“I’d Like a Quote for ‘Commissioning’” – Developing Scopes that Maximize Results

Robert Austin
Operations Manager
Eaton Energy Solutions
Learning Objectives

1. Review the typical deliverables for a Cx and EBCx project.
2. Understand how a well defined Cx scope puts a project onto a path for success, and how a poorly written Cx scope can lead to disappointing results.
3. Develop an appreciation for how an owner’s objectives shape the scope of work.
4. Discuss the most common pitfalls in developing Cx and EBCx scopes, why they matter, and how to avoid them.
Why Scope Matters

**Scope Defines the Relationship**
- Commissioning is a professional service
- Advocate, not adversary

**Scope Ensures Performance**
- Levels cost for apples to apples comparison
- Ensures quality of delivery

**Scope Drives Reputation**
- Industry reputation tied to delivery efficiency
- *Cx is only as effective as the scope*
Existing Building Commissioning
Ready, Fire, Aim! – Know Your Goals

Reasons for Existing Buildings Commissioning (N=85)

Percent of projects reporting

- Ensure system performance (energy and non-energy-related systems) 69%
- Obtain energy savings 94%
- Ensure or improve thermal comfort 65%
- Extended equipment life
- Train and increase awareness of building operators 24%
- Smoother process and turnover (new construction)
- Increase occupant productivity 47%
- Ensure adequate indoor air quality 59%
- Comply with LEED or other sustainability rating system 1%
- Reduce liability
- Qualify for rebate, financing, or other services 8%
- Research/demonstration/pilot 13%
- Participation in utility program 28%
Develop Scope with Goals, Deliverables in Mind

Goal – Energy Savings

• Key Deliverables:
  ○ Planning/Scoping Report
  ○ Master List of Findings
  ○ EBCx Final Report
    - Facility Description
    - Utility Analysis
    - Testing Results
    - Measure Recommendations
    - Energy and Economic Analysis Results
Goal – Training of O&M Staff and Ongoing Persistence

• Key Deliverables:
  ○ Training/Systems Manual
    - Improved Maintenance Protocols
    - Trending and Diagnostic Protocols
    - Detailed System Descriptions
    - As-Built Sequences
    - System Diagrams
    - Key Performance Tracking Metrics
Develop Scope with Goals, Deliverables in Mind

Goal – Obtain Utility Rebate/Incentive

• Key Deliverables:
  ○ Post-Implementation Testing Results
  ○ Post-Implementation Trending
  ○ Additional Required M&V Data
  ○ *Know what your program requires!*
“Didn’t I Already Pay for Implementation?”

Define How Implementation Is to Be Achieved

- On the fly adjustments
- Low cost projects
- Capital improvements and upgrades
- Expect more than calibration and set point adjustment
“Contractor Shall Make Minor Repairs and Adjustments as Needed”

Be Careful with On the Fly Adjustments

• Don’t buy more than you need

• Level the expectations

• Consider an “allowance” approach
Identify Implementation Expectations

- What is expected of the Cx provider?
  - On the fly adjustments
  - SOW and sequence development
  - Oversight and management
  - Post-implementation verification
Define the Rigor Required for Energy Analysis

- Should be driven by accuracy desired and M&V requirements
“Contractor Shall Conduct Air Flow Testing”

Define the Role of TAB

- Carefully weigh cost benefits against goals
- Define what you want (testing only, or full TAB)
- System level or zone level?
Commissioning Deliverables

Generally Less Variability than EBCx

- Key Deliverables:
  - Specifications
  - BOD, OPR
  - Design and Submittal Reviews
  - Commissioning Plan
  - Commissioning Final Report
  - Systems Manual
Develop Scope with Goals, Deliverables in Mind

Goal – Obtain LEED Accreditation

• Key Deliverables:
  ○ As prescribed by LEED
  ○ Based on whether fundamental or enhanced credit is sought
  ○ Submittals to USGBC may not include all the submittals to owner
  ○ Even within the scope of “LEED Commissioning” there can be considerable variability in tasks and deliverables
“CxA Shall Test All Equipment”

Does “All” Really Mean “All”

• Allow flexibility for sampling when it makes sense
• Better if defined by Owner
• Same applies for witnessing start-ups, design reviews, etc.
“CxA Shall Invoice Contractor for Retest”

Set Reasonable Retest Expectations

- Define anticipated amount of retest
- Don’t expect CxA to bill contractor
- Don’t expect CxA to manage resolution
“Can You (CxA) Write the OPR?”

Expect Owner and A/E Involvement in OPR

- CxA can facilitate
“No One Told Us There Was Going to Be Commissioning on This Job!”

Define Contractor Requirements Up Front in Specs

• Define roles and responsibilities
• Define expectations
• Explicitly define support required from contractors
Resources

Available Resources

• Portland Energy Conservation Inc – www.peci.org
• Building Commissioning Association, www.bcxa.org
• California Commissioning Collaborative, www.cxca.org
• ASHRAE Commissioning Guideline www.ashrae.org
• U.S. DOE / FEMP, www.eere.energy.gov/femp
Portland Energy Conservation, Inc is a registered provider with The American Institute of Architects Continuing Education Systems. Credit earned on completion of this program will be reported to CES Records for AIA members. Certificates of Completion for non-AIA members are available on request.

This program is registered with the AIA/CES for continuing professional education. As such, it does not include content that may be deemed or construed to be an approval or endorsement by the AIA of any material of construction or any method or manner of handling, using, distributing, or dealing in any material or product. Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.
Questions?
Robert Austin
RobertJAustin@Eaton.com
661-964-7850
Click to edit copy text styles

• First level bullets
  ○ Second level bullets
    - Third level bullets
      » Fourth level bullets

Guideline for images:
Please add 1 pt. green (R119G152B35) rule around each image
Click to edit copy text styles

• First level bullets
  ○ Second level bullets
    - Third level bullets
      » Fourth level bullets