

## QUALITY ASSURANCE: IN-HOUSE OR THIRD PARTY?

Users of this Guide may debate whether to use in-house staff or outside third parties as the Commissioning Authority (CxA) to perform the quality assurance (QA) tasks in the design, construction, and acceptance phases of the project. A case can be made for either approach depending on project budget, design complexity, capabilities of the design and construction team, and availability of local Cx expertise.

While both approaches can be effective, building owners should insist that the QA tasks be carried out by a party who is independent from the design and construction team. Independent review ensures that “fresh eyes” are applied to energy performance QA.

Where the in-house approach is deemed to be in the best interests of the building owner, the QA tasks are best accomplished by personnel with no direct interest in the project. For example, qualified staff working on other projects could be assigned as disinterested parties to check and verify the work of their colleagues. However, building owners can expect to get the most independent QA review from outside third parties. Indeed, most of the literature on building Cx and energy performance QA recommends or requires independent outside reviews. In either case, building owners should expect to bear the cost of approximately 25–50 professional staff hours to carry out the Suggested Commissioning Scope (see next page) depending on project specifics. Additional information can be found in Chapter 5.

**Quality Assurance:** During the design process, the design team documents its design assumptions (basis of design) and includes them in the OPR document. A party other than the installing contractor, architect, or engineer of record should review the contract document and verify that it incorporates the OPRs and the associated strategies contained in this Guide before the start of construction. The owner’s agent, if qualified, can provide the required review. This review, along with subsequent inspection, testing, and reporting, is referred to as *commissioning*. The Commissioning Process is a quality-oriented process for achieving, verifying, and documenting that the performance of facilities, systems, and assemblies meets defined objectives and criteria.

The reviewer provides the owner and designers with written comments outlining where items do not comply with these defined objectives and criteria selected from this Guide. Comments should be resolved and any required changes should be completed before start of construction. The owner may choose to use an outside third party to perform this review.

Once the Design Phase is completed, the party that is independent of the design and construction team fulfills the QA role to ensure that the goals, strategies, and recommendations are actually installed and achieved. This Guide provides recommendations to ensure that the goals, strategies, and actions selected are properly executed during the later stages of the building life cycle in Chapter 4 under “Quality Assurance.”

## SUGGESTED COMMISSIONING SCOPE

- Review the OPRs and the designers' basis-of-design documentation for completeness and clarity. The information provided by the design team for review should include project and design goals, measurable performance criteria, budgets, schedules, success criteria, and supporting information.
- Develop project-specific commissioning/quality assurance (Cx/QA) specifications for building envelope and electrical, mechanical, and plumbing systems that will be verified during the delivery of the project. The specifications will incorporate Cx/QA activities into the construction process and provide a clear understanding to all participants of their specific roles, responsibilities, and effort. The Guide specifications will be reviewed, modified, and blended into the construction documents by the designers.
- Conduct one design review of the construction documents before 100% completion. A review before construction document completion (around 90% completion recommended) allows any changes to be incorporated. The review will focus on ensuring the design is consistent with the OPRs and the designers' basis of design and that all construction requirements are clear and well coordinated. It is also intended to ensure that the specifications describe the roles and responsibilities of all parties to the Cx process so that contractors have a clear understanding of their responsibilities. Prepare a report identifying concerns and opportunities, and use it in working with the owner and designers to develop a collaborative partnership that will ensure delivery of a high-quality building that performs as intended. Provide a report that tracks issues to resolution and follow a collaborative process to facilitate resolution.
- Conduct one two-hour meeting to discuss review comments and adjudicate issues with the design team, and issue a final report illustrating the disposition of each issue raised. Use the report to verify during construction site visits that issues were corrected.
- If a pre-bid meeting is held with bidding contractors, participate in it to emphasize the inclusion of Cx and describe the Cx process for the specific project.
- Prepare construction checklists and the Cx/QA plan and conduct a one-hour meeting with the project team reviewing QA procedures, roles, and responsibilities and establishing a tentative schedule of Cx/QA activities. During the meeting provide the construction checklists to the contractors for their use during the delivery process.
- Review submittal information for systems being commissioned and provide appropriate comments to team. Based on the submittal information, develop test procedures that will be used to verify system performance and distribute to the team.
- Conduct two site visits during construction to observe construction techniques and to identify issues that may affect performance. Review issues with appropriate team members at the end of each site visit in accordance with established communication protocols, and issue one report per visit documenting findings. Establish and maintain an issues log for tracking issues identified.
- Direct and witness testing and document results. Issues identified will be documented in the issues log and tracked to resolution. General contractor (GC) will schedule testing activities and ensure that responsible parties needed for verification are present.
- Review O&M information to ensure warranty requirements and preventive maintenance information required are part of the documentation along with a copy of the OPR and basis-of-design information.
- Witness training of O&M staff to help ensure that O&M staff understands the systems and their operation, warranty responsibilities, and preventive maintenance requirements.