

# 1 RCNY §103-07

## CHAPTER 100

### Subchapter C Maintenance of Buildings

#### §103-07 Energy audits and retro-commissioning of base building systems

- (a) **Purpose.** This section sets forth the basic requirements for performing energy audits and retro-commissioning on certain buildings 50,000 square feet or more in floor area and submitting the associated Energy Efficiency Report (“EER”) in accordance with article 308 of chapter 3 of title 28 of the administrative code, and establishes violations for failing to submit an EER.
- (b) **References.** Article 308 of Chapter 3 of Title 28 of the New York City Administrative Code (“Article 308”); American Society of Heating, Refrigerating and Air-conditioning Engineers Inc. (“ASHRAE”) Procedures for Commercial Building Energy Audits, 2011 edition.
- (c) **Approved agency qualifications.** Individuals with relevant experience are deemed approved agencies pursuant to this section for the purpose of conducting energy audits and retro-commissioning of base building systems.
- (1) Energy auditor qualifications. The energy auditor performing or supervising the audit may not be on the staff of the building being audited and must meet the qualifications of either subparagraph (i) or (ii).
- (i) The energy auditor must be a registered design professional, and the energy auditor or an individual under the direct supervision of the energy auditor must be one of the following:
- (A) a New York State Energy Research and Development Authority- (NYSERDA) approved Flex Tech consultant;
  - (B) a Certified Energy Manager (CEM) or Certified Energy Auditor (CEA), certified by the Association of Energy Engineers (AEE);
  - (C) a High-Performance Building Design Professional (HPBD) certified by ASHRAE;
  - (D) a Building Energy Assessment Professional (BEAP) certified by ASHRAE; or
  - (E) for audits of multifamily residential buildings only, a Multifamily Building Analyst (MFBA), certified by the Building Performance Institute (BPI).
- (ii) The energy auditor must be an individual registered with the department and must be one of the following:
- (A) a Certified Energy Manager (CEM) or Certified Energy Auditor (CEA), certified by the Association of Energy Engineers (AEE);
  - (B) a High-Performance Building Design Professional (HPBD) certified by ASHRAE;
  - (C) a Building Energy Assessment Professional (BEAP) certified by ASHRAE; or
  - (D) for audits of multifamily residential buildings only, a Multifamily Building Analyst (MFBA), certified by the Building Performance Institute (BPI).
- (2) Retro-commissioning agent qualifications. The retro-commissioning agent performing or supervising the retro-commissioning may not be on the staff of the building being retro-commissioned and must meet the qualifications of either subparagraph (i) or (ii).
- (i) The retro-commissioning agent must be a registered design professional, a certified Refrigerating System Operating Engineer, or a licensed High Pressure Boiler Operating Engineer. In addition, the retro-commissioning agent or an individual under the direct supervision of the retro-commissioning agent must be one of the following:
- (A) a Certified Commissioning Professional (CCP) certified by the Building Commissioning Association (BCA);

