

# 1 RCNY §5000-01

## CHAPTER 5000

### New York City Energy Conservation Code

#### §5000-01 Construction document approval requirements for compliance with the New York City Energy Conservation Code.

- (a) Purpose. This section sets forth the requirements for filing and approval of construction documents and the universe of progress inspections during construction, in accordance with the New York City Energy Conservation Code.
- (b) References: See New York City Energy Conservation Code (Administrative Code Sections 28-1001.1 et seq.); New York State Energy Conservation Construction Code (19 NYCRR part 1240); Administrative Code Section 28-104.7.9, Sections BC107.13 and BC110.3.5; 1 RCNY §101-07 (“Approved Agencies”).
- (c) Definitions. For the purposes of this chapter, the following terms shall have the following meanings:  
ADDITION. An addition as defined in the Energy Code.

APPROVED PROGRESS INSPECTION AGENCY. An approved progress inspection agency as described in subparagraph (iii) of paragraph (3) of subdivision (c) of section 101-07 of the rules of the Department.

ASHRAE 90.1. American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc., Standard 90.1-2010 as defined in the New York State Energy Conservation Construction Code and amended by Appendix A of the Energy Code.

COMMERCIAL BUILDING. A commercial building as defined in the Energy Code.

DESIGN APPLICANT. An applicant of record who develops, signs and seals the construction drawings. The design applicant may be someone other than the registered design professional who prepares, signs and seals the energy analysis.

ENERGY CODE. The New York City Energy Conservation Code (“ECC”), as defined in Chapter 10 of Title 28 of the Administrative Code.

HISTORIC BUILDING. A historic building as described in the ECC.

PROJECT. A project as defined in the Energy Code.

RESIDENTIAL BUILDING. A residential building as defined in the Energy Code.

- (d) Applicability.
  - (1) Applicable version and edition of Energy Code. Applications must comply with the Energy Code version and edition in effect when the application is filed, continuing through construction and sign-off of the application by the Department.
  - (2) Commercial building projects. All applications related to a single commercial building project must follow either ECC Chapters C2 through C5 or ASHRAE 90.1 in its entirety and as modified by ECC Appendix A.
    - (i) ECC Compliance Path. Vertical fenestration is allowed up to 30% of the gross wall area, prescriptively. Commercial buildings with vertical fenestration exceeding 30% of the above-grade wall must provide daylighting controls in accordance with ECC provisions to a maximum fenestration area of 40% of the gross above-grade wall area.

- (ii) ASHRAE 90.1 Compliance Path. Vertical fenestration is allowed up to 40% of the gross wall area, prescriptively. If the vertical fenestration exceeds 40% of the gross wall area, the design team must use energy modeling in accordance with Section 11 of ASHRAE 90.1 (“Energy Cost Budget Method”) or Appendix G of ASHRAE 90.1 (“Performance Rating Method”) and as provided in subparagraph (iv) of paragraph (1) of subdivision (f) of this section or Section 5.6 of ASHRAE 90.1 (“Building Envelope Trade-off Option”).
- (3) Identification of related applications. Applicants must indicate in the application form all applications related to the project or, if an application has not yet been filed, the name of the applicant or the applicant’s firm and discipline for any anticipated related applications.
- (e) Professional statement. Every application filed by a registered design professional for approval of construction documents for a new building or alteration shall include a professional statement of either compliance with or exemption from the Energy Code.
  - (1) Compliance. All new building and alteration applications must indicate compliance on the application form, except as specifically excluded in paragraph (2) of this subdivision.
  - (2) Exemption. Only applications that consist entirely of work exempt from the Energy Code may indicate exemption in the professional statement. The application must state one of the following bases for exemption:
    - (i) Historic building.
    - (ii) Envelope of low-energy building. All the proposed work is related to the envelope system of a low-energy or unconditioned building, as described in ECC Chapter 1.
    - (iii) Categories of work not affecting energy use. Temporary structures (as described in sections 28-111 and BC 3103) are exempt from compliance with the Energy Code. In addition, the following work types are exempt:
      - (A) FA (fire alarm)
      - (B) FP (fire suppression in a range hood)
      - (C) SD (standpipe)
      - (D) SP (sprinklers)
      - (E) FS (fuel storage)
      - (F) EQ (construction equipment)
      - (G) CC (curb cut)
      - (H) OT/BPP (builder’s pavement plan)
      - (I) OT/FPP (fire protection plan).
- (f) Energy analysis. An energy analysis is required for every project that is not entirely exempt. The energy analysis shall identify the compliance path followed, demonstrate how the project design complies with the Energy Code and, for commercial projects, indicate whether the project is designed in accordance with ECC Chapters C2 through C5 or with ASHRAE 90.1.
  - (1) Accepted formats for energy analysis. One of the following formats may be used to present the energy analysis:
    - (i) Tabular analysis. For new buildings, additions and/or alterations to existing residential or commercial buildings for which either ECC Chapter 4, ECC Chapters C2 through C5 or ASHRAE 90.1 has been used, the applicant may create a table entitled “Energy Analysis” as described in figure 1.

Such table shall compare the proposed values of each Energy Code regulated item in the scope of work with the respective prescriptive values required by the Energy Code. The items shall be organized by discipline, including Envelope Systems, Mechanical and Service Water Heating Systems, and Lighting and Electrical Systems, as applicable.

