

# Working with your local AHJ

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# AIA Quality Assurance

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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

# Course Description

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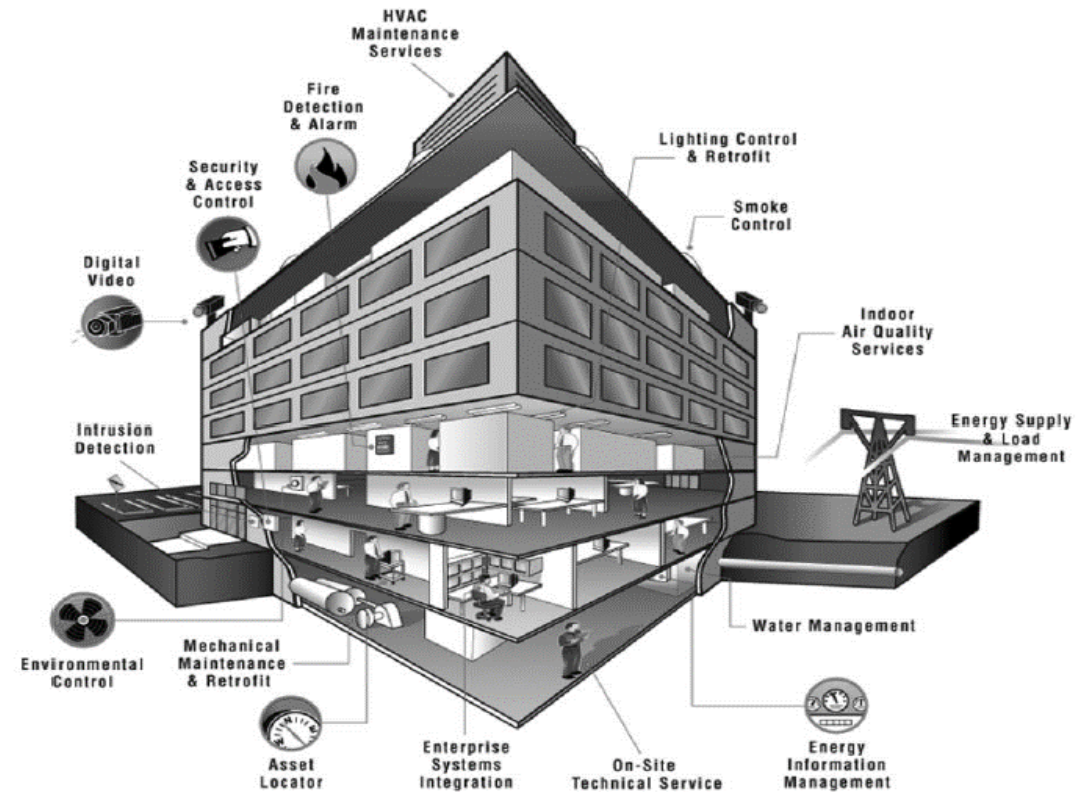
Working with code officials and the commissioning process can be critical to any building project. During this webinar, we will cover how to develop a solid working relationship with the code officials and develop a checklist for the code official based on the local codes. The webinar will also discuss how to work with the other stakeholders in the process.

# Learning Objectives

1. Develop relationships with AHJ
2. Develop a checklist for the AHJ to use according to codes and standards
3. Describe where to find your local codes and standards for Cx.
4. Describe how other Stakeholders are involved when working with the AHJ.

# Building Code Adoption of Cx - Need and Response

- Buildings are more complex
- Better organized and performed Inspection – Functional & Performance Testing
- Interior Environment Control and Performance
- Energy Efficiency and Building Performance



# Building Codes and Standards

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## Building Codes

- **Building**, Mechanical, Plumbing, Electrical

## Energy Codes

- **Energy Code (IECC-2021) - ASHRAE Standard 90.1-2019**

## Green Codes and Programs

- **International Green Construction Code (IGCC-2021)**
- **ASHRAE 189.1-2020, Standard for Design of High-Performance Green Buildings**
- **LEED Certificates**
- **Green Globes**
- WELL
- FITWEL
- Living Building Challenge, Etc.

