

Considerations for Task Order Language

Performance Assurance

With the objective of delivering a fully functional project that meets or exceeds design performance, the utility shall provide a comprehensive performance assurance plan adapted to the agency, the facility, and the project objectives, and implement the activities determined to be the responsibility of the utility. At a minimum and in accordance with the contract, the utility will provide, as part of the performance assurance plan deliverable for each ECM identified, analysis-based design and operational instructions; installation as good as or better than that defined in the project design; a training plan and training; a Cx plan with specific protocol to measure and prove that performance meets contract requirements; and an rCx plan with detailed instruction for measuring, comparing, and interpreting the actual performance of each KPI. Include a resource for interpreting performance and identifying the correctional action required. In using the Cx plan, the utility will verify the installed equipment is operating to specified performance and efficiency in accordance with the final proposal.

Recommended Task Order Best Practices

1. Require a performance assurance plan lead, who develops the plan, verifies design effectiveness, leads commissioning during construction, writes the Cx report, and leads utility engagement for performance period services as negotiated in the contract.
2. Require a plan for every UESC project, reference the plan template in the UESC guide, and establish a responsible party for all activities.
 - A. **Baseline:** Determine requirements for setting the baseline and ensure that the agency concurs with the requirements. After each ECM is installed, commission and compare to the baseline. For any discrepancies, an explanation and recommended solutions should be included in the Cx report. Performance verification and reCx will be compared to this as-built baseline.
 - B. **Design:** Include competition between qualified contractors to ensure that the selected design contractor will deliver an effective, complete, and buildable design that ensures ECM performance and competitive pricing.
 - C. **Training plan:** Develop a training plan and materials to support the agency's ability to operate, maintain, and recommission ECMs.
 - D. **Installation:** Provide project management, quality assurance, and competitive bids; demonstrate performance at installation, upon seasonal changes, at completion of one year of service, and prior to the end of warranty period.
 - E. **Commissioning:** Develop ECM-specific performance metrics, protocols, and training materials, and include in the Cx report.
 - F. **Operations and Maintenance:** Ensure that ECMs meet equipment manufacturers' requirements and performance metrics and verification procedures.
 - G. **Recommissioning:** Provide a performance period rCx plan that supports the O&M of ECMs, identifies KPIs out of set point or range, and includes scheduled, written protocols that will return the ECMs to optimal performance.
3. Insist on O&M training that will support agency's ability to operate and maintain design-level performance; understand, measure, and interpret performance metrics; and self-perform rCx. Include a training plan, a project notebook addressing design, O&M, Cx, etc., for each ECM.

4. Insist on a minimum 1-year wraparound warranty beginning at project acceptance. During the first 12 months of the performance period, verify performance and functionality.
5. Include identification and resolution of performance discrepancies.
6. Define utility engagement as negotiated in the contract. For example:
 - A. Beginning with the end of year 1, the utility will provide annually or at 3-year intervals, an rCx consultation and refresher training.
 - B. Develop an rCx and written report at the end of post-acceptance services.
7. Perform continuous Cx for complex and energy-significant ECMs.
8. Review O&M practices and effectiveness and recommend adjustments to meet or exceed performance targets.

The contractor should provide a narrative describing their vision of the performance assurance plan (Plan) with the preliminary assessment, a fully developed draft of the Plan with the feasibility study, and submit a final Plan for review and approval prior to the preconstruction meeting. The Plan will detail how the contractor will verify that the operation and efficiency of installed equipment meets its design performance specifications and outline the expected level of O&M necessary to assure the annual estimated savings are achieved throughout the task order period. The plan will also detail how the contractor shall collect data specific to the performance of the ECMs, review these data for validity, and integrate the data and systems operation into a report.

Deliverable—Commissioning Plan

1. The contractor shall submit a Cx plan, as part of the Performance Assurance Plan (Plan), detailing how the Cx process shall be completed, for review and approval prior to the preconstruction meeting and updated prior to Cx start should updates be required.
2. Start-up performance verification (measured) shall be achieved through Cx.
3. Performance shall be verified at the end of the 1-year construction warranty period through rCx (measured).
4. The contractor shall submit a rCx plan as part of the Performance Assurance Plan. An updated rCx shall be submitted along with an updated Cx plan should updates be required.
5. The contractor shall submit a written rCx report after completing rCx at the end of year 1 and as required in the task order.

Deliverable—Performance Assurance Training Plan

The training must prepare the agency O&M team to operate and maintain the ECMs as well as to understand the process for Cx each ECM and provide the rCx process for verifying the performance of each ECM. The training should include:

1. **Project Overview:** Describe the full scope and intent of the project, emphasizing the relationship between sustained performance and project payback.
2. **Key Performance Indicators for Energy Conservation Measures:** the design of each ECM shall include performance metrics and be designated as key performance indicators (KPI) within the Plan. The Cx and rCx protocol must include templates with the specific KPI element and acceptable setpoint or range for each ECM.