For commercial building additions and/or alterations involving lighting, the applicant may choose to utilize the Lighting Application Worksheet from COMcheck for the lighting part of the analysis in lieu of including lighting in the tabular analysis; however, the supporting documentation index must provide a breakdown of each lighting fixture to clarify the location per room type or floor. See subparagraph (iii) of this paragraph and Figure 2 in subdivision (g) of this section.

**Figure 1: Sample tabular energy analysis:**

| <b>ENERGY ANALYSIS</b>   |                                      |  |
|--|--------------------------------------|--|
| Code chapter and/or standard used for design<br>Climate Zone 4A                                    |                                      |  |
| <b>Item Description</b>  | <b>Proposed Design Value</b>         | <b>Code Prescriptive Value and Citation</b>  |
| (List all elements of the scope of work in the detail that they are addressed by the energy code.) | (List the value used in the design.) | (List the prescriptive value required by the Energy Code and provide the citation for such value.) |

- (ii) REScheck Software Program. The REScheck software program available from the United States Department of Energy website may be used for residential buildings as follows:
  - (A) New buildings. REScheck may be used for new residential buildings.
  - (B) Additions. REScheck may be used for additions only where a whole-building analysis, including the existing building and the addition, is performed.
  - (C) Alterations and repairs. REScheck may be used for alterations and repairs only where a whole-building analysis, including the existing-to-remain and altered envelope and mechanical systems, is performed.
  - (D) REScheck version.
    - 1. Only the New York State version of the REScheck form is permitted.
    - 2. For applications filed on or after December 28, 2010, the report must specify the 2010 Energy Conservation Construction Code of New York State.
    - 3. For applications filed before December 28, 2010, the report must specify the edition of REScheck that matches the edition of the Energy Conservation Construction Code of New York State in effect when the application was filed.
- (iii) COMcheck. The COMcheck software program available from the United States Department of Energy website may be used for commercial buildings as follows:
  - (A) New buildings. COMcheck may be used for new commercial buildings.
  - (B) Additions. COMcheck may be used for additions only as follows:
    - 1. Where a whole-building analysis, including the existing building and the addition, is performed; or
    - 2. Where the COMcheck report states “addition” as the project type.

- (C) Alterations and repairs. COMcheck may be used for alterations and repairs only as follows:
  - 1. Where a whole-building analysis, including the existing-to-remain and altered parts of the building, is performed; or
  - 2. Where the COMcheck report states “alteration” as the project type.
- (D) COMcheck versions.
  - 1. Only the New York State versions of the COMcheck forms are permitted.
  - 2. For applications filed on or after January 1, 2015, the report must specify the New York State Energy Code or New York State amended ASHRAE 90.1. In the event that a New York State-specific version is no longer supported, the report must specify the applicable IECC or ASHRAE 90.1 version of the software.
  - 3. All three parts of the COMcheck report – the envelope, the mechanical/service water heating and the lighting/power parts – shall be presented, except where the project type is an addition or alteration as described above and some parts of the report are not relevant to the scope of work.

- (iv) Energy modeling based on DOE2. For new commercial buildings and additions or alterations to commercial buildings, where trade-offs among disciplines and/or the performance path are used in accordance with ASHRAE 90.1 section 11 or Appendix G, an energy modeling program developed by the United States Department of Energy, including DOE2 or updates of DOE2, shall be used; such updates include DOE2.1E, VisualDOE, EnergyPlus and eQuest.

Other energy modeling programs must be approved by the Secretary of State of New York State and the commissioner. The commissioner may at his or her discretion require the energy modeling report to be submitted to the Department.

The applicant shall provide the project-relevant utility company energy cost time-of-use rate structure in effect on January 1 of the calendar year in which the initial filing of the project application(s) occurs, and shall utilize the time-of-use electricity, gas and steam prices from the rate structure in the energy model. Fuel oil prices used in the model shall be supported by comparable local supplier information from the provider in effect on January 1 of such calendar year.

The results of the energy modeling report must be reported on a Department form.

- (v) Alternative formats. Formats other than those listed in subparagraphs i through iv of this paragraph, including, but not limited to, the home energy software programs described in section ECC 101.5.1, may be used for a project only if they are approved in advance by both the Secretary of State of New York State and the commissioner.
- (2) Mixed-occupancy buildings three stories or fewer. In accordance with section ECC 101.4.6, buildings three stories or fewer above grade with mixed residential and non-residential occupancies must comply with the respective requirements of Chapters 2 through 4 and Chapters C2 through C5, and must have separate energy analyses, except that a tabular analysis format may be used to show both the residential and non-residential requirements.
  - (3) Build-outs of tenant space prior to issuance of new building certificate of occupancy. The energy analysis for any alteration application for a build-out of a new building tenant space before the

final certificate of occupancy is issued must be consistent with the energy analysis for the new building. Such energy analysis for the new building must be provided upon request.