NOTE: **RED** include commissioning requirements.

# Commissioning Enforcement

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## Project Requirements before permit:

- Designation of an *approved* Commissioning Provider
- Commissioning requirements in the project documents
- An acceptable commissioning plan

# Code Official (AHJ) Functions

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## Based on Code Requirements the AHJ Verifies

- The CxP is retained,
- Systems to be commissioned are selected,
- OPR and BoD documents are developed and reviewed,
- Cx Plan is written, and Cx specifications are in the construction documents.
- Cx Reports are completed submitted

# By Code - Contract Documents - Cx Requirements

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- List of equipment to be commissioned
- Performance requirements for that equipment
- Contractor participation
- Verification, Testing, and Commissioning
- Training
- Documentation

# ICC- Building Codes Interrelation

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## ICC Building Code (IBC)

- Mechanical (IMC), and Plumbing (IPC)
- Energy Code (IECC)
- Green Code (IGCC)

# ICC Building Code - 2021

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- "Commissioning" Not Specifically Defined
- Chapter 9, Fire Protection and Life Safety, 901.5 and 901.6.2, System acceptance and testing required
- Section 909, Smoke Control, 909.3, Special Inspection and test requirements.
- References performance terms in Section 1704

# ICC Building Code - 2021

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## Chapter 17, Special Inspections and Tests

- Section 1703.1 defines "approved agency" to include:
  - Objective, Competent and Independent from Contractor
  - Adequate Calibrated Equipment
  - Experienced and Educated Personnel
- Section 1705.13.6 requires "Periodic special inspection of plumbing, mechanical and electrical components" for a list of specific items.

# ICC Mechanical Code - 2021

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"Commissioning" not defined or specifically included.

- Section 108, Inspections and Testing
  - 108.2 Mechanical systems inspection and testing is required and can be done by "approved agencies...that satisfy the requirements as to qualifications and reliability"

# ICC Plumbing Code - 2021

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“Commissioning” not defined or specifically included.

- Section 112, Inspections and Testing
  - 112.2.4 Plumbing systems inspection and testing is required and can be done by “approved inspection agencies...that satisfy the requirements as to qualifications and reliability”

# IECC -2021 - Energy Code

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## Energy Code Building Cx definition:

A process that verifies and documents that the selected building systems have been designed, installed and function in according to the owner's project requirements, and construction documents, **and to minimum code requirements.**

# IECC-2021 Section C402.5.1.5

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## Building Envelope Performance Verification

Continuous air barrier verified by code official, registered design professional or approved agency with:

1. Review of construction documents and supporting data
2. Inspection of air barrier components and assemblies
3. Final commissioning report provided to owner identifying deficiencies found during reviews, inspections, and corrective measures taken.

# IECC-2021 Section C408

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## Maintenance Information and System Commissioning

### C408.1.1 Building Operations and Maintenance Information

- Provided to Owner in Documents
  - Specifications and designs
  - Manufacturer's information – submittals
  - Programming procedures and data points
  - Installation, maintenance and operation procedures
- Equipment labeled with title, publication # and location of operation and maintenance (Systems) manual

# IECC-2021 Section C408.2

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## **Mechanical and Service WH Systems Cx & Completion**

- Construction documents shall include system operation requirements, and commissioning and completion requirements.
- Commissioning Plan drafted by Commissioning Provider prior to permit.
- Prior to final inspection design professional or approved agency shall provide evidence of mechanical system commissioning and completion to owner and to AHJ if requested.