- (B) a Certified Building Commissioning Professional (CBCP) certified by the AEE;
  - (C) an Existing Building Commissioning Professional (EBCP) as certified by the AEE;
  - (D) a Commissioning Process Management Professional (CPMP) certified by ASHRAE; or
  - (E) an Accredited Commissioning Process Authority Professional (ACPAP) approved by the University of Wisconsin.
- (ii) The retro-commissioning agent performing or supervising the retro-commissioning must be an individual registered with the department and must be one of the following:
  - (A) a Certified Commissioning Professional (CCP) certified by the Building Commissioning Association (BCA);
  - (B) a Certified Building Commissioning Professional (CBCP) certified by the AEE;
  - (C) an Existing Building Commissioning Professional (EBCP) as certified by the AEE; or
  - (D) a Commissioning Process Management Professional (CPMP) certified by ASHRAE.
- (3) Registration.
  - (i) General. An energy auditor or a retro-commissioning agent who is not a registered design professional must register with the department in accordance with the provisions of this paragraph. No such energy auditor or retro-commissioning agent may perform audits or retro-commissioning without a current registration.
  - (ii) Form and manner of registration. An application for registration must be submitted in a form and manner determined by the commissioner, including electronically, and the applicant must provide such information as the commissioner may require.
  - (iii) Certifications. All energy auditors or retro-commissioning agents who register with the department must obtain and maintain a current certification from one of the entities listed in subparagraph (ii) of paragraph (1) or subparagraph (ii) of paragraph (2) of this subdivision, as applicable. The certification must be presented to the department upon request.
  - (iv) Registration term. The term of an initial registration is three (3) years, beginning on the applicant's birthday following the date of registration, and may be renewed for additional three- (3) year periods after such initial registration.
  - (v) Registration and renewal fees. Fees will be those set forth in section 101-03 of these rules.
  - (vi) Renewals. A renewal application must be submitted between sixty (60) and ninety (90) days prior to the expiration date of the registration and must be accompanied by proof that the auditor or agent has, during the one (1) year period immediately preceding renewal, maintained a current certification as set forth in this rule.
  - (vii) Other applicable provisions. The provisions of sections 28-401.6, 28-401.8 and 28-401.19 of the Administrative Code shall apply to energy auditors and retro-commissioning agents registered pursuant to this paragraph.
- (d) **Energy Audit Procedures.** An energy audit must be performed on the base building systems of a covered building prior to filing an energy efficiency report. The scope of such energy audit must be at a minimum equivalent to the procedures described for a Level 2 Energy Survey and Analysis in accordance with *Procedures for Commercial Building Energy Audits*, 2011 edition, published by the American Society of Heating, Refrigerating and Air-conditioning Engineers, Inc. (ASHRAE). The building's operations and maintenance staff must be consulted at the start of and during the energy audit process in order to establish the current facility requirements.
- (e) **Contents of Energy Audit Report.** An audit report must be prepared for the owner that is at a minimum equivalent to the report prescribed by ASHRAE *Procedures for Commercial Building Energy Audits*, 2011 edition, and must include the information required by §28-308.2 of the Administrative Code. Such report must be retained by the owner in

accordance with subdivision (j) of this section. The energy auditor must certify that the audit satisfies the requirements of §28-308.2 of the Administrative Code and this rule.

(f) **Retro-commissioning procedures.** The base building system components subject to retro-commissioning as per §28-308.3 of the Administrative Code must be assessed in accordance with §28-308.3 of the Administrative Code, including the testing protocols, master list of findings and repairs and deficiencies corrected, and this section. Deficiencies found in the assessment must be corrected as required by this subdivision. Notwithstanding the particular provisions of this subdivision, where less than ninety percent of components tested in the initial sample set is found to be satisfactory, corrections may be made to all similar system components without further testing. The building's operations and maintenance staff must be consulted at the start of and during the retro-commissioning process in order to establish the current facility requirements.

(1) Operating protocols, calibration, and sequencing.

(i) Heating, ventilation, and air conditioning (HVAC) system temperature and humidity set points and setbacks. All major system components, such as chillers, boilers, cooling towers, air handlers, or pumps, must be tested to verify that such system set points and setbacks are appropriate to the current facility requirements. Where set points and setbacks require correction, the condition must be corrected and noted on the retro-commissioning report.

(ii) HVAC sensors.

(A) All critical sensors that are part of a control sequence and have direct control of a major piece of equipment such as a chiller, boiler, pump, or air handling unit of capacity greater than 5,000 cubic feet per minute must be tested for proper calibration. Where sensors require correction, the condition must be corrected and noted on the retro-commissioning report.

(B) For monitoring sensors that measure air flow or temperature but are not part of a control sequence, a sample set constituting ten percent of all monitoring sensors, but in no event fewer than ten individual sensors, must be tested for proper calibration. If more than ninety percent of the sample set is found to be satisfactory, then no further sampling is required for the purposes of the retro-commissioning report. If less than ninety percent of the sample set is found to be satisfactory, then all monitoring sensors serving base building systems must be tested for proper calibration. Where sensors require correction, the condition must be corrected and noted on the retro-commissioning report.