- (4) Professional responsibility for energy analysis. The energy analysis shall be signed and sealed by registered design professional(s).
- (i) Election. The project team must elect one of the following methods for performing the energy analysis:
- (A) Responsibility by discipline. Where each system of the energy analysis – envelope, mechanical/service water heating and lighting/power – meets the prescriptive requirements of the Energy Code individually, different registered design professionals may sign and seal their respective parts of the energy analysis report and include them as follows:
1. If all such systems are filed with the Department under the same application number, each registered design professional may include his or her part of the energy analysis in his or her respective parts of the project construction drawings.
  2. If such systems are filed with the Department under different application numbers, all parts of the energy analysis shall be filed in the initial application for the project; except that in the case of foundation and earthwork permits issued pursuant to section 28-104.2.5, the energy analysis for the new building project must be submitted with subsequent construction documents. Refer also to paragraph (5) of this subdivision.
- (B) Lead professional. Where energy modeling (whole-building analysis) is performed for the energy analysis or where the project design uses tradeoffs among disciplines such that one or more systems of the energy analysis – envelope, mechanical/service water heating and lighting/power – could not meet the prescriptive or performance requirements of the Energy Code on its own, a lead professional must be identified who must sign and seal the entire energy analysis for all systems involved.
- The energy modeling program must be based on the DOE2 energy modeling software in accordance with subparagraph (iv) of paragraph (1) of this subdivision. The energy analysis must be presented in the construction drawings for one application only. The lead professional must be a registered design professional and need not be a design applicant.
- (ii) Registered design professional other than a design applicant. A registered design professional other than a design applicant may prepare, sign and seal the energy analysis, either as lead professional or for individual discipline(s) in accordance with subparagraph i of this paragraph. Such registered design professional shall file a PW1 form as a subsequent filing and indicate “Energy” or “Electrical” as applicable in Section 6D, OT – Other.
- (5) Foundation and earthwork permits. When phased or partial approval is requested by the applicant for the purpose of issuance of a foundation and earthwork permit in accordance with §28-104.2.5 of the *Administrative Code*, a tabular analysis must be filed showing the foundation insulation requirements of the ECC. Refer also to subclause 2 of clause (A) of subparagraph (i) of paragraph (4) of this subdivision.
- (g) Supporting documentation. The construction drawings submitted for approval shall provide all energy design elements and shall match or exceed the energy efficiency of each value in each part of the energy

analysis – envelope, mechanical/service water heating and lighting/power. The supporting documentation shall be listed in a table that serves as an indexing guide to the construction document set. Such table shall list the proposed values of each Energy Code-regulated item in the scope of work with the respective location in the drawing set.

**Figure 2: Sample Supporting Documentation Index:**

| <b>SUPPORTING DOCUMENTATION INDEX</b>                           |  |  |
|---|--|--|
| Code chapter and/or standard used for design<br>Climate Zone 4A |  |  |
| <b>Code Section</b>   | <b>Item Description</b>  | <b>Supporting Documentation Location</b>             |
| (List specific code section)                                    | (List all elements of the scope of work in the detail that they are addressed by the energy code.) | (List the drawing page number and/or section title.) |

In addition, other mandatory Energy Code requirements shall be provided as described in paragraphs 1 through 5 of this subdivision.

Further, supporting documentation shall provide all information necessary for a progress inspector to verify during construction that the building has been built in accordance with the approved construction documents to meet the requirements of the Energy Code.

For additions and alterations, the applicant must clearly show those physical portions of the systems that are being brought up to code and those that are not being upgraded.

- (1) Envelope. Building wall sections and details shall be provided for each unique type of roof/ceiling, wall, and either the foundation, slab-on-grade, basement or cellar assembly. Such building wall sections shall show each layer of the assembly, including, but not limited to, insulation, moisture control and air barriers. If continuous insulation is indicated, it must be fully continuous, uninterrupted by framing, slab edges, shelf angles, or any other continuous breaks in the insulation. The insulation in each case shall be labeled and shall be equal to or greater than the R values, and an assembly in each case shall be equal to or less than the assembly U factors, in the energy analysis.

Door, window and skylight schedules shall include columns for U and SHGC values for each fenestration assembly type, and such values shall be equal to or less than those in the energy analysis. Mandatory requirements to prevent air leakage shall be detailed. Siding attachment over foam sheathing shall comply with the Energy Code as required.

- (2) Mechanical/service water heating. Mechanical system design criteria, and mechanical and service water heating system and equipment types, sizes and efficiencies shall be provided.

Space heating and cooling equipment, energy recovery equipment, economizers, ventilation equipment, service water heating equipment, and mandatory requirements including control systems, duct sealing and duct and piping insulation shall be shown on the construction drawings and shall be equal to or greater than the energy efficiency requirements established in the energy analysis, the Energy Code and/or this section, as applicable. A narrative shall be provided for each mandatory control system describing its function and operation and specifying proper setpoints of equipment and controls.

- (3) Electrical. The applicant must provide supporting documents for lighting, power and controls on either electrical drawings or drawings of other disciplines as appropriate. Such documents must:
  - support the energy analysis;
  - satisfy mandatory requirements of the Energy Code, such as controls, transformers, metering, voltage drop and electric motor requirements; and
  - support progress inspections required by this section.

The drawings must be numbered with an “E,” “EN” or other discipline designator and must be signed and sealed by a registered design professional. If the registered design professional is an electrical engineer, the engineer must file a PW1 form as an initial or subsequent filing and indicate either “Electrical” or “Energy” in Section 6D, OT – Other.

- (i) Interior and exterior lighting. Supporting documentation for lighting must be as follows:
  - (A) Commercial buildings, except dwelling units. The applicant shall provide reflected ceiling plans, floor plans and/or electrical drawings with lighting layouts for each floor or space in the project, and for exterior lighting as applicable.

The lighting fixtures shall be described and keyed to the lighting plans, including type designation, brief description, locations, lamp type, ballast/transformer type, watts per lamp, quantity of lamps per fixture, and system input watts per fixture, such that the drawings support the energy analysis.

In addition, mandatory lighting and power controls shall be shown and described, and a narrative provided describing their function and operation.

Control devices and zones shall be indicated on drawings.