# IECC-2021 Section C408.2

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## Maintenance Information and System Commissioning

- C408.2.1 Commissioning Plan:
  - Provided by Design Professional or Approved Agency
  - Include narrative description of Cx activities and team
  - Include list of specific equipment and required tests
    - Some system sizes excluded
  - Functions to be tested includes calibrations and economizers
  - Include testing conditions
  - Include measurable criteria for performance

# IECC-2021 Section C408.2

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## Maintenance Information and System Commissioning

- C408.2.2 Systems Adjusting and Balancing
  - HVAC Systems balanced
  - Air Systems balancing
  - Hydronic Systems balancing
  - Reviewed by Cx Provider, Included in Systems Manual, Available to Building Official

# IECC-2021 Section C408.2

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## Maintenance Information and System Commissioning

- C408.2.3 Functional Performance Testing Required
  - Demonstrate installation and operation to approved plans
  - Control systems tested
  - Economizers to undergo functional tests

# IECC-2021 Section C408.2

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## Maintenance Information and System Commission

- C408.2.4 Preliminary Commissioning Report
  - Required prior to project final inspection and CO
  - Test results provided to building owner
  - Provided by Design Professional or Approved Agency
  - Include performance test procedures used including measurable criteria for acceptance.
  - Include itemization of deficiencies not corrected
  - Include deferred test with climatic conditions required for final testing
  - Include results of functional performance tests

# IECC-2021 Section C408.2

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## Maintenance Information and System Commissioning

- C408.2.5.2 Final Commissioning Report
  - Provided to Owner within 90 days of project CO
  - Final test and balance report
  - Report of test procedures
  - Results of functional performance tests
  - Disposition of deficiencies including corrective measures

# IECC-2021 Section C408.3

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## Lighting System Commissioning

- Testing and reports include:
  - Occupancy sensors
  - Time switch controls
  - Daylight responsive controls
  - Drawings and O&M manuals
  - Reports

# IECC - 2021 – Chapter 5

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## Existing Buildings

- C502 Additions shall conform to new construction requirements
- C503 Alterations shall comply with new construction requirements with some variations
  - New HVAC, hot water, and lighting systems in additions and alterations shall comply with new construction requirements.
- C504 Repairs not normally required to comply.
- C505 Change in Occupancy requires IECC compliance if energy use is increased

# 2021 International Green Construction Code

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## DEFINITIONS: Chapter 3

Commissioning (Cx) Process: A quality focused process for enhancing the delivery of a project. The process focuses on verifying and documenting that the facility and all of its systems and assemblies are planned, designed, installed, tested, operated, and maintained to meet the owner's project requirements.

# 2021 International Green Construction Code

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## DEFINITIONS: Chapter 3

- **Commissioning (Cx) Provider:** an entity identified by the owner and approved by the AHJ, who manages the commissioning team to implement the building commissioning process.
- **Commissioning (Cx) Plan:** a document that outlines the organization, schedule, allocation of resources, and documentation requirements of the building commissioning process.

# IGCC – Chapter 10 Construction & Plans for Operation

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- 1001.3.1 Functional and Performance Testing
  - Required to Generally Accepted Engineering Standards
  - Mandatory on Listed Systems:
    - HVAC and refrigeration systems greater than 180,000 BTU/hr
    - Lighting systems over 5 kW
    - Domestic water-heating systems over 50,000 BTU/hr
    - Water pumping and mixing systems over 5 HP
    - Irrigation Systems over 1,000 gal per day

# IGCC Chapter 10 Construction and Plans for Operation

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- 1001.3.1.1 FPT Requirements Included in Construction Documents and Schedule
- 1001.3.1.2 Activities Prior to Building Permit
  - Designate FPT Providers- may be Owner's employees, independent Cx providers, designers familiar with FPT – must be independent of building system design and construction.
  - FPT Providers shall Review Construction Documents to verify sensor location, control sequences, performance and testing criteria and accessibility.

# IGCC –Chapter 10 Construction and Plans for Operation

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- 1001.3.1.3 FPT Activities Prior to Building Occupancy
  - Verify installation and startup of designated systems
  - Perform FPT on designated systems
  - Verify O&M documentation and warranty information
  - Provide complete project design and FPT documentation to owner.
  - Project documentation shall be retained.

