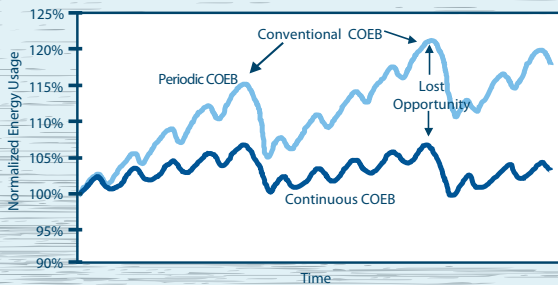


# COMMISSIONING BENEFITS

Conventional commissioning of existing buildings provides on average an annualized **benefit of 10 to 15% by improving the operating efficiency with a return on investment typically seen in less than three years.** Other benefits include non-energy benefits such as equipment life, indoor-air quality, and thermal comfort which are at least as significant as the energy savings.

The use of continuous commissioning provides further benefits. It validates that **energy saving measures** put in place are delivering the benefits on an ongoing basis. Continuous commissioning provides **additional capabilities** to the operating team to detect problems, and to find new opportunities for more energy savings. Finally, continuous **commissioning can reduce peak period electricity demand by 5%.**

**Continuous Application of Commissioning Assures Permanence, Higher Savings**



Source : Costs Savings from Operational Energy Efficiency: a Case Study from WCSU, EnerNOC Inc., 17<sup>th</sup> National Conference on Building Commissioning (NCBC), 2009.



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## AWARENESS SERIES

# What is Commissioning of Existing Buildings?

© Her Majesty the Queen in Right of Canada 2011  
Cat. No.: M154-43/2011E  
ISBN: 978-1-100-18703-7

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## Why Commissioning?

**Today, buildings are more complex** with increasingly specialized and integrated systems. Many factors need to be considered to achieve energy savings, if only to avoid costly operational inefficiencies. Once a building is operationally and energetically sound, other factors need to be considered to **maintain the benefits of optimization over time**.

The cost savings that are achieved and locked-in through commissioning and persistence strategies can be used by **building owners for further benefits**. Building owners may invest the cost savings in **more efficient energy** technologies or they may choose to convert the savings into carbon credits or make the building carbon neutral. Energy savings provide opportunities to building owners but the question is where to begin?

**Commissioning of existing buildings (COEB) is a powerful solution** that provides risk management and quality assurance to building owners, who face the challenges of higher energy costs and the need to improve the operational efficiency and the sustainability of mechanical equipment, lighting and related controls.

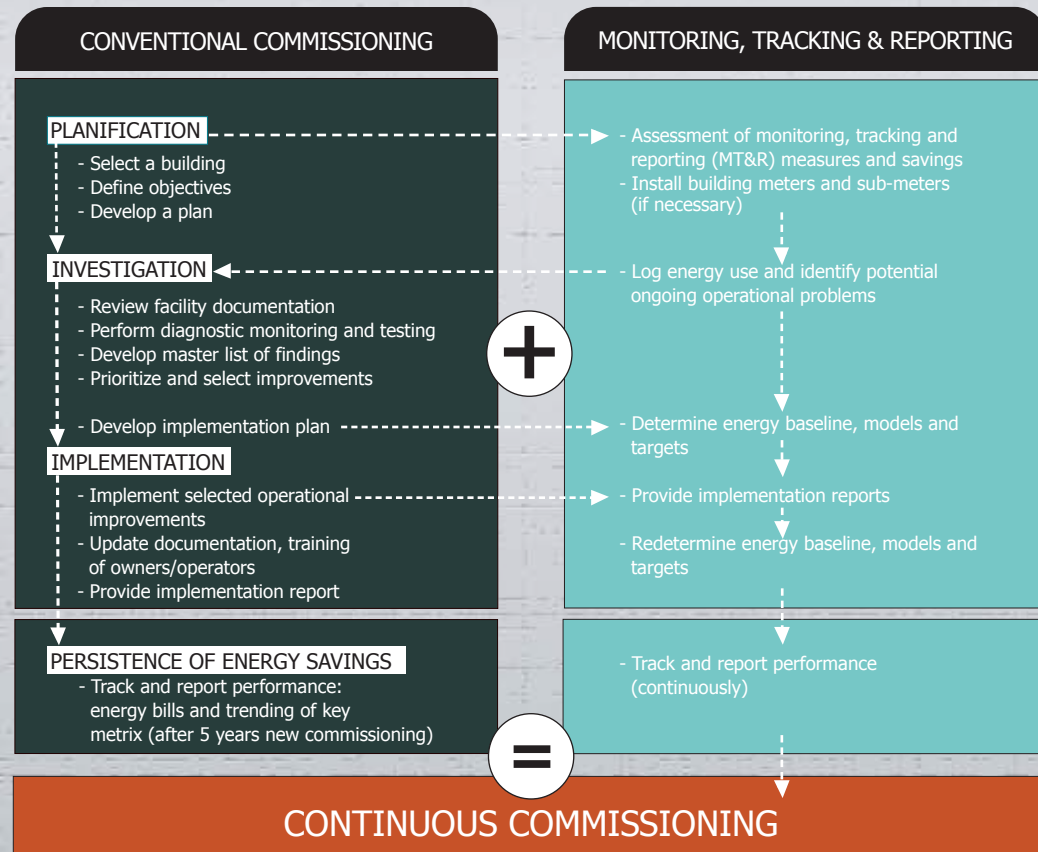


## COMMISSIONING SOLUTIONS

COEB is the single-most cost-effective strategy for reducing energy costs and greenhouse gas emissions in buildings. It provides a rigorous investigation approach to identify problems and integration issues. It ensures that building equipment and systems are operating optimally. Building owners use commissioning for tune-ups and optimization of equipment and systems that are usually performed periodically. A **tune-up** is a quick analysis that includes minor maintenance and capital costs. **Optimization** is a wider and deeper systematic process that includes low cost measures such as building system documentation, standardizing operation procedures, building operation training, and performance monitoring and verification.

Building owners may also use COEB as a starting point to a **staged energy management plan**. Before engaging into retrofit projects, building owners are using COEB to get insights on how to manage performance and risks. Furthermore, facility managers and operators who have been trained during the commissioning process may provide insights on how to set priorities for future capital projects.

Building owners use COEB to establish a long-term **energy conservation** vision and goals. The commissioning process provides the opportunity for management, service providers and building operators to discuss and implement changes to reduce energy usage while fostering a culture of conservation across the entire organization. The COEB offers two solutions: **conventional commissioning and continuous commissioning**. COEB conventional is composed of four phases which are executed successively. Combined with monitoring, tracking and reporting techniques, COEB conventional becomes continuous COEB. Buildings equipped with a central control system are good candidates to use continuous COEB. Energy consumption of building equipment and systems can be monitored by the energy management information system (EMIS) which ensures the monitoring, tracking and reporting of data to management; and by a fault detection and diagnostic software (FDD) such as the agent for building operation (DABO™) which provides advanced monitoring capabilities to building owners.



### MAKING SAVINGS LAST

Ensuring that energy savings are achieved and will last over time is a critical aspect of building energy systems. **Continuous COEB** provides building operators a quick response to system errors and problems that may have otherwise gone undetected and it **ensures that energy savings** are maintained.

In buildings with no ongoing **monitoring and tracking system**, the persistence of energy measures and savings can be achieved by tracking energy bills, improving documentation and by training the **owners and operators**.