- (B) Dwelling units in residential and commercial buildings. In homes and dwelling units, the applicant must indicate on floor plans what fixtures are to be installed with high-efficacy lamps, and where the separate meter for each dwelling unit is located.

- (ii) Exterior lighting zones. Exterior lighting zones as set forth in ECC Table C405.6.2(1) correspond with the following zoning districts in the New York City Zoning Resolution:

|                  |   |
|------------------|---|
| Lighting zone 1: | Park land.  |
| Lighting zone 2: | All R districts, R districts with C overlays and MX districts.                    |
| Lighting zone 3: | M districts, except MX; C districts, except C5, C6 and C overlays on R districts. |
| Lighting zone 4: | C5 and C6 districts.  |

- (iii) Fan motors and controls. Fan motor horsepower and controls must be shown on the drawings and described.
  - (iv) Feeders. For applications using ASHRAE 90.1 for prescriptive compliance, calculated feeder voltage drops must be provided in accordance with ASHRAE 90.1.
  - (v) Automatic receptacle controls. For applications using ASHRAE 90.1 for prescriptive compliance, 50 percent of the receptacles must be automatically controlled and clearly shown on the drawings in accordance with ASHRAE 90.1.

- (4) Mandatory requirements. The construction documents shall comply with all mandatory requirements of the Energy Code.

- (i) For residential buildings, references for such requirements are listed in Section ECC 401.2.
  - (ii) For commercial buildings complying with the provisions of ECC Chapters C2 through C5, references for such requirements are listed throughout Chapters C2 through C5; for commercial buildings complying with ASHRAE 90.1, such requirements are set forth throughout the referenced standard.
  - (iii) Commissioning statement. Every application filed by a registered design professional for approval of construction documents for a new building or alteration under the commercial provisions of ECC shall include a statement of either compliance with or

exemption from the commissioning requirements of the Energy Code as described in ECC C408.

- (5) Permanent certificate in residential buildings. For residential buildings, the construction documents shall indicate the following in accordance with Section ECC 401.3:
  - (i) New buildings. For new buildings regulated under ECC Chapter 4, a permanent certificate shall be required to be installed indoors and in accordance with Section ECC 401.3, except that it may be posted near the electrical distribution panel at eye level and in plain sight.
  - (ii) Additions and alterations. For additions and alterations affecting information on an existing permanent certificate, such permanent certificate shall be updated, initialed where changed and reposted such that the values on the posted permanent certificate remain current.
- (6) Deferred submittals. Drawings showing design intent and performance criteria matching those in the energy analysis may be submitted as supporting documentation provided that, in accordance with Section 28-104.2.6 of the Administrative Code, the applicant lists such deferred submittals in the construction drawings and submits them for approval prior to installation or construction. If required, the energy analysis must be updated when deferred submittals are provided for approval.
- (7) Required progress inspections. Supporting documentation shall also set forth all applicable required progress inspections in accordance with the Energy Code, 1 RCNY §101-07 and this section.
  - (i) Applicant's instructions regarding required progress inspections. Progress inspections required to be performed during construction for any new building, addition or alteration project shall be identified by the design applicant according to the scope of work and listed and described in the approved construction drawings as required progress inspections.

The description shall set forth the standard of construction and the inspection criteria as appropriate for the scope of work in accordance with Table I or Table II of subdivision (h) of this section, as applicable; simple reference to the citations provided, without such description, is not sufficient.

The applicant shall include the instruction that, in accordance with Section BC 110.9 and ECC 104.2.3, where an inspection or test fails, the construction shall be corrected and must be made available for reinspection and/or retesting by the progress inspector until it complies.

For additions and alterations, the applicant must clearly indicate what portions of the altered systems should be inspected and/or tested, and what inspection and/or testing may be outside the scope of the work.

- (ii) Construction scheduling instructions. The drawings shall state that, in accordance with Article 116 of Title 28 and Section BC 110, construction shall be scheduled to allow required progress inspections to take place, and that roofs, ceilings, exterior walls, interior walls, floors, foundations, basements and any other construction shall not be covered or enclosed until required progress inspections are completed or the progress inspector indicates that such covering or enclosure may proceed, at each stage of construction, as applicable.
- (iii) Commercial building reference standards and citations. Progress inspection reference standards and citations shall conform to the respective requirements of ECC Chapters C2 through C5 or ASHRAE 90.1 as used for design, in accordance with the following:



- (A) When ECC Chapters C2 through C5 have been used for the project design, as reflected in the energy analysis, the applicant shall list on the drawings the respective references and citations for ECC for the progress inspection.
- (B) When ASHRAE 90.1 has been used for the project design, as reflected in the energy analysis, the applicant shall list on the drawings the respective references and citations for ASHRAE 90.1 for the progress inspection.
- (h) List of progress inspections required. The following progress inspections and/or testing set forth in Tables I and II shall be required when applicable to the scope of work and shall be identified/described in the supporting documentation and included on the drawings submitted to the Department. Energy Code sections cited in Tables I and II of this section shall be understood to include the section, all subsections, all tables and, when ASHRAE 90.1 is used, appendices related to the cited Energy Code section.
- (1) Residential buildings. The progress inspections and tests described in Table I shall be performed for buildings regulated by ECC Chapter 4. For heating, cooling and/or service hot water systems in multiple dwellings, including where such systems serve a single dwelling unit, the applicant shall list inspections, tests and citations from Table II, in accordance with Section ECC 403.7.

