

# **ENERGY AUDITS AND RETRO-COMMISSIONING**

## **Local Law 87**

### **Overview**

Although energy-efficiency retrofits generally result in major cost and energy savings, many buildings are not participating in the audits that would identify such cost-effective measures. This law will require large buildings to undergo an energy audit every ten years, along with retro-commissioning, to “tune up” the building’s existing systems and ensure efficient operation.

### **Applicability & Exemptions**

<b>Building Type</b>	<b>Required to Audit and Retro-commission</b>	<b>Exemption</b>
<b>City Buildings</b>	<ul style="list-style-type: none"> <li>▪ Buildings 50,000 gross square feet or more that are owned by the city or for which the city regularly pays all or part of the annual energy bills</li> <li>▪ Two or more buildings on the same tax lot that together exceed 100,000 gross square feet that are owned by the city or for which the city regularly pays all or part of the annual energy bills</li> <li>▪ Two or more buildings held in the condominium form of ownership that are governed by the same board of managers and that together exceed 100,000 gross square feet that is owned by the city or for which the city regularly pays all or part of the annual energy bills</li> </ul>	<ul style="list-style-type: none"> <li>▪ Buildings participating in the tenant interim lease apartment purchase program</li> <li>▪ Buildings participating in an HPD program</li> <li>▪ Buildings managed by NYC Health and Hospital Corporation</li> <li>▪ Any cultural institution that is in the Cultural Institutions Group as per the Department of Cultural Affairs</li> </ul>
<b>Commercial and Mixed-Use Buildings</b>	<ul style="list-style-type: none"> <li>▪ Building 50,000 gross square feet or more</li> <li>▪ Two or more buildings on the same tax lot that together exceed 100,000 gross square feet</li> <li>▪ Two or more buildings held in</li> </ul>	

	the condominium form of ownership that are governed by the same board of managers and that together exceed 100,000 gross square feet	
<b>Residential Buildings</b>	<ul style="list-style-type: none"> <li>▪ Building 50,000 gross square feet or more, OR</li> <li>▪ Two or more buildings on the same tax lot that together exceed 100,000 gross square feet, OR</li> <li>▪ Two or more buildings held in the condominium form of ownership that are governed by the same board of managers and that together exceed 100,000 gross square feet</li> </ul>	<ul style="list-style-type: none"> <li>▪ Residential property classified as class one in section 1802, subdivision one of the real property tax law, including: <ul style="list-style-type: none"> <li>○ 1, 2, and 3 family homes</li> <li>○ Condos and Co-ops with no more than 3 dwelling units</li> </ul> </li> </ul>

### **Additional Exemptions**

Buildings experiencing substantial financial hardship, including those on the Department of Finance’s tax lien list, and those exempt from real property taxes under sections 420-a, 420-b, 446 or 462, will be eligible for extensions.

No energy audit is required for buildings that have earned EPA Energy Star for two of the three years prior to an audit requirement, or earned LEED for Existing Buildings certification within four years prior to the audit requirement coming due. Other buildings that complete “simple retrofits” may also be exempt. These include individual heating controls, common area and exterior lighting in compliance with the NYC ECC 2010, low flow fixtures, insulated pipes, insulated hot water tanks, front-loading washing machines and cool roofs (please see section 28-308.2 for a more detailed list).

No retro-commissioning is required for buildings that have been certified under the LEED for Existing Buildings rating system within two years prior to filing the energy efficiency report and have earned both the LEED points for Existing Building Commissioning Investigation and Existing Building Commissioning Implementation.

### **Requirements**

#### *Energy Audits:*

Building owners must ensure that an energy audit is performed by or under the supervision of an energy auditor, and that the results of the audit are filed with the Department of Buildings as an energy efficiency report (the report will contain both information on the audit and retro-commissioning). Energy audits must include all

of the base building systems, including building envelope, HVAC systems, conveying systems, and electrical and lighting systems. The audit must identify all reasonable measures and capital improvements that would result in energy use or cost reductions, the associated savings, cost of implementation, and simple payback period.

*Retro-commissioning:*

Before filing an energy efficiency report, owners must also ensure that retro-commissioning is completed by a retro-commissioning agent for the required base systems. The efficiency of base building systems must include an analysis of operating protocols, calibration and sequencing, cleaning and repairs, and training and documentation issues. The retro-commissioning report must include information relating to the project team, building information, testing protocol, a master list of findings, and a catalogue of deficiencies corrected.

LEED-certified Existing Buildings earning a point for Existing Building Commissioning within two years of an energy efficiency report are exempt from the retro-commissioning requirement.

