Recent Cx Projects

- √ New Hampshire SPCA
- √ Grappone Toyota
- √ Lindt & Sprungli
- √ Durham Town Hall
- √ Effingham Town Hall
- √ Nobis Engineering
- √ Holderness School
- √ The Wyeth Buildings
- √ Various LEED buildings
- √ Various multi-family buildings
- √ CSX Transportation

Case Study

Project Name:

New Hampshire Society for the Prevention of Cruelty to Animals

Building Type and Square Footage:

Animal Adoption Center and Learning Center, 18,000 SF

Overview story:

New Hampshire SPCA is a mission-driven organization where every donation raised improves the lives of the animals sheltered there. Wasting money on energy undermines the mission. New Hampshire SPCA underwent significant energy upgrades including airsealing, insulation, and fuel switching to wood-pellet boilers and solar hot water. These sophisticated systems need to integrate with the older existing systems, some of which were not optimized. This project's Cx work included on-site inspections, data logging, occupancy survey for feed-back, remote monitoring of systems and trouble shooting, assembling manuals and systems documentation, training staff, and working with New Hampshire SPCA's existing contractors to understand, integrate, and maintain the systems going forward.

CX identified issues in need of attention:

CX found problems, that once addressed by the appropriate trades, will improve energy usage and comfort. We found simul-taneous heating and cooling; dampers that didn't close and/or didn't work; Building Management System set points incorrectly programmed; mixing valves that didn't operate; gaps in training and documentation for facilities staff; and deferred mainte-nance issues that could lead to premature equipment failure.

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The Jordan Institute

Resilient Buildings Group is a majority-owned, for-profit subsidiary of The Jordan Institute, a non-profit energy-use reduction think tank.

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Superior energy performance

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Commissioning

Optimize your building and its energy systems

- √ Save energy and energy dollars
- √ Improve comfort = better morale, attendance, productivity
- √ Improve indoor air quality
- √ Reduce noise, odors, vibrations, drafts
- √ Train and empower staff
- √ Reduce emergency maintenance
- √ Improve understanding of energy systems and integration
- √ Improve systems documentation
- √ Meet LEED certification requirement and credits
- √ Maintain warranties
- √ Avoid premature equipment failure and safety issues
- √ Avoid simultaneous heating and cooling
- √ Comply with next versions of energy code

Ensure energy systems work together and as designed

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What is Cx?

Building Commissioning (Cx) is the process of verifying and optimizing mechanical (HVAC), plumbing, electrical, building envelope, renewable energy, lighting, controls, and other systems to achieve proper operation and maximum efficiency as intended by the building owner and as designed by the architects and engineer. Like an energy audit, the Commissioning Agent discovers problems to be addressed by the responsible trade—plumber, electrician, controls specialist, etc.

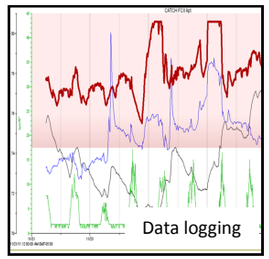
Retro-commissioning (RCx) is the methodical process of testing and documenting existing systems to be fixed by responsible trades when a building has never been Cx'd.

Re-commissioning is the periodic review of systems previously commissioned—considered a Best Practice.

Building commissioning is a quality-focused process necessary for modern construction projects, integrating sophisticated and aging systems. Involving the Cx agent from project initiation through 1 year of occupancy and energy data monitoring. Ideally there is an on-going Cx program and team for the life of the building.

The basic formula for successful building Cx involves a synergistic team from pre-design who work together throughout the entire project and over see on-going monitoring for the life of the building. This includes developing a scope and plan, benchmarks for success, pre-functional testing, review of design documents and construction submittals, checklists for achieving the goals, facilitating contractor training, witnessing and verifying construction phase tests, periodic site observations during construction, and performing Cx functional testing as the project nears completion.

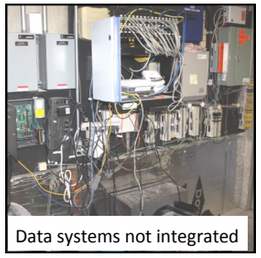
While the practice of Cx is still fairly new to some in the construction industry, building owners and developers recognize the value of this process and the crucial role it plays in getting more out of their investment.


Data logging


Window testing


Plans review


Clogged air intake


Data systems not integrated

FAQs about Cx

Why is Commissioning important?

Commercial buildings frequently undergo operational and occupancy changes that challenge the mechanical, electrical, controls, envelope, and renewable energy systems, hindering optimal performance. In today's complex buildings, systems are highly interactive with sophisticated controls that can create a trickle-down effect on building operations: small problems have big effects on performance. Unfortunately, most buildings have never gone through any type of Cx process to ensure that they operate optimally when installed. Even well-constructed buildings experience performance degradation over time. No matter how well building operators and service contractors maintain equipment, if it operates incorrectly or inefficiently, energy waste and reliability problems can occur.

Is it really an issue?

A 2006 Lawrence Berkeley National Laboratory CX study found 11 "Deficiencies" per building among 225 commercial buildings (150 existing, 75 new). Fixing those "Deficiencies" yielded 15% energy savings with payback in 8 1/2 months. **RBG** typically finds significant opportunities in buildings we Cx.

Why an independent third party?

Even the greatest writers need editors and athletes rely on coaches. The building code inspection process ensures that compliant equipment is installed, but does not confirm proper systems functioning or integration, and doesn't review existing systems. Commercial buildings are important assets to their owners and local communities. Fresh eyes and perspective are crucial for optimized operation of your building. A Commissioning Agent is an independent third-party who has no vested interest in selling equipment. **RBG** is a mission-driven company; we want to eliminate energy waste from your building so it performs the way it should.

How much does Cx or RCx cost?

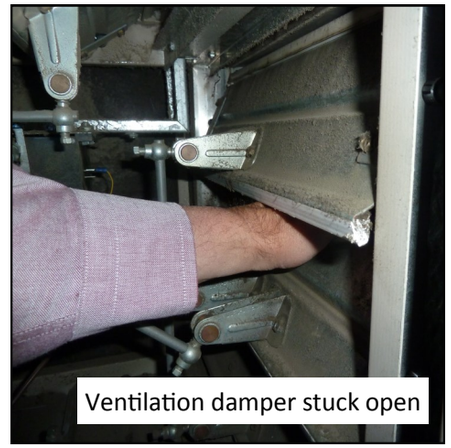
The scope of work, size, age of the building, and the complexity of the building systems are some factors that affect project costs. It is also important to understand that the Cx finds the problems which then need to be addressed by the appropriate trade. The act of searching out, identifying, and reporting Cx ranges in costs from $0.50/SF—$2.00/SF, depending on numerous variables.

If Cx is so great, why haven't I heard of it?

You have now! LEED, most green-building programs, and the 2012 International Energy Conservation Code require Cx for new commercial buildings. Existing buildings do not require RCx but can realize significant savings and other benefits. Cx is recognized as one most cost-effective measures to identify energy-system problems and thus save energy and operations costs.


Unusable test port


Duct to Nowhere


Ventilation damper stuck open