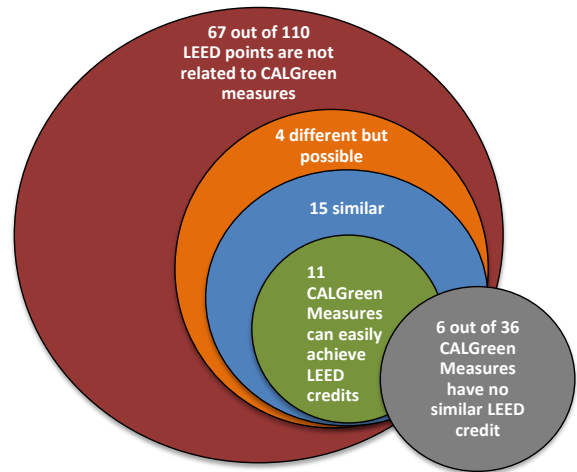


CALGreen 2013 Nonresidential Mandatory Measures Comparison to LEED Version 4 - Snapshot Chart

The following is a comparative analysis between the 2013 Nonresidential California Green Building Standards Code (CALGreen 2013) and the third party rating system "Leadership in Energy and Environmental Design - Building Design & Construction, New Construction version 4" (LEED v4). The analysis only compares CALGreen 2013 code mandatory measures against LEED v4 prerequisites & credits that have aligned or similar intent. The purpose of the comparison is to identify the number of LEED points that can be achieved on a new construction project when meeting the requirements of CALGreen 2013 code mandatory measures.

This comparative analysis includes assumptions for LEED and CALGreen, as determined by industry-leading Green Building experts. Actual LEED v4 points achieved may vary depending on a multitude of project specific circumstances. The following comparison should only be used as a reference for evaluation purposes.

CALGreen 2013 measures overlapping LEED v4



KEY

	LEED points that can easily be achieved by meeting the CALGreen Requirements. Exact or similar standards overlap by comparison.
	Additional LEED points that can be achieved with minimal changes. LEED standards are slightly different than CALGreen.
	Additional LEED points that can be achieved with major changes. LEED standards are significantly different than CALGreen.
	CALGreen Measures for which there is no LEED overlap.

CALGreen 2013 New Building Mandatory Measures and LEEDv4 - Comparison

Code/ Rating System	Measure or Credit Number	CALGreen 2013 Mandatory Measure LEEDv4 Prerequisite/Credit	Points for LEED Standards that meet or exceed CALGreen	Points for LEED standards ≠ CALGreen, but which are achievable with some changes	Points for LEED standards that are significantly different than CALGreen
CALGreen 2013	5.106.1	Storm Water Soil Loss Prevention Plan	0		
LEEDv4	SSp1	Prerequisite: Construction Activity Pollution Prevention			
CALGreen 2013	5.106.4.1	Short-Term and long-term bicycle parking			1
LEEDv4	LTC6	Bicycle Facilities			
CALGreen 2013	5.106.5.2	Designated Parking			2
LEEDv4	LTC7	Reduced Parking Footprint			
	LTC8	Green Vehicles			
CALGreen 2013	5.106.8	Light Pollution Reduction	1		
LEEDv4	SSc6	Light Pollution Reduction			
CALGreen 2013	5.106.10	Grading and Paving			
LEEDv4	N/A	N/A			
CALGreen 2013	5.201.1	Energy Efficiency		2	16
LEEDv4	EAp2	Minimum Energy Performance (Title 24 part 6 - 2013)			
	EAc1	Optimize Energy Performance			
CALGreen 2013	5.303.1	Water Meters and Submeters	1		
LEEDv4	WEp3	Prerequisite: Building Level Water Metering			
CALGreen 2013	5.303.2	Water Reduction		4	2
	5.303.3	Water Conserving Plumbing Fixtures and Fittings			
	5.303.4	Wastewater Reduction			
	LEEDv4	WEp2			
CALGreen 2013	5.304.1	Water budget		2	
	5.304.2	Outdoor Potable Water Use			
	5.304.3	Irrigation Design			
	LEEDv4	WEp1			
CALGreen 2013	5.407.1	Weather Protection			
	LEEDv4	N/A			
CALGreen 2013	5.407.2	Moisture Control: Sprinklers, entries and openings, flashings			
LEEDv4	N/A	N/A			

