



## Why Don't More Buildings Get Commissioned?

By Jennifer Creighton, Kelly Kosco, Greg Bogard and Peter Locke of McKinstry

*If building commissioning saves the average building owner 10 percent of their annual energy and water costs and extends the life of systems and equipment, why don't more building systems get commissioned?*

Good question, we're wondering the same thing.

The practice of building commissioning has been in existence for more than 30 years, yet, it's misunderstood by building owners and the construction industry alike. Commissioning is not testing, adjusting and balancing (TAB) or a punchlist item, and it's not building maintenance—it's the process of verifying that systems are designed, installed, functionally tested and performing in conformity with the building owner's expectations and operational needs. New buildings should be thoroughly commissioned prior to the turnover to building operators to validate the system installations, meet the occupant's operational needs, efficiency goals and expectations. In a perfect world the commissioning process continues forward through ongoing commissioning. Ideally, facilities should then be formally re-commissioned every five years after to identify over-arching or hidden problems and improve performance in existing buildings. Regular building commissioning can extend the life of equipment, lessen the demand for virgin materials and reduce energy and water consumption, increasing the sustainability and performance of the building.

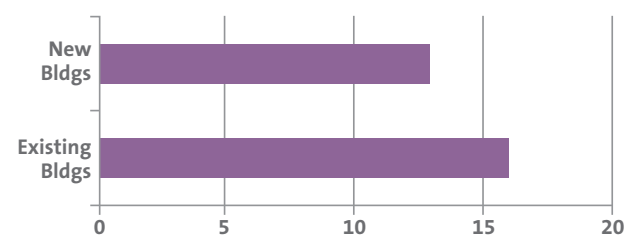
Now that we've established the basics of commissioning, let's talk about what it's going to cost and save, clarify how it can be useful to owners and Construction Managers—and why every owner should do this.

You might have thought that commissioning was cost prohibitive. Is that true? No! Looking at a broad sample of studies provided by Portland Energy Conservation, Inc. we've determined that the industry standard for the cost of commissioning a new building is an estimated \$1/sq. ft. and

an existing building is about \$0.50/sq. ft. When you compare these costs to the average industry savings of 10 percent of the facility's energy bill, the building owner that engages a quality commissioning firm with experienced Certified Commissioning Agents is highly likely to save themselves money. To encourage commissioning, many jurisdictions actually incentivize it by subsidizing the first \$0.15 to \$0.50/sq. ft. incurred by an existing building owner undergoing building commissioning. Furthermore, commissioning is a prerequisite for the U.S. Green Build Council rating systems for LEED NC, CI and CS, as well as offering the potential for additional points for enhanced commissioning. Meeting these LEED requirements may be a factor in securing certain utility rebates or incentives. On average the costs (not subsidized by any incentives or rebates) and savings of building commissioning break even and begin paying the owner back for their investment within three to four years of fixing problems identified and sometimes drastically quicker.

Advanced Building Commissioning, a member of the nationally recognized Building Commissioning Association, estimates about 13 percent energy saving for new buildings and 16 percent energy savings on average after existing building commissioning. See Figure 1 below.

**% Energy Savings After Building Commissioning**



Above chart based on commissioning results of 643 projects throughout U.S.

The owner's benefits from re-commissioning an existing building are easy to identify; energy and water cost savings over time and lower corrective service and maintenance expenses as your systems begin to age. Commissioning often identifies opportunities to reduce the greenhouse gas emissions from the facility. The results of commissioning provide a baseline and can be compared directly to the information gathered after the previous commissioning effort or to EPA Energy Star or Commercial Buildings Energy Consumption Survey (CBECS) data. The process of ongoing commissioning can be used in buildings to verify hourly performance to find energy use patterns due to weather condition and building use. In part, the commissioning agent's assessment can even be used to gauge the soundness of a property management firm responsible for the property.

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But why would you need to commission a new building? It's new, so by definition it works, right? Yes, prior to building turnover the systems will be tested for basic functionality but not to optimize efficiency. Building construction is a fractured industry and more than likely, a number of different firms have worked together to conceptualize, design, engineer and construct your building. A third party commissioning agent is contracted directly by the owner to give a qualified, pull-no-punches assessment of the building systems throughout the process of design and construction. If contracted early, a commissioning agent will review the design during the design stage to confirm that the building will meet the expectations of the owner and intercept any problems that could be costly to fix later. During the startup of equipment and systems, the commissioning agent confirms that the systems have been installed properly and that the system controls are in working order. After construction is complete and prior to owner occupancy, the commissioning agent is responsible for verifying and thoroughly testing the systems in addition to confirming that the facility engineers have been properly trained on

system operation. The end result is a more sustainable and higher performing building with lower utility demands and fewer ongoing building issues that are costly to repair.

How does it benefit the Construction Manager? Working with the commissioning agent on a new construction or renovation project results in a better performing building overall. Fewer issues and better building performance results in a happier client who is more likely to return to your firm when it's time to begin phase two on the empty patch of ground next door.

So again, if building commissioning can reduce utility and annual service and maintenance costs, improve the sustainability of buildings and make both the building owner and the Construction Manager's lives easier, **why don't more buildings get commissioned?**

Do you have an answer? Send your observations to Jennifer Creighton, CMAA Sustainability Committee, at [JenniferC@mckinstry.com](mailto:JenniferC@mckinstry.com). Together, we'll get to the bottom of this mystery! **CM**

Established in 1960, McKinstry is a full-service design, build, operate and maintain (DBOM) firm with more than 1,600 employees and approximately \$400 million in annual revenue. Jennifer Creighton can be reached at [JenniferC@mckinstry.com](mailto:JenniferC@mckinstry.com).