(iii) HVAC controls. All control sequences and critical controls that are part of a control sequence of a major piece of equipment such as a chiller, boiler, pump, or air handling unit of capacity greater than 5,000 cubic feet per minute must be checked for proper function. Proper function may be determined from interviews with facility staff, through trend analysis, field observation or dedicated data loggers. Where controls require correction, the condition must be corrected and noted on the retro-commissioning report.

(iv) Load distribution. Fans, boilers, and pumps that are designed to run in parallel on major systems greater than ten horsepower must be tested for proper load distribution across the individual components. Where load distributions require correction, the condition must be corrected and noted on the retro-commissioning report.

(v) Ventilation rates. A sample set constituting ten percent of all outdoor air intakes, but in no event fewer than three outdoor air intakes, must be measured to verify that the flow rates are appropriate for the current facility requirements. If more than ninety percent of the sample set is found to be appropriate, then no further sampling is required for the purposes of the retro-commissioning report. If less than ninety percent of the sample set is found to be appropriate, then all outdoor air intakes serving base building systems must be measured. Where flow rates require correction, the condition must be corrected and noted on the retro-commissioning report.

- (vi) System automatic reset functions. For each piece of major equipment, such as chillers, boilers, cooling towers, air handlers, or pumps, at least one energy-related reset function based on temperature or pressure must be tested to verify that the reset function is functioning properly. Where the reset function requires correction, the condition must be corrected and noted on the retro-commissioning report.
- (vii) Adjustments to oversized or undersized equipment. Only major equipment, such as chillers, boilers, cooling towers, air handlers, or pumps, serving base building systems must be required to be adjusted to perform as efficiently as possible for the current facility requirements. Where the equipment requires correction, the condition must be corrected and noted on the retro-commissioning report.
- (viii) Simultaneous cooling and heating. A sample set constituting ten percent of the HVAC system air handling units must be tested to verify that simultaneous heating and cooling is not occurring, unless intended. If the entirety of the sample set is found to be without unintended simultaneous heating and cooling, then no further sampling is required for the purposes of the retro-commissioning report. If any portion of the sample set is found to have unintended simultaneous heating and cooling, then all base building air handling units must be tested for unintended simultaneous heating and cooling. Where unintended simultaneous cooling and heating is occurring, the condition must be corrected and noted on the retro-commissioning report.
- (ix) HVAC System Economizer controls. The economizer controls serving all major air handling units with a minimum air circulation capacity of 5,000 cubic feet per minute must be tested for proper functionality through trends or functional testing. Where the economizer controls are found to require correction, the condition must be corrected and noted on the retro-commissioning report.
- (x) HVAC distribution balancing. All major systems that include chillers, boilers, cooling towers, air handlers, or pumps, must be tested for proper balance for current facility requirements. A major system as used in this subparagraph means a system that serves more than 10,000 square feet. If the system is found to be out of balance, the condition must be corrected and noted on the retro-commissioning report. System balancing may only be performed by an individual certified in the testing and balancing of HVAC systems by the National Environmental Balancing Bureau (NEBB), the Testing, Adjusting and Balancing Bureau (TABB), or the Associated Air Balance Council (AABC).

Exceptions:

1. if the HVAC distribution has been tested and balanced within the twelve months prior to the reporting date of the retro-commissioning report, then the records of such testing and balancing must be included in the retro-commissioning report and no further testing and balancing will be required.
2. if the HVAC distribution has been tested and balanced within the sixty months prior to the reporting date of the retro-commissioning report, then no further testing and balancing is required, provided that all of the following conditions are satisfied:
  - 2.1. Space configurations have not been altered to affect the HVAC system since the prior testing and balancing; and
  - 2.2. no new equipment has been installed and no existing equipment has been removed during the sixty months since the prior testing and balancing; and
  - 2.3. if the major systems are controlled by a Building Management System (BMS), the BMS is monitoring or controlling all relevant equipment; and

