EO 1: RE-TUNE LARGE BUILDINGS EVERY SEVEN YEARS

NYC Building Code
This proposal was developed by the Energy & Ventilation Committee.

Summary

Issue:
Even the best-designed building systems drift away from optimal performance over time, due to broken parts, changes in use, and the accumulation of small changes in procedures and equipment.

Recommendation:
Every seven years, buildings larger than 50,000 square feet must be retro-commissioned, re-tuning the major building systems to ensure they all work together correctly. A similar proposal was incorporated into the Greener, Greater Buildings Plan, which became law prior to the issuance of this report.

Proposed Legislation, Rule or Study

Amendments to the New York City Administrative Code:

1. Add a new subchapter to Chapter 3 of Title 28 as follows:

Chapter 3 MAINTENANCE OF BUILDINGS

Article 308 RE-COMMISSIONING AND RETRO-COMMISSIONING OF EXISTING BUILDINGS

308.1 Definitions:

The following words and terms shall, for purposes of this chapter, applicable appendices and as used elsewhere in this code, have the following meanings:

CENTRAL SYSTEM. Includes (i) the exterior building envelope, as defined in Section 1402.1, and (ii) all energy-using building systems, not including that portion of any energy-using building system that the building owner may not access to the extent necessary for inclusion in any commissioning process under the terms of any applicable lease executed with respect to a portion of a large building occupied by more than one tenant prior to the effective date of the local law that added this section.

COMMISSIONING: A systematic process for investigating, analyzing, and optimizing the performance of building systems through the identification and implementation of low or no cost Facility Improvement Measures and ensuring their continued performance. The term “commissioning” shall include re-commissioning and retro-commissioning, as defined below.

COMMISSIONING AGENT. A person or agency approved by the department to perform commissioning and produce a commissioning report.

COMMISSIONING REPORT. A document setting forth the results of any commissioning process in the form provided by the department.

LARGE BUILDING. Any building or combination of buildings with a gross floor area equal to or greater than 50,000 square feet and located on a single lot.

RE-COMMISSIONING. The periodic re-implementation of the commissioning.

RETO-COMMISSIONING. The application of the commissioning process to an existing building that has not previously undergone the commissioning process.

308.2 Re-commissioning or retro-commissioning required. a. With respect to a large building having received either a temporary or permanent certificate(s) of occupancy pertaining to the entire building as of the effective date of the local law that added this section, the owner shall submit a commissioning report indicating that a commissioning...
agent has re-commissioned or retro-commissioned the central system of such building no earlier than two years prior to the date set forth in Section 308.3.

308.3 Schedule. A commissioning report shall be submitted to the department:
1. Within 180 days of issuance of an amended certificate of occupancy for a large building or any portion thereof that (i) changes the permitted use or occupancy of an area equal to or greater than 10,000 square feet, or (ii) changes the gross floor area of such large building by an area equal to or greater than 10,000 square feet; and
2. On a regular basis, as set forth below:
   (a) A commissioning report shall be submitted to the department prior to the second anniversary of the effective date of the local law that added this article; and (b) Subsequent commissioning reports for the building shall be due seven years after the submittal date of the previous commissioning report.

308.4 Notification. The department of finance shall notify every building two years prior to the due date, and each year thereafter until the due date.

Supporting Information

Issue - Expanded
There is growing recognition that most existing buildings have major opportunities for energy use reductions by better utilizing systems and equipment already in the building. Commissioning existing buildings, either through “retro-commissioning” or “re-commissioning”, as described in the proposed code language, can result in both substantial energy use reductions and improvements in occupant comfort conditions.

While commissioning of new buildings has become more common in recent years due to initiatives such as LEED and other high performance building programs, existing building commissioning has taken somewhat longer to catch on in the building industry. Recent research (see cost/savings section below) has demonstrated the significant energy savings potential from existing building commissioning, along with the extremely attractive economics. Beyond energy cost savings, many case studies of existing building commissioning also show additional non-energy benefits, such as improved system capacity and availability for comfort conditioning systems, and improved indoor environmental quality leading to increases in occupant comfort and productivity.

Environmental & Health Benefits
The need to address indoor air quality issues is often a driver of an existing building commissioning project. In fact, a recent review of 332 existing building commissioning projects, representing over 90 million square feet, showed that more than half of those projects were undertaken to “ensure adequate indoor air quality” or “ensure or improve thermal comfort.” While the valuation of improved occupant productivity is less rigorous than energy cost savings, many analyses have shown that productivity improvement benefits can often be several times larger than energy benefits.

This proposal was found to have a high, positive environmental impact per building and to impact a large number of buildings. It was thus given an environmental score of 3.

This proposal was found to have a positive, indirect health impact.

Cost & Savings
As described in the Executive Summary, Bovis Lend Lease prepared cost estimates for each Task Force proposal in the context of well-defined construction projects in specific buildings. Where possible, members of the Technical Committees prepared savings estimates for some of these projects and buildings. These cost and savings estimates are presented in the February 1st draft version of Appendix A. The innate uncertainty in how construction and operation will vary from one building to another, the complexity of the Task Force proposals, and the wide range of applications in which the proposals may be realized mean these figures are truly estimates.

This proposal was estimated to cost $0.30/square foot. It was thus categorized as incurring a higher cost increment. This proposal was also estimated to generate financial savings that will pay for the costs in less than three years.

Precedents
No direct requirement for commissioning has been found. California enthusiastically endorses the practice.

LEED
For new construction, LEED Enhanced Commissioning requires the involvement by the CxA in reviewing building operation within 10 months after substantial completion, including a plan for resolution of outstanding commissioning-related issues. However, there is no long-term re-commissioning initiative in LEED for new construction projects.
Under LEED EB-EA prerequisite 1 Existing Building Commissioning, teams may carry out a comprehensive commissioning process, or the team may choose to submit a 1- to 5-Year Plan for continuous improvement of commissioning requirements until all aspects are completed. While this time frame differs from the 7-year recommendation in this proposal, projects pursuing this 5-year LEED path will inevitably find it more feasible to document re-commissioning for the revised NYC building code.

Additional credits under LEED EB-EA credit 3.1, 3.2, & 3.3 Building Operations and Maintenance, require supporting appropriate operations and maintenance of buildings and building systems so that they continue to deliver building performance goals over the performance period. The LEED for Existing Buildings Performance Period is the period during which building performance data is collected for inclusion in a LEED for Existing Buildings certification application. While this time frame also differs from the 7-year recommendation in this proposal, projects pursuing the LEED path will similarly find it more feasible to document re-commissioning for the NYC building code.

Implementation & Market Availability
There is currently a shortage of energy engineers and auditors to supply the required services; however, this is quickly changing due to other PlaNYC initiatives.

ENDNOTES:
