



What's Up with LEED-NC Commissioning?



Erik Ring
CTG Energetics, Inc.

Session 8
2006 National Conference on Building Commissioning
San Francisco, CA
April 20, 2006

Overview

- Getting from LEED-NC 2.1 to 2.2
- Priority Cx Issues Addressed by 2.2
- LEED-NC v2.2 Cx Requirements



Getting from LEED-NC 2.1 to 2.2

"the key is doing, not inventing, focusing on what's important."

NC Committee

"Either do or do not. There is no try."

Yoda

Priority Cx Issues for V2.2



Clarify the intent EAp1 and EAc3



Clarify who can implement the process



Clarify the minimum requirements



Make it economically feasible

Tension in LEED

- Technical Rigor vs Market Penetration
- A Stick or a Carrot?



EA Prerequisite 1 - Intent



LEED 2.1

Fundamental Building Systems Commissioning

Verify and ensure that fundamental building elements and systems...

are designed, installed and calibrated to operate...

as intended.

LEED 2.2

Fundamental Commissioning of the Building Energy Systems

Verify that the building's energy related systems...

are installed, calibrated and perform...

according to the owner's project requirements, basis of design, and construction documents.

EA Credit 3 - Intent



LEED 2.1

LEED 2.2

Additional Commissioning

Verify and ensure that the entire building is designed, installed and calibrated to operate as intended.

Enhanced Commissioning

Begin the commissioning process early during the design process...

and execute additional activities after systems performance verification is completed.

LEED LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN

EA Prerequisite 1 – Who can be the CxA?



LEED 2.1

LEED 2.2

Requirement 1 - Engage a commissioning team that does not include individuals directly responsible for project design or construction management.

Requirement 1- Designate an individual as the CxA to lead, review and oversee the completion of the commissioning process activities.

- The CxA shall have documented commissioning authority experience in at least two building projects.
- The individual serving as the CxA shall be independent of the project's design and construction management, though they may be employees of the firms providing those services. The CxA may be a qualified employee or consultant of the Owner.
- The CxA shall report results, findings and recommendations directly to the Owner.
- For projects smaller than 50,000 square feet, the CxA may include qualified persons on the design or construction teams who have the required experience.

LEED LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN

EA Credit 3 – Who can be the CxA?



LEED 2.1

LEED 2.2

Requirement 1 - A commissioning authority independent of the design team shall conduct a review of the design prior to construction document phase.

Requirement 1 - Prior to the start of the construction documents phase, designate an independent CxA to lead, review, & oversee the completion of all commissioning process activities. The CxA shall perform Tasks 2, 3 and 6. Other team members may perform Tasks 4 and 5.

- The CxA shall have documented commissioning authority experience in at least two building projects.
- The individual serving as the CxA shall be independent of the work of design and construction; not an employee of the design firm, though they may be contracted through them; not an employee of, or contracted through, a contractor or construction manager holding construction contracts; and can be a qualified employee or consultant of the Owner.
- The CxA shall report results, findings and recommendations directly to the Owner.
- This requirement has no deviation for project size.

LEED LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN

Summary – Who can be the CxA?

Party Acting as the Commissioning Authority (CxA)	Fundamental Commissioning Prerequisite [2, 4, 5]		Enhanced Commissioning Credit [3, 4, 5]
	<50k sf	>=50k sf	
1. Employee or subcontractor of the General Contractor with construction responsibilities	Y		
2. Employee or subcontractor, with construction responsibilities, of the Construction Manager (CM) who holds constructor contracts	Y		
3. Employee or subcontractor, with project design responsibilities, of the Architect or Engineer of Record (A/E)	Y		
4. Disinterested [1] employee or a subcontractor of the General Contractor or CM	Y	Y	
5. Disinterested [1] employee of the A/E	Y	Y	
6. Disinterested [1] subcontractor to the A/E	Y	Y	Y
7. Construction Manager not holding constructor contracts	Y	Y	Y
8. Independent consultant contracted to Owner	Y	Y	Y
9. Owner employee or staff	Y	Y	Y

LEED LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN

One More Time - Who can be the CxA?

1. Contractor
2. Construction Manager
3. Architect/Engineer
EAp1 < 50,000 sf
4. "Disinterested" Contractor
5. "Disinterested" Architect/Engineer
EAp1 > 50,000 sf
6. Independent Cx Agent – contracted to design team
7. Construction Manager
8. Independent Cx Agent – contracted to owner
9. Owner
EAp1 & EAc3

LEED LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN

In All Cases Cx Provider Must be "Qualified"

- The CxA shall have documented commissioning authority experience in at least two building projects.

LEED LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN

EA Prerequisite 1 – Requirements

LEED 2.1

Commissioned Systems

None Specified


- HVAC systems
- Water and plumbing systems
- Lighting systems
- Emergency power systems
- Renewable energy systems
- Envelope systems
- Elevators
- Fire/Life-Safety systems
- Telecomm systems
- Security systems
- Etc. . . .