- 2.4. if the system is controlled by a BMS, more than ninety percent of the remote sensors, control valves, and control dampers are monitored or controlled by the BMS; and
  - 2.5. no piece of equipment is under manual control; and
  - 2.6. fewer than ten percent of the diffusers in the system require replacement; and
  - 2.7. if the system utilizes a Variable Air Volume (VAV) system, fewer than ten percent of the VAV terminal units are under manual control; and
  - 2.8. if the system utilizes economizers, all economizers and economizer controls are fully functioning; and
  - 2.9. the system supply air and water temperatures satisfy the current facility requirements.
3. If an HVAC system is out of balance but corrective work would be so extensive that it would require a work permit from the department, the condition need not be corrected in connection with the retro-commissioning but may be recommended for examination in connection with the energy audit.
- (xi) Light levels. A sample set constituting ten percent of the area served by base building lighting systems must be tested to verify that the lighting levels are appropriate for the current facility requirements. The sample set should include areas of different uses. If more than ninety percent of the sample set is found to be within fifteen percent of current facility required lighting levels for a given area, then no further sampling is required for the purposes of the retro-commissioning report. If less than ninety percent of the sample set is found to be within fifteen percent of current facility required lighting levels, then all areas served by the base building lighting system must be tested. Where the light levels are found to require correction, the condition must be corrected and noted on the retro-commissioning report.
- (xii) Lighting sensors and controls. A sample set constituting ten percent of the area served by base building lighting systems must be checked to verify that the lighting sensors and controls are functioning properly. The sample set should include areas of different uses. If more than ninety percent of the sample set is found to be served by properly functioning sensors and controls, then no further sampling is required for the purposes of the retro-commissioning report. If less than ninety percent of the sample set is found to be served by deficient sensors and controls, then all areas served by the base building lighting system must be checked to verify that the lighting sensors and controls are functioning properly. Where lighting sensors and controls are found to require correction, the condition must be corrected and noted on the retro-commissioning report.
- (xiii) Domestic hot water heater temperature settings. All major hot water heaters serving base building systems must be visually checked to verify that the temperature settings are accurate and are appropriate for the current facility requirements. Where a given base building system is served by multiple domestic hot water heaters, a sample set constituting ten percent of such heaters, but in no event fewer than three domestic hot water heaters, must be visually checked to verify that the temperature settings are appropriate. If more than ninety percent of the sample set is found to be appropriate, then no further sampling is required for the purposes of the retro-commissioning report. If less than ninety percent of the sample set is found to be satisfactory, then all domestic hot water heaters must be visually checked to verify that the temperature settings are appropriate. Where the temperature settings are found to require correction, the condition must be corrected and noted on the retro-commissioning report.
- (xiv) Water pumps. All water pumps greater than ten horsepower, excluding fire pumps, must be tested to verify that the devices are functioning to meet the current facility requirements. Where a pump is

found to require correction, the condition must be corrected and noted on the retro-commissioning report.

- (xv) Water leaks.
  - (A) All boilers and roof tanks must be visually checked to verify that they are not leaking water.
  - (B) For water distribution lines and makeup water lines including steam distribution, a sample set constituting ten percent of the areas where such lines are exposed must be visually checked to verify that no leaks are present. If the entirety of the sample set is found to be without water leaks, then no further sampling is required for the purposes of the retro-commissioning report. If any portion of the sample set is found to be leaking, then all areas where such water lines are exposed must be visually checked.
  - (C) For plumbing fixtures, such as faucets, toilets, and showerheads, served by base building systems, a sample set constituting ten percent of the fixtures must be visually checked to verify that they are without water leaks. If the entirety of the sample set is found to be without water leaks, then no further sampling is required for the purposes of the retro-commissioning report. If any portion of the sample set is found to be leaking, then all fixtures must be visually checked. All system water leaks identified must be repaired, and the condition must be noted on the retro-commissioning report.

(2) Cleaning and repair.