CALGreen 2013 Nonresidential Mandatory Measures Comparison to LEED Version 4 - Snapshot Chart

CALGreen 2013	5.408.1	Construction Waste Management Plan	1	1	
LEEDv4	MRp2	Prerequisite: Construction Waste Management Planning			
	MRC5	Construction Waste Management			
CALGreen 2013	5.410.1	Recycling by occupants	0		
LEEDv4	MRp1	Prerequisite: Storage and Collection of Recyclables			
CALGreen 2013	5.410.2	Commissioning: OPR, BOD, Plan, Functional Performance Testing, Documentation and Training		2	1
	5.410.4	Testing and Adjusting, Balancing, O&M Manual, Inspection & Reports			
LEEDv4	EAp1	Prerequisite: Fundamental Commissioning			
	EAc3	Enhanced Commissioning			
CALGreen 2013	5.503.1	Fireplaces & Woodstoves			
LEEDv4	N/A	N/A			
CALGreen 2013	5.504.1.3	Temporary Ventilation		1	
	5.504.3	Covering of duct openings and protection of mechanical equipment during construction			
LEEDv4	EQc3	Construction Indoor Air Quality Management Plan			
CALGreen 2013	5.504.4.1	Adhesives, sealants and caulks	3		
	5.504.4.3	Paints and Coatings			
	5.504.4.4	Carpet Systems			
	5.504.4.5	Composite wood products			
	5.504.4.6	Resilient flooring systems			
LEEDv4	EQc2	Low-Emitting Interiors			
CALGreen 2013	5.504.5.3	Filters		1	
LEEDv4	EQc1	Enhanced IAQ Strategies			
CALGreen 2013	5.504.7	Environmental Tobacco Smoke Control	0		
LEEDv4	EQp2	Prerequisite: Environmental Tobacco Smoke Control			
CALGreen 2013	5.505.1	Indoor moisture control			
LEEDv4	N/A	N/A			
CALGreen 2013	5.506.1	Outside air delivery			0
LEEDv4	EQp1	Prerequisite: Minimum Indoor Air Quality Performance			
CALGreen 2013	5.506.2	Carbon dioxide (CO2) monitoring		Already Counted Above	
LEEDv4	EQc1	Enhanced IAQ Strategies			
CALGreen 2013	5.507.4	Acoustical Control			1
LEEDv4	EQc9	Acoustic Performance			
CALGreen 2013	5.508.1	Ozone depletion and greenhouse gas reductions		1	
LEEDv4	EAp3	LEED Prerequisite: Fundamental Refrigerant Management			
	EAc4	Enhanced Refrigerant Management			
CALGreen 2013	5.508.2	Supermarket refrigerator leak reduction			
LEEDv4	N/A	N/A			
CALGreen 2013	N/A	N/A			
LEEDv4	General	There are credits totaling 67 points within the LEED-NC v4 system that do not have similar mandatory measures.			
LEED Points Available =			6	14	23

In summary, CALGreen 2013 has the potential to earn a maximum of 43 points out of the 110 points possible within the LEED-NC v4 system. While this is technically enough points to achieve a Certified LEED rating, points in the Orange column are significantly different than CALGreen mandatory measures and should be considered difficult to achieve compared to LEED. Therefore a realistic comparison of LEEDv4 to CALGreen 2013 equates to 15-25 readily achievable points, which is not equivalent to LEED minimum certification.

LEED Certification Point Thresholds
Certified 40-49 pts
Silver 50-59 pts
Gold 60-79 pts
Platinum 80+ pts
110 points possible

Although CALGreen projects do not automatically qualify for LEED certification, code minimums do effectively close the gap and lessen the effort needed to achieve LEED. However, there are two LEEDv4 prerequisites (EAp1 Building Commissioning and EQp1 Minimum Indoor Air Quality Performance) that are not readily achieved without significant changes. There are credits totaling 67 points within the LEED-NC v4 system that do not have similar mandatory measures for comparison and are therefore unrepresented and unaccounted for in CALGreen 2013.

