.120	0.107	0.097	0.088	0.081	0.075	0.070	0.065	0.061	0.058	0.054	0.052	0.049	0.047	0.045	0.037	0.031	0.027	0.024	0.021
19	0.129	0.114	0.102	0.093	0.085	0.078	0.073	0.068	0.063	0.060	0.056	0.053	0.051	0.048	0.046	0.044	0.036	0.031	0.026	0.023	0.021
21	0.126	0.112	0.100	0.091	0.084	0.077	0.072	0.067	0.063	0.059	0.056	0.053	0.050	0.048	0.046	0.044	0.036	0.030	0.026	0.023	0.021
25	0.122	0.108	0.098	0.089	0.082	0.076	0.070	0.066	0.062	0.058	0.055	0.052	0.049	0.047	0.045	0.043	0.035	0.030	0.026	0.023	0.021
30	0.118	0.105	0.095	0.087	0.080	0.074	0.069	0.065	0.061	0.057	0.054	0.051	0.049	0.047	0.044	0.043	0.035	0.030	0.026	0.023	0.021
Steel Framing at 24 in. on Center (18% Framing Factor)—includes framing for tracks, blocking, headers, and jamb and king studs																					
0.9	0.348	0.258	0.205	0.170	0.145	0.127	0.113	0.101	0.092	0.084	0.078	0.072	0.067	0.063	0.059	0.056	0.044	0.036	0.030	0.026	0.023
11	0.137	0.121	0.108	0.097	0.089	0.081	0.075	0.070	0.065	0.061	0.058	0.055	0.052	0.049	0.047	0.045	0.037	0.031	0.027	0.024	0.021
13	0.130	0.115	0.103	0.093	0.085	0.079	0.073	0.068	0.064	0.060	0.056	0.053	0.051	0.048	0.046	0.044	0.036	0.031	0.027	0.023	0.021
15	0.124	0.110	0.099	0.090	0.083	0.077	0.071	0.066	0.062	0.059	0.055	0.052	0.050	0.047	0.045	0.043	0.036	0.030	0.026	0.023	0.021
19	0.116	0.104	0.094	0.086	0.079	0.073	0.068	0.064	0.060	0.057	0.054	0.051	0.049	0.046	0.044	0.042	0.035	0.030	0.026	0.023	0.021
21	0.113	0.102	0.092	0.084	0.078	0.072	0.067	0.063	0.059	0.056	0.053	0.050	0.048	0.046	0.044	0.042	0.035	0.030	0.026	0.023	0.020
25	0.109	0.098	0.089	0.082	0.076	0.070	0.066	0.062	0.058	0.055	0.052	0.049	0.047	0.045	0.043	0.041	0.034	0.029	0.026	0.023	0.020
30	0.105	0.095	0.086	0.080	0.074	0.069	0.064	0.060	0.057	0.054	0.051	0.049	0.046	0.044	0.042	0.041	0.034	0.029	0.025	0.022	0.020

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Table RF102.3 Assembly U-factors for Steel-Frame Walls by Stud Spacing and Framing Factor^{a,b} (Continued)

Cavity Insulation Value	Base Wall U-factor at Framing	Overall U-Factor for Assembly of Base Wall Plus Continuous Insulation (Uninterrupted by Framing or Furring)																			
		Rated R-Value of Continuous Insulation																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	20	25	30	35	40
Steel Framing at 12 in. on Center (18% Framing Factor)—includes only studs at 12 in. on center and top and bottom tracks																					
0.9	0.348	0.258	0.205	0.170	0.145	0.127	0.113	0.101	0.092	0.084	0.078	0.072	0.067	0.063	0.059	0.056	0.044	0.036	0.030	0.026	0.023
11	0.137	0.121	0.108	0.097	0.089	0.081	0.075	0.070	0.065	0.061	0.058	0.055	0.052	0.049	0.047	0.045	0.037	0.031	0.027	0.024	0.021
13	0.130	0.115	0.103	0.093	0.085	0.079	0.073	0.068	0.064	0.060	0.056	0.053	0.051	0.048	0.046	0.044	0.036	0.031	0.027	0.023	0.021
15	0.124	0.110	0.099	0.090	0.083	0.077	0.071	0.066	0.062	0.059	0.055	0.052	0.050	0.047	0.045	0.043	0.036	0.030	0.026	0.023	0.021
19	0.116	0.104	0.094	0.086	0.079	0.073	0.068	0.064	0.060	0.057	0.054	0.051	0.049	0.046	0.044	0.042	0.035	0.030	0.026	0.023	0.021
21	0.113	0.102	0.092	0.084	0.078	0.072	0.067	0.063	0.059	0.056	0.053	0.050	0.048	0.046	0.044	0.042	0.035	0.030	0.026	0.023	0.020
25	0.109	0.098	0.089	0.082	0.076	0.070	0.066	0.062	0.058	0.055	0.052	0.049	0.047	0.045	0.043	0.041	0.034	0.029	0.026	0.023	0.020
30	0.105	0.095	0.086	0.080	0.074	0.069	0.064	0.060	0.057	0.054	0.051	0.049	0.046	0.044	0.042	0.041	0.034	0.029	0.025	0.022	0.020
Steel Framing at 16 in. on Center (14% Framing Factor)—includes only studs at 16 in. on center and top and bottom tracks																					
0.9	0.346	0.257	0.204	0.170	0.145	0.127	0.112	0.101	0.092	0.084	0.078	0.072	0.067	0.063	0.059	0.056	0.044	0.036	0.030	0.026	0.023
11	0.125	0.111	0.100	0.091	0.083	0.077	0.071	0.067	0.063	0.059	0.056	0.053	0.050	0.048	0.045	0.044	0.036	0.030	0.026	0.023	0.021
13	0.117	0.105	0.095	0.087	0.080	0.074	0.069	0.064	0.061	0.057	0.054	0.051	0.049	0.046	0.044	0.043	0.035	0.030	0.026	0.023	0.021
15	0.111	0.100	0.091	0.083	0.077	0.072	0.067	0.063	0.059	0.056	0.053	0.050	0.048	0.045	0.044	0.042	0.035	0.029	0.026	0.023	0.020
19	0.103	0.093	0.085	0.079	0.073	0.068	0.064	0.060	0.056	0.053	0.051	0.048	0.046	0.044	0.042	0.040	0.034	0.029	0.025	0.022	0.020
21	0.100	0.091	0.083	0.077	0.071	0.066	0.062	0.059	0.055	0.053	0.050	0.048	0.045	0.043	0.042	0.040	0.033	0.029	0.025	0.022	0.020
25	0.095	0.087	0.080	0.074	0.069	0.064	0.060	0.057	0.054	0.051	0.049	0.046	0.044	0.042	0.041	0.039	0.033	0.028	0.025	0.022	0.020
30	0.090	0.083	0.077	0.071	0.066	0.062	0.059	0.055	0.052	0.050	0.047	0.045	0.043	0.042	0.040	0.038	0.032	0.028	0.024	0.022	0.020
Steel Framing at 24 in. on Center (10% Framing Factor)—includes only studs at 24 in. on center and top and bottom tracks																					
0.9	0.344	0.256	0.204	0.169	0.145	0.126	0.112	0.101	0.092	0.084	0.077	0.072	0.067	0.063	0.059	0.056	0.044	0.036	0.030	0.026	0.023
11	0.113	0.101	0.092	0.084	0.078	0.072	0.067	0.063	0.059	0.056	0.053	0.050	0.048	0.046	0.044	0.042	0.035	0.030	0.026	0.023	0.020
13	0.104	0.094	0.086	0.079	0.073	0.068	0.064	0.060	0.057	0.054	0.051	0.049	0.046	0.044	0.042	0.041	0.034	0.029	0.025	0.022	0.020
15	0.098	0.089	0.082	0.076	0.070	0.066	0.062	0.058	0.055	0.052	0.052	0.049	0.047	0.045	0.043	0.041	0.040	0.033	0.028	0.025	0.020
19	0.088	0.081	0.075	0.070	0.065	0.061	0.058	0.055	0.052	0.049	0.047	0.045	0.043	0.041	0.040	0.038	0.032	0.028	0.024	0.022	0.019
21	0.085	0.078	0.073	0.068	0.063	0.060	0.056	0.053	0.051	0.048	0.046	0.044	0.042	0.040	0.039	0.037	0.031	0.027	0.024	0.021	0.019
25	0.080	0.074	0.069	0.064	0.060	0.057	0.054	0.051	0.049	0.046	0.044	0.042	0.041	0.039	0.038	0.036	0.031	0.027	0.024	0.021	0.019
30	0.075	0.070	0.065	0.061	0.058	0.055	0.052	0.049	0.047	0.045	0.043	0.041	0.039	0.038	0.037	0.035	0.030	0.026	0.023	0.021	0.019

a. Refer to Section A9.2(b)(3)(i) for calculation method used to generate table values.

b. The cavity insulation rated RSI-value of 0.16 corresponds to no cavity insulation.

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Table RF102.3 Assembly U-factors for Steel-Frame Walls by Stud Spacing and Framing Factor^{a,b} (Continued)

Cavity Insulation Value	Base Wall U-factor at Framing	Overall U-Factor for Assembly of Base Wall Plus Continuous Insulation (Uninterrupted by Framing or Furring)																			
		Rated R-Value of Continuous Insulation																			
		0.18	0.35	0.53	0.70	0.88	1.06	1.23	1.41	1.59	1.76	1.94	2.11	2.29	2.47	2.64	3.52	4.40	5.28	6.16	7.04
Steel Framing at 300 mm on Center (25% Framing Factor)—includes framing for tracks, blocking, headers, and jamb and king studs																					
0.16	1.99	1.47	1.17	0.97	0.83	0.72	0.64	0.58	0.52	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.25	0.20	0.17	0.15	0.13
1.94	0.89	0.77	0.68	0.60	0.55	0.50	0.46	0.42	0.39	0.37	0.35	0.33	0.31	0.29	0.28	0.27	0.21	0.18	0.16	0.14	0.12
2.29	0.85	0.74	0.65	0.59	0.53	0.49	0.45	0.41	0.39	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.21	0.18	0.15	0.14	0.12
2.64	0.82	0.72	0.64	0.57	0.52	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.30	0.28	0.27	0.26	0.21	0.18	0.15	0.14	0.12
3.35	0.78	0.69	0.61	0.55	0.50	0.46	0.43	0.40	0.37	0.35	0.33	0.31	0.29	0.28	0.27	0.25	0.21	0.18	0.15	0.13	0.12
3.70	0.76	0.67	0.60	0.54	0.50	0.46	0.42	0.39	0.37	0.35	0.33	0.31	0.29	0.28	0.27	0.25	0.21	0.18	0.15	0.13	0.12
4.40	0.74	0.66	0.59	0.53	0.49	0.45	0.42	0.39	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.25	0.21	0.17	0.15	0.13	0.12
5.28	0.72	0.64	0.58	0.52	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.25	0.20	0.17	0.15	0.13	0.12
Steel Framing at 400 mm on Center (22% Framing Factor)—includes framing for tracks, blocking, headers, and jamb and king studs																					
0.16	1.98	1.47	1.17	0.97	0.83	0.72	0.64	0.58	0.52	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.25	0.20	0.17	0.15	0.13
1.94	0.84	0.73	0.65	0.58	0.53	0.48	0.45	0.41	0.38	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.21	0.18	0.15	0.14	0.12
2.29	0.80	0.70	0.63	0.56	0.51	0.47	0.43	0.40	0.38	0.35	0.33	0.31	0.30	0.28	0.27	0.26	0.21	0.18	0.15	0.13	0.12
2.64	0.77	0.68	0.61	0.55	0.50	0.46	0.43	0.40	0.37	0.35	0.33	0.31	0.29	0.28	0.27	0.25	0.21	0.18	0.15	0.13	0.12
3.35	0.73	0.65	0.58	0.53	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.25	0.20	0.17	0.15	0.13	0.12
3.70	0.71	0.63	0.57	0.52	0.48	0.44	0.41	0.38	0.36	0.33	0.32	0.30	0.28	0.27	0.26	0.25	0.20	0.17	0.15	0.13	0.12
4.40	0.69	0.62	0.56	0.51	0.46	0.43	0.40	0.37	0.35	0.33	0.31	0.30	0.28	0.27	0.26	0.24	0.20	0.17	0.15	0.13	0.12
5.28	0.67	0.60	0.54	0.49	0.45	0.42	0.39	0.37	0.34	0.32	0.31	0.29	0.28	0.26	0.25	0.24	0.20	0.17	0.15	0.13	0.12
Steel Framing at 600 mm on Center (18% Framing Factor)—includes framing for tracks, blocking, headers, and jamb and king studs																					
0.16	1.97	1.46	1.16	0.97	0.83	0.72	0.64	0.57	0.52	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.25	0.20	0.17	0.15	0.13
1.94	0.78	0.68	0.61	0.55	0.50	0.46	0.43	0.40	0.37	0.35	0.33	0.31	0.29	0.28	0.27	0.25	0.21	0.18	0.15	0.13	0.12
2.29	0.74	0.65	0.58	0.53	0.48	0.45	0.41	0.39	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.25	0.20	0.17	0.15	0.13	0.12
2.64	0.70	0.63	0.56	0.51	0.47	0.43	0.40	0.38	0.35	0.33	0.31	0.30	0.28	0.27	0.26	0.25	0.20	0.17	0.15	0.13	0.12
3.35	0.66	0.59	0.53	0.49	0.45	0.42	0.39	0.36	0.34	0.32	0.31	0.29	0.28	0.26	0.25	0.24	0.20	0.17	0.15	0.13	0.12
3.70	0.64	0.58	0.52	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.25	0.24	0.20	0.17	0.15	0.13	0.12
4.40	0.62	0.56	0.51	0.47	0.43	0.40	0.37	0.35	0.33	0.31	0.30	0.28	0.27	0.26	0.24	0.23	0.19	0.17	0.14	0.13	0.12
5.28	0.59	0.54	0.49	0.45	0.42	0.39	0.36	0.34	0.32	0.31	0.29	0.28	0.26	0.25	0.24	0.23	0.19	0.16	0.14	0.13	0.11

c. Refer to Section A9.2(b)(3)(i) for calculation method used to generate table values.

d. The cavity insulation rated RSI-value of 0.16 corresponds to no cavity insulation.

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Table RF102.3 Assembly U-factors for Steel-Frame Walls by Stud Spacing and Framing Factor^{a,b} (Continued)

Cavity Insulation Value	Base Wall U-factor at Framing	Overall U-Factor for Assembly of Base Wall Plus Continuous Insulation (Uninterrupted by Framing or Furring)																			
		Rated R-Value of Continuous Insulation																			
		0.18	0.35	0.53	0.70	0.88	1.06	1.23	1.41	1.59	1.76	1.94	2.11	2.29	2.47	2.64	3.52	4.40	5.28	6.16	7.04
Steel Framing at 300 mm on Center (18% Framing Factor)—includes only studs at 300 mm on center and top and bottom tracks																					
0.16	1.97	1.46	1.16	0.97	0.83	0.72	0.64	0.57	0.52	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.25	0.20	0.17	0.15	0.13
1.94	0.78	0.68	0.61	0.55	0.50	0.46	0.43	0.40	0.37	0.35	0.33	0.31	0.29	0.28	0.27	0.25	0.21	0.18	0.15	0.13	0.12
2.29	0.74	0.65	0.58	0.53	0.48	0.45	0.41	0.39	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.25	0.20	0.17	0.15	0.13	0.12
2.64	0.70	0.63	0.56	0.51	0.47	0.43	0.40	0.38	0.35	0.33	0.31	0.30	0.28	0.27	0.26	0.25	0.20	0.17	0.15	0.13	0.12
3.35	0.66	0.59	0.53	0.49	0.45	0.42	0.39	0.36	0.34	0.32	0.31	0.29	0.28	0.26	0.25	0.24	0.20	0.17	0.15	0.13	0.12
3.70	0.64	0.58	0.52	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.25	0.24	0.20	0.17	0.15	0.13	0.12
4.40	0.62	0.56	0.51	0.47	0.43	0.40	0.37	0.35	0.33	0.31	0.30	0.28	0.27	0.26	0.24	0.23	0.19	0.17	0.14	0.13	0.12
5.28	0.59	0.54	0.49	0.45	0.42	0.39	0.36	0.34	0.32	0.31	0.29	0.28	0.26	0.25	0.24	0.23	0.19	0.16	0.14	0.13	0.11
Steel Framing at 400 mm on Center (14% Framing Factor)—includes only studs at 400 mm on center and top and bottom tracks																					
0.16	1.96	1.46	1.16	0.96	0.82	0.72	0.64	0.57	0.52	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.25	0.20	0.17	0.15	0.13
1.94	0.71	0.63	0.57	0.52	0.47	0.44	0.41	0.38	0.36	0.33	0.32	0.30	0.28	0.27	0.26	0.25	0.20	0.17	0.15	0.13	0.12
2.29	0.67	0.60	0.54	0.49	0.45	0.42	0.39	0.37	0.34	0.32	0.31	0.29	0.28	0.26	0.25	0.24	0.20	0.17	0.15	0.13	0.12
2.64	0.63	0.57	0.52	0.47	0.44	0.41	0.38	0.36	0.33	0.32	0.30	0.28	0.27	0.26	0.25	0.24	0.20	0.17	0.15	0.13	0.12
3.35	0.58	0.53	0.48	0.45	0.41	0.39	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.25	0.24	0.23	0.19	0.16	0.14	0.13	0.11
3.70	0.57	0.51	0.47	0.44	0.40	0.38	0.35	0.33	0.31	0.30	0.28	0.27	0.26	0.25	0.24	0.23	0.19	0.16	0.14	0.13	0.11
4.40	0.54	0.49	0.45	0.42	0.39	0.36	0.34	0.32	0.31	0.29	0.28	0.26	0.25	0.24	0.23	0.22	0.19	0.16	0.14	0.12	0.11
5.28	0.51	0.47	0.43	0.40	0.38	0.35	0.33	0.31	0.30	0.28	0.27	0.26	0.25	0.24	0.23	0.22	0.18	0.16	0.14	0.12	0.11
Steel Framing at 600 mm on Center (10% Framing Factor)—includes only studs at 600 mm on center and top and bottom tracks																					
0.16	1.95	1.45	1.16	0.96	0.82	0.72	0.64	0.57	0.52	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.25	0.20	0.17	0.15	0.13
1.94	0.64	0.57	0.52	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.25	0.24	0.20	0.17	0.15	0.13	0.12
2.29	0.59	0.54	0.49	0.45	0.42	0.39	0.36	0.34	0.32	0.31	0.29	0.28	0.26	0.25	0.24	0.23	0.19	0.16	0.14	0.13	0.11
2.64	0.55	0.51	0.46	0.43	0.40	0.37	0.35	0.33	0.31	0.30	0.28	0.27	0.26	0.24	0.23	0.22	0.19	0.16	0.14	0.13	0.11
3.35	0.50	0.46	0.43	0.40	0.37	0.35	0.33	0.31	0.29	0.28	0.27	0.25	0.24	0.23	0.22	0.22	0.18	0.16	0.14	0.12	0.11
3.70	0.48	0.45	0.41	0.38	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.25	0.24	0.23	0.22	0.21	0.18	0.15	0.14	0.12	0.11
4.40	0.45	0.42	0.39	0.37	0.34	0.32	0.31	0.29	0.28	0.26	0.25	0.24	0.23	0.22	0.21	0.21	0.17	0.15	0.13	0.12	0.11
5.28	0.43	0.40	0.37	0.35	0.33	0.31	0.29	0.28	0.27	0.25	0.24	0.23	0.22	0.22	0.21	0.20	0.17	0.15	0.13	0.12	0.11

e. Refer to Section A9.2(b)(3)(i) for calculation method used to generate table values.

f. The cavity insulation rated RSI-value of 0.16 corresponds to no cavity insulation.

