



NEW YORK STATE COMMERCIAL CODE

For New Construction and Substantial Renovation

OVERVIEW

New York State has established significant energy goals in its Reforming the Energy Vision strategy. In October 2016, the state's commercial construction code was updated to align with international standards for energy efficiency and building performance. This introduced the code commissioning requirement. In May of 2020 a new version of the NYS code was adopted which updates certain requirements (noted in red), but leaves much of the 2016 framework in place:

This document briefly summarizes new commissioning requirements according to

- 2020 Energy Conservation Code of NYS (NYS ECC) Section C408,¹
- 2018 International Energy Conservation Code (2018 IECC)

These commercial codes governing commercial energy efficiency and system commissioning require a comprehensive commissioning process for projects involving a total mechanical capacity larger than

- > 480,000 BTU/hr COOLING, or
- > 600,000 BTU/hr HEATING & SERVICE HOT WATER

Rule of Thumb	Building Size
	<ul style="list-style-type: none">• Larger than 20,000 SF – typically WILL require commissioning• Smaller than 10,000 SF - typically will NOT require commissioning

CODE SPECIFIES THAT:

- **Construction Documents:** Commissioning Requirements must be included by notes in the Construction Documents (references to the specifications are allowed)
- **Commissioning Plan** must meet certain requirements and be prepared by a registered design professional or approved agency
- **Functional Testing** of equipment and controls must be performed and documented in a "Preliminary Commissioning Report" before final inspection by code official
- **Preliminary Commissioning Report** must be submitted prior to final inspection
- **Post-construction documents** include equipment manuals, submittals, as-built drawings
- **Final Commissioning Report** be completed within 90 days of Certificate of Occupancy

¹ Note: ASHRAE 90.1-2016 as amended by 19 NYCRR Part 1240 is considered an alternate compliance path, however it also requires commissioning (compliant with ASHRAE Guideline 1.1-2007 (HVAC&R Technical Requirements for the Commissioning Process))

BUILDING SYSTEMS WHICH MUST BE COMMISSIONED:

Mechanical Systems

- Mechanical Heating, Cooling, and Refrigeration Systems
- Air Handling and Distribution, Ventilation and Exhaust Systems, and Related Air Quality Monitoring Systems
- Air, Water, and Energy Recovery Systems
- Manual or automatic controls on all energy-using systems (local or remote temperature controls, setback sequences, occupancy-based controls)
- “Other systems, equipment and components that are used for heating, cooling or ventilation and that affect energy use”

Exception: Economizers covered by NYS ECC, Section C403.5 serving individual dwellings and sleeping units can be excluded from the required testing scope.

Service Hot Water Heating Systems

Plumbing, including (but not limited to):

- Domestic, mechanical service and process water systems,
- Pumping and mixing systems,
- Swimming pool and spa water heating systems, and
- All associated controls

Electrical Power and Lighting Systems

- Occupancy and vacancy sensors
- Daylighting systems
- Bi-level lighting controls
- Timeclock lighting controls

DELIVERABLES AND SCHEDULE IMPACTS:

Documentation	Responsible Party	Phase
<p>Construction Documents must list location and performance of each piece of equipment</p> <ul style="list-style-type: none"> • Each supply-air outlet/zone terminal must be adjustable. • All hydronic systems need means to adjust & measure flow — including individual heating/cooling coils. • Requirements include a document certifying that the installed lighting controls meet the documented performance criteria of the ECC be provided to the owner within 90 days • 90-day requirement for O&M, and As-Built documents must be written into the Contract Documents 	<p>Design Engineer</p>	<p>Construction Documents</p>
<p>Commissioning Plan must include:</p> <ul style="list-style-type: none"> • Narrative of commissioning process, including activities/phases/personnel • List equipment to be tested and test descriptions • Include measurable performance criteria (pass/fail) • List functions to be tested, including controls • List necessary testing conditions (summer/winter/etc.) 	<p>Commissioning Agent</p>	<p>Early Construction</p>
<p>Testing, Adjusting and Balancing Air and water side TAB required</p> <ul style="list-style-type: none"> • Results must be within tolerances in product specifications • Balancing will first minimize throttling losses, then fan/ pump speed (or impeller size) adjusted to design conditions <p>Exception: Fans under 1 HP and Pumps under 5HP</p> <ul style="list-style-type: none"> • A final Balancing report is required as part of the commissioning documentation. 	<p>Testing and Balancing by TAB firm.</p> <p>Engineers and Commissioning Agent review TAB report.</p>	<p>Construction</p>