# IGCC Chapter 10 Construction and Plans for Operation

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- 1001.3 Building Project Cx Process for Projects Over 10,000 Sq, Ft.
  - **Cx Process performed to ASHRAE STD 202** or generally accepted approved standards
  - Cx Process included in design phases and construction documents
  - Cx documents and building systems comply with OPR& BoD
  - Systems Manual assembled, completed and provided to maintenance staff.

# IGCC Chapter 10 Construction and Plans for Operation

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- 1001.3.2.1 Systems to be Commissioned
  - HVAC and associated controls
  - Air-curtain systems
  - Lighting systems and controls
  - Domestic hot-water systems and controls
  - Water pumping and mixing systems over 5 HP
  - Irrigation systems over 1,000 gal per day and controls
  - Renewable energy generation and storage systems
  - Energy and building management and demand control systems

# IGCC Chapter 10 Construction and Plans for Operation

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- 1001.3.2.2 Cx Activities Prior to Permit
  - Develop and submit Cx Plan per Standard 202 with permit application
  - Owner shall designate an approved Cx Provider with necessary training, experience and equipment
  - Cx requirements included in project documents and specifications.

# IGCC Chapter 10 Construction and Plans for Operation

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- 1001.3.2.3 Cx Activities Prior to Building Occupancy
  - Verify Cx complete including installation verification and FPT for all designated systems with documentation of testing results.
  - Owner provided with Preliminary Cx Report
  - Systems Manual provided to owner with O&M and warranty info
- 1001.3.2.4 Post-occupancy Cx Activities
  - Comply with Cx Plan post occupancy requirements per STD 202
  - Complete Cx and update Cx Reports and System Manual

# IGCC Chapter 10 Construction and Plans for Operation

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- 1001.3.2.5.3 Preliminary Commissioning Report
  - Performance of commissioned equipment, and systems
  - Issue and resolution logs of deficiencies found and not corrected
  - Deferred testing
  - Training of maintenance and operations
  - Plan for completion of commissioning

# IGCC Chapter 10 Construction and Plans for Operation

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- 1001.3.2.5.4 Final Commissioning Report
  - Final Cx report with updated Systems Manual
  - Provided to Owner prior to project completion.
  - Owner to retain Systems Manual and final Cx report

# IGCC – 2021 Appendix K

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## Informative Guidance for FPT and Cx Process

- Provider Qualifications
  - Personnel experience, independence, equipment, and registration or certification
- Overview of Commissioning Process, Table K101.2
  - Cx activity, deliverables, and normally provided by listing

# Cx Compliance Checklist - IECC Figure C408.2.4

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Project Information: \_\_\_\_\_ Project Name: \_\_\_\_\_

Project Address: \_\_\_\_\_

Commissioning Authority: \_\_\_\_\_

Commissioning Plan (Section C408.2.1)

- Commissioning Plan was used during construction and includes all items required by Section C408.2.1
- Systems Adjusting and Balancing has been completed.
- HVAC Equipment Functional Testing has been executed. If applicable, deferred and follow-up testing is scheduled to be provided on: \_\_\_\_\_
- HVAC Controls Functional Testing has been executed. If applicable, deferred and follow-up testing is scheduled to be provided on: \_\_\_\_\_

# Cx Compliance Checklist - IECC Figure C408.2.4

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- Economizer Functional Testing has been executed. If applicable, deferred and follow-up testing is scheduled to be provided on: \_\_\_\_\_
- Lighting Controls Functional Testing has been executed. If applicable, deferred and follow-up testing is scheduled to be provided on: \_\_\_\_\_
- Service Water Heating System Functional Testing has been executed. If applicable, deferred and follow-up testing is scheduled to be provided on: \_\_\_\_\_
- Systems Manual, record documents and training have been completed or scheduled
- Preliminary Commissioning Report submitted to owner and includes all items required by Section C408.2.4

I hereby certify that the commissioning provider has provided me with evidence of mechanical, service water heating and lighting systems commissioning in accordance with the 2021 IECC.

