

## Commissioning Activity Matrix: A comparison between Title 24, CalGreen, CHPS, LEED 2009, and LEED 2013

Commissioning activities differ depending on the certifying or regulatory agency.

CalGreen requires irrigation system commissioning, a systems manual, and training for the building engineer.

Title 24 2013 goes beyond CalGreen and LEED Fundamental Commissioning to require design review.

Pursuing Enhanced Commissioning through LEED 2009 will not only satisfy the vast majority of CalGreen and Title 24 requirements, but also remain the best value for commissioning dollars spent.

Activity	Title 24 <sup>1</sup>	CalGreen	CHPS 2014	LEED 2009 (v3)		LEED 2013 (v4) (6/2015)	
				Fundamental	Enhanced	Fundamental	Enhanced
Review Owner's Project Requirements (OPR)	(v) <sup>2</sup>	√	√	√		√	
Review engineer's Basis of Design (BOD)	(v) <sup>2</sup>	√	√	√		√	
Cx Specs	√ <sup>3</sup>	√	√	√		√	
Design Review	√ <sup>4</sup>		√ <sup>5</sup>		√		√ <sup>6</sup>
Cx Plan	√	√	√	√		√	
Review submittals			√ <sup>7</sup>		√		√
Functional Performance Testing:							
▪ HVAC	√	√	√	√		√	
▪ Lighting/lighting controls	√ <sup>8</sup>	√	√	√		√	
▪ Renewable energy		√	√	√		√	
▪ Domestic hot water		√	√	√		√	
▪ Building Control System	√	√	√	√		√	
▪ Irrigation system		√	(v) <sup>9</sup>				
Cx summary report	√	√	√	√		√	
Systems Manual	√	√	√ <sup>10</sup>		√		√
Verify training	√	√	√		√		√
Post-occupancy review			√		√		√
M&V Plan, Envelope Cx							√ <sup>11</sup>

<sup>1</sup> Not required for buildings less than 10,000 square feet, unless otherwise noted.

<sup>2</sup> OPR and BOD are required, but not required for CxA review.

<sup>3</sup> Cx specifications are required regardless of building size.

<sup>4</sup> Design review requirements: If building <10,000 square feet, may be done by design engineer. Between 10-50,000 sq ft, in-house 3<sup>rd</sup> Party. >50,000 sq ft or complex mechanical system, independent 3<sup>rd</sup> Party.

<sup>5</sup> Required for Standard Commissioning (1 point). Two reviews (DD, CD) required under Comprehensive Commissioning (2 points).

<sup>6</sup> Also includes design review of the building envelope

<sup>7</sup> Includes review of O&M manuals.

<sup>8</sup> Lighting and lighting controls Acceptance Testing must be performed by a Certified Lighting Controls Acceptance Test Technician (CLCATT)

<sup>9</sup> Optional – conduct testing for 3 additional points under WE 6.1.

<sup>10</sup> See also credit OM 5.1.

<sup>11</sup> Measurement and Verification Plan is only required for Path 2, Option 1. Note exception for datacenters. Envelope Cx is required for LEED v4 Path 2, Option 2.