The OPR - The Most Neglected Deliverable in Commissioning

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Learning Objectives

1. Attendees will evaluate ways to change commissioning process requirements by writing a better Owners Project Requirement (OPR) to incorporate performance based commissioning into a project.

2. Attendees will identify common areas in the commissioning process that do not receive the same level of attention from project to project.

3. Attendees will analyze case studies of several commissioned projects that still had issues related to design and construction years after occupancy.

4. Attendees will review commissioning standards to realize that they do not establish minimum performance requirements for commissioning.
Defining the Owner’s Project Requirements (OPR)

How many of you have ever written an Owner’s Project Requirements (OPR) Document?

Aileron Conference Center
LEED Gold
Defining the Owner’s Project Requirements (OPR)

- **Owner's Project Requirements:**
  - Prepared by Owner
  - Details the functional requirements of a Project
  - Expectations of how it will be used and operated.
  - Document should include:
    - Project goals
    - **Measurable performance criteria**
    - Cost considerations
    - Benchmarks
    - Success criteria
    - Supporting information
According to ASHRAE Guideline 0, and LEED, the OPR is the basis of all commissioning work for the project:

- The OPR must be developed in Pre-Design
- The Basis of Design must be evaluated against the OPR
- The CDs needs to be checked for compliance with the OPR
Defining the Owner’s Project Requirements (OPR)

- Submittals need to be checked for compliance with the OPR
- Functional testing needs to verify that the building meets the OPR
- The building needs to be operated in accordance with the OPR
OPR in the Real World

The OPR is usually developed after the project is already past the design development stage...

...only because it is a “missed” LEED requirement

Mid-Ohio Foodbank
LEED Gold
OPR in the Real World

The OPR usually ends up becoming a reverse engineering process... ...going backwards from the Basis of Design (BOD)

Setterlin Building Company HQ
LEED Gold
The OPR should contain, (but usually does not), measurable building performance criteria.

Univ. of Toledo - Classroom Conversion
LEED Gold
Without an OPR, the Cx Authority is just checking the project against plans and specs.

Centre College Pearl Hall Dorm
LEED Gold
Most owners think the *commissioning design review* is a 3rd party critique of the design...

But it also must include: *checking design compliance with the OPR.*
Creating a Better Owner’s Project Requirements

An OPR, at a minimum should contain the following:

- How the users define comfort (temperature/humidity/air flow, etc.)
- Project budget and schedule
- Commissioning process budget and scope
- Project document requirements
- Occupant space usage and scheduling
• Health, hygiene and indoor environment requirements
• Training requirements
• Warranty requirements
• Benchmarking requirements
• O&M criteria
• Energy efficiency goals
• Allowable tolerances
Creating a Better Owner’s Project Requirements

- Environmental sustainability goals
- Applicable codes and standards
- Acoustic requirements
- Vibration and seismic requirements
- Accessibility requirements
- Security requirements
LEED 2012 is addressing the OPR as follows:

- New Integrated Process (IP) credits to develop OPR in workshops
- The OPR can be developed and maintained by the CxA

Creative Technology Accelerator
LEED Gold
The OPR must specify building performance goals.

The CxA must verify that the DD documents meet the OPR.

Review 95% CDs to meet the OPR.
LEED 2012 (Under Public Review)

- Review submittals to meet BOD and OPR, must be concurrent with design approval
- The CxA must validate building energy performance

US Customs – Selfridge AFB
LEED Gold
Purdue’s first LEED Building – Gatewood Mechanical Engineering Annex

- 85,000 SF free-standing addition to Mechanical Engineering Building
OPR Case Studies at Purdue University

• What the actual OPR contained – how did this help the project

• What the actual OPR lacked – did this hurt the project
OPR Case Studies at Purdue University

Purdue Student Recreation Center

• 330,000 SF of renovated space combined with 110,000 SF of new space

• What the actual OPR contained – how has this helped the project

• What the actual OPR lacked – has this hurt the project

Student Recreation Center
Purdue University
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