- (i) HVAC equipment. A visual inspection of all accessible HVAC equipment, including vents, ducts, coils, valves, and soot bins must be visually checked for cleanliness where required for proper operation. If within the scope of the visual inspection the equipment is found to require cleaning, then that equipment must be cleaned, and the condition must be noted on the retro-commissioning report.
- (ii) Filter cleaning and replacement. A sample set constituting ten percent of filters must be visually checked to verify cleanliness and tested to confirm that the filter is within the manufacturer's recommended pressure drop differential. The retro-commissioning agent must confirm with facility maintenance staff that a replacement protocol is in place for the replacement of filters according to the pressure drop differential or at least as frequently as the manufacturer's recommendation. Where such protocol is not in place, the lack of protocol must be noted as a deficiency to be corrected, and a satisfactory protocol must be developed in order to correct such deficiency and noted on the retro-commissioning report.
- (iii) Light fixture cleanliness. A sample set constituting ten percent of the area served by base building lighting systems must be visually checked to verify that light fixtures serving such areas are clean. If more than ninety percent of the sample set is found to be clean, then no further sampling is required for the purposes of the retro-commissioning report. If less than ninety percent of the sample set is found to be clean, then all areas served by the base building lighting system must be visually checked to verify that the lighting fixtures are clean. Lighting fixtures requiring cleaning must be cleaned and the condition must be noted on the retro-commissioning report.

Exception: Cleaning of lighting fixtures throughout a building for the purposes of retro-commissioning is not required where there is regular maintenance of fixtures and the condition of fixtures is such that gains in energy efficiency from extensive cleaning would be minimal.

- (iv) Operating conditions of motors, fans and pumps. A visual inspection of all motors, fans, or pumps, 5 horsepower and greater, and associated belts, pulleys, and bearings must be performed to determine that such components are in good operating condition. Where any motor, fan, or pump is found to require correction, the condition must be corrected and noted on the retro-commissioning report.

- (v) Steam traps.
- (A) The retro-commissioning agent must confirm with facility maintenance staff that a protocol is in place for the testing of steam traps and replacement of non-functional steam traps. Where such protocol is not in place, the lack of protocol must be noted as a deficiency to be corrected. A satisfactory protocol must be developed in order to correct such deficiency and noted on the retro-commissioning report.
- (B) A sample set constituting ten percent of all steam traps in areas served by base building system must be tested to verify operation. If more than ninety percent of the sample set is found to be functioning properly, then no further sampling is required for the purposes of the retro-commissioning report. If less than ninety percent of the sample set is found to be functioning properly, then all areas served by the base building steam system must be tested to verify that the steam traps are operational. All steam traps found to be functioning improperly must be replaced, repaired or rebuilt, and the condition must be noted on the retro-commissioning report.
- (vi) Manual override remediation. The retro-commissioning agent must confirm with facility maintenance staff that a protocol for the remediation of the issues causing manual overrides has been developed. Where such protocol is not in place, the lack of protocol must be noted as a deficiency to be corrected, and a satisfactory protocol must be developed in order to correct such deficiency, and the condition must be noted on the retro-commissioning report.
- (vii) Boilers tuned for optimal efficiency. A combustion efficiency test must be conducted for each boiler serving a base building system, and the boiler must be tuned and cleaned to perform at optimal efficiency for the current facility requirements.
- However, if the boiler has been tested and tuned within the twelve months prior to the reporting date of the retro-commissioning report, then the records of such tuning must be included in the retro-commissioning report, and no further testing and tuning will be required.
- (viii) Pipe insulation. All exposed hot and chilled water and steam pipes three inches in diameter and greater and pipe fittings must be visually checked for insulation. Where any such pipes are found not to be insulated, they must be insulated in accordance with the *New York City Energy Conservation Code* and noted on the retro-commissioning report.
- Exception: Insulation with asbestos. Existing insulation with asbestos containing materials found to be in need or replacement or repair shall not be required to be removed or replaced for the purposes of the retro-commissioning report. The condition must be noted on the retro-commissioning report and correction of such condition is not required.
- (ix) Sealants and weather stripping. A visual inspection must be conducted in a sample set constituting ten percent of all accessible locations to confirm that sealants and weather stripping are installed and in good condition. If any portion of the sample set is found to require correction, then all accessible locations must be visually inspected. Where any sealant or weather stripping is found to require correction, the condition must be corrected and noted on the retro-commissioning report.
- Exception: Sealants and weather stripping with asbestos. Sealants and weather stripping with asbestos containing materials shall not be required to be removed or replaced for the purposes of the retro-commissioning report. The condition must be noted on the retro-commissioning report and correction of such condition is not required.
- (x) Training and documentation. On-site documentation in accordance with §28-308.3(3) of the Administrative Code must be verified and noted on the retro-commissioning report. Verification of

training of critical operations and maintenance staff must be noted on the retro-commissioning report.