Signature of Building Owner or Owner's Representative \_\_\_\_\_ Date \_\_\_\_\_

# CxP Assistance to AHJ

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- Training on the Cx Process
- Checklist for AHJ Functions Related to Cx
- Checklists for Use in Permitting and Final Inspection
- Checklists for Cx Plan and Reports

# Commissioning Process Requirements

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- Requirements Documented
- Design Meets Requirements
- Construction Meets Design Documents
- Systems Tested to Verify Performance
- Operators Trained
- Documentation and Records

# Code Officials Functions

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## Code Process

1. Cx is included in the project design documentation.
2. Cx Plan is written and is based on OPR
3. The review of the Cx Plan and design documents to ensure code is meet and the cx requirements are included.

# Code Officials Functions

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## Code Process

- 4. Owner has selected CxP by the time of permitting**
- 5. CxP has submitted preliminary Cx Report**

# Code Commissioning Enforcement - Permit

## Commissioning Documentation for Permit

Project Name: \_\_\_\_\_  
Project Address: \_\_\_\_\_ Permit Number: \_\_\_\_\_  
Commissioning Provider: \_\_\_\_\_  
Company/Entity Address: \_\_\_\_\_  
CxP Phone Number: \_\_\_\_\_ CxP Email Address: \_\_\_\_\_  
CxP Certification (if required) \_\_\_\_\_

### Commissioning Documentation

### Approval

#### Project Requirements for Commissioning

Project requirements and design completed, documented, and included in the project documentation, including the list of systems to be commissioned and their performance criteria

#### Contractor and Construction Instructions

Plans and commissioning specifications, with equipment performance requirements shown, completed and included in contract documents

#### Design Review

Commissioning design documents review completed with response from design team

#### Commissioning Plan

Initial Cx plan (for permit) completed with required contents and provided by the CxP for Owner and AHJ review

#### Commissioning Provider Acknowledgment

I have reviewed the documents and verified that they meet the Owner's project requirements:

Name: \_\_\_\_\_ Company

Name: \_\_\_\_\_ Signature:

Date: \_\_\_\_\_

#### Owner/Owner's Representative Acknowledgment

The project documents include the items listed in this form and have been approved by the Owner or Owner's representative:

Name: \_\_\_\_\_

☐ Owner

☐ Owner's Representative

Company Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

# Enforcement – Certificate of Occupancy

## Commissioning Documentation for Final Inspection and Certificate Of Occupancy

Project Name: \_\_\_\_\_  
Project Address: \_\_\_\_\_ Permit Number: \_\_\_\_\_  
Commissioning Provider: \_\_\_\_\_  
Company/Entity Address: \_\_\_\_\_  
CxP Phone Number: \_\_\_\_\_ CxP Email Address: \_\_\_\_\_  
CxP Certification (if required) \_\_\_\_\_

| Commissioning Documentation                                                                                                                                               | Approval |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| <b>Project Requirements</b>                                                                                                                                               |          |
| Project requirements and design of equipment and systems requirements included in project documents                                                                       |          |
| <b>Commissioning Plan</b>                                                                                                                                                 |          |
| Cx plan with checklists completed before start of functional testing and used on project.                                                                                 |          |
| <b>Contractor and Construction Instructions</b>                                                                                                                           |          |
| Project plans and commissioning specifications were used on the project                                                                                                   |          |
| <b>Design and Construction Submittal Review</b>                                                                                                                           |          |
| Design documents review and construction submittal review and reports completed                                                                                           |          |
| <b>Commissioning Issues and Resolutions Log</b>                                                                                                                           |          |
| Issues and resolutions logs completed up to time of final inspection with open items shown.                                                                               |          |
| <b>Commissioning Testing</b>                                                                                                                                              |          |
| Commissioning checklists completed up to time of final inspection                                                                                                         |          |
| <b>Systems Manual</b>                                                                                                                                                     |          |
| Project documentation and systems manual assembled with available information for use in training program before occupancy                                                |          |
| <b>Training Documents</b>                                                                                                                                                 |          |
| Operations, maintenance, and occupant training plan completed for initial training                                                                                        |          |
| <b>Commissioning Report</b>                                                                                                                                               |          |
| Preliminary commissioning report with plans for project completion available (at time of final inspection for certificate of occupancy) and submitted to AHJ if required. |          |