Note: this analysis compares the June 2013 balloted version of LEED v4 for New Construction and July 2013 First Printing of the 2013 California Green Building Standards Code - California Code of Regulations, Title 24, Part 11 (Nonresidential).

LEED v4 CALGreen Scorecard for Hypothetical Nonresidential 2013-2016 Code Compliant Building

6	16	30	Total LEED v4 points likely based on hypothetical project at each level of CALGreen compliance. Note: points are not cumulative across columns.
----------	-----------	-----------	--

Three CALGreen 2013 Compliant Scenarios with potential LEED v4 New Construction points achieved by CALGreen measures.

1. **CALGreen Code:** Only Code Mandatory Measures

2. **Tier 1:** Mandatory + Tier 1 required measures + 1 elective measures per non-energy category + 1 from any category (5 total elective measures)

3. **Tier 2:** Mandatory + Tier 1 & 2 required measures + 3 elective measures per non-energy category + 3 from any category (15 total elective measures)

Code*	Tier 1*	Tier 2*	
1	3	4	Planning and Design
P	P	P	5.106.1 Stormwater Pollution Prevention
0	0	0	5.106.4 Bicycle Parking
0	0	0	5.106.5.2 Designated Parking
1	1	1	5.106.8 Light Pollution Reduction
0	0	0	5.106.10 Grading and Paving for Surface Water Control
	2	2	A5.103.1 Community Connectivity
			A5.103.2 Brownfield or Greyfield Infill Development
			A5.104.1 Reduce development footprint and optimize open space
			A5.105.1 Deconstruction and Reuse of Existing Structures
		0	A5.106.2 Storm water design
			A5.106.3 Low Impact Development
		1	A5.106.4 Bicycle parking and changing rooms
		0	A5.106.5.1 Designated Parking
			A5.106.5.3 Electric vehicle charging.
			A5.106.6 Reduce parking capacity.
			A5.106.7 Exterior wall shading.
			A5.106.9 Building orientation.
	0	0	A5.106.11 Heat island effect.

Code*	Tier 1*	Tier 2*	
0	5	12	Energy Efficiency
P	P	P	5.201.1 Meet California Energy Code, CCR Title 24, Part 6.
	5	5	A5.203.1.1 Tier 1 Energy efficiency
		7	A5.203.1.2 Tier 2 Energy efficiency
			A5.211.1 On-site renewable Energy
			A5.211.3 Green Power
			A5.211.4 Pre-wiring for future solar.
			A5.212.1 Elevators and escalators
			A5.213.1 Steel Framing

Code*	Tier 1*	Tier 2*	
1	3	5	Water Efficiency and Conservation
P	P	P	5.303.1 Water Meters and Submeters
P	P	P	5.303.2 Indoor Water Use Efficiency - 20% reduction
0	0	0	5.303.4 Wastewater Reduction
0	0	0	5.303.6 Plumbing Fixtures and Fittings
0	0	0	5.304.1 Exterior Water Budget
1	1	1	5.304.2 Outdoor Potable Water Metering
0	0	0	5.304.3 Irrigation Design
	2	2	A5.303.2.1 Indoor Water Use Tier 1 – 30% Savings.
		1	A5.303.2.2 Indoor Water Use Tier 2 – 35% Savings.
			A5.303.2.2 Indoor Water Use – 40% Savings.
		0	A5.303.3 Appliances
			A5.303.5 Dual Plumbing
			A5.304.2.1 Outdoor Potable Water Use (meters)
	P	P	A5.304.4.1 Exterior Potable water reduction. Tier 1: 40% reduction
	0	0	A5.304.4.2 Exterior Potable water reduction. Tier 2: 45% reduction
		1	A5.304.4.4 Exterior Potable water reduction. 50% reduction
			A5.304.5 Potable water elimination.
		0	A5.304.6 Restoration of areas disturbed by construction.
			A5.304.7 Restore or protect 50% of the site area
			A5.304.8 Graywater Irrigation System.