**TABLE I – PROGRESS INSPECTIONS FOR ENERGY CODE COMPLIANCE – RESIDENTIAL BUILDINGS**

|           | <b>Inspection/Test</b>   | <b>Frequency (minimum)</b>   | <b>Reference Standard (See ECC Chapter 6) or Other Criteria</b> | <b>ECC or Other Citation</b>                                    |
|-----------|--|--|---|---|
| <b>IA</b> | <b>Envelope Inspections</b>  |  |   |   |
| IA1       | <b>Protection of exposed foundation insulation:</b> Insulation shall be visually inspected to verify proper protection where applied to the exterior of basement or cellar walls, crawl-space walls and/or the perimeter of slab-on-grade floors.  | Prior to backfill  | Approved construction documents                                 | 303.2.1   |
| IA2       | <b>Insulation placement and R-values:</b> Installed insulation for each component of the conditioned space envelope and at junctions between components shall be visually inspected to ensure that the R-values are marked, that such R-values conform to the R-values identified in the construction documents and that the insulation is properly installed. Certifications for unmarked insulation shall be similarly visually inspected. | As required to verify continuous enclosure while walls, ceilings and floors are open | Approved construction documents                                 | 303.1, 303.1.1, 303.1.2, 402.1, 402.2, 402.4.2.2, Table 402.4.2 |
| IA3       | <b>Fenestration U-factor and product ratings:</b> U-factors of installed fenestration shall be verified by visual inspection for conformance with the U-factors identified in the construction drawings, either by verifying the manufacturer’s NFRC labels or, where not labeled, using the ratings in ECC Tables 303.1.3(1) and (2).   | As required during installation  | Approved construction drawings; NFRC 100                        | 303.1, 303.1.3, 402.1, 402.3, 402.6                             |
| IA4       | <b>Fenestration air leakage:</b> Windows, skylights and sliding glass doors, except site-built windows, skylights and doors, shall be visually inspected to verify that installed assemblies are listed and labeled to the   | As required during installation  | NFRC 400, AAMA/WDMA/CSA 101/I.S.2/A440                          | 402.4.4   |

|           |  |   |   |  |
|-----------|--|---|---|--|
|           | referenced standard.   |   |   |  |
| IA5       | <b>Fenestration areas:</b> Dimensions of windows, doors and skylights shall be verified by visual inspection.  | Prior to final construction inspection                | Approved construction documents   | 402.3  |
| IA6       | <b>Air sealing and insulation – visual inspection:</b> Openings and penetrations in the building envelope, including site-built fenestration and doors, shall be visually inspected to verify that they are properly sealed, in accordance with Table 402.4.2.   | As required during envelope construction              | Approved construction documents; ASTM E283; ASTM E84; RCNYS                 | 402.4.1, 402.4.2.2, 402.4.3                          |
| IA7       | <b>Air sealing and insulation – testing:</b> Testing shall be performed in accordance with section ECC 402.4.2.1 and shall be accepted if the building meets the requirements detailed in such section. Test results shall be retained in accordance with the provisions of Title 28.  | Prior to final construction inspection                | ASHRAE/ASTM E779; ANSI Z65; Approved construction documents                 | 402.4.2.1  |
|           |  |   |   |  |
| <b>IB</b> | <b>Mechanical and Plumbing Inspections</b>   |   |   |  |
| IB1       | <b>Fireplaces:</b> Provision of combustion air and tight-fitting fireplace doors shall be verified by visual inspection.   | Prior to final construction inspection                | Approved construction documents; ANSI Z21.60 (see also MC 904), ANSI Z21.50 | 303.1.5; BC 2111; MC Chapters 7, 8, 9; FGC Chapter 6 |
| IB2       | <b>Shutoff dampers:</b> Not less than 20% of installed automatic or gravity dampers, and a minimum of one of each type, shall be visually inspected and physically tested for proper operation.  | Prior to final construction inspection                | Approved construction documents   | 403.5, 403.7, C403                                   |
| IB3       | <b>HVAC and service water heating equipment:</b> Heating and cooling equipment shall be verified by visual inspection for proper sizing. Pool heaters and covers shall be verified by visual inspection.   | Prior to final plumbing and construction inspection   | ACCA Manual J; Approved construction documents, including energy analysis   | 403.6, 403.7, 403.9, C403                            |
| IB4       | <b>HVAC and service water heating system controls:</b> System controls shall be inspected to verify that each dwelling is provided with at least one individual programmable thermostat with capabilities as described in ECC 403.1.1, and that such controls are set and operate as specified in ECC 403.1.1.<br><br>Controls for supplementary electric-resistance heat pumps shall be inspected to verify that such controls prevent supplemental heat operation when the heat pump compressor can meet the heating load.<br><br>Controls for snow- and ice-melting systems and pools shall be inspected for proper operation. Not less than 20% or one of each control type, whichever is more, shall be inspected.<br><br>Controls for turning off circulating hot water pumps when not in use shall be inspected for | Prior to final electrical and construction inspection | Approved construction documents, including control system narratives        | 403.1, 403.4, 403.7, 403.8, 403.9                    |