- (g) **Contents of retro-commissioning report.** In accordance with §28-308.3.1 of the Administrative Code, the retro-commissioning agent must prepare and certify a retro-commissioning report that satisfies the requirements of §28-308.3 of the Administrative Code and this rule. Such report must be retained by the owner in accordance with subdivision (j) of this section.
- (h) **Contents of Energy Efficiency Report.** An Energy Efficiency Report in accordance with §28-308.5 of the Administrative Code must be submitted to the department in accordance with §28-308.4 of the Administrative Code on forms prescribed by the department.
- (i) **Multiple buildings.**
  - (1) Multiple buildings on a lot. Two or more buildings on a lot that constitute a covered building in accordance with §28-308.1 of the Administrative Code are subject to an energy audit and retro-commissioning of base building systems as follows:
    - (i) Multiple buildings on a covered lot that are equipped with base building systems that are wholly separate from each other are subject to the requirements for an EER for each individual building.
    - (ii) Multiple buildings on a covered lot that share base building systems are subject to the requirements for an EER for each grouping of buildings that share base building systems.
  - (2) Multiple buildings on multiple tax lots that share systems. Two or more buildings on more than one tax lot that share base building systems are subject to the requirements for an EER for each grouping of buildings that share base building systems.
  - (3) Buildings on different blocks with shared base building systems. Two or more buildings on separate blocks that constitute a covered building in accordance with §28-308.1 of the Administrative Code are subject to the requirements for an EER for each grouping of buildings that share base building systems. The due date for the EER will be in the calendar year with a final digit that is the same as the last digit of the block number that is highest or with respect to a city building as defined in §28-308.1 of the Administrative Code in accordance with the schedule of the Department of Citywide Administrative Services.
- (j) **Record retention.** Owners of covered buildings as defined in § 28-308.1 of the Administrative Code must maintain the Energy Audit Report required by §28-308.2.1 of the Administrative Code and the Retro-commissioning Report required by §28-308.3.1 of the Administrative Code as proof of energy audits and retro-commissioning as required in Article 308. Such records must be retained for eleven years from the required submission date and must be made available to the department upon request.
- (k) **Fees.** Owners of covered buildings must pay a filing fee as provided in §101-03 of these rules.
- (l) **Extension of time to file report.**
  - (1) An owner may apply for an extension of time to file an energy efficiency report if, despite good faith efforts, the owner is unable to complete the required energy audit and retro-commissioning prior to the due date of the report, for reasons other than financial hardship of the building. The application must be on a form provided by the department and must be filed by October 1 of the year in which the report is due.
  - (2) An owner may apply for annual extensions of time to file an energy efficiency report based on the financial hardship of the building. The application must be on a form provided by the department and must be filed by October 1 of the year in which the report is due and by October 1 of every subsequent year for which an extension is requested.



(m) **Violation and penalty.** Failure to submit an EER is a Major (Class 2) violation which may result in a penalty of \$3,000 in the first year and \$5,000 for each additional year until the EER is submitted to the department. The department will not accept any outstanding EER submission if outstanding penalties are not paid in full.

(n) **Challenge to violations.**

(1) An owner may challenge a violation issued pursuant to this section by providing:

- (i) proof from the Department of Finance that the building in question is not a “covered building” as defined in section 28-308.1 of the Administrative Code; or
- (ii) proof of early compliance with the filing requirements pursuant to section 28-308.7 of the Administrative Code; or
- (iii) proof that the building is less than ten years old at the start of its first assigned calendar year; or
- (iv) proof that the base building systems underwent substantial rehabilitation within the preceding ten years; or
- (v) proof that the owner was granted an extension of time to file the report.

(2) Such challenge must be made in writing on a form provided by the Department within thirty days from the postmark date of the violation served by the Department.