1 **Table RF102.3.1 Effective Insulation/Framing Layer R-Values for Wall Insulation Installed**
 2 **Between Steel Framing.**

3 Table RF102.3.1 – Add new Table RF102.3.1 to read as follows:

4 **Table RF102.3.1 Effective Insulation/Framing Layer R-Values for Wall Insulation**
 5 **Installed Between Steel Framing**

<u>Nominal Depth of Cavity, in.</u>	<u>Actual Depth of Cavity, in.</u>	<u>Rated R-Value of Air Space or Insulation</u>	<u>Effective Framing/Cavity R-Value at 16 in. on Center</u>	<u>Effective Framing/Cavity R-Value at 24 in. on Center</u>
<u>Empty Cavity, No Insulation</u>				
<u>4</u>	<u>3.5</u>	<u>R-0.91</u>	<u>0.79</u>	<u>0.91</u>
<u>Insulated Cavity</u>				
<u>4</u>	<u>3.5</u>	<u>R-11</u>	<u>5.5</u>	<u>6.6</u>
<u>4</u>	<u>3.5</u>	<u>R-13</u>	<u>6.0</u>	<u>7.2</u>
<u>4</u>	<u>3.5</u>	<u>R-15</u>	<u>6.4</u>	<u>7.8</u>
<u>6</u>	<u>6.0</u>	<u>R-19</u>	<u>7.1</u>	<u>8.6</u>
<u>6</u>	<u>6.0</u>	<u>R-21</u>	<u>7.4</u>	<u>9.0</u>
<u>8</u>	<u>8.0</u>	<u>R-25</u>	<u>7.8</u>	<u>9.6</u>

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1 § 28-1001.2.2 New York city amendments to the New York State-specific version of
2 ASHRAE 90.1.

3 2025 NYC ASHRAE 90.1

4 Section 3.1.1 Occupancy.

5 Section 3.1.1 – Add new Section 3.1.1 to read as follows:

6 **3.1.1 Occupancy.** Occupancy classification and use shall be determined by Chapter 3 of the
7 *New York City Building Code.*

8 Section 3.2 Definitions.

9 Section 3.2 – Delete the definition of “authority having jurisdiction” after the definition of “attic
10 and other roofs.”

11 Section 3.2 – Add the definition of “authority having jurisdiction,” after the definition of “attic
12 and other roofs,” to read as follows:

13 **authority having jurisdiction:** the commissioner or the commissioner's designee.

14 Section 3.2 – Add the definition of “clear-field U-factor,” after the definition of “clear-field
15 thermal bridge,” to read as follows:

16 **clear-field U-factor.** thermal performance factor that accounts for clear-field thermal
17 bridges.

18 Section 3.2 – Add the definition of “demand responsive control,” and “ demand response
19 signal,” after the definition of “demand control ventilation (DCV),” to read as follows:

20 **demand responsive control:** a control capable of receiving and automatically responding to
21 a demand response signal.

22 **demand response signal:** a signal that indicates a price or a request to modify electricity
23 consumption for a limited time period.

24 Section 3.2 – Delete the definition of “labeled” after the definition of “kilowatt (kW).”

25 Section 3.2 – Add the definition of “labeled,” after the definition of “kilowatt (kW),” to read as
26 follows:

27 **labeled:** see Section 28-101.5 of the Administrative Code.

28 Section 3.2 – Add the definition of “pre-engineered metal building,” after the definition of
29 “primary sidelighted area,” to read as follows:

1 **pre-engineered metal building:** a pre-engineered metal building (PEMB) is a structure
2 where the steel components—primary framing, secondary framing, and cladding—are
3 designed and manufactured in a factory according to specific project requirements and then
4 shipped to the construction site for assembly.

5 Section 3.2 – Add the definition of “spandrel panel,” after the definition of “space conditioning
6 category,” to read as follows:

7 **spandrel panel:** an opaque assembly within a fenestration framing system in a wall that is
8 part of the building thermal envelope. Such panels are considered to be a portion of the
9 opaque thermal envelope assembly.

10 **Section 4 Administration and Enforcement.**

11 **Section 4.2.1.1 New Buildings.**

12 Section 4.2.1.1 – Delete Section 4.2.1.1 in its entirety and replace with a new Section 4.2.1.1 to
13 read as follows:

14 **4.2.1.1 New Buildings.** *New buildings* shall comply with Sections 4.2.2 through 4.2.5 and the
15 provisions of:

16 a. Sections 5, “*Building Envelope*”; 6, “*Heating, Ventilating, and Air Conditioning*”; 7,
17 “*Service Water Heating*”; 8, “*Power*”; 9, “*Lighting*”; 10, “*Other Equipment*,” and 11,
18 “*Additional Efficiency Requirements*;

19 b. Section 12, “*Energy Cost Budget Method*”; or

20 c. Normative Appendix G, “*Performance Rating Method*.”

21 When using Normative Appendix G, new buildings, additions to existing buildings, and/or
22 alterations shall comply with Section 4.2.1.1.1 and Section 4.2.1.1.2. Alterations to existing
23 buildings shall comply with Section 4.2.1.1.1.

24 **Section 5 Building Envelope.**

25 **Section 5.4.3.1.1.**

26 Section 5.4.3.1.2 – Delete Section 5.4.3.1.1 in its entirety and replace with a new Section
27 5.4.3.1.1 to read as follows:

28 **5.4.3.1.1.** *New buildings* shall comply with measured air leakage requirements in Section
29 5.4.3.1.4 and continuous air barrier design and installation verification program performed in
30 accordance with Section 5.9.1.2.

31 **Section 5.4.3.1.2.**

32 Section 5.4.3.1.2 – Delete Section 5.4.3.1.2 in its entirety and replace with a new Section

1 5.4.3.1.2 to read as follows:

2 5.4.3.1.2. Reserved

3 **Section 5.4.3.1.4 Measured Air Leakage.**

4 Section 5.4.3.1.4 – Delete Section 5.4.3.1.4 in its entirety and replace with a new Section
5 5.4.3.1.4 to read as follows:

6 **5.4.3.1.4 Measured Air Leakage.** Where measured air leakage is used for compliance, the
7 rate of air leakage of the building envelope shall not exceed 0.35 cfm/ft² (1 L/s/m²) under a
8 pressure differential of 75 Pa (0.30 in. of water), with this air leakage rate normalized by the
9 sum of the above-grade and below-grade building envelope areas of the conditioned space
10 and semiheated space and in accordance with this section.

11 a. Whole-building pressurization testing shall be conducted in accordance with ASTM
12 E3158, ASTM E779, or ASTM E1827. Air leakage shall be measured following a
13 multi-point regression method and then averaged from depressurization and
14 pressurization tests.

15 For buildings greater than 50 000 square feet (4645.2 m²), portions of the building shall
16 be permitted to be tested following the procedures for a guarded test in ASTM E3158,
17 and the measured air leakage shall be area-weighted by the surface areas of the building
18 thermal envelope in each portion. The weighted average tested air leakage shall not be
19 greater than the whole building leakage limit. The following portions of the building shall
20 be tested:

21 1.1 The entire building thermal envelope area of stories that have any
22 conditioned spaces directly under a roof.

23 1.2 The entire building thermal envelope area of stories that have a building
24 entrance, have a floor over unconditioned space, have a loading dock, or are
25 below grade.

26 1.3 Representative above-grade portions of the building totaling not less than
27 25 percent of the wall area enclosing the remaining conditioned space.

28 **Exception to 5.4.3.1.4(a):** Hospitals, museums and other occupancies approved by the
29 commissioner may be permitted to only perform pressurization test to comply with the
30 requirements of this section.

31 b. Where a building contains both conditioned space and semiheated space, compliance
32 shall be shown using one of the following, as applicable:

33 1. Separately for the conditioned space and for the semiheated space, with the air
34 leakage rate for the conditioned space normalized by the exterior building
35 envelope area of the conditioned space and the air leakage rate for the
36 semiheated space normalized by the semiexterior building envelope area of the
37 semiheated space.

38 2. For the conditioned space and for the semiheated space together, with the air
39 leakage rate for the overall space normalized by the sum of the exterior

1 building envelope area and the semiexterior building envelope area minus the
2 semiexterior building envelope area that separates the conditioned space from
3 the semiheated space.

4 c. Reporting shall be in compliance with Section 4.2.5.1.2.

5 **Section 5.5.3 Opaque Elements.**

6 Section 5.5.3 – Delete Section 5.5.3 in its entirety and replace with a new Section 5.5.3 to read as
7 follows:

8 **5.5.3 Opaque Elements.** For all *opaque* elements, compliance with Tables 5.5-4 and 5.5-5 for
9 each class of construction as described in Normative Appendix A, Sections A2 through A8,
10 shall be demonstrated by 1 of the following 2 methods:

11 a. Providing a minimum rated *R-value* of insulation added to the assembly equal to or
12 greater than the insulation minimum R-value required of each insulation component.

13 b. Providing insulation such that the maximum *U-factor*, *C-factor*, or *F-factor* for the entire
14 assembly is not exceeded, as determined by 1 of the following:

15 1. Precalculated values in accordance with Normative Appendix A, Section A1.1.

16 2. Applicant-determined values in accordance with Normative Appendix A, Section A1.2,
17 where such values are approved by the building official.

18 **Exceptions to 5.5.3:**

19 1. For opaque assemblies not complying with the classes of construction as described
20 in Normative Appendix A, Sections A2 through A8, compliance with the maximum
21 U-factors for the “attic and other” or “wood frame and other” opaque element
22 conditions in Tables 5.5-4 and Table 5.5-5 shall be demonstrated by testing or
23 calculations in accordance with Normative Appendix A, Section A9.1, where
24 approved by the building official.

25 2. For multiple assemblies within a single *class of construction* for a single *space*
26 *conditioning category*, compliance shall be shown for either (a) the most restrictive
27 requirement or (b) an area-weighted average *U-factor*, *C-factor*, or *F-factor*.

28 3. When the total area of penetrations from through-the-wall equipment or equipment
29 listed in Table 6.8.1-4 exceeds 1 percent of the opaque above-grade wall area, the
30 mechanical equipment penetration area shall be calculated as a separate wall
31 assembly with a default U-factor of 0.5, and compliance shall be shown with method
32 b of this section. Where mechanical equipment has been tested in accordance with
33 testing standards, and approved by the authority having jurisdiction, the mechanical
34 equipment penetration area may be calculated as a separate wall assembly with the
35 U-factor as determined by such test.

36 4. For opaque assemblies in curtain wall framing or other fenestration framing systems,
37 compliance shall be shown using the effective U-factor values of Table 5.5.3.

38 **Table 5.5.3 Effective U-factors for Spandrel Panels and Glass Curtain Walls^a**

1 Table 5.5.3 – Add a new Table 5.5.3 to read as follows:

2 **Table 5.5.3 Effective U-factors for Spandrel Panels and Glass Curtain Walls^a**

RATED R-VALUE OF INSULATION BETWEEN FRAMING MEMBERS		None	R-4	R-7	R-10	R-15	R-20	R-25	R-30
Frame Type	Spandrel Panel	Default U-factor							
Aluminum without thermal break ^b	Single glass pane, stone, or metal panel	<u>U-0.445</u>	<u>U-0.285</u>	<u>U-0.259</u>	<u>U-0.247</u>	<u>U-0.236</u>	<u>U-0.230</u>	<u>U-0.226</u>	<u>U-0.224</u>
	Double glazing with no low-e coatings	<u>U-0.356</u>	<u>U-0.273</u>	<u>U-0.254</u>	<u>U-0.244</u>	<u>U-0.234</u>	<u>U-0.229</u>	<u>U-0.226</u>	<u>U-0.223</u>
	Triple glazing or double glazing with low-e glass	<u>U-0.313</u>	<u>U-0.263</u>	<u>U-0.249</u>	<u>U-0.241</u>	<u>U-0.233</u>	<u>U-0.228</u>	<u>U-0.225</u>	<u>U-0.223</u>
Aluminum with thermal break ^c	Single glass pane, stone, or metal panel	<u>U-0.429</u>	<u>U-0.243</u>	<u>U-0.212</u>	<u>U-0.197</u>	<u>U-0.184</u>	<u>U-0.176</u>	<u>U-0.172</u>	<u>U-0.169</u>
	Double glazing with no low-e coatings	<u>U-0.328</u>	<u>U-0.228</u>	<u>U-0.205</u>	<u>U-0.193</u>	<u>U-0.182</u>	<u>U-0.175</u>	<u>U-0.171</u>	<u>U-0.168</u>
	Triple glazing or double glazing with low-e glass	<u>U-0.277</u>	<u>U-0.217</u>	<u>U-0.199</u>	<u>U-0.189</u>	<u>U-0.180</u>	<u>U-0.174</u>	<u>U-0.170</u>	<u>U-0.167</u>
Structural glazing ^d	Single glass pane, stone, or metal panel	<u>U-0.428</u>	<u>U-0.217</u>	<u>U-0.180</u>	<u>U-0.161</u>	<u>U-0.145</u>	<u>U-0.136</u>	<u>U-0.130</u>	<u>U-0.126</u>
	Double glazing with no low-e coatings	<u>U-0.316</u>	<u>U-0.199</u>	<u>U-0.172</u>	<u>U-0.157</u>	<u>U-0.143</u>	<u>U-0.135</u>	<u>U-0.129</u>	<u>U-0.126</u>
	Triple glazing or double glazing with low-e glass	<u>U-0.257</u>	<u>U-0.186</u>	<u>U-0.165</u>	<u>U-0.152</u>	<u>U-0.140</u>	<u>U-0.133</u>	<u>U-0.128</u>	<u>U-0.125</u>
No framing or insulation is continuous ^e	Single glass pane, stone, or metal panel	<u>U-0.445</u>	<u>U-0.160</u>	<u>U-0.108</u>	<u>U-0.082</u>	<u>U-0.058</u>	<u>U-0.045</u>	<u>U-0.037</u>	<u>U-0.031</u>
	Double glazing with no low-e coatings	<u>U-0.356</u>	<u>U-0.147</u>	<u>U-0.102</u>	<u>U-0.078</u>	<u>U-0.056</u>	<u>U-0.044</u>	<u>U-0.036</u>	<u>U-0.030</u>
	Triple glazing or double glazing with	<u>U-0.313</u>	<u>U-0.139</u>	<u>U-0.098</u>	<u>U-0.076</u>	<u>U-0.055</u>	<u>U-0.043</u>	<u>U-0.035</u>	<u>U-0.030</u>

	low-e glass								
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- 1 a. Extrapolation outside of the table and interpolation between values in the table shall not be
2 permitted. Assemblies with distance between framing less than 30 inches (762 mm), or
3 not included in the default table, shall have a U-factor determined by testing in
4 compliance with ASTM C1363 or modeling in compliance with ANSI/NFRC 100.
5 Spandrel panel assemblies in the table do not include metal backpans. For designs with
6 metal backpans, multiply the U-factor by 1.20. U-factors for spandrel panels include a
7 three-quarters inch (19.1 mm) air gap and five-eighths inch (15.9 mm) gypsum board with
8 R-value of 0.56 for the interior finish. The gypsum board is assumed to span between the
9 window sill and a channel at the floor.
- 10 b. This frame type shall be used for systems that do not contain a non-metallic element that
11 separates the metal exposed to the exterior from the metal that is exposed to the interior
12 condition.
- 13 c. This frame type shall be used for systems where a urethane or other non-metallic element
14 separates the metal exposed to the exterior from the metal that is exposed to the interior
15 condition.
- 16 d. This frame type shall be used for systems that have no exposed mullion on the interior
17 exterior.
- 18 e. This frame type shall be used for systems where there is no framing, or where the
19 insulation is continuous across and uninterrupted by the framing (also known as mullion
20 wrap).