|           |   |  |  |   |
|-----------|---|--|--|---|
|           | an automatic or manual switch.  |  |  |   |
| IB5       | <b>HVAC insulation and sealing:</b> Installed duct and piping insulation shall be visually inspected to verify correct insulation placement and values.<br><br>Ducts, air handlers, filter boxes and building cavities used as ducts shall be visually inspected for proper sealing.  | Prior to closing ceilings and walls and prior to final construction inspection   | Approved construction documents; RCNYS M1601.3.1                           | 403.2.1, 403.2.2, 403.3, 403.4, 403.7; MC 603.9 |
| IB6       | <b>Duct leakage testing:</b> Where the air handler and/or some ductwork is in unconditioned space, duct-leakage testing shall be performed either after rough-in or post-construction to ensure compliance with ECC 403.2.2. Not less than 20% of such ductwork shall be tested.  | Prior to closing ceilings and walls and prior to final construction inspection   | Approved construction documents; ANSI/ASHRAE 152, ASTM E1554 Test Method A | 403.2.2, 403.7                                  |
|           |   |  |  |   |
| <b>IC</b> | <b>Electrical Power and Lighting Systems</b>  |  |  |   |
| IC1       | <b>Electrical energy consumption:</b> The presence and operation of individual meters or other means of monitoring individual dwelling units shall be verified by visual inspection for all dwelling units.   | Prior to final electrical and construction inspection                            | Approved construction documents  | 404.2   |
| IC2       | <b>Interior lighting power:</b> Lamps in permanently installed lighting fixtures shall be visually inspected to verify compliance with high-efficacy requirements.  | Prior to final electrical and construction inspection                            | Approved construction documents  | 404.1   |
|           |   |  |  |   |
| <b>ID</b> | <b>Other</b>  |  |  |   |
| ID1       | <b>Maintenance information:</b> Maintenance manuals for equipment and systems requiring preventive maintenance shall be reviewed for applicability to installed equipment and systems before such manuals are provided to the owner.<br><br>Labels required for such equipment or systems shall be inspected for accuracy and completeness. | Prior to sign-off or issuance of Certificate of Occupancy                        | Approved construction documents  | 303.3   |
| ID2       | <b>Permanent certificate:</b> The installed permanent certificate shall be visually inspected for location, completeness and accuracy.  | Prior to final plumbing, electrical and/or construction inspection as applicable | Approved construction documents  | 401.3; 1RCNY 5000-01(g)(5)                      |

- (2) Commercial buildings. The progress inspections and tests described in Table II shall be performed for buildings regulated by either ECC Chapters C2 through C5 or ASHRAE 90.1 as applicable.

**TABLE II – PROGRESS INSPECTIONS FOR ENERGY CODE COMPLIANCE – COMMERCIAL BUILDINGS**

|  | <b>Inspection/Test</b> | <b>Periodic (minimum)</b> | <b>Reference Standard (See ECC Chapter C5) or</b> | <b>ECC or Other Citation</b> |
|--|------------------------|---------------------------|---|------------------------------|
|--|------------------------|---------------------------|---|------------------------------|

|            |   |  | Other Criteria   |  |
|------------|---|--|--|--|
| <b>IIA</b> | <b>Envelope Inspections</b>   |  |  |  |
| IIA1       | <p><b>Protection of exposed foundation insulation:</b> Insulation shall be visually inspected to verify proper protection where applied to the exterior of basement or cellar walls, crawl-space walls and/or the perimeter of slab-on-grade floors.</p>  | As required during foundation work and prior to backfill                             | Approved construction documents                                  | C303.2.1; ASHRAE 90.1 – 5.8.1.7  |
| IIA2       | <p><b>Insulation placement and R-values:</b> Installed insulation for each component of the conditioned space envelope and at junctions between components shall be visually inspected to ensure that the R-values are marked, that such R-values conform to the R-values identified in the construction documents and that the insulation is properly installed. Certifications for unmarked insulation shall be similarly visually inspected.</p> | As required to verify continuous enclosure while walls, ceilings and floors are open | Approved construction documents                                  | C303.1, C303.1.1, C303.1.2, C402.1, C402.2; ASHRAE 90.1 –5.5, 5.6 or 11; 5.8.1 |
| IIA3       | <p><b>Fenestration U-factor and product ratings:</b> U-factors, SHGC and VT values of installed fenestration shall be visually inspected for conformance with the U-factors, SHGC and VT values identified in the construction drawings by verifying the manufacturer’s NFRC labels or, where not labeled, using the ratings in ECC Tables C303.1.3(1), (2) and (3).</p>  | As required during installation  | Approved construction documents; NFRC 100, NFRC 200              | C303.1, C303.1.3, C402.3; ASHRAE 90.1 –5.5; 5.6 or 11; 5.8.2                   |
| IIA4       | <p><b>Fenestration air leakage:</b> Windows and sliding or swinging door assemblies, except site-built windows and/or doors, shall be visually inspected to verify that installed assemblies are listed and labeled by the manufacturer to the referenced standard.</p> <p>For curtain wall, storefront glazing, commercial entrance doors and revolving doors, the testing reports shall be</p>  | As required during installation; prior to final construction inspection              | NFRC 400, AAMA/WDMA/CSA 101/I.S.2/A440 ASTM E283; ANSI/DASMA 105 | C402.4.3; ASHRAE 90.1 –5.4.3.2   |