LEED 2.2

Commissioned Systems

Commissioning process activities shall be completed for the following energy-related systems, at a minimum:

- Heating, ventilating, air conditioning, and refrigeration (HVAC&R) systems (mechanical and passive) and associated controls
- Lighting and day lighting controls
- Domestic hot water systems
- Renewable energy systems (wind, solar, etc.)



EA Prerequisite 1

LEED 2.1

Technologies & Strategies

Engage a CxA and adopt a Cx plan.


LEED 2.2

Technologies & Strategies

In order to meet this prerequisite, owners are required to use qualified individuals to lead the commissioning process.

Qualified individuals are identified as those who possess a high level of experience in the following areas:

- Energy systems design, installation and operation
- Commissioning planning & process management
- Hands-on field experience with energy systems performance, interaction, start-up, balancing, testing, troubleshooting, operation, and maintenance procedures
- Energy systems automation control knowledge



EA Prerequisite 1

LEED 2.1

Technologies & Strategies

Include commissioning requirements in bid documents and task the CxA to produce a report once Cx activities are completed.


LEED 2.2

Technologies & Strategies

This LEED-NC 2.2 Reference Guide provides guidance on the rigor expected for this prerequisite for the following:

- Owner's Project Requirements
- Basis of Design
- Commissioning Plan
- Commissioning Specification
- Performance Verification Documentation
- Commissioning Report

Owners are encouraged to consider including water-using systems, building envelope systems, and other systems in the scope of the commissioning plan as appropriate.



EA Prerequisite 1

LEED 2.1

Submittal Documentation


Provide the LEED Letter Template, signed by the Owner or commissioning agent(s), confirming that the fundamental commissioning requirements have been successfully executed or will be provided under existing contracts.

LEED 2.2

Submittal Documentation

This prerequisite is submitted as part of the **Construction Submittal**.

- Provide the name and company information for the CxA.
- Confirm that the 6 required tasks have been completed.
- Provide a narrative description of the systems that were commissioned and the results of the commissioning process.



LEED LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN

LEED On-line

NEW




LEED - ONLINE
Streamlined, Refined, and Online.

LEED LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN

Understanding the New LEED Cx Requirements

EA Credit 3
Enhanced Commissioning



LEED LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN

24

EA Credit 3 – Requirements



LEED 2.1

2. Conduct a review of the construction documents near completion of the construction document development and prior to issuing the contract documents for construction.
3. Review the contractor submittals relative to the systems being commissioned.
4. Provide the Owner with a single manual that contains the information required for re-commissioning building systems.

LEED 2.2

2. The CxA shall conduct, at a minimum, one commissioning design review of the Owner's Project Requirements (OPR), Basis of Design (BOD), and design documents prior to mid-construction documents phase and back-check the review comments in the subsequent design submission.
3. The CxA shall review contractor submittals applicable to systems being commissioned for compliance with the OPR and BOD. This review shall be concurrent with A/E reviews and submitted to the design team and the Owner.
4. Develop a systems manual that provides future operating staff the information needed to understand and optimally operate the commissioned systems.

EA Credit 3 – Requirements



LEED 2.1

4. Have a contract in place to review building operation with O&M staff, including a plan for resolution of outsourcing commissioning-related issues within one year after construction completion date.

LEED 2.2

4. Verify that the requirements for training operating personnel and building occupants are completed.
5. Assure the involvement by the CxA in reviewing building operation within 10 months after substantial completion with O&M staff and occupants. Include a plan for resolution of outstanding commissioning related issues.

EA Credit 3



LEED 2.1

Technologies & Strategies
Engage the CxA early in the design process.

LEED 2.2

Technologies & Strategies
Although it is preferable that the CxA be contracted by the Owner, for the enhanced commissioning credit, the CxA may also be contracted through the design firms or construction management firms not holding construction contracts.
This LEED-NC 2.2 Reference Guide provides detailed guidance on the rigor expected for following process activities:

- Commissioning design review
- Commissioning submittal review
- Systems manual

EA Credit 3



LEED 2.1

Submittal Documentation

Provide the LEED Letter Template, signed by the Owner or commissioning agent(s), confirming that the required additional commissioning tasks have been successfully executed or will be provided under existing contracts.

LEED 2.2

Submittal Documentation

This credit is submitted as part of the **Construction Submittal**.

- Confirm that the 5 required tasks have been completed.
- Provide a narrative description of the results of the commissioning design review, implementation of the systems manual and training, and the plan for the review of building operation at 8 to 10 months.

What are LEED Reviewers Looking For?



LEED-NC Review Process

A Few Key Truths:

- EAp1 and EA3 are audited frequently by LEED-NC reviewers
- Most LEED-NC reviews are not Cx experts
- LEED-NC reviewers have limited time
- Excess documentation and information is generally not useful to reviewers
- Be Clear – Be Concise – Be Consistent



 **LEED**

Questions & Discussion

Erik Ring

ering@CTGEnergetics.com

LEED LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN 32