21 **Table 5.5-4 Building Envelope Requirements for Climate Zone 4 (A,B,C)***

22 Table 5.5-4 – Revise Table 5.5-4 to read as follows:

23 **Table 5.5-4 Building Envelope Requirements for Climate Zone 4 (A,B,C)***

Opaque Elements	Nonresidential		Residential		Semiheated	
	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value	Assembly Maximum	Insulation Min. R-Value
<i>Roofs</i>						
<i>Insulation entirely above deck</i>	U-0.030	R-33 <i>c.i</i>	U-0.030	R-33 <i>c.i.</i>	U-0.093	R-10 <i>c.i.</i>
<i>Pre-Engineered Metal building^a</i>	U-0.035	R-19 + R-11 <i>Ls</i> or or R-25 + R-8 <i>Ls</i>	U-0.035	R-19 + R-11 <i>Ls</i> or R-25 + R-8 <i>Ls</i>	U-0.082	R-19
<i>Attic and other</i>	U-0.020	R-53ca	U-0.020	R-53ca	U-0.034	R-30
<i>Walls, above Grade</i>						

<i>Mass</i>	U-0.099		R-11.2 c.i.	U-0.086		R-13.25 c.i.	U-0.580		NR
<i>Pre-Engineered Metal building</i>	U-0.048		R-13ca + R-14.9 c.i.	U-0.048		R-13ca + R-14.9 c.i.	U-0.162		R-13
<i>Steel-framed</i>	U-0.061		R-13ca + R-8.5 c.i.	U-0.061		R-13ca + R-8.5 c.i.	U-0.124		R-13
<i>Wood-framed and other</i>	U-0.061		R-13ca + R-4.5 c.i. or R-19ca+R-1.5ci	U-0.061		R-13ca + R-4.5 c.i. or R-19ca+R-1.5ci	U-0.089		R-13
<i>Wall, below Grade</i>									
<i>Below-grade wall</i>	C-0.119		R-7.5 c.i.	C-0.092		R-10 c.i.	C-1.140		NR
<i>Floors</i>									
<i>Mass</i>	U-0.057		R-14.6 c.i.	U-0.051		R-16.7 c.i.	U-0.107		R-6.3 c.i.
<i>Steel joist</i>	U-0.033		R-38ca	U-0.033		R-38ca	U-0.052		R-19
<i>Wood-framed and other</i>	U-0.033		R-30ca	U-0.033		R-30ca	U-0.051		R-19
<i>Slab-on-Grade Floors</i>									
<i>Unheated</i>	F-0.520		R-15 for 24 in.	F-0.520		R-15 for 24 in.	F-0.730		NR
<i>Heated</i>	F-0.843		R-20 for 48 in. +%-5 full slab	F-0.63		R-20 for 48 in.+R-5 full slab	F-0.900		R-10 for 24 in.
<i>Opaque Doors</i>									
<i>Swinging</i>	U-0.370			U-0.370			U-0.370		
<i>Nonswinging</i>	U-0.310			U-0.310			U-0.360		
<i>Fenestration</i>	Assembly Max. U	Assembly Max. SHGC	Assembly Min. VT/SHGC	Assembly Max. U	Assembly Max. SHGC	Assembly Min. VT/SHGC	Assembly Max. U	Assembly Max. SHGC	Assembly Min. VT/SHGC
Vertical Fenestration, 0% to 40% of Wall									
<i>Nonmetal framing, all</i>	0.28	0.36	1.10 (for all types)	0.28	0.36	1.10 (for all types)	0.50	NR (for all types)	NR (for all types)
<i>Metal framing, fixed, below 95 ft^c</i>	0.30	0.36		0.30	0.36		0.50		
<i>Metal framing, fixed, above 95 ft^c</i>	0.36	0.36		0.36	0.36		0.50		
<i>Metal framing, operable, below 95 ft^c</i>	0.40	0.33		0.40	0.33		0.65		
<i>Metal framing, operable, above 95 ft^c</i>	0.42	0.33		0.42	0.33		0.65		
<i>Entrance door</i>	0.63	0.33		0.63	0.33		0.77		
Skylight, 0% to 3% of Roof									
<i>All types</i>	0.48	0.38	NR	0.48	0.38	NR	0.75	NR	NR

1 * The following definitions apply: c.i. = continuous insulation (see Section 3.2), ca= cavity

1 insulation, FC = filled cavity (see Section A2.3.2.5), Ls = liner system (see Section A2.3.2.4);
2 NR = no (insulation)requirement.

3 a. When using the R-value compliance method for metal building roofs, a thermal spacer block is
4 required (see Section A2.3.2).

5 b. Exception to Section 5.5.3.2 applies for mass walls above grade.

6 c. Where any portion of the fenestration frame is installed at or above 95 feet (29 m) above
7 grade, the unit may meet the requirements for above 95 feet (29 m).

8 **Section 5.5.4.2.1 Vertical Fenestration Area.**

9 Section 5.5.4.2.1 – Revise Section 5.5.4.2.1 to read as follows:

10 **5.5.4.2.1 Vertical Fenestration Area.** The total vertical fenestration area shall not be greater
11 than that specified in Table 5.5-4.

12 **Exception to 5.5.4.2.1:** Vertical fenestration complying with Section 5.5.4.4.1, Exception 3.

13 **Section 5.5.4.2.2 Maximum Skylight Fenestration Area.**

14 Section 5.5.4.2.2 – Revise Section 5.5.4.2.2 to read as follows:

15 **5.5.4.2.2 Maximum Skylight Fenestration Area.** The total skylight area shall not be greater
16 than that specified in Tables 5.5-4.

17 **Exception to 5.5.4.2.2:** The total skylight area is permitted to be increased to no greater than
18 6 percent of the gross roof area, provided the skylights meet all of the criteria in Section
19 5.5.4.4.2, Exception 1, and the total daylight area under skylights is a minimum of half the
20 floor area of the space.

21 **Section 5.5.4.3 Fenestration U-Factor.**

22 Section 5.5.4.3 – Revise Section 5.5.4.3 to read as follows:

23 **5.5.4.3 Fenestration U-Factor:** Fenestration shall have a U-factor not greater than that
24 specified in Tables 5.5-4.

25 **Exception to 5.5.4.3:** The U-factor for skylights is permitted to be increased to no greater
26 than 0.90 Btu/h·ft²·°F in Climate Zones 0 through 3 and 0.75 Btu/h·ft²·°F in Climate Zones 4
27 through 8, provided the skylights meet all of the criteria in Section 5.5.4.4.2, Exception 1.

28 **Section 5.5.4.4.1 SHGC of Vertical Fenestration.**

29 Section 5.5.4.4.1 – Revise the first sentence of Section 5.5.4.4.1 to read as follows:

30 Vertical fenestration shall have an SHGC not greater than that specified in Table 5.5-4.

31 **Section 5.5.4.4.2 SHGC of Skylights.**

32 Section 5.5.4.4.2 – Revise the first sentence of Section 5.5.4.4.1 to read as follows:

1 Skylights shall have an SHGC not greater than that specified in Table 5.5-4.

2 **Section 5.5.4.5 Fenestration Orientation.**

3 Section 5.5.4.5 – Revise Section 5.5.4.5 to read as follows:

4 **5.5.4.5 Fenestration Orientation.** The *vertical fenestration* shall comply with either (a) or
5 (b):

6 a. For Climate Zones 0 through 8,

$$7 \quad \underline{A_W} \leq (\underline{A_T})/4 \text{ and } \underline{A_E} \leq (\underline{A_T})/4$$

8 b. For Climate Zones 0 through 3,

$$9 \quad \underline{A_W} \times \underline{SHGC_W} \leq (\underline{A_T} \times \underline{SHGC_C})/4 \text{ and}$$

$$10 \quad \underline{A_E} \times \underline{SHGC_E} \leq (\underline{A_T} \times \underline{SHGC_C})/4$$

11 For Climate Zones 4 through 8,

$$12 \quad \underline{A_W} \times \underline{SHGC_W} \leq (\underline{A_T} \times \underline{SHGC_C})/5 \text{ and}$$

$$13 \quad \underline{A_E} \times \underline{SHGC_E} \leq (\underline{A_T} \times \underline{SHGC_C})/5$$

14 where

15 $\underline{A_W}$ = west-oriented *vertical fenestration area*

16 $\underline{A_E}$ = east-oriented *vertical fenestration area*

17 $\underline{A_T}$ = total *vertical fenestration area*

18 $\underline{SHGC_C}$ = *SHGC* criteria in Tables 5.5-4 for each climate zone

19 $\underline{SHGC_E}$ = *SHGC* for east-oriented *fenestration* that complies with Section 5.5.4.4.1

20 $\underline{SHGC_W}$ = *SHGC* for west-oriented *fenestration* that complies with Section 5.5.4.4.1

21 **Exceptions to Section 5.5.4.5:**

22 1. *Vertical fenestration* that complies with Section 5.5.4.4.1, Exception (3).

23 2. *Buildings* with shade on 75% of the east- and west-oriented *vertical fenestration*
24 *areas*

25 from permanent projections, *existing buildings*, existing permanent infrastructure, or
26 topography at 9 a.m. and 3 p.m., respectively, on the summer solstice (June 21 in the
27 north- ern hemisphere).

28 3. *Alterations* and additions with no increase in *vertical fenestration area*.

29 4. *Buildings* where the west-oriented and east-oriented *vertical fenestration area* (as defined
30 in Section 5.5.4.5) does not exceed 20% of the *gross wall area* for each of those façades,
31 and *SHGC* on those façades is no greater than 90% of the criteria in Table 5.5-4.

32 5. *Buildings* in Climate Zone 8.

33 **Section 5.5.4.6 Visible Transmittance/SHGC Ratio.**

34 Section 5.5.4.6 – Revise the first sentence of Section 5.5.4.6 to read as follows:

35 Where automatic daylighting controls are required in accordance with Section 9.4.1.1(e) or
36 (f), *fenestration* shall have a ratio of VT divided by SHGC not less than that specified in
37 Table 5.5-4 for the appropriate *fenestration area*.

38 **Section 5.5.5 Linear Thermal Bridges and Point Thermal Bridges.**

1 Section 5.5.5 – Revise Section 5.5.5 to read as follows:

2 **5.5.5 Linear Thermal Bridges and Point Thermal Bridges.** Where linear thermal bridges
3 and point thermal bridges occur as described in Sections 5.5.5.1 through 5.5.5.5, they shall:

- 4 a. Comply with the applicable requirements of Sections 5.5.5.1 through 5.5.5.5; or
- 5 b. Not exceed the mitigated psi-factors and chi-factors in Table A10.1, where the psi-factors
6 and chi-factors for the thermal bridges are determined in accordance with Normative
7 Appendix A, Section A10.

8 For the purposes of Section 5.5.5, linear elements that are connected to the building
9 structure by a series of point connections shall be permitted to be characterized as linear
10 thermal bridges or as individual point thermal bridges.

11 Exceptions to 5.5.5:

- 12 1. Reserved
- 13 2. Semiheated spaces.
- 14 3. Clear-field thermal bridges.
- 15 4. Thermal bridges in uninsulated assemblies.
- 16 5. Linear and point thermal bridges that have a material thermal conductivity less than 3.0
17 Btu·in/h·ft²·°F.
- 18 6. Alterations to existing buildings other than additions.
- 19 7. Roofs that project over exterior walls.

20 Informative Note: For linear thermal bridges and point thermal bridges that fall under the
21 provisions of Section 4.2 and cannot comply prescriptively with the provisions of Sections
22 5.5.5.1 through 5.5.5.4, projects can use Section 5.5.5.5, Normative Appendix C, or
23 Normative Appendix G.

24 **Section 5.5.5.1.1 Roof Edges.**

25 Section 5.5.5.1.1 – Revise Section 5.5.5.1.1 to read as follows:

26 **5.5.5.1.1 Roof Edges.** At roof edges without parapets or overhangs, the roof insulation and
27 the wall insulation shall comply with the following, as applicable to the location of the
28 insulation:

- 29 a. Where a wall has exterior continuous insulation, the roof insulation shall extend to the
30 exterior of the wall insulation, and the wall insulation shall extend to the roof insulation.

1 b. Where a wall has cavity or integral insulation that represents more than 50 percent of the
2 total wall insulation R-value, the roof-to-wall insulation shall comply with 1 of the
3 following:

4 1. The cavity or integral insulation shall extend to the underside of the roof
5 insulation.

6 2. The cavity or integral insulation shall extend to the underside of the roof deck, and
7 the roof insulation shall extend to the exterior face of the wall. The wall insulation
8 shall be permitted to be interrupted by roof framing members.

9 3. Additional insulation having a rated R-value of insulation not less than R-5 shall
10 extend inward on the underside of the roof deck for not less than 2 feet (609.6
11 mm) and be permitted to be interrupted by roof framing members.

12 4. Insulation having a rated R-value of insulation not less than R-5 shall be placed at
13 the exterior of the roof edge and be located between the bottom plane of the roof
14 insulation and the plane of the bottom of the roof deck.

15 5. The wall insulation values in Tables 5.5-4 shall be adjusted in accordance with
16 Table 5.5.5.1.1-1.6. The roof insulation values in Table 5.5-4 shall be adjusted in
17 accordance with Table 5.5.5.1.1-2.

18 c. Where a mass wall has interior insulation that represents more than 50 percent of the total
19 wall insulation R-value, the interior insulation shall extend to the underside of the roof
20 deck, shall be permitted to be interrupted by framing members, and shall comply with 1
21 of the following:

22 1. Additional insulation having a rated R-value of insulation not less than R-5 shall
23 extend inward on the underside of the roof deck for not less than 2 feet (609.6
24 mm) and be permitted to be interrupted by roof framing members.

25 2. Additional insulation having a rated R-value of insulation not less than R-5 shall
26 be placed at the exterior of the roof edge and be located between the bottom plane
27 of the roof insulation and the plane of the bottom of the roof assembly in contact
28 with the exterior wall.

29 3. The wall insulation values in Table 5.5-4 shall be adjusted in accordance with
30 Table 5.5.5.1.1-1.

31 4. The roof insulation values in Table 5.5-4 shall be adjusted in accordance with
32 Table 5.5.5.1.1-2.

33 Informative Note: See Informative Appendix K, Figure K-1.

34 **Section 5.5.5.1.2 Parapets.**

35 Section 5.5.5.1.2 – Revise Section 5.5.5.1.2 to read as follows:

36 **5.5.5.1.2 Parapets.** At roof edges with parapets, the exterior wall insulation shall comply
37 with 1 or more of the following, as applicable to the location of the insulation and wall
38 assembly:

39 a. Where a wall has exterior continuous insulation, such insulation shall be applied to
40 both vertical sides of the parapet.

41 Informative Note: See Informative Appendix K, Figure K-2(a).

1 b. Where a wall has cavity or integral insulation that represents more than 50 percent of the
2 total wall insulation R-value, the roof to wall intersections at parapets shall comply with
3 1 of the following:

- 4 1. The wall insulation shall extend within the cavity of the parapet not less than the
5 height of the top of the roof insulation. The wall insulation shall be permitted to
6 be interrupted by roof framing members.
- 7 2. Additional insulation having a rated R-value of insulation not less than R-5 shall
8 extend inward on the underside of the roof deck for not less than 2 feet (609.6
9 mm) and be permitted to be interrupted by roof framing members.
- 10 3. Insulation having a rated R-value of insulation not less than R-5 shall be placed at
11 the exterior of the roof edge and be located between the bottom plane of the roof
12 insulation and the plane of the bottom of the roof deck.
- 13 4. The wall insulation values in Table 5.5-4 shall be adjusted in accordance with
14 Table 5.5.5.1.1-1.
- 15 5. The roof insulation values in Table 5.5-4 shall be adjusted in accordance with
16 Table 5.5.5.1.1-2.

17 Informative Note: See Informative Appendix K, Figure K-2(b).

18 c. Where a mass wall has interior insulation that represents more than 50 percent of the total
19 wall insulation R-value, the interior insulation shall extend to the underside of the roof
20 deck, shall be permitted to be interrupted by framing members, and shall comply with 1
21 of the following:

- 22 1. Additional insulation having a rated R-value of insulation not less than R-5 shall
23 extend inward on the underside of the roof deck for not less than 2 feet (609.6
24 mm) and be permitted to be interrupted by roof framing members.
- 25 2. Additional insulation having a rated R-value of insulation not less than R-5 shall
26 be placed at the exterior of the roof edge and be located between the bottom plane
27 of the roof insulation and the plane of the bottom of the roof assembly in contact
28 with the exterior wall.
- 29 3. The wall insulation values in Table 5.5-4 shall be adjusted in accordance with
30 Table 5.5.5.1.1-1.
- 31 4. The roof insulation values in Table 5.5-4 shall be adjusted in accordance with
32 Table 5.5.5.1.1-2.

33 Informative Note: See Informative Appendix K, Figures K-2(c) and K-2(d).

34 **Section 5.5.5.2.1.**

35 Section 5.5.5.2.1 – Revise Section 5.5.5.2.1 to read as follows:

36 **5.5.5.2.1.** Intermediate floor edges that do not serve as balconies or floor overhangs shall
37 comply with the following, as applicable:

- 38 a. Where a wall has exterior continuous insulation, such insulation shall extend continuously
39 past the floor edge.
- 40 b. Where a wall has cavity insulation that represents more than 50 percent of the total
41 wall insulation R-value, the cavity insulation shall extend to the underside of the floor
42 deck and shall be permitted to be interrupted by floor framing members and wall top and
43 bottom plates or tracks.

1 Informative Note: See Informative Appendix K, Figures K-4(a) and K-4(b).

2 c. Where a mass wall has integral insulation that represents more than 50 percent of the total
3 wall insulation R-value, the intermediate floor intersection shall comply with 1 of the
4 following:

5 1. The full thickness of integral insulation shall extend past the floor edge.

6 2. Where the intermediate floor deck extends through the integral insulation,
7 insulation having a rated R-value of insulation not less than R-5 shall be
8 maintained to the full depth of the floor edge on the exterior side of the floor
9 edge.

10 Informative Note: See Informative Appendix K, Figures K-4(c) and K-4(d).

11 d. Where a mass wall has interior insulation that represents more than 50 percent of the total
12 wall insulation R-value, the interior insulation shall extend to the underside of the floor
13 deck, shall be permitted to be interrupted by framing members, and shall comply with 1
14 of the following:

15 1. Additional interior insulation having a rated R-value of insulation not less than R-
16 5 shall cover the full depth of the floor edge. Such insulation shall be permitted to
17 be interrupted by floor framing members. Fire safing applied to the full depth of
18 the floor edge meets this requirement.

19 2. Additional insulation having a rated R-value of insulation not less than R-5 shall
20 cover the full depth of the floor edge on the exterior side of the wall.

21 3. The wall insulation values in Table 5.5-4 shall be adjusted in accordance with
22 Table 5.5.5.2.1.

23 Informative Note: See Informative Appendix K, Figures K-4(e) and K-4(f).

24 e. Where mass walls have not less than 50 percent of the rated R-value of insulation on the
25 exterior side of the wall and the remainder on the interior side, the insulation on the interior side
26 of the wall shall be permitted to be interrupted by an intermediate floor. Informative Note: See
27 Informative Appendix K, Figure K-4(g).

28 **Section 5.7.2 Permit Application Documentation.**

29 Section 5.7.2 – Revise item “c” from Section 5.7.2 to read as follows:

30 c. Identify air leakage compliance. Continuous air barrier compliance with whole-building
31 pressurization testing in accordance with Section 5.4.3.1.4 shall be clearly indicated on the
32 construction documents.

33 **Section 5.7.3.1 Permit Application Documentation.**

34 Section 5.7.3.1 – Revise Section 5.7.3.1 to read as follows:

35 **5.7.3.1 Record Documents.** Construction documents shall require that, within 90 days after the
36 date of building envelope acceptance, record documents be provided to the building owner or the
37 designated representative of the building owner. For new buildings or additions that are 10 000
38 square feet (929 m²) and greater, these documents will be required prior to passing final
39 inspection. Record documents shall include, as a minimum, those items listed in Section 5.7.2,

1 and the following:

2 a. A report complying with Section 4.2.5.1.2 providing the results of continuous air barrier
3 compliance with whole-building pressurization testing in accordance with Section 5.4.3.1.4 and
4 verification of the building envelope in accordance with Section 5.9.1.2.

