



BEYOND
SMART CITIES

LEARN.BEYONDSMARTCITIES.IN



WELCOME TO ADVANCED EXISTING BUILDING COMMISSIONING

ONLINE TRAINING

KRISHNAJI PAWAR - CEO & FOUNDER





4. IMPLEMENTATION PHASE EBCX

KRISHNAJI PAWAR, LEED AP BD+C, GSAS CGP, ISO 14001:2015, GCP

COMMISSIONING SPECIALIST CURRICULUM



Learning Objectives

- Introduction
- Implement Facility Improvement Measures
- Adjust Energy Savings Estimates and Measure Costs
- Update EBCx Documentation/Prepare Implementation Phase Summary Report
- Plan for Ongoing Commissioning
- Deliverables

Introduction

The objectives of the implementation phase are to implement the approved ECMs and FIMs and validate their correct operation.

Implementation Phase Cx tasks include these activities:

- Prepare an Implementation Plan
- Implement Selected FIMs
- Verify Successful FIM Implementation
- Adjust Energy Savings Estimates and Measure Costs
- Review and comment on remediation designs by a design professional
- Execute Measurement and Verification Plan and Metering (If in Scope)
- Update EBCx Documentation/Prepare Implementation Phase Summary Report
- Plan for Ongoing Commissioning
- Obtain Owner Acceptance and Written Decision to Proceed



Implement Facility Improvement Measures

Prepare an Implementation Plan

- To finish the implementation of the selected ECMs and FIMs, create an Implementation Plan. This plan typically states which changes will be performed during the Implementation Phase and which will be deferred with a timeframe for planned implementation as capital improvement projects to satisfy the CFR.
- Each measure's verification plan is crucial to the implementation plan. A successful result and verification procedure are in the plan. The CxP creates an RFP for the specified ECMs and FIMS and examines contractor pricing. Scope, timeline, warranty, and commissioning are in the RFP.

Implement Facility Improvement Measures

Implement Selected FIMs

- Check contractor submittals for scope and CFR compliance. After contractor selection, the CxP organises a project start meeting with the contractor and owner. The Implementation Plan's system and operation upgrades are then completed. The CxP regularly hosts project implementation meetings and reports the Owner on FIM implementation progress. CxP assists the Owner in arranging all on-site activities and determining when measures will go live.

Verify Successful FIM Implementation

- The CxP and project team will document ECM and FIMS results. Verification of the implementation shall be done using a combination of methods, including focused functional performance testing (FPT) of the implemented ECMs and FIMs using a formal FPT procedure; analysing utility bill data, BAS or data logger trend data or reports; or other data collected to demonstrate that the desired outcomes and improvements achieve the anticipated outcomes.

MARKETING

Adjust Energy Savings Estimates and Measure Costs

Through checking the implementation of ECM and FIM, performance measurements and trend data after implementation will be collected and compared to data from before implementation and calculations of energy savings. Based on how things actually worked after the changes were made, the energy savings calculations will be updated to match the actual measured and trended data as closely as possible. This could make the amount of money saved go up or down, which will be shared with the Owner.



Update EBCx Documentation/Prepare Implementation Phase Summary Report

Based on the actual installed measures the CxP shall prepare documentation for each measure implemented including the following for inclusion in the implementation phase summary report:

- Prepared scope of work (SOW) documentation
- Submittals
- RFIs
- As-built documentation, including sequence of operations
- Installation, Operations and Maintenance Manuals
- Facility Guide
- Warranties (if applicable)
- Pre and post trend data and energy savings calculations
- Preventative and routine maintenance procedures



Perform Initial Site Walk-Through and BAS Review

- The CxP and facility staff assigned to the project conduct a walkthrough of all major spaces to gain an understanding of the building's layout, types and condition of spaces, occupancy levels, lighting and controls, location of equipment rooms, location of documentation, building automation system, its age, and what it controls, as well as the general condition of equipment.
- Components of the initial site walk through pertaining to equipment observation include a broad appraisal of the systems and equipment to be included in the EBCx project's scope and condition.
- Also, document any components that have beyond their service life and must be replaced with capital expenditures instead of being included in the EBCx project.



Plan for Ongoing Commissioning

- Plans like remote monitoring, are made to continue elements of the commissioning and M&V verification process on an ongoing basis to help the improvements persist over time.
- Certain steps may be repeated at regular intervals to facilitate this. Best practice includes CxP's six and 10-month review of the newly implemented ECMs and FIMS to validate the improvements function as expected.

Implementation Phase Deliverables

- Updated CFR
- Updated Master List of Findings with implementation status
- Updated EBCx Report, including the addition of the Implementation Report
- Updated Facility Guide material





Thanks

Learn From Beyond Smart Cities
Online professional courses led by
the world's top specialists


KRISHNAJI PAWAR
SUSTAINABILITY SPECIALIST

LEARN.BEYONDSMARTCITIES.IN