### Commissioning Provider Acknowledgment

I have reviewed the documents and verified that they meet the Owner's project requirements:

Name: \_\_\_\_\_ Company  
Name: \_\_\_\_\_ Signature:  
Date: \_\_\_\_\_

### Owner/Owner's Representative Acknowledgment

The project documents include the items listed in this form and have been approved by the Owner or Owner's representative:

Name: \_\_\_\_\_  
☐ Owner ☐ Owner's Representative  
Company Name: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_

# Commissioning Process Participants

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- Owner/Developer
- Cx Provider
- Architects
- Engineers
- Designers
- Code Official
- Contractor/CM
- Sub-contractors
- Installers
- Manufacturers
- Suppliers
- Program Administrators

# Commissioning Coordination Functions

1. Analyze Project for Cx and Participant Requirements
2. Establish Identity and Contact Information for Stakeholders
3. Assure that Necessary Participants Understand the Cx Process
4. Provide Coordination and Completion Checklists for Project Cx Stakeholder's Responsibilities and Specific Equipment
5. Track Completion Status

# Cx Activities and Participants

| Phases                     | Document                                  | Input By                            | Provided By                | Reviewed/<br>Approved by | Used By                                    |
|----------------------------|-------------------------------------------|-------------------------------------|----------------------------|--------------------------|--------------------------------------------|
| <b>Project Initiation</b>  | <b>OPR</b>                                | Owner, CxP, O&M, Users, Design Team | Owner, CxP, or Design Team | Owner                    | CxP, Design Team                           |
| <b><i>Design Phase</i></b> | <b>Initial Cx Plan</b>                    | Owner, Design Team, CxP             | Owner or CxP               | Owner                    | CxP, Owner, Design Team, Construction Team |
|                            | <b>Systems Manual Outline</b>             | Owner, O&M, CxP                     | Owner or CxP               | Owner                    | Design Team, Construction Team             |
|                            | <b>Training Requirements Outline</b>      | Owner, O&M Users, CxP, Design Team  | Owner or CxP               | Owner, CxP               | Design Team, Construction Team             |
|                            | <b>Issues and Resolution Log Format</b>   | Owner, CxP                          | Owner or CxP               | Owner                    | CxP, Design Team                           |
|                            | <b>Cx Report Format</b>                   | Owner, CxP                          | CxP                        | Owner                    | Design Team, Owner                         |
|                            | <b>OPR Update</b>                         | Owner, CxP, O&M, Users, Design Team | CxP or Designer            | Owner                    | CxP, Design Team                           |
|                            | <b>Basis of Design</b>                    | Design Team                         | Design Team                | Owner, CxP               | Design Team, CxP                           |
|                            | <b>Construction Specifications for Cx</b> | Design Team, CxP, Owner, O&M        | Design Team or CxP         | Owner                    | Contractors, CxP, Design Team              |
|                            | <b>Systems Manual Outline—Expanded</b>    | Design Team, CxP, O&M, Contractor   | Design Team or CxP         | Owner, CxP               | Design Team, Contractor                    |
|                            | <b>Training Requirements</b>              | Owner, CxP, O&M, Users              | Owner, CxP, or O&M         | Owner                    | Design Team                                |
|                            | <b>Design Review Comments</b>             | CxP                                 | CxP                        | Design Team, Owner       | Design Team                                |
|                            | <b>Issues and Resolution</b>              | CxP                                 | CxP                        | Design Team, Owner       | CxP, Design Team                           |