5 b. Insulation documentation in accordance with Section 5.8.1.11.

6 c. Field inspections reports of project construction showing compliance with continuous air
7 barrier requirements, including proper material handling and storage, use of approved materials
8 and material substitutes, proper material and surface preparation, and air barrier continuity. Air
9 barrier continuity shall be determined by testing or inspecting each type of unique air barrier
10 joint or seam in the building envelope for continuity and defects.

11

12 **Section 5.8.2.2 Labeling of Fenestration and Door Products.**

13 Section 5.8.2.2 – Revise Section 5.8.2.2 to read as follows:

14 **5.8.2.2 Labeling of Fenestration and Door Products.** All manufactured and site-built
15 fenestration and door products shall demonstrate compliance with U-value and SHGC
16 requirements through a third party labeling program recognized by ANSI, ILAC, or
17 MiRA and acceptable to the commissioner, or a signed and dated certificate showing
18 compliance through modeling performed using Lawrence Berkley National Labs
19 WINDOW/THERM software at the sizes and boundary conditions prescribed in NFRC -
20 100/200. The simulation shall be provided by a third party recognized by ANSI, ILAC,
21 MiRa, or an NFRC certified simulator. Air infiltration rate shall be demonstrated by
22 testing to ASTM E283. The test shall be conducted at an independent third-party
23 laboratory recognized by ANSI, ILAC, or MiRa, and shall be less than 5 years old.

24 **Section 6 Heating, Ventilating, and Air Conditioning.**

25 **Section 6.1.4.1.1.**

26 Section 6.1.4.1.1 – Add new Section 6.1.4.1.1 to read as follows:

27 **6.1.4.1.1** Where controls are altered for more than 50 percent of the terminal distribution
28 elements of a space heating or cooling system, the controls for all commonly served terminals
29 and the associated, immediately upstream equipment shall comply with the controls requirements
30 of sections 6.4 and 6.5 as new. Controls for HVAC zones that are altered based on
31 reconfiguration of the associated space, notwithstanding alterations to the HVAC system, shall
32 comply with sections 6.4 and 6.5.

33 Exceptions:

34 1. Controls for terminals located in a space occupied by a different tenant than the altered space.

1 2. Control provisions of sections 6.4 and 6.5 which are impossible to achieve without an
2 alteration of otherwise unaltered non-control elements of the associated plant equipment.

3 3. Alterations of controls limited to relocation of control devices within an HVAC zone where
4 there is no reconfiguration of space.

5 **Section 6.1.4.2.**

6 Section 6.1.4.2 – Revise Section 6.1.4.2 to read as follows:

7 6.1.4.2. New cooling systems installed to serve previously uncooled spaces and new heating
8 systems installed to serve previously unheated spaces shall comply with this section as
9 described in Section 6.2.

10 **Section 6.3.2 Criteria.**

11 Section 6.3.2 – Revise Item “e” from Section 6.3.2 to read as follows:

12 e. Heating (if any) shall be provided by a unitary packaged or split-system heat pump that
13 meets the applicable efficiency requirements shown in Table 6.8.1-2 (heat pumps) or
14 Table 6.8.1-4 (packaged terminal and room air conditioners and heat pumps), a fuel-fired
15 furnace that meets the applicable efficiency requirements shown in Table 6.8.1-5
16 (furnaces, duct furnaces, and unit heaters), or a baseboard system connected to a boiler
17 that meets the applicable efficiency requirements shown in Table 6.8.1-6 (boilers) and
18 Section 6.4.1.6 (buildings with high efficiency space heating gas boiler systems). Heating
19 equipment shall also comply with Section 6.4.14.

20 Section 6.3.2 – Revise Item “h” from Section 6.3.2 to read as follows:

21 h. If a heat pump equipped with auxiliary internal electric resistance heaters is installed,
22 controls shall be provided that prevent supplemental heater operation when the heating
23 load can be met by the heat pump alone during both steady-state operation and setback
24 recovery. Supplemental heater operation is permitted during outdoor coil defrost cycles.
25 The heat pump must be controlled by either (1) a digital or electronic thermostat designed
26 for heat pump use that energizes auxiliary heat only when the heat pump has insufficient
27 capacity to maintain set point or to warm up the space at a sufficient rate or (2) a
28 multistage space thermostat and an outdoor air thermostat wired to energize auxiliary heat
29 only on the last stage of the space thermostat and when outdoor air temperature is less
30 than 17 °F.

31 Exception to 6.3.2(h): Heat pumps that comply with the following:

32 1. Have a minimum efficiency regulated by NAECA.

33 2. Meet the requirements in Table 6.8.1-2.

1 3. Include all usage of internal electric resistance heating.

2 **Section 6.4.1.6 Buildings With High Efficiency Space Heating Gas Boiler Systems.**

3 Section 6.4.1.6 – Add new Section 6.4.1.6 to read as follows:

4 **6.4.1.6 Buildings With High Efficiency Space Heating Gas Boiler Systems.** New
5 buildings where space heating is served by 1 or more gas hot water boilers with a minimum
6 thermal efficiency (Et) of 90 percent when rated in accordance with the test procedures in
7 Table 6.5.4.1 shall comply with this section, unless otherwise approved by the authority
8 having jurisdiction. The hot water distribution system shall be designed so that the coils and
9 other heat exchangers are selected such that at outdoor design conditions, the hot water return
10 temperature entering the boilers is 120°F or less when the boiler is firing.

11 **Section 6.4.4.1.3 Piping Insulation.**

12 Section 6.4.4.1.3 – Remove exception 3 from Section 6.4.4.1.3.

13 **Section 6.5.6.1.2 Spaces Other than Nontransient Dwelling Units.**

14 Section 6.5.6.1.2 – Revise Section 6.5.6.1.2 to read as follows:

15 **6.5.6.1.2 Spaces Other than Nontransient Dwelling Units.** Each fan system serving spaces
16 other than nontransient dwelling units shall have an energy recovery system where the design
17 supply fan airflow rate exceeds the value listed in Tables 6.5.6.1.2-1 and 6.5.6.1.2-2, based
18 on the climate zone and percentage of outdoor air at design airflow conditions. Table
19 6.5.6.1.2-1 shall be used for all ventilation systems that operate less than 8000 hours per year,
20 and Table 6.5.6.1.2-1 shall be used for all ventilation systems that operate 8000 or more
21 hours per year.

22 Exceptions to 6.5.6.1.2:

23 1. Laboratory systems meeting Section 6.5.7.3.

24 2. Systems serving spaces that are not cooled and that are heated to less than 60°F.

25 3. Heating energy recovery where more than 60 percent of the outdoor air heating energy is
26 provided from site-recovered energy or on-site energy in Climate Zones 5 and 6.

27 4. Reserved

28 5. Reserved

29 6. Where the sum of the airflow rates exhausted and relieved within 20 feet (6096 mm) of
30 each other is less than 75 percent of the design ventilation outdoor airflow rate, excluding
31 exhaust air that is any of the following:

32 a. Used for another energy recovery system;

33 b. Not allowed by ASHRAE/ASHE Standard 170 for use in energy recovery systems
34 with leakage potential;

35 c. Prohibited by the New York City Mechanical Code; or

36 d. Of Class 4, as defined in ASHRAE Standard 62.1.

37 7. Systems in Climate Zone 4 requiring dehumidification during heating mode that employ
38 energy recovery and have a minimum SERR of 0.40.

1 8. Systems expected to operate less than 20 hours per week at the outdoor air percentage
2 covered by Table 6.5.6.1.2-1.

3 9. Indoor pool dehumidifiers meeting Section 6.5.6.4.

4 **Section 6.6.2.2 Criteria.**

5 Section 6.6.2.2 – Revise Section 6.6.2.2 to read as follows:

6 **Section 6.7.3.4 System Balancing.**

7 Section 6.7.3.4 – Delete Section 6.7.3.3, Section 6.7.3.3.1, Section 6.7.3.3.2, and Section
8 6.7.3.3.3, and add new Section 6.7.3.3, Section 6.7.3.3.1, Section 6.7.3.4, Section 6.7.3.4.1,
9 Section 6.7.3.4.2, Section 6.7.3.4.3, Section 6.7.3.5, Section 6.7.3.5.1, Section 6.7.3.5.2, Section
10 6.7.3.5.3, Section 6.7.3.5.4, Section 6.7.3.5.4.1, Section 6.7.3.5.4.2, Section 6.7.3.5.5, Section
11 6.7.3.5.5.1, Section 6.7.3.5.5.2, Section 6.7.3.5.5.3, and Section 6.7.3.5.5.4 in their entirety.

12 **6.7.3.3 Mechanical, renewable energy, and service water heating systems**
13 **commissioning and completion requirements.** Prior to passing the final mechanical
14 and plumbing inspections, the approved agency shall provide evidence of mechanical
15 systems commissioning and completion in accordance with the provisions of this
16 section.

17 Construction document notes shall clearly indicate provisions for commissioning and
18 completion requirements in accordance with this section and are permitted to refer to
19 specifications for further requirements. Copies of all documentation shall be given to the
20 owner or owner’s authorized agent and made available to the building official upon request,
21 in accordance with Sections 6.7.3.5.4 and 6.7.3.5.5.

22 Mechanical systems, renewable energy, and service water heating systems shall include
23 at a minimum, but are not limited to, the following heating, ventilating, air conditioning,
24 service water heating, indoor air quality, and refrigeration systems (mechanical and/or
25 passive) and associated controls:

26 a. Heating, cooling, air handling and distribution, ventilation, and exhaust systems,
27 and their related air quality monitoring systems.

28 b. Air, water, and other energy recovery systems.

29 c. Manual or automatic controls, whether local or remote, on energy using systems
30 including but not limited to temperature controls, setback sequences, and
31 occupancy based control, including energy management functions of the building
32 management system.

33 d. Plumbing, including insulation of piping and associated valves, domestic and
34 process water pumping, and mixing systems.

35 e. Mechanical heating systems and service water heating systems.

36 f. Refrigeration systems.

37 g. Renewable energy and energy storage systems.

38 h. Other systems, equipment, and components that are used for heating, cooling, or
39 ventilation and that affect energy use.

40 **Exceptions to 6.7.3.3:**

- 1 1. Mechanical systems and service hot water systems in new buildings,
2 additions, or alterations where either the total mechanical equipment
3 capacity being installed or the total mechanical equipment connected load
4 serving the alteration space is less than 480,000 Btu/h (140.7 kW) cooling
5 capacity and 600,000 Btu/h (175.8 kW) combined service water-heating
6 and space-heating capacity.
- 7 2. Renewable energy systems being installed with a generating capacity of less
8 than 25kW.

9 **6.7.3.3.1 Commissioning Plan.** A commissioning plan shall be developed by an
10 approved agency and shall include the following items:

- 11 a. A narrative description of the activities that will be accomplished during each phase of
12 commissioning, including the personnel intended to accomplish each of the activities.
- 13 b. A listing of the specific equipment, appliances, or systems to be tested, their full
14 sequences of operation, and a description of the tests to be performed, including
15 prerequisite activities and reference to specific checklists or worksheets which are
16 necessary or required by the department.
- 17 c. Functions to be tested, including, but not limited to, calibrations and economizer
18 controls.
- 19 d. Conditions under which the test will be performed. Testing shall affirm winter and
20 summer design conditions and full outside air conditions.
- 21 e. Measurable criteria for performance.

22 **6.7.3.4 System Balancing**

23 **6.7.3.4.1 Systems Adjusting and Balancing.** HVAC systems shall be balanced in
24 accordance with ASHRAE 111, "Testing, Adjusting, and Balancing of Building HVAC
25 Systems," or other *accepted engineering standards* as approved by the department. Air
26 and water flow rates shall be measured and adjusted to deliver final flow rates within the
27 tolerances provided in the product specifications. Test and balance activities shall include air
28 system and hydronic system balancing.

29 **6.7.3.4.2 Air Systems Balancing.** Each supply air outlet and zone terminal device shall be
30 equipped with means for air balancing in accordance with the requirements of
31 Chapter 6 of the New York City Mechanical Code. Discharge dampers used for air-
32 system balancing are prohibited on constant-volume fans and variable-volume fans
33 with motors 10 hp and larger. Air systems shall be balanced in a manner to first
34 minimize throttling losses, then, for fans with system power of greater than 1 hp,
35 fan speed shall be adjusted to meet design flow conditions.

36 **6.7.3.4.3 Hydronic Systems Balancing.** Individual hydronic heating and cooling coils shall
37 be equipped with means for balancing and measuring flow. Hydronic systems shall be
38 proportionately balanced in a manner to first minimize throttling losses, then the pump
39 impeller shall be trimmed or pump speed shall be adjusted to meet design flow conditions.
40 Each hydronic system shall have either the capability to measure pressure across the pump or
41 test ports at each side of each pump.

42 **Exceptions to 6.7.3.4.3:** The following equipment is not required to be equipped with a
43 means for balancing or measuring flow:

- 44 a. Pumps with pump motors of 5 hp or less.

1 b. Where throttling results in no greater than 5 percent of the nameplate horsepower
2 draw above that required if the impeller were trimmed.

3 **6.7.3.5 Functional Performance Testing.** Functional performance testing specified in
4 Sections 6.7.3.5.1 through 6.7.3.5.3 shall be conducted.

5 **6.7.3.5.1 Equipment.** Equipment functional performance testing shall demonstrate the
6 installation and operation of components, systems, and system-to-system interfacing
7 relationships in accordance with approved plans and specifications, such that operation,
8 function, and maintenance serviceability for each of the commissioned systems is
9 confirmed. Testing shall include all modes and sequence of operation, including under
10 full-load, part-load, and the following emergency conditions:

11 a. All modes as described in the sequence of operation.

12 b. Redundant or automatic back-up mode.

13 c. Performance of alarms.

14 d. Mode of operation upon a loss of power and restoration of power.

15 **Exception to 6.7.3.5.1:** Unitary or packaged HVAC equipment listed in Tables 6.8.1-1,
16 6.8.1-2, or 6.8.1-4 that do not require supply air economizers shall only be required to
17 demonstrate functioning under full-load and part-load conditions.

18 **6.7.3.5.2 Controls.** HVAC and service water-heating control systems shall be tested to
19 document that control devices, components, equipment, and systems are calibrated and
20 adjusted and operate in accordance with approved plans and specifications. Sequences of
21 operation shall be functionally tested to document they operate in accordance with
22 approved plans and specifications.

23 **6.7.3.5.3 Economizers.** Air economizers shall undergo a functional test to determine that
24 they operate in accordance with manufacturer’s specifications.

25 **6.7.3.5.4 Preliminary Commissioning Report.** A preliminary report of commissioning test
26 procedures and results shall be completed and certified by the approved agency and provided
27 to the building owner or owner’s authorized agent. The report shall be organized with
28 mechanical and service hot water findings in separate sections to allow independent review.
29 The report shall be identified as “Preliminary Commissioning Report,” shall include the
30 completed Commissioning Compliance Checklist, and shall identify:

31 a. Itemization of deficiencies found during testing required by this section that have not been
32 corrected at the time of report preparation.

33 b. Deferred tests that cannot be performed at the time of report preparation because of
34 climatic conditions.

35 c. Climatic conditions required for performance of the deferred tests.

36 d. Results of functional performance tests.

37 e. Functional performance test procedures used during the commissioning process, including
38 measurable criteria for test acceptance.

39 **6.7.3.5.4.1 Acceptance of Report.** Buildings, or portions thereof, shall not be considered
40 acceptable for a final inspection pursuant to Article 116 of Chapter 1 of Title 28 of the
41 Administrative Code until the building official has received a letter of transmittal from the
42 building owner acknowledging that the building owner or owner’s authorized agent has
43 received the Preliminary Commissioning Report.

44 **6.7.3.5.4.2 Copy of Report.** The building official shall be permitted to require that a copy of
45 the Preliminary Commissioning Report be made available for review by the building official.

1 **6.7.3.5.5 Documentation Requirements.** The construction documents shall specify that the
2 documents described in Sections 6.7.3.5.5.1 through 6.7.2.3.5.3 be provided to the building
3 owner or owner's authorized agent within 90 days of the date of receipt of the certificate of
4 occupancy. The construction documents shall also specify that the Final Commissioning
5 Report be provided to the building owner or owner's authorized agent in accordance with the
6 requirements of Section 6.7.3.5.5.4.

7 **6.7.3.5.5.1 Drawings.** Construction documents shall include the location and performance
8 data on each piece of equipment.

9 **6.7.3.5.5.2 Manuals.** An operating and maintenance manual shall be provided and
10 include all of the following:

- 11 a. Submittal data stating equipment size and selected options for each piece of
12 equipment requiring maintenance.
- 13 b. Manufacturer's operation manuals and maintenance manuals for each piece of
14 equipment requiring maintenance, except equipment not furnished as part of the
15 project. Required routine maintenance actions shall be clearly identified.
- 16 c. Name and address of at least one service agency.
- 17 d. HVAC and service hot water controls system maintenance and calibration
18 information, including wiring diagrams, schematics, and control sequence
19 descriptions. Desired or field-determined set points shall be permanently
20 recorded on control drawings at control devices or, for digital control systems, in
21 system programming instructions.

22 **6.7.3.5.5.3 System Balancing Report.** A written report describing the activities and
23 measurements completed in accordance with Section 6.7.2.3.2.

24 **6.7.3.5.5.4 Final Commissioning Report.** Within 30 months for new buildings 500 000
25 gross square feet (46 451.5 m²) or greater, excluding R-2 occupancies, or within 18
26 months for R-2 occupancies and all other buildings, of the issuance of the certificate of
27 occupancy or letter of completion, an approved agency shall prepare a report of test
28 procedures and results, including test procedures and results performed after occupancy,
29 identified as the "Final Commissioning Report," provide such report to the building
30 owner, and submit a certification to the department with applicable fees in accordance
31 with department rules. The owner of a building 500 000 gross square feet (46 451.5 m²)
32 or greater may apply for an extension of time to the building official based on good
33 cause, in accordance with department rules. Such report shall include the following:

- 34 a. Results of functional performance tests.
- 35 b. Disposition of deficiencies found during testing, including details of corrective
36 measures used or proposed.
- 37 c. Functional performance test procedures used during the commissioning process
38 including measurable criteria for test acceptance, provided herein for
39 repeatability.