Code*	Tier 1*	Tier 2*	
1	2	4	Material Conservation and Resource Efficiency
0	0	0	5.407 Water Resistance and Moisture Control
P	P	P	5.408.2 Construction Waste Management Plan
1	1	1	5.408.3 Construction Waste Reduction
0	0	0	5.408.4 100% Diversion of Soil and Land Clearing Debris
P	P	P	5.410.1 Occupant Recycling
0	0	0	5.410.2 Commissioning
0	0	0	5.410.3 Testing and Adjusting
			A5.404 Efficient Framing Techniques
	1	1	A5.405.1 Regional materials
			A5.405.2.1 Certified wood
			A5.405.2.2 Rapidly renewable
			A5.405.3 Reused Materials
	0	0	A5.405.4 Recycled content, Tier 1 10%
		1	A5.405.4.1 Recycled content, Tier 2 15%
			A5.405.5 Cement and Concrete
			A5.406 Enhanced durability and reduced maintenance.
		0	A5.407.3 Weather protection
		0	A5.407.4 Moisture control
	0	0	A5.408.3.1 Enhanced construction waste reduction, Tier 1: 65%
		1	A5.408.3.2 Enhanced construction waste reduction, Tier 2: 80%
			A5.409.1 Lifecycle cost assessment of Materials and system assemblies

Code*	Tier 1*	Tier 2*	
3	3	5	Environmental Quality
0	0	0	5.503.1 Fireplaces
0	0	0	5.503.1.3 Temporary Ventilation
0	0	0	5.504.3 Protect HVAC system and equipment during construction
3	3	3	5.504.4 Finish Material Pollutant Control
0	0	1	5.504.5.3 MERV 8 Filters
P	P	P	5.504.7 Environmental Tobacco Smoke
0	0	0	5.505.1 Indoor Moisture Control
0	0	0	5.506.1 Outside Air Delivery
0	0	0	5.506.2 CO2 Monitoring
0	0	0	5.507.4 Acoustical Control
0	0	0	5.508.1 Ozone Depletion and GHG Reduction
0	0	0	5.508.2 Supermarket refrigerant leak reduction
	0	0	A5.504.1 IAQ during construction
		0	A5.504.2 IAQ Post-construction
	0	0	A5.504.4.7 Resilient flooring systems, Tier 1 80%
		0	A5.504.4.7.1 Resilient flooring systems, Tier 2 90%
	0	0	A5.504.4.8 Thermal insulation, Tier 1
		0	A5.504.4.8.1 Thermal insulation, Tier 2 Install No-Added Formaldehyde
			A5.504.4.9 Acoustical ceilings and wall panels
			A5.504.5 Hazardous particulates and chemical pollutants
			A5.504.8 Finish material pollutant control
			A5.507.1 Lighting and thermal comfort controls
			A5.507.2 Daylight
			A5.507.3 Views
			A5.507.5 Acoustical control.
		1	A5.508.1.3 Hydrochlorofluorocarbons
			A5.508.1.4 Hydrofluorocarbons

Code*	Tier 1*	Tier 2*	
0	0	0	Installer and Special Inspector Qualifications
0	0	0	5.303.1 Special Inspections

* Points reflect likely LEED v4 for New Construction points based on hypothetical CALGreen compliant building scenarios

