

Understanding OPR and BOD in Building Commissioning

In facility design, construction, and commissioning, two documents establish the roadmap for a successful project: the **Owner's Project Requirements (OPR)** and the **Basis of Design (BOD)**. Together, they form a strict check-and-balance system to ensure a building operates exactly as intended.

Core Definitions

Owner's Project Requirements (OPR): A functional document detailed by the project owner that specifies the operational goals, criteria, and expectations for the facility. It defines *what* the building systems must achieve from a business and user standpoint.

Basis of Design (BOD): A technical narrative and data set compiled by the design engineering team. It explains *how* they intend to fulfill the OPR requirements, detailing applicable codes, system choices, technical assumptions, and calculation criteria.

Comparison Matrix

Document	Primary Author	Core Focus	Project Role
OPR	Project Owner / CxA Support	Goals, performance metrics, constraints, and business targets.	The target benchmarking standard for project success.
BOD	Architects & Design Engineers	Technical solutions, calculations, design paths, and equipment selections.	The engineering blueprint translating goals into building physics.

Side-by-Side Commissioning Integration

- **Pre-Construction Alignment:** The Commissioning Authority (CxA) reviews the BOD directly against the OPR to verify every functional expectation has a valid engineering mechanism before a single dollar is spent on equipment.
- **Functional Performance Tests (FPTs):** The Cx team combines the high-level targets of the OPR with the operational sequences in the BOD to generate real-world hardware verification procedures. They stress-test systems to ensure physical assets achieve the programmatic intent.

Project Framework Template: OPR & BOD Blueprint

Instructions: Copy and use this framework structure to document project development alignment.

1. Owner's Project Requirements (OPR) Framework

1.1 Project Program & Objectives

- [Insert structural vision, space utilization layouts, facility capacities, and operational schedules.]

1.2 Sustainability & Environmental Mandates

- [Detail targeted certifications such as LEED/WELL, net-zero carbon rules, and energy performance metrics.]

1.3 Indoor Environmental Quality (IEQ) Targets

- [Specify required temperature setpoints, humidity boundaries, acoustics parameters, and filtration goals.]

1.4 Facility Life Cycle & Maintainability Expectations

- [Outline targeted equipment life expectancy, spatial footprint rules for tool access, and standard component types.]

1.5 Personnel Training & Operational Budgets

- [Document training hours required for site technicians and cap targets for total annual utility consumption costs.]

2. Basis of Design (BOD) Framework

2.1 Governing Design Assumptions & Ambient Metrics

- [Insert outdoor meteorological conditions, weather station reference baselines, and local occupant load numbers.]

2.2 Codes, Legal Regulations, and Local Ordinances

- [Enumerate applicable building codes, energy codes, regional structural laws, and industrial standards like ASHRAE.]

2.3 Core Building Systems Layout & Architecture Descriptions

- [Summarize architectural features, insulation parameters, HVAC configurations, water setups, and primary electrical distribution.]

2.4 Comprehensive Sequences of Operation (SoO)

- [Provide deep step-by-step logic chains for physical controls, schedule triggers, setback thresholds, and failure safety routines.]

2.5 Engineering Calculations & Sizing Datasets

- [Attach complete engineering equations, heat-load summaries, pressure profiles, wire sizes, and scheduled machinery capacities.]