40 **Exception to 6.7.3.5.5.4:** Deferred tests that cannot be performed at the time of report
41 preparation due to climatic conditions.

42 **Section 7 Service Water Heating.**

43 **Section 7.2.1 Requirements for All Compliance Paths.**

1 Section 7.2.1 – Revise Section 7.2.1 to read as follows:

2 **7.2.1 Requirements for All Compliance Paths.** Service water heating systems and
3 equipment shall comply with Sections 7.1, “General”; 7.4, “Mandatory Provisions”; 7.7,
4 “Submittals”; Section 6.7.3.3, “Mechanical, renewable energy, and service water heating
5 systems commissioning and completion requirements”; and 7.8, “Product Information.”

6 **Section 7.4.7 Demand responsive water heating.**

7 Section 7.4.7 – Add new Section 7.4.7 to read as follows:

8 **7.4.7 Demand responsive water heating.** Electric storage water heaters with a rated water
9 storage volume of 40 gallons (150L) to 120 gallons (450L) and a nameplate input rating
10 equal to or less than 12kW shall be provided with demand responsive controls in accordance
11 with Table 7.4-3.

12 Exceptions:

- 13 1. Water heaters that provide a hot water delivery temperature of 180°F (82°C) or greater.
- 14 2. Water heaters that comply with Section IV, Part HLW, or Section X of the ASME Boiler
15 and Pressure Vessel Code.
- 16 3. Water heaters that use 3-phase electric power.

17 **Table 7.4-3 Demand Responsive Controls for Water Heating.**

18 Table 7.4-3 – Add new Table 7.4-3 to read as follows:

19 **Table 7.4-3 Demand Responsive Controls for Water Heating**

<u>Equipment Type</u>	<u>Controls</u>	
	<u>Manufactured before 7/1/2025</u>	<u>Manufactured on or after 7/1/2025</u>
<u>Electric storage Water heaters</u>	<u>AHRI Standard 1430 or ANSI/CTA-2045-B Level 1 and also capable of initiating water heating to meet the temperature set point in response to a demand response signal.</u>	<u>AHRI Standard 1430</u>

20 **Section 8 Power.**

21 **Section 8.4.3.1 Monitoring.**

22 Section 8.4.3.1 – Revise Section 8.4.3.1 to read as follows:

23 **8.4.3.1 Monitoring.** Measurement devices shall be installed in new buildings to monitor the
24 electrical energy use for each of the following separately:

1 a. Total electrical energy

2 b. HVAC systems

3 c. Interior lighting

4 d. Exterior lighting

5 e. Receptacle circuits

6 f. Refrigeration systems

7 g. Electric vehicle charging

8 For buildings with tenants, these systems shall be separately monitored for the total building
9 and (excluding shared systems) for each individual tenant.

10 Exception to 8.4.3.1: Where the design load for each of any of the categories (b) through (f)
11 is less than 10 percent of the whole-building load, these categories shall be allowed to be
12 loads combined with other categories.

13 **Section 8.4.3.2 Recording and Reporting.**

14 Section 8.4.3.2 – Revise the exceptions from Section 8.4.3.2 to read as follows:

15 **Exceptions to Sections 8.4.3.1 and 8.4.3.2:**

16 1. Buildings less than 10,000 ft².

17 2. Individual tenant spaces less than 5,000 ft².

18 3. Dwelling units.

19 4. Residential buildings with less than 10,000 ft² of common area.

20 5. Critical equipment and life-safety branches of Article 517 of the *New York City Electrical*
21 *Code.*

22 **Section 8.4.5 Electrification Ready**

23 **Section 8.4.5 – Delete Section 8.4.5.**

24 **Section 8.4.5 Measurement of electrical consumption of tenant spaces in covered buildings.**

25 Section 8.4.5 – Add new Section 8.4.5 to read as follows:

26 **8.4.5 Measurement of electrical consumption of tenant spaces in covered buildings.** Each
27 covered tenant space in a new building shall be equipped with a separate meter or sub-meter
28 to measure the electrical consumption of such space when let or sublet. The terms covered
29 building, meter, sub-meter, tenant space, and covered tenant space shall have the same
30 meanings as defined in Section 28-311.2 of the Administrative Code.

1 **Section 8.4.6 Dwelling unit metering.**

2 Section 8.4.6 – Add new Section 8.4.6 to read as follows:

3 **8.4.6 Dwelling unit metering.** Each dwelling unit located in a Group R-2 building shall have
4 a separate electrical meter.

5 **Section 9 Lighting.**

6 **Section 9.4.1.1 Interior Lighting Controls.**

7 Section 9.4.1.1 – Revise item “g” from Section 9.4.1.1 to read as follows:

8 g. Automatic reduction control (full OFF complies): The general lighting power in the space
9 shall be automatically reduced by at least 50 percent within 15 minutes of all occupants
10 leaving the space. The controls in open plan offices, cafeteria dining areas, and fast food
11 dining areas, that are 300 ft² and greater in area, shall be configured so that general
12 lighting power in each control zone is reduced by not less than 80 percent of the full zone
13 general lighting power in a reasonably uniform illumination pattern within 15 minutes of
14 all occupants leaving that control zone. Control functions that switch control zone lights
15 completely off when the zone is vacant meet this requirement.

16 In offices greater than 300 ft², control zones for general lighting shall:

17 1. Be limited to 600 ft²; and

18 2. Automatically reduce general lighting by at least 80 percent of full power within 15
19 minutes of all occupants leaving a control zone.

20 Section 9.4.1.1 – Revise item “h” from Section 9.4.1.1 to read as follows:

21 h. Automatic full OFF control: All lighting in the space, including lighting connected to
22 emergency circuits, shall be automatically shut off within 15 minutes of all occupants leaving
23 the space. A control device meeting this requirement shall control no more than 5000 ft²,
24 provided that for open plan office spaces or dining spaces, a control device meeting this
25 requirement shall control not greater than 600 ft².

26 Exception to 9.4.1.1(h): The following lighting is not required to be automatically shut off:

27 1. Lighting required for 24/7 operation.

28 2. Lighting in spaces where patient care is rendered.

29 3. General lighting and task lighting in spaces where automatic shutoff would endanger the
30 safety or security of the room or building occupants.

1 4. Lighting load exceeding 0.02 W/ft² multiplied by the gross lighted floor area of the
2 building.

3 **Section 9.4.1.5 Demand responsive lighting controls.**

4 **Section 9.4.1.5 – Add new Section 9.4.1.5 to read as follows:**

5 **9.4.1.5 Demand responsive lighting controls.** Interior general lighting in Group B, E, M,
6 and S occupancies shall have *demand responsive controls* complying with Section 9.4.1.5.1
7 in not less than 75 percent of the interior floor area.

8 Exceptions:

- 9 1. Where the combined interior floor area of Group B, E, M, and S occupancies is less than
10 10 000 square feet (929 m²).
- 11 2. Buildings where a demand response signal is not available from a controlling entity other
12 than the owner.
- 13 3. Parking garages.
- 14 4. Ambulatory care facilities.
- 15 5. Outpatient clinics.
- 16 6. Physician or dental offices.

17 **Section 9.4.1.5.1 Demand responsive lighting controls function.**

18 Section 9.4.1.5.1 – Add new Section 9.4.1.5.1 to read as follows:

19 **9.4.1.5.1 Demand responsive lighting controls function.** *Demand responsive controls for*
20 *lighting shall be capable of the following:*

- 21 1. Automatically reducing the output of controlled lighting to 80 percent or less of full
22 power or light output upon receipt of a *demand response signal*.
- 23 2. Where *high-end trim* has been set, automatically reducing the output of controlled
24 lighting to 80 percent or less of the *high-end trim* setpoint upon receipt of a *demand*
25 *response signal*.
- 26 3. Dimming controlled lights gradually and continuously over a period of not longer than 15
27 minutes to achieve their demand response setpoint.
- 28 4. Returning controlled lighting to its normal operational settings at the end of the demand
29 response period.

1 Exception: Storage rooms and warehouse storage areas shall be permitted to switch off 25
2 percent or more of general lighting power rather than dimming.

3 **Section 9.4.3.1 Lamp and Luminaire Efficacy.**

4 Section 9.4.3.1 – Revise Section 9.4.3.1 to read as follows:

5 **9.4.3.1 Lamp and Luminaire Efficacy.** At least 90 percent of the permanently installed
6 luminaires shall use lamps with an efficacy of at least 75 lm/W or have a total luminaire
7 efficacy of at least 50 lm/W.

8 **Section 9.4.4 Horticultural Lighting.**

9 Section 9.4.4 – Delete Section 9.4.4, Section 9.4.4.1, and Section 9.4.4.2, and add new Section
10 9.4.4 to read as follows:

11 **9.4.4 Horticultural Lighting.** Luminaires in indoor grow spaces and greenhouse buildings
12 used for horticultural lighting shall have a photosynthetic photon efficacy (PPE) of at least
13 2.1 $\mu\text{mol}/\text{J}$. Horticultural lighting in greenhouse spaces and indoor grow spaces shall be
14 controlled by a device that automatically turns off the horticultural lighting at specific
15 programmed times.

16 **Table 9.5.1 Lighting Power Density Allowances Using the Building Area Method.**

17 Table 9.5.1 – Delete Table 9.5.1 and add new Table 9.5.1 to read as follows:

18 **Table 9.5.1 Lighting Power Density Allowances Using the**
19 **Building Area Method**

<u>Building Area Type^a</u>	<u>LPD, W/ft²</u>
<u>Automotive facility</u>	<u>0.64</u>
<u>Convention center</u>	<u>0.64</u>
<u>Courthouse</u>	<u>0.74</u>
<u>Dining: Bar lounge/leisure</u>	<u>0.69</u>
<u>Dining: Cafeteria/fast food</u>	<u>0.66</u>
<u>Dining: Family</u>	<u>0.61</u>
<u>Dormitory</u>	<u>0.52</u>
<u>Exercise center</u>	<u>0.65</u>
<u>Fire station</u>	<u>0.50</u>
<u>Gymnasium</u>	<u>0.67</u>
<u>Health-care clinic</u>	<u>0.68</u>
<u>Hospital</u>	<u>0.86</u>

<u>Hotel/motel</u>	<u>0.53</u>
<u>Library</u>	<u>0.78</u>
<u>Manufacturing facility</u>	<u>0.60</u>
<u>Motion picture theater</u>	<u>0.43</u>
<u>Multifamily</u>	<u>0.46</u>
<u>Museum</u>	<u>0.56</u>
<u>Office</u>	<u>0.62</u>
<u>Parking garage</u>	<u>0.12</u>
<u>Penitentiary</u>	<u>0.65</u>
<u>Performing arts theater</u>	<u>0.82</u>
<u>Police station</u>	<u>0.62</u>
<u>Post office</u>	<u>0.62</u>
<u>Religious facility</u>	<u>0.66</u>
<u>Retail</u>	<u>0.78</u>
<u>School/university</u>	<u>0.67</u>
<u>Sports arena</u>	<u>0.73</u>
<u>Town hall</u>	<u>0.67</u>
<u>Transportation</u>	<u>0.51</u>
<u>Warehouse</u>	<u>0.41</u>
<u>Workshop</u>	<u>0.83</u>

1 a. In cases where both a general *building* area type and a specific *building* area type are listed, the
2 specific *building* area type shall apply.

3 b. Neither the area of the dwelling units nor the wattage of lighting in the dwelling units is
4 counted.

5 **Section 9.5.2.1 Space-by-Space Method of Calculating Interior Lighting Power Allowance.**

6 Section 9.5.2.1 – Revise Item “c” from Section 9.5.2.1 to read as follows:

7 c. Based on the space type selected for each space or subspace, determine the lighting power
8 allowance of each space or subspace by multiplying the calculated area of the space or
9 subspace by the appropriate LPD allowance determined in Section 9.6.1(a). For space
10 types not listed, selection of a reasonable equivalent category shall be permitted. Where a
11 building has unfinished spaces, the lighting power allowance for the unfinished spaces
12 shall be the total connected lighting power for those spaces, or 0.2 watts per square foot,
13 whichever is less.

14 **Table 9.5.2.1-1 Space-by-Space Lighting Power Density Allowances and Minimum Control**

1 **Requirements Using Either Method.**

2 Table 9.5.2.1-1 – Revise Table 9.5.2.1-1 to read as follows:

3

4 **Table 9.5.2.1-1 Space-by-Space Lighting Power Density Allowances and Minimum Control**
5 **Requirements Using Either Method**

<p><u>Informative Note:</u> This table is divided into two sections; this first section covers <i>space</i> types that can be commonly found in multiple <i>building</i> types. The second part of this table covers <i>space</i> types that are typically found in a single <i>building</i> type.</p>			<p><u>The control functions below shall be implemented in accordance with the descriptions found in the referenced paragraphs within Section 9.4.1.1. For each <i>space</i> type:</u></p> <p><u>(1) All REQs shall be implemented.</u></p> <p><u>(2) At least one ADD1 (when present) shall be implemented.</u></p> <p><u>(3) At least one ADD2 (when present) shall be implemented.</u></p>								
			<u>Local Control</u>	<u>Manual ON</u>	<u>Partial ON</u>	<u>Multilevel Lighting Control</u>	<u>Daylight Response Sidelighting</u>	<u>Daylight Response Toplighting</u>	<u>Auto Reduction</u>	<u>Auto Full OFF</u>	<u>Scheduled Shutoff</u>
<u>Common Space Types¹</u>	<u>LPD Allowances, W/ft²</u>	<u>RCR Threshold</u>	<u>9.4.1.1[a]</u>	<u>9.4.1.1[b]</u>	<u>9.4.1.1[c]</u>	<u>9.4.1.1[d]</u>	<u>9.4.1.1[e]</u>	<u>9.4.1.1[f]</u>	<u>9.4.1.1[g]</u>	<u>9.4.1.1[h]</u>	<u>9.4.1.1[i]</u>
<u>Atrium</u>											
<20 ft in height	0.32	NA	REQ	ADD1	ADD1		REQ	REQ		ADD2	ADD2
>20 ft and <40 ft in height	0.41	NA	REQ	ADD1	ADD1		REQ	REQ		ADD2	ADD2
>40 ft in height	0.51	11	REQ	ADD1	ADD1		REQ	REQ		ADD2	ADD2
<u>Audience Seating Area</u>											
Auditorium	0.57	6	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Gymnasium	0.23	6	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Motion picture theater	0.27	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Performing arts theater	1.10	8	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Sports arena	0.27	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2

All other audience seating areas	<u>0.23</u>	<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>		<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>
Banking Activity Area	<u>0.56</u>	<u>6</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>
Classroom/Lecture Hall/Training Room											
Shop classroom	<u>1.17</u>	<u>6</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>		<u>REQ</u>	<u>REQ</u>			<u>REQ</u>
All other classrooms/lecture halls/training rooms	<u>0.72</u>	<u>4</u>	<u>REQ</u>	<u>REQ</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>		<u>REQ</u>	
Computer Room	<u>0.75</u>	<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>
Conference/Meeting/Multipurpose Rooms	<u>0.88</u>	<u>6</u>	<u>REQ</u>	<u>REQ</u> <u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>		<u>REQ</u>	
Control/(Editing Room or Booth)	<u>0.73</u>	<u>6</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>
Copy/Print Room	<u>0.5</u>	<u>6</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>		<u>REQ</u>	
Corridor	<u>0.44</u>	<u>width 8 ft</u>	<u>REQ</u>				<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	<u>ADD2</u>	<u>ADD2</u>
Courtroom	<u>1.06</u>	<u>6</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>
Dining Areas											
Bar/lounge or leisure dining	<u>0.62</u>	<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>
Cafeteria or fast-food dining	<u>0.36</u>		<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>		<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>
Family dining	<u>0.52</u>	<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>
All other dining areas	<u>0.42</u>	<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>
Electrical/Mechanical Room ⁷	<u>0.39</u>	<u>6</u>	<u>REQ</u>				<u>REQ</u>	<u>REQ</u>			
Emergency Vehicle Garage	<u>0.41</u>	<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>		<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>
Equipment Room	<u>0.73</u>		<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>		<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	
Food Preparation Area	<u>0.92</u>	<u>6</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>
Guest Room	<u>0.41</u>	<u>6</u>	See Section 9.4.1.3(b).								
Laboratory											
In or as a classroom	<u>1.04</u>	<u>6</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	<u>ADD2</u>	<u>ADD2</u>
All other laboratories	<u>1.21</u>	<u>6</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>
Laundry/Washing Area	<u>0.43</u>	<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>		<u>ADD2</u> <u>REQ</u>	<u>ADD2</u>
Loading Dock, Interior	<u>0.51</u>	<u>6</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>		<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>

<u>Lobby</u>											
<u>Elevator</u>	<u>0.52</u>	<u>6</u>	<u>REQ</u>				<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>
<u>Hotel</u>	<u>0.48</u>	<u>4</u>	<u>REQ</u>				<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>
<u>Motion picture theater</u>	<u>0.20</u>	<u>4</u>	<u>REQ</u>				<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>
<u>Performing arts theater</u>	<u>0.82</u>	<u>6</u>	<u>REQ</u>				<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	<u>ADD2</u>	<u>ADD2</u>
<u>All other lobbies</u>	<u>0.80</u>	<u>4</u>	<u>REQ</u>				<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	<u>ADD2</u>	<u>ADD2</u>
<u>Locker Room</u>	<u>0.43</u>	<u>6</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>		<u>REQ</u>	
<u>Lounge/Breakroom</u>											
<u>Mother's/wellness room</u>	<u>0.68</u>	<u>6</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>				<u>REQ</u>	
<u>All other lounges/breakrooms</u>	<u>0.44</u>	<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>		<u>REQ</u>	
<u>Office</u>											
<u>Office <150 ft²</u>	<u>0.73</u>	<u>8</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>				<u>REQ</u>	
<u>Office >150 and <300 ft²</u>	<u>0.66</u>	<u>8</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>				<u>REQ</u>	
<u>Offices >300 ft²</u>	<u>0.56</u>	<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	
<u>Parking Garage</u>											
<u>Daylight transition lone</u>	<u>1.06</u>	<u>4</u>				See Section 9.4.1.2.					
<u>All other parking and drive areas</u>	<u>0.11</u>	<u>4</u>				See Section 9.4.1.2.					
<u>Pharmacy Area</u>	<u>1.23</u>	<u>6</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>
<u>Restrooms</u>	<u>0.74</u>	<u>8</u>		<u>ADD1</u>	<u>ADD1</u>		<u>REQ</u>	<u>REQ</u>		<u>REQ</u>	
<u>Sales Area⁴ (For accent lighting, see Section 9.5.2.2[b].)</u>	<u>0.85</u>	<u>6</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>		<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>
<u>Seating Area, General</u>	<u>0.21</u>	<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>		<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>
<u>Security Screening</u>											
<u>Airport bus ship train transportation screening</u>	<u>0.93</u>	<u>6</u>	<u>REQ</u>				<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	
<u>Airport bus ship train transportation screening queue</u>	<u>0.56</u>	<u>6</u>	<u>REQ</u>				<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	
<u>General security screening</u>	<u>0.64</u>	<u>6</u>	<u>REQ</u>				<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	
<u>Stairway The <i>space</i> containing the stairway shall determine the <i>LPD</i></u>											

and control requirements for the stairway.											
Stairwell	0.47	10				REQ	REQ	REQ	REQ	ADD2	ADD2
Storage Room											
< 50 ft ²	0.43	9	REQ	REQ						ADD2	ADD2
≥ 50 ft ²	0.35	6	REQ	ADD1	ADD1		REQ	REQ		REQ	
Vehicular Maintenance Area	0.53	4	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2
Workshop (including workshop classrooms)	1.09	6	REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2

a. Where both a common *space* type and a *building-specific space* type are listed, the *building specific space* type shall apply (see Table 9.5.2.1-2 for *building-specific space* types).

b. *Automatic* daylight responsive controls are mandatory only if the *space* meets the requirements of the specified sections.