Documentation	Responsible Party	Phase
<p>Functional Testing – Mechanical, Service Hot Water</p> <p>Tests based on design document requirements</p> <ul style="list-style-type: none"> • Intended to confirm all design modes, sequence of operation, part/ full load testing & maintenance serviceability • Include testing of emergency conditions • Includes controls tests/checklists that confirm calibration, sequences <p>Exception: Testing of economizers (listed in section C403.5 per IECC 2020) that serve individual dwelling units and sleeping units is not required.</p>	<p>Commissioning Agent</p> <p>Installing Contractors</p>	<p>Construction through Substantial Completion</p>
<p>Functional Testing - Lighting and Electrical</p> <p>Design professionals certify that lighting controls are tested and setup correctly before final inspection.</p> <p>Lighting Controls testing focuses on the following elements:</p> <p>Occupancy Controls – Sampling:</p> <ul style="list-style-type: none"> • Sample 7 minimum and at least 10% (or 1) of each unique type/geometry. • If more than 30% fail all remaining units of that type must be tested <p>Occupancy Controls – Testing Notes:</p> <ul style="list-style-type: none"> • Confirm the sensors are installed as per manufacturers requirements • Must verify no nuisance triggers <p>Time-switch –Testing must verify:</p> <ul style="list-style-type: none"> • Correct time/date, schedule and battery backup • Overrides are no more than 2 hrs and override switches are located in the space they control <p>Daylighting – Testing must confirm:</p> <ul style="list-style-type: none"> • Proper setup and calibration • Controlled lights are correctly located • Recalibration restricted to authorized personnel only 	<p>Design Engineer</p> <p>Commissioning Agent</p> <p>Installing Contractors</p>	<p>Construction through Substantial Completion</p>

Documentation	Responsible Party	Phase
<p>Preliminary Commissioning Report A preliminary commissioning report must be completed and issued prior to the final code inspection.</p> <ul style="list-style-type: none"> • Owner must notify Building Code Official they have received their preliminary report to trigger final inspection • Mechanical, DHW and electrical systems must be split into three sections • List of deficiencies not corrected at time of report, any deferred tests, and climate conditions needed to complete those tests must be included • Compliance Checklist (C408.2.4) is now required, which includes scheduled dates for retesting of all open issues. • Code Official must receive the Preliminary Report before considering the project final inspection to be acceptable (C408.2.4.1) 	<p>Commissioning Agent</p> <p>Installing contractors must resolve all major outstanding items for Preliminary Report to be issued.</p>	<p>Prior to final code inspection</p>
<p>Final Commissioning Report which includes:</p> <ul style="list-style-type: none"> • All test procedures & results • Functional test acceptance criteria • Disposition of deficiencies found during testing, including corrective measures used/proposed <p>And the following Final Documentation</p>	<p>Commissioning Agent</p> <p>Installing contractors must resolve <u>all</u> outstanding items for Preliminary Report to be issued.</p>	<p>Within 90 days of Certificate of Occupancy</p>
<p>Final Documentation</p> <ul style="list-style-type: none"> • Submittals • Manufacturer Operations & Maintenance manuals (mechanical, DHW, and lighting) • Name/address of at least 1 service agency • HVAC & DHW controls maintenance/calibration info (wiring diagrams, schematics, sequences, setpoints) • Control inspection/recalibration schedule • Narrative of system's intended operation • Documented confirmation that lighting meets electrical performance criteria. • Drawings (as-built) & TAB report 	<p>Contractors</p> <p>Design Engineer</p> <p>TAB firm</p> <p>Commissioning Agent</p>	<p>Within 90 days of Certificate of Occupancy</p>

CONCLUSION

New York State has substantially increased the depth and breadth of commissioning required to meet its commercial energy code requirements. By planning ahead and engaging a commissioning agent prior to issuing bid documents, the prudent building owner and project team will ensure that fulfilling these requirements is fully integrated with project development and completion. The Building Commissioning Association website at www.bxca offers many resources, including the [CCP Registry](#) of certified commissioning professionals. The long term benefits of commissioning as specified by NYS will be optimized building systems performance and reduced energy usage, beginning at occupancy and continuing throughout the life cycle of the building.

ABOUT THE AUTHORS

Lou Vogel and Nate Goodell are both Certified Commissioning Professionals through the BCxA and Existing Building Commissioning Professionals through AEE. Together they have commissioned over 3 million square feet and worked on projects ranging from multi-million dollar school, hospital and public buildings, to small office buildings, theaters, industrial and commercial projects. They can be reached with questions at lvogel@titem.com and ngoodell@titem.com or by phone at 315.600.8544.

ABOUT TAITEM ENGINEERING

Taitem Engineering is a full-service consulting engineering firm at the forefront of innovative, sustainable design and building science. Founded in 1989 with a focus on energy efficiency and green building design, its team of design engineers, commissioning agents, energy analysts, and sustainability consultants works with clients to help create new high-performing buildings and improve the performance of existing buildings. Taitem also works with state and local agencies to ensure their energy programs deliver savings.

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