# Cx Activities and Participants

|                     |                                           |                                |                            |                    |                                      |
|---------------------|-------------------------------------------|--------------------------------|----------------------------|--------------------|--------------------------------------|
| <b>Construction</b> | <b>OPR Update</b>                         | Owner, O&M, Users, Design Team | CxP or Designer            | Owner              | CxP, Design Team, Contractors, Owner |
|                     | <b>BoD Update</b>                         | Design Team                    | Design Team                | CxP, Owner         | Design Team, CxP, Owner              |
|                     | <b>Cx Plan Update</b>                     | Project Team                   | CxP                        | Owner              | Project Team                         |
|                     | <b>Submittal Review Comments</b>          | CxP                            | Design Team                | Design Team        | Contractor                           |
|                     | <b>System Coordination Plans</b>          | Contractor, Design Team, CxP   | Contractor                 | CxP, Design Team   | Contractor, CxP                      |
|                     | <b>Evaluation Checklists</b>              | CxP, Contractor, Design Team   | CxP or Contractor          | CxP, Design Team   | Contractor                           |
|                     | <b>Cx Progress Reports</b>                | CxP, Contractor                | CxP                        | CxP, Owner         | Contractor                           |
|                     | <b>Test Procedures</b>                    | Project Team                   | CxP                        | CxP, Design Team   | Contractor                           |
|                     | <b>Specified Test Data Submittals</b>     | Owner, Design Team, CxP        | Contractors, CxP, or Owner | Design Team, CxP   | Project Team                         |
|                     | <b>Cx Meeting Agendas and Minutes</b>     | CxP                            | CxP                        | All                | All                                  |
|                     | <b>Training Plans</b>                     | Project Team                   | Contractor or CxP          | Owner, CxP         | O&M, Users, Contractor               |
|                     | <b>Systems Manual</b>                     | Project Team                   | Contractor or CxP          | Owner, CxP         | O&M, Users                           |
|                     | <b>Issues and Resolution Log</b>          | CxP                            | CxP                        | N/A                | Project Team                         |
|                     | <b>Progress Report</b>                    | CxP                            | CxP                        | Owner, Design Team | Project Team                         |
|                     | <b>Preliminary Construction Cx Report</b> | CxP                            | CxP                        | Owner              | Owner                                |
|                     | <b>Final Construction Cx Report</b>       | CxP                            | CxP                        | Owner              | Owner                                |

# Owner's - Checklist

**Table 3.3 Owner's Roles and Responsibilities Checklist**

Project: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Owner: \_\_\_\_\_ Email: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Owner's Project Manager: \_\_\_\_\_ Email: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Date Initiated: \_\_\_\_\_ Date Revised: \_\_\_\_\_

| Step | Required?<br>Y/N | Activity                                                                                                                | Document                                  | Completed | Notes |
|------|------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-----------|-------|
| 1    |                  | Select and retain CxP                                                                                                   | Contract                                  |           |       |
| 2    |                  | Assemble Owner's Cx team and develop OPR                                                                                | OPR                                       |           |       |
| 3    |                  | Approve initial Cx plan                                                                                                 | Cx plan                                   |           |       |
| 4    |                  | Approve format and contents of systems manual, training plan, issues log and Cx plans. Include the requirements in OPR. | Systems manual, training plan, issues log |           |       |
| 5    |                  | Approve BOD                                                                                                             | BOD                                       |           |       |
| 6    |                  | Review and approve updates to previous items during design phase                                                        |                                           |           |       |
| 7    |                  | Review and approve updates to previous items during construction phase                                                  |                                           |           |       |
| 8    |                  | Review and respond to issues and resolutions log                                                                        | Issues log                                |           |       |
| 9    |                  | Review and accept commissioning reports                                                                                 | Cx report                                 |           |       |

This checklist can also be used to develop the contracts and purchase orders for the various commissioning team members.