Table 9.5.2.1-2 Space-by-Space Lighting Power Density Allowances and Minimum Control Requirements Using Either Method.

Table 9.5.2.1-2 – Revise Table 9.5.2.1-2 to read as follows:

Table 9.5.2.1-2 Space-by-Space Lighting Power Density Allowances and Minimum Control Requirements Using Either Method

<i>Informative Note: This table covers building-specific space types typically found in a single building type. Table 9.5.2.1-1 covers common space types typically found in multiple building types.</i>						<u>The control functions below shall be implemented in accordance with the descriptions found within Section 9.4.1.1. For each space type:</u> (1) All REQs shall be implemented. (2) At least one ADD1 (when present) shall be implemented. (3) At least one ADD2 (when present) shall be implemented.					
			<u>Local Control</u>	<u>Manual ON</u>	<u>Partial Auto ON</u>	<u>Bilevel Multilevel Lighting Control</u>	<u>Daylight Responsive Sidelighting</u>	<u>Daylight Response Toplighting</u>	<u>Auto Reduction</u>	<u>Auto Full OFF</u>	<u>Schedule Shutoff</u>
<u>Building-Specific Space Types^a</u>	<u>LPD Allowances, W/ft²</u>	<u>RCR Threshold</u>	<u>9.4.1.1[a]</u>	<u>9.4.1.1[b]</u>	<u>9.4.1.1[c]</u>	<u>9.4.1.1[d]</u>	<u>9.4.1.1[e]</u>	<u>9.4.1.1[f]</u>	<u>9.4.1.1[g]</u>	<u>9.4.1.1[h]</u>	<u>9.4.1.1[i]</u>
<u>Casino-Gaming Area</u>	-	-	-	-	-	-	-	-	-	-	-

<u>Betting/sportsbook/keno/bingo area</u>	- <u>0.82</u>	<u>5</u>	-	-	-	<u>REQ</u>	-	-	-	<u>ADD2</u>	<u>ADD2</u>
<u>High-limit game area</u>	- <u>1.68</u>	<u>4</u>	-	-	-	<u>REQ</u>	-	-	-	<u>ADD2</u>	<u>ADD2</u>
<u>Slot machine/digital gaming area</u>	- <u>0.54</u>	<u>5</u>	-	-	-	<u>REQ</u>	-	-	-	<u>ADD2</u>	<u>ADD2</u>
<u>Table games area</u>	- <u>1.09</u>	<u>5</u>	-	-	-	<u>REQ</u>	-	-	-	<u>ADD2</u>	<u>ADD2</u>
<u>Convention Center—Exhibit Space</u>	<u>0.5</u>	<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	-	-	<u>REQ</u>
<u>Correctional Facilities</u>	-	-	-	-	-	-	-	-	-	-	-
<u>Audience seating area</u>	- <u>0.56</u>	<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	-	<u>REQ</u>	<u>REQ</u>	-	<u>ADD2</u>	<u>ADD2</u>
<u>Classroom/lecture hall/training room</u>	- <u>0.74</u>	<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	-	-	-
<u>Confinement cells</u>	- <u>0.6</u>	<u>6</u>	<u>REQ</u>	-	-	-	-	-	-	-	<u>REQ</u>
<u>Dining area</u>	- <u>0.35</u>	<u>6</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	-	<u>ADD2</u>	<u>ADD2</u>
<u>Dormitory—Living Quarters</u>	<u>0.46</u>	<u>8</u>	<u>REQ</u>	-	-	-	-	-	-	-	-
<u>Facility for the Visually Impaired²</u> (A facility for the visually impaired is a facility that can be documented as being designed to comply with the light levels in ANS./ES R3-28 and that is or will be licensed by local/state authorities for senior long-term care, adult daycare, senior support, and/or people with special visual needs.)	-	-	-	-	-	-	-	-	-	-	-
<u>Chapel (used primarily by residents)</u>	<u>0.58</u>	<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	-	<u>ADD2</u>	<u>ADD2</u>

<u>Corridor (used primarily by residents)</u>	-	<u>0.71</u>	<u>width</u> <u>8 ft</u>	<u>REQ</u>	-	-	-	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	<u>ADD2</u>	<u>ADD2</u>
<u>Dining (used primarily by residents)</u>	-	<u>1.22</u>	<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD</u> <u>1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>
<u>Lobby</u>	-	<u>1.44</u>	<u>4</u>	<u>REQ</u>	-	-	-	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	<u>ADD2</u>	<u>ADD2</u>
<u>Recreation room/common living room (used primarily by residents)</u>	-	<u>1.2</u>	<u>6</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD</u> <u>1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	-	<u>ADD2</u>	<u>ADD2</u>
<u>Restroom (used primarily by residents)</u>	-	<u>0.96</u>	<u>8</u>	-	-	-	-	<u>REQ</u>	<u>REQ</u>	-	<u>REQ</u>	-
<u>Fire Station—Sleeping Quarters</u>	-	<u>0.19</u>	<u>6</u>	<u>REQ</u>								
<u>Gymnasium/Fitness Center</u>	-			-	-	-	-	-	-	-	-	-
<u>Exercise area</u>	<u>0.50</u>		<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD</u> <u>1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	-	<u>ADD2</u>	<u>ADD2</u>
<u>Playing area</u>	<u>0.75</u>		<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD</u> <u>1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>
<u>Healthcare Facility</u>	-			-	-	-	-	-	-	-	-	-
<u>Control room (MRT/CT/radiology/PET)</u>	-	<u>0.78</u>	<u>8</u>	<u>REQ</u>	<u>REQ</u>	-	<u>REQ</u>	-	-	-	<u>REQ</u>	-
<u>Exam/treatment room</u>	<u>1.16</u>		<u>8</u>	<u>REQ</u>	-	-	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	-	<u>ADD2</u>	<u>ADD2</u>
<u>Hospital corridor</u>	-	<u>0.61</u>	<u>width</u> <u>8 ft</u>	<u>REQ</u>	-	-	-	<u>REQ</u>	<u>REQ</u>	<u>ADD2</u>	<u>ADD2</u>	<u>ADD2</u>
<u>Imaging room</u>	<u>0.94</u>		<u>6</u>	<u>REQ</u>	-	-	<u>REQ</u>	-	-	-	<u>ADD2</u>	<u>ADD2</u>
<u>Lounge</u>	-	<u>0.77</u>	<u>6</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD</u> <u>1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	-	<u>REQ</u>	-
<u>Medical supply room</u>	<u>0.54</u>		<u>6</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD</u> <u>1</u>	-	-	-	-	<u>REQ</u>	
<u>Nursery</u>	<u>0.87</u>		<u>6</u>	<u>REQ</u>	-	-	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	-	<u>ADD2</u>	<u>ADD2</u>
<u>Nurse’s station</u>	<u>0.75</u>		<u>6</u>	<u>REQ</u>	-	-	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	-	<u>ADD2</u>	<u>ADD2</u>
<u>Operating room</u>	<u>1.87</u>		<u>6</u>	<u>REQ</u>	-	-	<u>REQ</u>	-	-	-		

<u>Patient room</u>	<u>0.45</u>	<u>6</u>	<u>REQ</u>	-	-	<u>REQ</u>			-		
<u>Physical therapy room</u>	<u>0.82</u>	<u>6</u>	<u>REQ</u>	-	-	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	-	<u>ADD2</u>	<u>ADD2</u>
<u>Recovery room</u>	<u>0.89</u>	<u>6</u>	<u>REQ</u>	-	-	<u>REQ</u>			-	<u>ADD2</u>	<u>ADD2</u>
<u>Telemedicine</u>	<u>1.44</u>	<u>8</u>	-	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	-	<u>REQ</u>	-
<u>Library</u>	-	-	-	-	-	-	-	-	-	-	-
<u>Reading area</u>	<u>0.77</u>	<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	-	<u>ADD2</u>	<u>ADD2</u>
<u>Stacks</u>	<u>1.18</u>	<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>				<u>REQ</u>	<u>ADD2</u>	<u>ADD2</u>
<u>Manufacturing Facility</u>	-	-	-	-	-	-	-	-	-	-	-
<u>Detailed manufacturing area</u>	<u>0.75</u>	<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>		<u>REQ</u>	<u>REQ</u>	-	<u>ADD2</u>	<u>ADD2</u>
<u>Extra-high bay area (>50 ft floor-to-ceiling height)</u>	<u>0.73</u>	<u>8</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>		<u>REQ</u>	<u>REQ</u>	-	<u>ADD2</u>	<u>ADD2</u>
<u>High bay area (25 to 50 ft floor-to-ceiling height)</u>	<u>0.58</u>	<u>6</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>		<u>REQ</u>	<u>REQ</u>	-	<u>ADD2</u>	<u>ADD2</u>
<u>Low bay area (25 ft floor-to-ceiling height)</u>	<u>0.5</u>	<u>3</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>		<u>REQ</u>	<u>REQ</u>	-	<u>ADD2</u>	<u>ADD2</u>
<u>Museum</u>	-	-	-	-	-	-	-	-	-	-	-
<u>General exhibition area</u>	<u>0.31</u>	<u>6</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	-	<u>ADD2</u>	<u>ADD2</u>
<u>Restoration room</u>	<u>0.77</u>	<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	-	<u>ADD2</u>	<u>ADD2</u>
<u>Performing Arts Theater—Dressing Room</u>	<u>0.35</u>	<u>6</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	-	<u>REQ</u>	-
<u>Post Office—Sorting Area</u>	<u>0.66</u>	<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>		<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	<u>ADD2</u>	<u>ADD2</u>
<u>Religious Facility</u>	-	-	-	-	-	-	-	-	-	-	-
<u>Audience seating area</u>	<u>0.72</u>	<u>4</u>	<u>REQ</u>	-	-	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	-	<u>ADD2</u>	<u>ADD2</u>
<u>Fellowship hall</u>	<u>0.5</u>	<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	-	<u>ADD2</u>	<u>ADD2</u>
<u>Worship/pulpit/choir area</u>	<u>0.75</u>	<u>4</u>	<u>REQ</u>	<u>ADD1</u>	<u>ADD1</u>	<u>REQ</u>	<u>REQ</u>	<u>REQ</u>	-	<u>ADD2</u>	<u>ADD2</u>
<u>Retail Facilities</u>	-	-	-	-	-	-	-	-	-	-	-

<u>Dressing/fitting room</u>	0.45		<u>REQ</u>	<u>ADD1</u>	<u>ADD</u> <u>±</u>	<u>REQ</u>	-	<u>REQ</u>	-	<u>REQ</u>	<u>ADD2</u>
<u>Hair care</u>	0.65	6	<u>REQ</u>	<u>ADD1</u>	-	-	-	-	-	<u>ADD2</u>	<u>ADD2</u>
<u>Mall concourse</u>	0.57	4	<u>REQ</u>	<u>ADD1</u>	<u>ADD</u> <u>1</u>	<u>REQ</u>		<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>
<u>Massage</u>	0.81		<u>REQ</u>	<u>ADD1</u>	<u>ADD</u> <u>1</u>	<u>REQ</u>	-	-	-	<u>ADD2</u>	<u>ADD2</u>
<u>Nail care</u>	0.5	6	<u>REQ</u>	<u>ADD1</u>	<u>ADD</u> <u>1</u>	-	-	-	-	<u>ADD2</u>	<u>ADD2</u>
<u>Sports Arena—Playing Area⁸</u> <u>(Class of play as defined by</u> <u>ANSI/IES RP-6)</u>	-	-	-	-	-	-	-	-	-	-	-
<u>Class I facility</u>	2.26	4	<u>REQ</u>	<u>REQ</u>			<u>REQ</u>	<u>REQ</u>	-		<u>REQ</u>
<u>Class II facility</u>	1.45	4	<u>REQ</u>	<u>REQ</u>			<u>REQ</u>	<u>REQ</u>	-		<u>REQ</u>
<u>Class III facility</u>	1.08	4	<u>REQ</u>	<u>REQ</u>			<u>REQ</u>	<u>REQ</u>	-		<u>REQ</u>
<u>Class IV facility</u>	0.5	4	<u>REQ</u>	<u>ADD1</u>	<u>ADD</u> <u>1</u>		<u>REQ</u>	<u>REQ</u>		<u>ADD2</u>	<u>ADD2</u>

- 1 a. Where both a common space type and a building-specific space type are listed, the building specific space type shall apply (see Table
- 2 9.5.2.1-1 for common space types).
- 3 b. Automatic daylight responsive controls are mandatory only if the space meets the requirements of the specified sections.

1 **Section 9.9.1 Verification and Testing.**

2 Section 9.9.1– Revise Item “b” from Section 9.9.1 to read as follows:

3 b. Automatic Time Switches

4 1. Confirm that the automatic time-switch control is programmed with accurate weekday,
5 weekend, and holiday schedules, as applicable.

6 2. Document for the owner automatic time-switch control programming, including weekday,
7 weekend, and holiday schedules, as well as all setup and preference program settings.

8 3. Verify that correct time and date are properly set in the time switch.

9 4. Verify that any battery backup is installed and energized, as applicable.

10 5. Verify that the override time limit is set to no more than 2 hours.

11 6. Simulate occupied condition. Verify and document the following:

12 i. All lights can be turned on and off by their respective area control switch.

13 ii. The switch only operates lighting in the enclosed space in which the switch is located.

14 7. Simulate unoccupied condition. Verify and document the following:

15 i. All nonexempt lighting turns off.

16 ii. Manual override switch allows only the lights in the enclosed space where the override
17 switch is located to turn on or remain on until the next scheduled shut off occurs.

18 8. Additional testing as specified by the registered design professional.

19 **Section 9.9.1.1 Documentation Requirements.**

20 Section 9.9.1.1 – Add new Section 9.9.1.1 to read as follows:

21 **9.9.1.1 Documentation Requirements.** The construction documents shall specify that the
22 documents described in this section be provided to the building owner or owner’s authorized
23 agent within 90 days of the date of receipt of the certificate of occupancy.

24 **Section 9.9.1.1.1 Drawings.**

25 Section 9.9.1.1.1 – Add new Section 9.9.1.1.1 to read as follows:

26 **9.9.1.1.1 Drawings.** Construction documents shall include the location and catalogue number
27 of each piece of equipment.

28 **Section 9.9.1.1.2 Manuals.**

29 Section 9.9.1.1.2 – Add new Section 9.9.1.1.2 to read as follows:

30 **9.9.1.1.2 Manuals.** An operating and maintenance manual shall be provided and include the
31 following:

32 a. Name and address of not less than 1 service agency for installed equipment.

33 b. A narrative of how each system is intended to operate, including recommended setpoints.

34 c. Submittal data indicating all selected options for each piece of lighting equipment and
35 lighting controls.

36 d. Operation and maintenance manuals for each piece of lighting equipment. Required

1 routine maintenance actions, cleaning, and recommended relamping shall be clearly
2 identified.

3 e. A schedule for inspecting and recalibrating all lighting controls.

4 **Section 9.9.1.1.3 Report.**

5 Section 9.9.1.1.3 – Add new Section 9.9.1.1.3 to read as follows:

6 **9.9.1.1.3 Report.** A report of test results shall be provided and include the following:

7 a. Results of functional performance tests.

8 b. Disposition of deficiencies found during testing, including details of corrective measures
9 used or proposed.

10 **Section 10 Other Equipment.**

11 **Section 10.4.3.5.1 Motor.**

12 Section 10.4.3.5.1 – Add new Section 10.4.3.5.1 to read as follows:

13 **10.4.3.5.1 Motor.** Induction motors with a Class IE2 efficiency rating, as defined by IEC EN
14 60034-30, or alternative technologies, such as permanent magnet synchronous motors that have
15 equal or better efficiency, shall be used.

16 **Section 10.4.3.5.2 Transmission.**

17 Section 10.4.3.5.2 – Add new Section 10.4.3.5.2 to read as follows:

18 **10.4.3.5.2 Transmission.** Transmissions shall not reduce the efficiency of the combined
19 motor/transmission for the Class IE2 motor for elevators with capacities below 4,000 pounds.
20 Gearless machines shall be assumed to have a 100 percent transmission efficiency.

21 **Section 10.4.3.5.3 Drive.**

22 Section 10.4.3.5.3 – Add new Section 10.4.3.5.3 to read as follows:

23 **10.4.3.5.3 Drive.** Potential energy released during motion shall be recovered with a regenerative
24 drive that supplies electrical energy to the building electrical system.

25 **Section 10.4.4.1.1 Regenerative Drive.**

26 Section 10.4.4.1.1 – Add new Section 10.4.4.1.1 to read as follows:

27 **10.4.4.1.1 Regenerative Drive.** An escalator designed either for one-way down operation
28 only or for reversible operation shall have a variable frequency regenerative drive that
29 supplies electrical energy to the building electrical system when the escalator is loaded with
30 passengers whose combined weight exceeds 750 pounds.

31 **Section 10.4.7.2 Recording and Reporting.**

1 Section 10.4.7.2– Revise the exceptions to Section 10.4.7.2 to read as follows:

2 **Exceptions to 10.4.7.1 and 10.4.7.2:**

- 3 1. Buildings or additions less than 10,000 ft².
4 2. Individual tenant spaces less than 5,000 ft².
5 3. Dwelling units.
6 4. Residential buildings with less than 10,000 ft² of common area.
7 5. Fuel used for on-site emergency equipment.

