



COMMISSIONING CHALLENGES : COMPREHENSION



☒ Of the need

- ☒ "Isn't the design good enough?"
- ☒ "I already pay for QA/QC & Start-Up and TAB"

☒ Of the process

COMMISSIONING CHALLENGES : COMMITMENT

☒ Include all disciplines and participants

- ☒ Owner
- ☒ Design Team
- ☒ Contractors
- ☒ Operators

☒ Include Cx from the beginning

☒ Stick with it!





COMMISSIONING CHALLENGES : BUDGET



☒ Cx costs 2-4% of Systems Commissioned

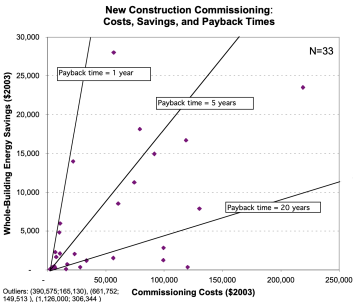
- ☒ 0.5 - 1% of Total Project Construction Cost
- ☒ Depends on Scope, Project Size
- ☒ Depends on Degree of Cx

☒ Pay now or Pay More Later!

☒ How to minimize?

- ☒ Avoid duplication with tasks already in someone's Scope
- ☒ Make Cx part of the project expectations from the start.
- ☒ Involve O&M Staff in Cx

ECONOMICS OF COMMISSIONING

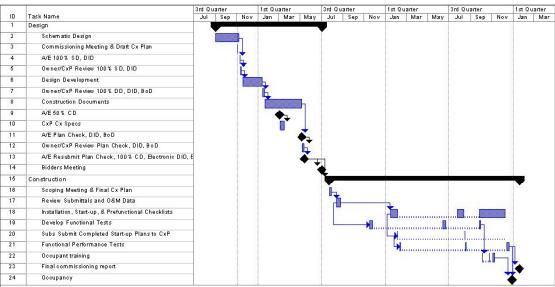


COMMISSIONING CHALLENGES : SCHEDULE

- ☒ Schedule Cx Activities throughout
- ☒ Involve Commissioning Provider early
- ☒ Begin Commissioning Process in the design phase
- ☒ Allow for iterative design refinement
- ☒ Allow time to correct deficiencies found by testing
- ☒ Cx will be on the Critical Path at the end



TYPICAL COMMISSIONING SCHEDULE



COMMISSIONING CHALLENGES : INTEGRATION

☑ Throughout design & construction

☑ Role of Commissioning Provider

- ☑ CA is part of the Team.
- ☑ Don't "shoot the messenger!"
- ☑ Finding & fixing problems is a Success in Cx!



COMMISSIONING CHALLENGES:PROCUREMENT

☑ Design-Build puts Cx under Contractor

☑ Potential conflict of interest

☑ Low Bid procurement

☑ Requires a very tight Cx Spec

☑ In all projects:

☑ Need to clarify Cx Roles & Responsibilities



COMMISSIONING CHALLENGES : TECHNICAL

☑ What level of Cx is desired or needed?

☑ Many new technical challenges with innovative new.

☑ How do you commission Shell & Core Systems when T/I's not done?

- ☑ Shell - HVAC
- ☑ T/I - Underfloor Air





COMMISSIONING CHALLENGES:FOLLOW -THROUGH



☑ Operations Staff:

- ☑ Understanding Design Intent
- ☑ Participating in Commissioning Process
- ☑ Implementing Operating Strategies
- ☑ Monitoring Operations against Performance Goals
- ☑ Maintaining Trained Operators on Staff

SUMMARY

☑ Commissioning “bridges the gap” between Possibility & Reality

- Verifies that Design Intent is Met
- Monitors Construction Compliance with Intent
- Assures Systems Operate as Intended
- Validates/Calibrates Performance Measurements
- Trains Operators

☑ Key Elements of Successful CXA

- Committed Owner and Team
- Commissioning Provider present Early in project
- Team Approach to Design & Construction
- Early O&M Personnel Involvement



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Thank You



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RESOURCES

1 The Building Commissioning Association (BCxA) is an international nonprofit organization with more than 1,200 members from the commercial building industry who are committed to the highest standards and practices for the commissioning process.

<https://www.bcxa.org>

2 The Building Commissioning Association (BCxA) is an international nonprofit organization with more than 1,200 members from the commercial building industry who are committed to the highest standards and practices for the commissioning process.

<https://pec.org>

3 The mission of the Energy Department is to ensure America's security and prosperity by addressing its energy, environmental and nuclear challenges through transformative science and technology solutions.

<https://www.energy.gov>