*The approval section that follows can be used if applicable to the planning process.*

**I have reviewed the required items and plans and verified that they meet the Owner's project requirements:**

Name: \_\_\_\_\_

Company Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

# Commissioning Provider - Checklist

**Table 3.9 Commissioning Provider Roles and Responsibilities Checklist**

Project: \_\_\_\_\_ Address: \_\_\_\_\_  
 Owner: \_\_\_\_\_ Email/Phone: \_\_\_\_\_  
 Owner's Project Manager: \_\_\_\_\_ Email/Phone: \_\_\_\_\_  
 Date Initiated: \_\_\_\_\_ Date Revised: \_\_\_\_\_

| Step | Required?<br>Y/N | Activity                                                                     | Document                   | Completed | Notes |
|------|------------------|------------------------------------------------------------------------------|----------------------------|-----------|-------|
| 1.   |                  | Assist in the development of the OPR                                         | OPR                        |           |       |
| 2.   |                  | Develop the initial Cx Plan                                                  | Cx Plan                    |           |       |
| 3.   |                  | Review the BoD                                                               | BoD                        |           |       |
| 4.   |                  | Review and approve updates to above items during design phase                |                            |           |       |
| 5.   |                  | Review and approve updates to above items during construction phase          |                            |           |       |
| 6.   |                  | With Commissioning Team and contractors, develop the construction checklists | Checklists                 |           |       |
| 7.   |                  | Conduct the initial scoping meeting and other commissioning meetings         |                            |           |       |
| 8.   |                  | Develop and maintain the issues and resolutions log                          | Issues and resolutions log |           |       |
| 9.   |                  | Witness and manage equipment and system testing with contractors             |                            |           |       |
| 10.  |                  | Review Systems Manual                                                        | Systems Manual             |           |       |
| 11.  |                  | Review training plan and witness operations and maintenance training         | Training plan              |           |       |
| 12.  |                  | Produce commissioning reports                                                | Cx report                  |           |       |
|      |                  | Additional tasks may be required                                             |                            |           |       |

*The approval section that follows can be used if applicable to the planning process.*

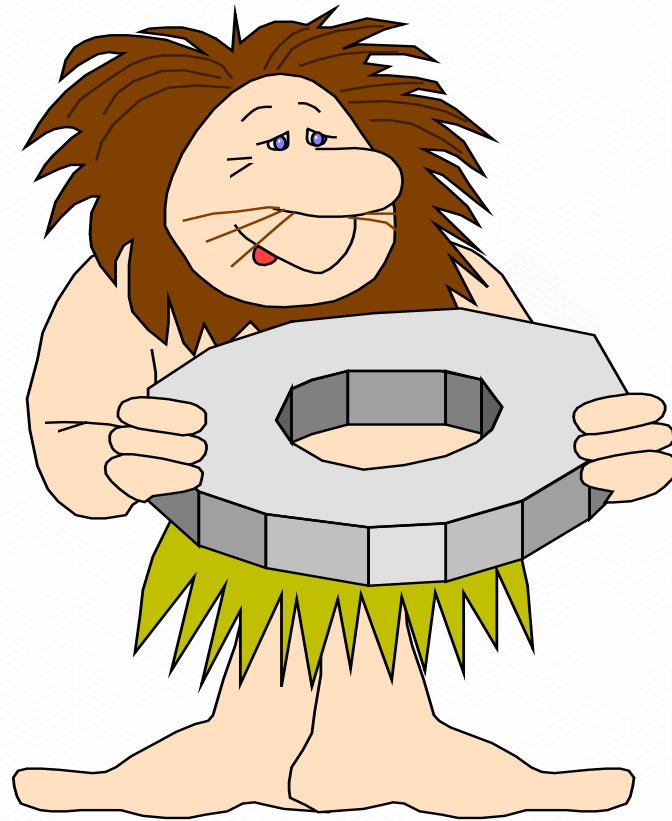
**I have reviewed the required items and plans and verified that they meet the OPR:**

Name: \_\_\_\_\_

Company Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

# Question – Comments



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