**Timeline**

The first energy efficiency reports for applicable buildings must be filed within the calendar year detailed below, as determined by the last digit of the building’s tax block number, with the first group being due in 2013:

<u>Last digit of tax block number</u>	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>
<u>Year first EER is due</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>

Note that buildings less than ten years old as of their first scheduled calendar year, or those that have undergone significant rehabilitation in the same time frame, may defer the date of their submissions. See section 28.308.4.1 for details on building eligibility. For those interested in pursuing audits and/or retro-commissioning early, please see section 28-308.7 and 28-308.8 for details.

**Compliance**

Energy efficiency reports must be filed by the building owner in the calendar year determined by tax block number (above). The energy audit and retro-commissioning must be completed within four years of filling the energy efficiency report.

The audit must be done in accordance with the requirements of an ASHRAE Level II Energy Survey (2004 edition).

Retro-commissioning should ensure the items listed in section 28-308.3 of the legislation are met. This includes the following items:

1. Operating protocols, calibration, and sequencing:

- 1.1. HVAC temperature and humidity set points and setbacks are appropriate and operating schedules reflect major space occupancy patterns and the current facility requirements.
- 1.2. HVAC sensors are properly calibrated.
- 1.3. HVAC controls are functioning and control sequences are appropriate for the current facility requirements.
- 1.4. Loads are distributed equally across equipment when appropriate (i.e. fans, boilers, pumps, etc. that run in parallel).
- 1.5. Ventilation rates are appropriate for the current facility requirements.
- 1.6. System automatic reset functions are functioning appropriately, if applicable.
- 1.7. Adjustments have been made to compensate for oversized or undersized equipment so that it is functioning as efficiently as possible.
- 1.8. Simultaneous heating and cooling does not occur unless intended.
- 1.9. HVAC system economizer controls are properly functioning, if applicable.
- 1.10. The HVAC distribution systems, both air and water side, are balanced.
- 1.11. Light levels are appropriate to the task.
- 1.12. Lighting sensors and controls are functioning properly according to occupancy, schedule, and/or available daylight, where applicable.
- 1.13. Domestic hot water systems have been checked to ensure proper temperature settings.
- 1.14. Water pumps are functioning as designed.
- 1.15. System water leaks have been identified and repaired.

2. Cleaning and repair:

- 2.1. HVAC equipment (vents, ducts, coils, valves, soot bin, etc.) is clean.
- 2.2. Filters are clean and protocols are in place to replace, as appropriate.
- 2.3. Light fixtures are clean.
- 2.4. Motors, fans, and pumps, including components such as belts, pulleys, and bearings, are in good operating condition.
- 2.5. Steam traps have been replaced as required to maintain efficient operation, if applicable.
- 2.6. Manual overrides on existing equipment have been remediated.
- 2.7. Boilers have been tuned for optimal efficiency, if applicable.
- 2.8. Exposed hot and chilled water and steam pipes three (3) inches or greater in diameter with associated control valves are insulated in accordance with the standards of the New York city energy

conservation code as in effect for new systems installed on or after July 1, 2010.

2.9 In all easily accessible locations, sealants and weather stripping are installed where appropriate and are in good condition.

3. Training and documentation:

3.1. Permits for all HVAC, electrical and plumbing equipment are in order.

3.2. Critical operations and maintenance staff have received appropriate training, which may include labor/management training, on all major equipment and systems and general energy conservation techniques.

3.3. Operational and maintenance record keeping procedures (log books, computer maintenance records, etc.) have been implemented.

3.4. The following documentation is on site and accessible to the operators: the operations and maintenance manuals, if such manuals are still available from the manufacturer, the maintenance contracts, and the most recent retro-commissioning report.

## **Who does the work**

The auditing team must include the following:

1. A registered design professional (professional engineer, PE or registered architect, RA) performing or supervising the audit and certifies the audit when it is complete
2. An individual with one of the following criteria:
  - a. A NYSERDA-approved Flex Tech contractor
  - 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, or
  - d. For audits of multifamily residential buildings only, a Multi-family Building Analyst (MFBA), certified by the Building Performance Institute (BPI)
3. An individual with at least three years of professional experience performing energy audits on buildings larger than 50,000 gross square feet
4. The building's operations and maintenance staff must be consulted at the start of and during the audit process

The retro-commissioning team must include the following:

1. A registered design professional (professional engineer, PE or registered architect, RA), certified Refrigerating System Operating Engineer, or a licensed High Pressure Boiler Operating Engineer must supervise and certify the retro-commissioning
2. An individual with one of the following criteria:

- a. Certified Commissioning Professional (CCP) certified by the Building Commissioning Association(BCA)
  - b. A Certified Building Commissioning Professional, certified by the Association of Energy Engineers (AEE)
  - c. A Commissioning Process Management Professional (CPMP) certified by ASHRAE, or
  - d. An Accredited Commissioning Process Authority Professional (ACPAP) approved by the University of Wisconsin
3. An individual with at least one year of professional experience performing retro-commissioning on buildings larger than 50,000 gross square feet
  4. The building's operations and maintenance staff must be consulted at the start of and during the retro-commissioning process