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|            | reviewed to verify that the installed assembly complies with the standard cited in the approved plans.   |  |  |   |
| IIA5       | <b>Fenestration areas:</b> Dimensions of windows, doors and skylights shall be verified by visual inspection.  | Prior to final construction inspection | Approved construction documents  | C402.3; ASHRAE 90.1 – 5.5.4.2, 5.6 or 11              |
| IIA6       | <b>Air sealing and insulation – visual inspection:</b> Openings and penetrations in the building envelope, including site-built fenestration and doors, shall be visually inspected to verify that a continuous air barrier around the envelope forms an air-tight enclosure.<br><br>The progress inspector shall visually inspect to verify that materials and/or assemblies have been tested and meet the requirements of the respective standards, or that the building is tested and meets the requirements of the standard, in accordance with the standard(s) cited in the approved plans. | As required during construction        | Approved construction documents; ASTM E2178, ASTM E2357, ASTM E1677, ASTM E779, ASTM E283. | C402.4; ASHRAE 90.1 – 5.4.3.1                         |
| IIA7       | <b>Projection factors:</b> Where the energy analysis utilized a projection factor > 0, the projection dimensions of overhangs, eaves or permanently attached shading devices shall be verified for conformance with approved plans by visual inspection.   | Prior to final construction inspection | Approved construction documents, including energy analysis                                 | C402.3; ASHRAE 90.1 – 5.5.4, 5.6 or 11                |
| IIA8       | <b>Loading dock weatherseals:</b> Weatherseals at loading docks shall be visually verified.  | Prior to final construction inspection | Approved construction documents  | C402.4.6; ASHRAE 90.1 – 5.4.3.3                       |
| IIA9       | <b>Vestibules:</b> Required entrance vestibules shall be visually inspected for proper operation.  | Prior to final construction inspection | Approved construction documents  | C402.4.7; ASHRAE 90.1 – 5.4.3.4                       |
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| <b>IIB</b> | <b>Mechanical and Service Water Heating Inspections</b>  |  |  |   |
| IIB1       | <b>Fireplaces:</b> Provision of combustion air and tight-fitting fireplace doors shall be verified by visual inspection.   | Prior to final construction inspection | Approved construction documents; ANSI Z21.60 (see also MC 904), ANSI Z21.50                | C402.2.9; BC 2111; MC Chapters 7, 8, 9; FGC Chapter 6 |
| IIB2       | <b>Shutoff dampers:</b> Dampers for stair and elevator shaft vents and other outdoor air intakes and exhaust openings integral to the building envelope shall be visually  | As required during installation        | Approved construction documents; AMCA 500D   | C403.2.4.4; ASHRAE 90.1 – 6.4.3.4                     |

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|      | <p>inspected to verify that such dampers, except where permitted to be gravity dampers, comply with approved construction drawings.</p> <p>Manufacturer's literature shall be reviewed to verify that the product has been tested and found to meet the standard.</p>   |  |   |  |
| IIB3 | <p><b>HVAC and service water heating equipment:</b> Equipment sizing, efficiencies and other performance factors of all major equipment units, as determined by the applicant of record, and no less than 15% of minor equipment units, shall be verified by visual inspection and, where necessary, review of manufacturer's data.</p> <p>Pool heaters and covers shall be verified by visual inspection.</p>  | Prior to final plumbing and construction inspection  | Approved construction documents   | C403.2, C404.2, C404.7, C406.2; ASHRAE 90.1 – 6.3, 6.4.1, 6.4.2, 6.8; 7.4, 7.8                                     |
| IIB4 | <p><b>HVAC and service water heating system controls:</b> No less than 20% of each type of required controls and economizers shall be verified by visual inspection and tested for functionality and proper operation. Such controls shall include, but are not limited to:</p> <ul style="list-style-type: none"> <li>▪ Thermostatic</li> <li>▪ Set point overlap restriction</li> <li>▪ Off-hour</li> <li>▪ Shutoff damper</li> <li>▪ Snow-melt system</li> <li>▪ Demand control systems</li> <li>▪ Outdoor heating systems</li> <li>▪ Zones</li> <li>▪ Economizers</li> <li>▪ Air systems</li> <li>▪ Variable air volume fan</li> <li>▪ Single Zone Cooling Systems</li> <li>▪ Hydronic systems</li> <li>▪ Heat rejection equipment fan speed</li> <li>▪ Complex mechanical</li> </ul> | After installation and prior to final electrical and construction inspection, except that for controls with seasonally dependent functionality, such testing shall be performed before sign-off for issuance of a Final Certificate of Occupancy | Approved construction documents, including control system narratives; ASHRAE Guideline 1: The HVAC Commissioning Process where applicable | C403.2.4, C403.2.5.1, C403.2.11, C403.3, C403.4, C404.3, C404.6, C404.7; ASHRAE 90.1 – 6.3, 6.4, 6.5, 7.4.4, 7.4.5 |