8 **Section 10.4.11 Commercial Kitchen Equipment.**

9 Section 10.4.11 – Add new Section 10.4.11 to read as follows:

10 **10.4.11 Commercial Kitchen Equipment.** Commercial kitchen equipment shall comply with
11 the minimum efficiency requirements of Tables 10.4.11-1 through 10.4.11-5.

12 **Table 10.4.11-1 Minimum Efficiency Requirements: Commercial Fryers**
13 **(This table is intended to be a restatement of the legally binding provisions found in Title**
14 **10 CFR Part 431 included here as a convenience to the users of this code)**

	<u>Heavy-Load Cooking Energy Efficiency</u>	<u>Idle Energy Rate</u>	<u>Test Procedure</u>
<u>Standard Open Deep-Fat Gas Fryers</u>	<u>≥ 50%</u>	<u>≤ 9,000 Btu/hr</u>	<u>ASTM Standard F1361-17</u>
<u>Large Vat Open Deep-Fat Gas Fryers</u>	<u>≥ 50%</u>	<u>≤ 12,000 Btu/hr</u>	-
<u>Standard Open Deep-Fat Electric Fryers</u>	<u>≥ 83%</u>	<u>≤ 800 watts</u>	<u>ASTM Standard F2144-17</u>
<u>Large Vat Open Deep-Fat Electric Fryers</u>	<u>≥ 80%</u>	<u>≤ 1,100 watts</u>	-

15 **Table 10.4.11-2 Minimum Efficiency Requirements: Commercial Hot Food Holding**
16 **Cabinets**

17 **(This table is intended to be a restatement of the legally binding provisions found in Title**
18 **10 CFR Part 431 included here as a convenience to the users of this code)**

<u>Product Interior Volume (Cubic Feet)</u>	<u>Maximum Idle Energy Consumption Rate (Watts)</u>	<u>Test Procedure</u>
--	--	----------------------------------

$0 < V < 13$	$\leq 21.5 V$	ASTM Standard F2140-11
$13 \leq V < 28$	$\leq 2.0 V + 254.0$	
$28 \leq V$	$\leq 3.8 V + 203.5$	

1 **Table 10.4.11-3 Minimum Efficiency Requirements: Commercial Steam Cookers**
2 **(This table is intended to be a restatement of the legally binding provisions found in Title**
3 **10 CFR Part 431 included here as a convenience to the users of this code)**

<u>Type</u>	<u>Fuel</u>	<u>Pan Capacity</u>	<u>Cooking Energy Efficiency^a</u>	<u>Idle Rate</u>	<u>Test Procedure</u>
Electric Steam		3-pan	50%	400 watts	ASTM Standard F1484-18
		4-pan	50%	530 watts	
		5-pan	50%	670 watts	
		6-pan and larger	50%	800 watts	
Gas Steam		3-pan	38%	6,250 Btu/h	
		4-pan	38%	8,350 Btu/h	
		5-pan	38%	10,400 Btu/h	
		6-pan and larger	38%	12,500 Btu/h	

4 **Table 10.4.11-4 Minimum Efficiency Requirements: Commercial Dishwashers**
5 **(This table is intended to be a restatement of the legally binding provisions found in Title**
6 **10 CFR Part 431 included here as a convenience to the users of this code)**

<u>High Temperature Efficiency Requirements</u>			<u>Low Temperature Efficiency Requirements</u>		
<u>Machine Type</u>	<u>Idle Energy Rate^a</u>	<u>Water Consumption^b</u>	<u>Test Procedure</u>	<u>Idle Energy Rate^a</u>	<u>Water Consumption^b</u>
Under Counter	$\leq 0.50 \text{ kW}$	$\leq 0.86 \text{ GPR}$		$\leq 0.50 \text{ kW}$	$\leq 1.19 \text{ GPR}$
Stationary Single Tank Door	$\leq 0.70 \text{ kW}$	$\leq 0.89 \text{ GPR}$		$\leq 0.60 \text{ kW}$	$\leq 1.18 \text{ GPR}$
Pot, Pan, and Utensil	$\leq 1.20 \text{ kW}$	$\leq 0.58 \text{ GPSF}$		$\leq 1.00 \text{ kW}$	$\leq 0.58 \text{ GPSF}$
Single Tank Conveyor	$\leq 1.50 \text{ kW}$	$\leq 0.70 \text{ GPR}$		$\leq 1.50 \text{ kW}$	$\leq 0.79 \text{ GPR}$
Multiple Tank Conveyor	$\leq 2.25 \text{ kW}$	$\leq 0.54 \text{ GPR}$		$\leq 2.00 \text{ kW}$	$\leq 0.54 \text{ GPR}$
Single Tank Flight Type	Reported	$\text{GPH} \leq 2.975x + 55.00$		Reported	$\text{GPH} \leq 2.975x + 55.00$
Multiple Tank Flight Type	Reported	$\text{GPH} \leq 4.96x + 17.00$		Reported	$\text{GPH} \leq 4.96x + 17.00$

7 a. Idle results shall be measured with the door closed and represent the total idle energy
8 consumed by the machine including all tank heater(s) and controls. Booster heater
9 (internal or external) energy consumption should not be part of this measurement

1 unless it cannot be separately monitored per US EPA Energy Star Commercial
 2 Dishwasher Specification Version 2.0.

3 b. GPR = gallons per rack; GPSF = gallons per square foot of rack; GPH = gallons per
 4 hour; x = sf of conveyer belt (i.e., W*L/min (maximum conveyer speed).

5 **Table 10.4.11-5 Minimum Efficiency Requirements: Commercial Ovens**

6 **(This table is intended to be a restatement of the legally binding provisions found**
 7 **in Title 10 CFR Part 431 included here as a convenience to the users of this code)**

<u>Fuel Type</u>	<u>Classification</u>	<u>Idle Rate</u>	<u>Cooking- Energy Efficiency, %</u>	<u>Test Procedure</u>
<u>Convection Ovens</u>				
<u>Gas</u>	<u>Full-Size</u>	$\leq 12,000 \text{ Btu/h}$	≥ 46	<u>ASTM F1496 - 13</u>
<u>Electric</u>	<u>Half-Size</u>	$\leq 1.0 \text{ Btu/h}$	≥ 71	
	<u>Full-Size</u>	$\leq 1.60 \text{ Btu/h}$		
<u>Combination Ovens</u>				
<u>Gas</u>	<u>Steam Mode</u>	$\leq 200P^a + 6,511$ <u>Btu/h</u>	≥ 41	<u>ASTM F2861 - 17</u>
	<u>Convection Mode</u>	$\leq 150P^a + 5,425$ <u>Btu/h</u>	≥ 56	
<u>Electric</u>	<u>Steam Mode</u>	$\leq 0.133P^a + 0.6400$ <u>kW</u>	≥ 55	
	<u>Convection Mode</u>	$\leq 0.080P^a + 0.4989$ <u>kW</u>	≥ 76	
<u>Rack Ovens</u>				
<u>Gas</u>	<u>Single</u>	$\leq 25,000 \text{ Btu/h}$	≥ 48	<u>ASTM F2093 - 18</u>
	<u>Double</u>	$\leq 30,000 \text{ Btu/h}$	≥ 52	

8 a. P = Pan Capacity: The number of steam table pans the combination oven is able to
 9 accommodate as per the ASTM F1495 – 05 standard specification.

10 **Section 11 Additional Efficiency Requirements.**

11 **Section 11.5.2 Energy Credits Achieved.**

12 Section 11.5.2 – Amend the first paragraph of Section 11.5.2 to read as follows:

13 Energy credits achieved for the project shall be the sum of measure energy credits for individual

1 measures included in the project. Energy credits shall only be counted to satisfy this code section
2 if such systems, equipment, or efficiencies exceed the requirements of any current state or local
3 law, rule, or regulation. Where a project contains multiple building use types, credits achieved
4 for each building use type shall be weighted by the gross floor area of each building use type
5 group to determine the weighted-average project energy credits achieved. The combined
6 renewable (R01) and load management (G01 through G07) energy credits achieved through
7 Section 11.5.2.6 and 11.5.2.8 shall be limited to meeting 60 percent of required energy credits.
8 Credits are available for the measures listed in Section 11.5.2.1 through 11.5.2.8. Base energy
9 credits are shown in Tables 11.5.3-1 through 11.5.3-9 for building use types in each climate
10 zone. Measure energy credits achieved shall be determined in 1 of 3 ways, depending on the
11 measure:

12 **Section 11.5.2.3.1 Improved Service Water Heating Effectiveness.**

13 Section 11.5.2.3.1 – Revise item “c” from Section 11.5.2.3.1 to read as follows:

14 c. Reserved

15 Section 11.5.2.3.1 – Revise item “d” from Section 11.5.2.3.1 to read as follows:

16 d. Combination service water heating systems shall achieve credits as follows:

17 1. (W01 + W02) Where service water heating employs both energy recovery and heat-pump
18 water heating, W01 is permitted to be combined with W02 and receive the sum of both credits.

19 2. Reserved

20 3. Reserved

21 4. Reserved

22 **Section 11.5.2.7.1 Q01: Efficient Elevator Equipment.**

23 Section 11.5.2.7.1 – Revise Section 11.5.2.7.1 to read as follows:

24 **11.5.2.7.1 Q01: Efficient Elevator Equipment. Reserved.**

25 **Section 11.5.2.7.2 Q02: Efficient Kitchen Equipment.**

26 Section 11.5.2.7.2 – Revise Section 11.5.2.7.2 to read as follows:

27 **11.5.2.7.2 Q02: Efficient Kitchen Equipment. Reserved**

28 **Normative Appendix A - Rated R-Value of Insulation and Assembly U-Factor, C-Factor,**
29 **and F-Factor Determinations.**

1 **Table A3.3.3. 1 Assembly U-factors for Steel-Frame Walls by Stud Spacing and Framing**
2 **Factor^{a,b}**

3 Table A3.3.3. 1 – Delete Table A3.3.3. 1 in its entirety and add new Table A3.3.3. 1 to read
4 as follows:

1 **Table A3.3.3. 1 Assembly U-factors for Steel-Frame Walls by Stud Spacing and Framing Factor^{a,b}**

Cavity Insulation Value	Base Wall U-factor at Framing	Overall U-Factor for Assembly of Base Wall Plus Continuous Insulation (Uninterrupted by Framing or Furring)																			
		Rated R-Value of Continuous Insulation																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	20	25	30	35	40
Steel Framing at 12 in. on Center (25% Framing Factor) —includes framing for tracks, blocking, headers, and jamb and king studs																					
0.9	0.351	0.260	0.206	0.171	0.146	0.127	0.113	0.102	0.092	0.084	0.078	0.072	0.067	0.063	0.059	0.056	0.044	0.036	0.030	0.026	0.023
11	0.156	0.135	0.119	0.106	0.096	0.088	0.081	0.075	0.069	0.065	0.061	0.057	0.054	0.052	0.049	0.047	0.038	0.032	0.027	0.024	0.022
13	0.149	0.130	0.115	0.103	0.094	0.086	0.079	0.073	0.068	0.064	0.060	0.057	0.053	0.051	0.048	0.046	0.037	0.032	0.027	0.024	0.021
15	0.144	0.126	0.112	0.101	0.092	0.084	0.077	0.072	0.067	0.063	0.059	0.056	0.053	0.050	0.048	0.046	0.037	0.031	0.027	0.024	0.021
19	0.137	0.121	0.108	0.097	0.089	0.081	0.075	0.070	0.065	0.061	0.058	0.055	0.052	0.049	0.047	0.045	0.037	0.031	0.027	0.024	0.021
21	0.135	0.119	0.106	0.096	0.088	0.080	0.074	0.069	0.065	0.061	0.057	0.054	0.051	0.049	0.047	0.045	0.036	0.031	0.027	0.024	0.021
25	0.131	0.116	0.104	0.094	0.086	0.079	0.073	0.068	0.064	0.060	0.057	0.054	0.051	0.048	0.046	0.044	0.036	0.031	0.027	0.023	0.021
30	0.127	0.113	0.101	0.092	0.084	0.078	0.072	0.067	0.063	0.059	0.056	0.053	0.050	0.048	0.046	0.044	0.036	0.030	0.026	0.023	0.021
Steel Framing at 16 in. on Center (22% Framing Factor) —includes framing for tracks, blocking, headers, and jamb and king studs																					
0.9	0.350	0.259	0.206	0.171	0.146	0.127	0.113	0.101	0.092	0.084	0.078	0.072	0.067	0.063	0.059	0.056	0.044	0.036	0.030	0.026	0.023
11	0.148	0.129	0.114	0.103	0.093	0.085	0.078	0.073	0.068	0.063	0.060	0.056	0.053	0.051	0.048	0.046	0.037	0.031	0.027	0.024	0.021
13	0.141	0.124	0.110	0.099	0.090	0.083	0.076	0.071	0.066	0.062	0.059	0.055	0.052	0.050	0.047	0.045	0.037	0.031	0.027	0.024	0.021
15	0.136	0.120	0.107	0.097	0.088	0.081	0.075	0.070	0.065	0.061	0.058	0.054	0.052	0.049	0.047	0.045	0.037	0.031	0.027	0.024	0.021
19	0.129	0.114	0.102	0.093	0.085	0.078	0.073	0.068	0.063	0.060	0.056	0.053	0.051	0.048	0.046	0.044	0.036	0.031	0.026	0.023	0.021
21	0.126	0.112	0.100	0.091	0.084	0.077	0.072	0.067	0.063	0.059	0.056	0.053	0.050	0.048	0.046	0.044	0.036	0.030	0.026	0.023	0.021
25	0.122	0.108	0.098	0.089	0.082	0.076	0.070	0.066	0.062	0.058	0.055	0.052	0.049	0.047	0.045	0.043	0.035	0.030	0.026	0.023	0.021
30	0.118	0.105	0.095	0.087	0.080	0.074	0.069	0.065	0.061	0.057	0.054	0.051	0.049	0.047	0.044	0.043	0.035	0.030	0.026	0.023	0.021
Steel Framing at 24 in. on Center (18% Framing Factor) —includes framing for tracks, blocking, headers, and jamb and king studs																					
0.9	0.348	0.258	0.205	0.170	0.145	0.127	0.113	0.101	0.092	0.084	0.078	0.072	0.067	0.063	0.059	0.056	0.044	0.036	0.030	0.026	0.023
11	0.137	0.121	0.108	0.097	0.089	0.081	0.075	0.070	0.065	0.061	0.058	0.055	0.052	0.049	0.047	0.045	0.037	0.031	0.027	0.024	0.021
13	0.130	0.115	0.103	0.093	0.085	0.079	0.073	0.068	0.064	0.060	0.056	0.053	0.051	0.048	0.046	0.044	0.036	0.031	0.027	0.023	0.021
15	0.124	0.110	0.099	0.090	0.083	0.077	0.071	0.066	0.062	0.059	0.055	0.052	0.050	0.047	0.045	0.043	0.036	0.030	0.026	0.023	0.021
19	0.116	0.104	0.094	0.086	0.079	0.073	0.068	0.064	0.060	0.057	0.054	0.051	0.049	0.046	0.044	0.042	0.035	0.030	0.026	0.023	0.021
21	0.113	0.102	0.092	0.084	0.078	0.072	0.067	0.063	0.059	0.056	0.053	0.050	0.048	0.046	0.044	0.042	0.035	0.030	0.026	0.023	0.020
25	0.109	0.098	0.089	0.082	0.076	0.070	0.066	0.062	0.058	0.055	0.052	0.049	0.047	0.045	0.043	0.041	0.034	0.029	0.026	0.023	0.020
30	0.105	0.095	0.086	0.080	0.074	0.069	0.064	0.060	0.057	0.054	0.051	0.049	0.046	0.044	0.042	0.041	0.034	0.029	0.025	0.022	0.020
Steel Framing at 12 in. on Center (18% Framing Factor) —includes only studs at 12 in. on center and top and bottom tracks																					
0.9	0.348	0.258	0.205	0.170	0.145	0.127	0.113	0.101	0.092	0.084	0.078	0.072	0.067	0.063	0.059	0.056	0.044	0.036	0.030	0.026	0.023
11	0.137	0.121	0.108	0.097	0.089	0.081	0.075	0.070	0.065	0.061	0.058	0.055	0.052	0.049	0.047	0.045	0.037	0.031	0.027	0.024	0.021
13	0.130	0.115	0.103	0.093	0.085	0.079	0.073	0.068	0.064	0.060	0.056	0.053	0.051	0.048	0.046	0.044	0.036	0.031	0.027	0.023	0.021