3. **Energy Conservation Measure Operations and Maintenance:** Explain how to operate, maintain, and keep ECM performance optimized. For each ECM, provide the energy, water, and demand savings associated with the measure; cover the manufacturer’s recommended O&M; and highlight any changes or additions to current procedures necessary for maintaining and verifying performance.
4. **Energy Conservation Measure Commissioning:** For each ECM and the project as a whole, address Cx protocol and review protocol checklist and performance metrics. The training schedule should include opportunities for the agency O&M team to observe actual functional testing and Cx to prepare them for implementing the rCx in the future as part of their O&M activities.
5. **Energy Conservation Measures Recommissioning and Retuning:** For each ECM and for the project, address the rCx protocol, review protocol checklist and performance metrics, and include a video module for rCx. Integrate rCx into periodic maintenance.
6. Periodic inspections and verification of appropriate operations and maintenance performance: This can be achieved through performance assurance reports, as described below.
7. **Performance discrepancy resolution:** Include a description of how discrepancies in performance will be investigated and recommendations provided in the yearly reports.

Deliverable—Performance Assurance Reports

The contractor shall submit performance assurance reports based on the approved plan for the contracting officer’s review and approval. These reports should include:

1. At the completion of installation, the utility shall implement the Cx plan, perform necessary actions required to ensure each ECM and the project as a whole is performing to the parameters of the final design. Document the Cx activities and results in the Cx report, which is required prior to acceptance.
2. Recommission the ECMs at the end of the first year following acceptance and document the findings, including O&M; review and interpret the results; provide recommendations for improving O&M and retuning or repairing as needed, and submit a complete report.
3. Recommission each ECM annually, every other year, or at an interval determined to be responsive to the criticality, complexity, or stability of that ECM. Given the flexibility of the UESC method, Agencies might consider the most cost-effective interval that supports the complexity of an ECM, for example every year for a chiller and every 3rd year for lighting. During the walk through, consider also identifying new efficiency opportunities.
4. The annual, or frequency set in the task order, written report of findings will summarize results, conclusions, and recommendations and shall be furnished by the responsible party on the following schedule:
 - A. **Report 1:** Final baseline report that records preconstruction energy and water usage prior to start of construction; Utility is responsible for this report.
 - B. **Report 2:** Commissioning report at initial activation and prior to government acceptance; Utility is responsible for this report.
 - C. **Report 3:** Recommissioning report 1 year after government acceptance—any discrepancy noted between the anticipated annual savings and the actual savings shall be noted and the cause of the discrepancy shall be investigated and noted in the report, with recommendations for government and/or Utility actions where appropriate; Utility is responsible for this report.

- D. Report 4, and later reports:** Recommissioning report at the end of each year or at interval years following the 1st year report that notes any discrepancy between the measured KPI, anticipated annual savings and the actual savings, and investigates the cause of the discrepancy with recommendations for government and/or Utility actions where appropriate. The Agency or the Utility will be responsible for these reports as indicated in the task order.

Deliverable—Commissioning

The utility shall implement the Cx plan following the protocol developed for each of the installed ECMs:

1. The performance of all installed ECMs shall be proven to be equal to or greater than the design performance metrics specified in the task order. The contractor shall provide performance verification and documentation through implementation of the Cx plan and by providing a written Cx report to the contracting officer.
2. All heating, ventilating, and air-conditioning (HVAC) and electrical systems and equipment including controls, plumbing, and photovoltaic systems, shall be commissioned in accordance with ASHRAE Guideline 0-2013. The Cx plan is required to contractually implement the installation phases of the process, and it must be project-specific. Cx of systems and equipment shall take place only after functional testing is complete. Cx will be witnessed by an agency representative.
3. The final Cx report shall be submitted to the contracting officer for approval prior to final acceptance of the project. The report shall consist of completed pre-functional performance test checklists and completed functional performance tests organized by system and subsystem and submitted as one package. The Cx report shall also include all ECM systems' test reports; inspection reports (preparatory, initial, and follow-up inspections); start-up reports; testing, adjusting, and balance (TAB) report; TAB verification report; controls start-up test reports; and controls performance verification test report. The results of failed tests shall be included along with a description of the corrective actions taken.
4. Final acceptance of the project will not be given until corrective measures identified in the Cx report have been completed.

Deliverable—Prior to Acceptance

The report shall detail the requirements and results of the Cx Plan, including the following:

1. Copy of the Cx plan
2. Copy of training materials
3. Verification of training completed
4. Verified TAB report
5. Copies of corrective modification documentation
6. Copies of accepted performance variance documentation
7. Copies of pre-start/start-up checklists
8. Copies of all completed functional performance tests checklists
9. Final deficiency report
10. Completed punch list with resolution of all items

11. Maintenance plan with maintenance manuals.

Deliverable—Post-Acceptance

As negotiated in the contract, rCx reports shall detail the findings and recommendations for performance, O&M, and, if requested, future project suggestions.