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|  | <p>systems serving multiple zones</p> <ul style="list-style-type: none"> <li>▪ Ventilation</li> <li>▪ Energy recovery systems</li> <li>▪ Hot gas bypass limitation</li> <li>▪ Temperature</li> <li>▪ Service water heating</li> <li>▪ Hot water system</li> <li>▪ Pool heater and time switches</li> <li>▪ Exhaust hoods</li> <li>▪ Radiant heating systems.</li> <li>▪ HVAC Control in Group R-1 Sleeping Rooms</li> </ul> <p><b>Controls with seasonally dependent functionality:</b><br/> Controls whose complete operation cannot be demonstrated due to prevailing weather conditions typical of the season during which progress inspections will be performed shall be permitted to be signed off for the purpose of a Temporary Certificate of Occupancy with only a visual inspection, provided, however, that the progress inspector shall perform a supplemental inspection where the controls are visually inspected and tested for functionality and proper operation during the next immediate season thereafter.</p> <p>The owner shall provide full access to the progress inspector within two weeks of the progress inspector's request for such access to perform the progress inspection.</p> <p>For such supplemental inspections, the Department shall be notified by the approved progress inspection agency of any unresolved deficiencies in the installed work within 180 days of such supplemental inspection.</p> |  |  |  |
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| IIB5   | <p><b>HVAC insulation and sealing:</b> Installed duct and piping insulation shall be visually inspected to verify proper insulation placement and values.</p> <p>Joints, longitudinal and transverse seams and connections in ductwork shall be visually inspected for proper sealing.</p>  | After installation and prior to closing shafts, ceilings and walls             | Approved construction documents; SMACNA Duct Construction Standards, Metal and Flexible | C403.2.7, C403.2.8, C404.5, MC 603.9; ASHRAE 90.1 – 6.3, 6.4.4, 6.8.2, 6.8.3; 7.4.3 |
| IIB6   | <p><b>Duct leakage testing:</b> For duct systems designed to operate at static pressures in excess of 3 inches w.g. (746 Pa), representative sections, as determined by the progress inspector, totaling at least 25% of the duct area, per ECC C403.2.7.1.3, shall be tested to verify that actual air leakage is below allowable amounts.</p> | After installation and sealing and prior to closing shafts, ceilings and walls | Approved construction documents; SMACNA HVAC Air Duct Leakage Test Manual               | C403.2.7.1.3; ASHRAE 90.1 – 6.4.4.2.2   |
| <b>IIC Electrical Power and Lighting Systems</b> |   |  |   |   |
| IIC1   | <p><b>Electrical energy consumption:</b> The presence and operation of individual meters or other means of monitoring individual apartments shall be verified by visual inspection for all apartments and where required in a covered tenant space.</p>   | Prior to final electrical and construction inspection                          | Approved construction documents   | C405.7  |
| IIC2   | <p><b>Lighting in dwelling units:</b> Lamps in permanently installed lighting fixtures shall be visually inspected to verify compliance with high-efficacy requirements.</p>  | Prior to final electrical and construction inspection                          | Approved construction documents   | C405.1; ASHRAE 90.1 – 9.1.1   |
| IIC3   | <p><b>Interior lighting power:</b> Installed lighting shall be verified for compliance with the lighting power allowance by visual inspection of fixtures, lamps, ballasts and transformers.</p>  | Prior to final electrical and construction inspection                          | Approved construction documents   | C405.5, C406.3; ASHRAE 90.1 – 9.1, 9.2, 9.5, 9.6; 1RCNY §101-07(c)(3)(v)(C)4        |
| IIC4   | <p><b>Exterior lighting power:</b> Installed lighting shall be verified for compliance with source efficacy and/or the lighting power allowance by visual inspection of fixtures, lamps, ballasts and relevant transformers.</p>  | Prior to final electrical and construction inspection                          | Approved construction documents   | C405.6; ASHRAE 90.1 – 9.4.3; 1RCNY §101-07(c)(3)(v)(C)4                             |



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| IIC5             | <p><b>Lighting controls:</b> Each type of required lighting controls, including:</p> <ul style="list-style-type: none"> <li>▪ occupant sensors</li> <li>▪ manual interior lighting controls</li> <li>▪ light-reduction controls</li> <li>▪ automatic lighting shut-off</li> <li>▪ daylight zone controls</li> <li>▪ sleeping unit controls</li> <li>▪ exterior lighting controls</li> </ul> <p>shall be verified by visual inspection and tested for functionality and proper operation.</p> | Prior to final electrical and construction inspection           | Approved construction documents, including control system narratives   | C405.2; ASHRAE 90.1 – 9.4.1 (as modified by section ECC A102)      |
| IIC6             | <p><b>Exit signs:</b> Installed exit signs shall be visually inspected to verify that the label indicates that they do not exceed maximum permitted wattage.</p>   | Prior to final electrical and construction inspection           | Approved construction documents  | C405.4; ASHRAE 90.1 – 9.4.2  |
| IIC7             | <p><b>Electric motors (including but not limited to fan motors):</b> Where required by the construction documents for energy code compliance, motor listing or labels shall be visually inspected to verify that they comply with the respective energy requirements in the construction documents.</p>  | Prior to final electrical and construction inspection           | Approved construction documents  | C403.2.10; ASHRAE 90.1 – 10.4                                      |
| <b>IID Other</b> |  |   |  |  |
| IID1             | <p><b>Maintenance information:</b> Maintenance manuals for mechanical, service hot water and electrical equipment and systems requiring preventive maintenance shall be reviewed for applicability to installed equipment and systems before such manuals are provided to the owner. Labels required for such equipment or systems shall be inspected for accuracy and completeness.</p>   | Prior to sign-off or issuance of Final Certificate of Occupancy | Approved construction documents, including electrical drawings where applicable; ASHRAE Guideline 4: Preparation of Operating and Maintenance Documentation for Building Systems | C303.3, C408.2.5.2; ASHRAE 90.1 – 4.2.2.3, 6.7.2.2, 8.7.2, 9.7.2.2 |

- (i) Energy Analysis of Constructed Conditions. In accordance with Section 28-104.3 of the Administrative Code and section ECC 103.4, if constructed work differs from the last-approved full energy analysis, an as-built energy analysis shall be submitted to the Department, listing the actual values used in the building for all applicable Energy Code-regulated items and demonstrating that the building complies with the Energy

Code. Such energy analysis shall be signed and sealed by a registered design professional. The progress inspector shall certify that to the best of his or her knowledge and belief the building as built complies with such signed and sealed energy analysis and construction drawings for energy code compliance; where no trade-offs have been used among disciplines, more than one registered design professional may sign and seal the elements of the energy analysis. The energy analysis shall be approved or accepted by the Department prior to sign-off.