

Ready and Underway: The Owner's Case for Commissioning

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Commissioning is a term borrowed from naval architecture by which a ship and its crew undergo – and pass – a range of tests and training before the navy accepts the ship into service. When applied to building construction, commissioning is simply the assurance by an independent party that a building is designed and constructed and will operate in full conformance with the owner's requirements.

The complexity of modern buildings often leaves owners figuratively at sea. “Did we really get everything we paid for?” and “How do we operate this thing?” are two questions that often linger long after the ribbon cutting. The answers “Yes, we did” and “Yes, we can” start with commissioning. This paper is a brief introduction to the process and components of the basic commissioning process.

First, let's define some new elements and players involved in commissioning:

- commissioning authority (CA)
- owner's project requirements (OPR)
- basis of design (BoD)

Building commissioning is moving into mainstream AEC practice not only as a prerequisite for LEED certification but also as a design and construction requirement of the Federal GSA, of New York City Mayoral Agencies, and of many other public and private owners throughout the United States.

Commissioning adds a new participant to the AEC team, the commissioning authority (CA), who administers the commissioning plan and provides oversight, guidance, and independent verification that a building's systems, operations, and envelope perform as mandated by the owner's project requirements (OPR), by the A/E's basis of design (BoD), and by the project's contract documents. In addition to verifying that systems and assemblies conform to the OPR, the CA also develops an operations and maintenance (O&M) manual and confirms that building staff are fully trained in the use of building systems and equipment.

The CA's commissioning report concludes the entire process. It documents that the building's equipment, assemblies, and systems conform to the commissioning plan's requirements and that building staff were trained in the use and operation of these systems.

The commissioning process extends from early design (or sometimes even predesign) through construction completion and beneficial use.

During early design, the owner, with assistance from the A/E and the CA, develops the OPR to conceptually define the building's functional and operational benchmarks. The OPR content varies from project to project, but per LEED v4 it should at a minimum cover HVAC systems and controls; lighting and daylighting controls; domestic hot water systems; renewable energy systems; and building envelope performance. The individual owner and project circumstances will inform the substance of additional

requirements to include in the OPR. For example, these could include universal design, acoustics, durability, design excellence, standards integration, and security.

The BoD expands the OPR's conceptual scope into a specific, technical narrative for achieving the OPR. It will include performance criteria, references to applicable codes and standards, equipment lists, and other relevant information, such as a building operations narrative.

The CA will then use these documents to develop and implement the commissioning plan, which ensures that the A/E's documents, the construction manager's submittal protocols, and the actual construction work all conform to the OPR and BoD. The CA will review design documents and submittals, test equipment in the field, issue reports on conformance or deficiencies, verify that deficiencies are rectified, and confirm that operator training has taken place. At substantial completion, the CA will produce a commissioning report that documents adherence with the commissioning plan and includes copies of the training, operations, and maintenance documents.

With the commissioning plan fulfilled, an owner has detailed knowledge of the building's performance capabilities, and assurance that the technical specifications were faithfully executed and that operations staff received proper instruction in operating the systems. Commissioning helps assure the owner that the building is ready for its voyage.

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