15	0.124	0.110	0.099	0.090	0.083	0.077	0.071	0.066	0.062	0.059	0.055	0.052	0.050	0.047	0.045	0.043	0.036	0.030	0.026	0.023	0.021
19	0.116	0.104	0.094	0.086	0.079	0.073	0.068	0.064	0.060	0.057	0.054	0.051	0.049	0.046	0.044	0.042	0.035	0.030	0.026	0.023	0.021
21	0.113	0.102	0.092	0.084	0.078	0.072	0.067	0.063	0.059	0.056	0.053	0.050	0.048	0.046	0.044	0.042	0.035	0.030	0.026	0.023	0.020
25	0.109	0.098	0.089	0.082	0.076	0.070	0.066	0.062	0.058	0.055	0.052	0.049	0.047	0.045	0.043	0.041	0.034	0.029	0.026	0.023	0.020
30	0.105	0.095	0.086	0.080	0.074	0.069	0.064	0.060	0.057	0.054	0.051	0.049	0.046	0.044	0.042	0.041	0.034	0.029	0.025	0.022	0.020
Steel Framing at 16 in. on Center (14% Framing Factor)—includes only studs at 16 in. on center and top and bottom tracks																					
0.9	0.346	0.257	0.204	0.170	0.145	0.127	0.112	0.101	0.092	0.084	0.078	0.072	0.067	0.063	0.059	0.056	0.044	0.036	0.030	0.026	0.023
11	0.125	0.111	0.100	0.091	0.083	0.077	0.071	0.067	0.063	0.059	0.056	0.053	0.050	0.048	0.045	0.044	0.036	0.030	0.026	0.023	0.021
13	0.117	0.105	0.095	0.087	0.080	0.074	0.069	0.064	0.061	0.057	0.054	0.051	0.049	0.046	0.044	0.043	0.035	0.030	0.026	0.023	0.021
15	0.111	0.100	0.091	0.083	0.077	0.072	0.067	0.063	0.059	0.056	0.053	0.050	0.048	0.045	0.044	0.042	0.035	0.029	0.026	0.023	0.020
19	0.103	0.093	0.085	0.079	0.073	0.068	0.064	0.060	0.056	0.053	0.051	0.048	0.046	0.044	0.042	0.040	0.034	0.029	0.025	0.022	0.020
21	0.100	0.091	0.083	0.077	0.071	0.066	0.062	0.059	0.055	0.053	0.050	0.048	0.045	0.043	0.042	0.040	0.033	0.029	0.025	0.022	0.020
25	0.095	0.087	0.080	0.074	0.069	0.064	0.060	0.057	0.054	0.051	0.049	0.046	0.044	0.042	0.041	0.039	0.033	0.028	0.025	0.022	0.020
30	0.090	0.083	0.077	0.071	0.066	0.062	0.059	0.055	0.052	0.050	0.047	0.045	0.043	0.042	0.040	0.038	0.032	0.028	0.024	0.022	0.020
Steel Framing at 24 in. on Center (10% Framing Factor)—includes only studs at 24 in. on center and top and bottom tracks																					
0.9	0.344	0.256	0.204	0.169	0.145	0.126	0.112	0.101	0.092	0.084	0.077	0.072	0.067	0.063	0.059	0.056	0.044	0.036	0.030	0.026	0.023
11	0.113	0.101	0.092	0.084	0.078	0.072	0.067	0.063	0.059	0.056	0.053	0.050	0.048	0.046	0.044	0.042	0.035	0.030	0.026	0.023	0.020
13	0.104	0.094	0.086	0.079	0.073	0.068	0.064	0.060	0.057	0.054	0.051	0.049	0.046	0.044	0.042	0.041	0.034	0.029	0.025	0.022	0.020
15	0.098	0.089	0.082	0.076	0.070	0.066	0.062	0.058	0.055	0.052	0.049	0.047	0.045	0.043	0.041	0.040	0.033	0.028	0.025	0.022	0.020
19	0.088	0.081	0.075	0.070	0.065	0.061	0.058	0.055	0.052	0.049	0.047	0.045	0.043	0.041	0.040	0.038	0.032	0.028	0.024	0.022	0.019
21	0.085	0.078	0.073	0.068	0.063	0.060	0.056	0.053	0.051	0.048	0.046	0.044	0.042	0.040	0.039	0.037	0.031	0.027	0.024	0.021	0.019
25	0.080	0.074	0.069	0.064	0.060	0.057	0.054	0.051	0.049	0.046	0.044	0.042	0.041	0.039	0.038	0.036	0.031	0.027	0.024	0.021	0.019
30	0.075	0.070	0.065	0.061	0.058	0.055	0.052	0.049	0.047	0.045	0.043	0.041	0.039	0.038	0.037	0.035	0.030	0.026	0.023	0.021	0.019

1

		Overall U-Factor for Assembly of Base Wall Plus Continuous Insulation (Uninterrupted by Framing or Furring)																			
Cavity Insulation Value	Base Wall U-factor at Framing	Rated R-Value of Continuous Insulation																			
		0.18	0.35	0.53	0.70	0.88	1.06	1.23	1.41	1.59	1.76	1.94	2.11	2.29	2.47	2.64	3.52	4.40	5.28	6.16	7.04
Steel Framing at 300 mm on Center (25% Framing Factor)—includes framing for tracks, blocking, headers, and jamb and king studs																					
0.16	1.99	1.47	1.17	0.97	0.83	0.72	0.64	0.58	0.52	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.25	0.20	0.17	0.15	0.13
1.94	0.89	0.77	0.68	0.60	0.55	0.50	0.46	0.42	0.39	0.37	0.35	0.33	0.31	0.29	0.28	0.27	0.21	0.18	0.16	0.14	0.12

2.29	0.85	0.74	0.65	0.59	0.53	0.49	0.45	0.41	0.39	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.21	0.18	0.15	0.14	0.12
2.64	0.82	0.72	0.64	0.57	0.52	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.30	0.28	0.27	0.26	0.21	0.18	0.15	0.14	0.12
3.35	0.78	0.69	0.61	0.55	0.50	0.46	0.43	0.40	0.37	0.35	0.33	0.31	0.29	0.28	0.27	0.25	0.21	0.18	0.15	0.13	0.12
3.70	0.76	0.67	0.60	0.54	0.50	0.46	0.42	0.39	0.37	0.35	0.33	0.31	0.29	0.28	0.27	0.25	0.21	0.18	0.15	0.13	0.12
4.40	0.74	0.66	0.59	0.53	0.49	0.45	0.42	0.39	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.25	0.21	0.17	0.15	0.13	0.12
5.28	0.72	0.64	0.58	0.52	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.25	0.20	0.17	0.15	0.13	0.12

Steel Framing at 400 mm on Center (22% Framing Factor)—includes framing for tracks, blocking, headers, and jamb and king studs

0.16	1.98	1.47	1.17	0.97	0.83	0.72	0.64	0.58	0.52	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.25	0.20	0.17	0.15	0.13
1.94	0.84	0.73	0.65	0.58	0.53	0.48	0.45	0.41	0.38	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.21	0.18	0.15	0.14	0.12
2.29	0.80	0.70	0.63	0.56	0.51	0.47	0.43	0.40	0.38	0.35	0.33	0.31	0.30	0.28	0.27	0.26	0.21	0.18	0.15	0.13	0.12
2.64	0.77	0.68	0.61	0.55	0.50	0.46	0.43	0.40	0.37	0.35	0.33	0.31	0.29	0.28	0.27	0.25	0.21	0.18	0.15	0.13	0.12
3.35	0.73	0.65	0.58	0.53	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.25	0.20	0.17	0.15	0.13	0.12
3.70	0.71	0.63	0.57	0.52	0.48	0.44	0.41	0.38	0.36	0.33	0.32	0.30	0.28	0.27	0.26	0.25	0.20	0.17	0.15	0.13	0.12
4.40	0.69	0.62	0.56	0.51	0.46	0.43	0.40	0.37	0.35	0.33	0.31	0.30	0.28	0.27	0.26	0.24	0.20	0.17	0.15	0.13	0.12
5.28	0.67	0.60	0.54	0.49	0.45	0.42	0.39	0.37	0.34	0.32	0.31	0.29	0.28	0.26	0.25	0.24	0.20	0.17	0.15	0.13	0.12

Steel Framing at 600 mm on Center (18% Framing Factor)—includes framing for tracks, blocking, headers, and jamb and king studs

0.16	1.97	1.46	1.16	0.97	0.83	0.72	0.64	0.57	0.52	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.25	0.20	0.17	0.15	0.13
1.94	0.78	0.68	0.61	0.55	0.50	0.46	0.43	0.40	0.37	0.35	0.33	0.31	0.29	0.28	0.27	0.25	0.21	0.18	0.15	0.13	0.12
2.29	0.74	0.65	0.58	0.53	0.48	0.45	0.41	0.39	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.25	0.20	0.17	0.15	0.13	0.12
2.64	0.70	0.63	0.56	0.51	0.47	0.43	0.40	0.38	0.35	0.33	0.31	0.30	0.28	0.27	0.26	0.25	0.20	0.17	0.15	0.13	0.12
3.35	0.66	0.59	0.53	0.49	0.45	0.42	0.39	0.36	0.34	0.32	0.31	0.29	0.28	0.26	0.25	0.24	0.20	0.17	0.15	0.13	0.12
3.70	0.64	0.58	0.52	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.25	0.24	0.20	0.17	0.15	0.13	0.12
4.40	0.62	0.56	0.51	0.47	0.43	0.40	0.37	0.35	0.33	0.31	0.30	0.28	0.27	0.26	0.24	0.23	0.19	0.17	0.14	0.13	0.12
5.28	0.59	0.54	0.49	0.45	0.42	0.39	0.36	0.34	0.32	0.31	0.29	0.28	0.26	0.25	0.24	0.23	0.19	0.16	0.14	0.13	0.11

1

Cavity Insulation Value	Base Wall U-factor at Framing	Overall U-Factor for Assembly of Base Wall Plus Continuous Insulation (Uninterrupted by Framing or Furring)																			
		Rated R-Value of Continuous Insulation																			
		0.18	0.35	0.53	0.70	0.88	1.06	1.23	1.41	1.59	1.76	1.94	2.11	2.29	2.47	2.64	3.52	4.40	5.28	6.16	7.04

Steel Framing at 300 mm on Center (18% Framing Factor)—includes only studs at 300 mm on center and top and bottom tracks

0.16	1.97	1.46	1.16	0.97	0.83	0.72	0.64	0.57	0.52	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.25	0.20	0.17	0.15	0.13
1.94	0.78	0.68	0.61	0.55	0.50	0.46	0.43	0.40	0.37	0.35	0.33	0.31	0.29	0.28	0.27	0.25	0.21	0.18	0.15	0.13	0.12
2.29	0.74	0.65	0.58	0.53	0.48	0.45	0.41	0.39	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.25	0.20	0.17	0.15	0.13	0.12

2.64	0.70	0.63	0.56	0.51	0.47	0.43	0.40	0.38	0.35	0.33	0.31	0.30	0.28	0.27	0.26	0.25	0.20	0.17	0.15	0.13	0.12
3.35	0.66	0.59	0.53	0.49	0.45	0.42	0.39	0.36	0.34	0.32	0.31	0.29	0.28	0.26	0.25	0.24	0.20	0.17	0.15	0.13	0.12
3.70	0.64	0.58	0.52	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.25	0.24	0.20	0.17	0.15	0.13	0.12
4.40	0.62	0.56	0.51	0.47	0.43	0.40	0.37	0.35	0.33	0.31	0.30	0.28	0.27	0.26	0.24	0.23	0.19	0.17	0.14	0.13	0.12
5.28	0.59	0.54	0.49	0.45	0.42	0.39	0.36	0.34	0.32	0.31	0.29	0.28	0.26	0.25	0.24	0.23	0.19	0.16	0.14	0.13	0.11
Steel Framing at 400 mm on Center (14% Framing Factor)—includes only studs at 400 mm on center and top and bottom tracks																					
0.16	1.96	1.46	1.16	0.96	0.82	0.72	0.64	0.57	0.52	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.25	0.20	0.17	0.15	0.13
1.94	0.71	0.63	0.57	0.52	0.47	0.44	0.41	0.38	0.36	0.33	0.32	0.30	0.28	0.27	0.26	0.25	0.20	0.17	0.15	0.13	0.12
2.29	0.67	0.60	0.54	0.49	0.45	0.42	0.39	0.37	0.34	0.32	0.31	0.29	0.28	0.26	0.25	0.24	0.20	0.17	0.15	0.13	0.12
2.64	0.63	0.57	0.52	0.47	0.44	0.41	0.38	0.36	0.33	0.32	0.30	0.28	0.27	0.26	0.25	0.24	0.20	0.17	0.15	0.13	0.12
3.35	0.58	0.53	0.48	0.45	0.41	0.39	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.25	0.24	0.23	0.19	0.16	0.14	0.13	0.11
3.70	0.57	0.51	0.47	0.44	0.40	0.38	0.35	0.33	0.31	0.30	0.28	0.27	0.26	0.25	0.24	0.23	0.19	0.16	0.14	0.13	0.11
4.40	0.54	0.49	0.45	0.42	0.39	0.36	0.34	0.32	0.31	0.29	0.28	0.26	0.25	0.24	0.23	0.22	0.19	0.16	0.14	0.12	0.11
5.28	0.51	0.47	0.43	0.40	0.38	0.35	0.33	0.31	0.30	0.28	0.27	0.26	0.25	0.24	0.23	0.22	0.18	0.16	0.14	0.12	0.11
Steel Framing at 600 mm on Center (10% Framing Factor)—includes only studs at 600 mm on center and top and bottom tracks																					
0.16	1.95	1.45	1.16	0.96	0.82	0.72	0.64	0.57	0.52	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.25	0.20	0.17	0.15	0.13
1.94	0.64	0.57	0.52	0.48	0.44	0.41	0.38	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.25	0.24	0.20	0.17	0.15	0.13	0.12
2.29	0.59	0.54	0.49	0.45	0.42	0.39	0.36	0.34	0.32	0.31	0.29	0.28	0.26	0.25	0.24	0.23	0.19	0.16	0.14	0.13	0.11
2.64	0.55	0.51	0.46	0.43	0.40	0.37	0.35	0.33	0.31	0.30	0.28	0.27	0.26	0.24	0.23	0.22	0.19	0.16	0.14	0.13	0.11
3.35	0.50	0.46	0.43	0.40	0.37	0.35	0.33	0.31	0.29	0.28	0.27	0.25	0.24	0.23	0.22	0.22	0.18	0.16	0.14	0.12	0.11
3.70	0.48	0.45	0.41	0.38	0.36	0.34	0.32	0.30	0.29	0.27	0.26	0.25	0.24	0.23	0.22	0.21	0.18	0.15	0.14	0.12	0.11
4.40	0.45	0.42	0.39	0.37	0.34	0.32	0.31	0.29	0.28	0.26	0.25	0.24	0.23	0.22	0.21	0.21	0.17	0.15	0.13	0.12	0.11
5.28	0.43	0.40	0.37	0.35	0.33	0.31	0.29	0.28	0.27	0.25	0.24	0.23	0.22	0.22	0.21	0.20	0.17	0.15	0.13	0.12	0.11

- 1 a. Refer to Section A9.2(b)(3)(i) for calculation method used to generate table values.
- 2 b. The cavity insulation rated RSI-value of 0.16 corresponds to no cavity insulation.

1 **Section A10.2.1 Thermal bridge details.**

2
3 Section A10.2.1- Add new section A10.2.1 to read as follows:

4 **A10.2.1 Thermal bridge details.** *Psi-factors and chi-factors for thermal bridges shall be*
5 *determined in accordance with Normative Appendix A, Section A10. The following*
6 *intersections shall be evaluated for thermal bridges and be detailed in construction*
7 *documents:*

- 8 1. Structural framing and members.
9 2. Cladding attachment systems
10 3. Assembly intersections:
11 a. Roof edge, parapet;
12 b. Intermediate floor to wall intersection;
13 c. Intermediate floor balcony or overhang to opaque wall intersection;
14 d. Intermediate floor balcony in contact with vertical fenestration;
15 e. Cladding support; and
16 f. Wall to vertical fenestration intersection.

17 Details shall include the total length of each linear thermal bridge, corresponding psi-factors,
18 and source. Details shall include point thermal bridges, including their cross-sectional area
19 and quantity of each type, corresponding chi-factors, and source.

20 **Exception:** HVAC or electrical system *point thermal bridges* totaling less than 12 square
21 inches (7741.9 mm²) of cross-sectional area at exposure.

22 **Normative Appendix C Methodology for Building Envelope Trade-Off Option in Section**
23 **5.6.**

24 **Section C3.5.5.4 Thermal Bridges.**

25 Section C3.5.5.4 – Revise Section C3.5.5.4 to read as follows:

26 **C3.5.5.4 Thermal Bridges.** Linear and point thermal bridges in the proposed design shall be
27 1 of the following:

- 28 a. Not modeled where option (a) or (c) is selected in Section C1.2.7.
- 29 b. Entered as individual thermal bridge inputs of length or count where option (b) is selected
30 in Section C1.2.7 and addressed as follows:
- 31 1. Individual thermal bridges in the proposed design that are indicated to comply with the
32 requirements of Sections 5.5.5.1 through 5.5.5.5 shall be modeled with the user-defined
33 psi-factor or chi-factors or the default values from Table A10.1.
- 34 2. Individual thermal bridges in the proposed design that are indicated to not comply with
35 the requirements of Sections 5.5.5.1 through 5.5.5.5 shall be modeled with the user-

1 defined psi-factor or chi-factors or the unmitigated values from Table A10.1.

2 3. Individual thermal bridges in the proposed design that are indicated to be not applicable with
3 the requirements of Sections 5.5.5.1 through 5.5.5.5 need not be modeled.

4 **Normative Appendix G Performance Rating Method.**

5 **Section G1.4 Energy Modeler Qualifications.**

6 Section G1.4 – Add new Section G1.4 to read as follows:

7 **G1.4 Energy Modeler Qualifications.** Energy models shall be created by persons
8 qualified by education and training to perform such work. The submitted modeling documentation
9 shall include the name, affiliation, credentials, and contact information of either a registered design
10 professional with a minimum of two years of experience in modeling buildings of similar size and
11 complexity or an individual with an active certification from ASHRAE as a Building Energy
12 Modeling Professional (BEMP) that completed or supervised the energy modeling.

13 § 4. This local law shall take effect on the same date that the New York State Energy
14 Conservation Construction Code, as adopted on October 1, 2025, by the State Fire Prevention and
15 Building Code Council pursuant to Article 11 of the New York State Energy Law takes effect,
16 except that if this local law becomes law after such date, it is retroactive to and deemed to have
17 been in effect as of the effective date of such New York State Energy Conservation Construction
18 Code.

19 § 5. If the Department of Buildings determines that compliance software described in
20 section 101.5.1 of the New York City Energy Conservation Code, as added by section three of this
21 local law, is not publicly available on the effective date of this local law, and that compliance with
22 provisions of the New York City Energy Conservation Code as enacted pursuant to this local law
23 is not practicable until such software is available, such Department shall follow any applicable
24 direction or published guidance of the State Fire Prevention and Building Code Council regarding

1 compliance with such code or the New York State Energy Code, as defined in section 28-1001.1.1
2 of the Administrative Code of the City of New York, as amended by section two of this local law,
3 by municipalities that enforce such code, similarly circumstanced by the unavailability of such
4 compliance software. In the absence of such direction, however, the department may provide
5 notification on its website and continue to enforce provisions of the version of the New York City
6 Energy Conservation Code that was in effect immediately prior to the effective date of this local
7 law, until such time as the Department determines such software is publicly available, or as soon
8 as practicable thereafter, and rescinds such notification. In the event of such notification,
9 compliance with provisions of law in effect prior to the effective date of this local law pursuant to
10 this section shall be deemed for all purposes to be compliance with the New York City Energy
11 Conservation Code as enacted pursuant to this local law. The Department shall make all reasonable
12 efforts to inform the interested parties of any such notification and subsequent rescission. The
13 Department shall also inform the Corporation Counsel of the publication and subsequent rescission
14 of such notification, and the Corporation Counsel shall provide the same to the New York State
15 Legislative Bill Drafting Commission and the publishers of Administrative Code of the City of
16 New York. Failure to provide such notifications shall not affect the effective date of any section
17 of this local law or the validity of actions taken by the Department or Corporation Counsel pursuant
18 to this section.

Session 13
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