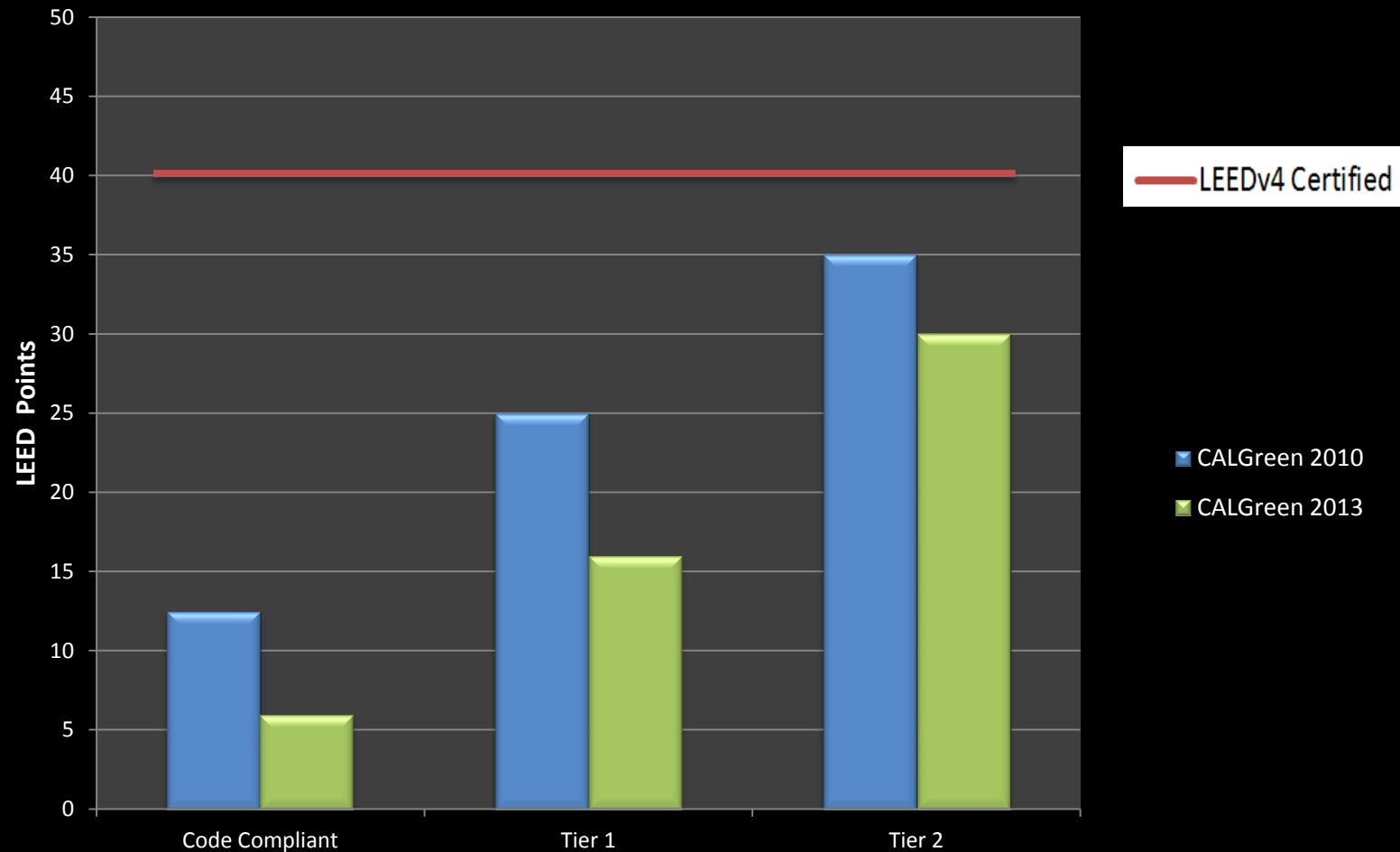
P = LEED Prerequisite

Mandatory Base Code Measure

Mandatory Tier Measure

Grey Measure not pursued in hypothetical project scenario

Potential LEED Points for Achieving CALGreen Tiers



Analysis indicates a widening gap between CALGreen Tiers and LEED point scores from 2010 to 2013. The blue bars compare relative LEED scores for projects achieving CALGreen 2010 under the LEED 2009 rating system. The green bars compare CALGreen 2013 and LEEDv4 on a hypothetical project. The widening gap is attributable to the trajectory of LEEDv4 which has led to new credits in the rating system and a redefining of green building criteria. While CALGreen 2013 has a much larger pool of covered projects than its 2010 version, there have only been minor changes to the green building criteria, thus the resulting lower scores in comparison to LEEDv4.