



LEED BD&C Version 3.0 (2009) Certification & Accreditation

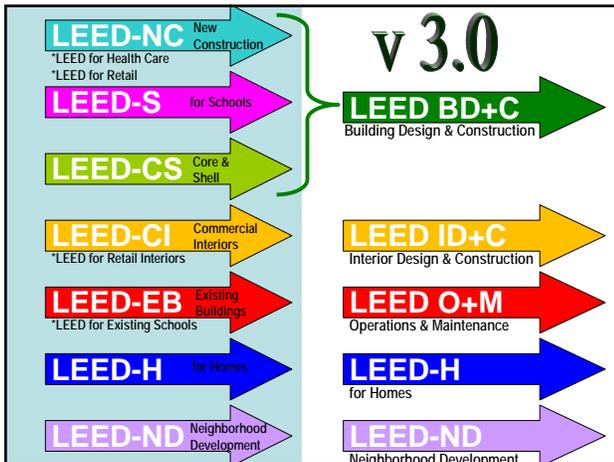
Session 7: LEED Summary
& Exam Preparation

June 15, 2009

California Department of General Services

Today's Agenda

- LEED O+M – Operation & Maintenance
- LEED ID+C – Interior Design & Construction
- LEED-H – for Homes
- LEED-ND – Neighborhood Development
- Rating Systems under development
- Exam preparation review & suggestions for study



Rating System	Reference Guide
LEED for New Construction	GREEN BUILDING DESIGN & CONSTRUCTION 2009 Edition
LEED for Core & Shell	
LEED for Schools	
LEED for Healthcare*	
LEED for Retail*	GREEN INTERIOR DESIGN & CONSTRUCTION 2009 Edition
LEED for Commercial Interiors	
LEED for Retail Interiors*	GREEN BUILDING OPERATIONS & MAINTENANCE 2009 Edition
LEED for Existing Buildings	
LEED for Existing Schools*	

LEED O+M - Operation & Maintenance

1. Replaces LEED EBOM (2008) & LEED-EB
2. Focus on operation, maintenance, energy efficiency, policy implementation

LEED O+M 2009: 110 total points
Certified: 40-49 points, **Silver:** 50-59 points,
Gold: 60-79 points, **Platinum:** 80+ points

LEED EBOM 2008: 92 total points
Certified: 34-42 points, **Silver:** 43-50 points,
Gold: 51-67 points, **Platinum:** 68-92

LEED O+M - Sustainable Sites - 26 Points

- | | | |
|-----|--|------|
| Cr1 | LEED Certified Design and Construction | 4 |
| Cr2 | Building Exterior and Hardscape Management Plan | 1 |
| Cr3 | Integrated Pest Management, Erosion Control, and Landscape Management Plan | 1 |
| Cr4 | Alternative Commuting Transportation, 10%, 25%, 50%, ≥75% | 3-15 |
| Cr5 | Site Development: Protect or Restore Open Space | 1 |
| Cr6 | Stormwater Quantity Control | 1 |
| Cr7 | Heat Island Reduction - Non-Roof, Roof | 2 |
| Cr8 | Light Pollution Reduction | 1 |



LEED O+M - Water Efficiency - 14 Points

P1	Minimum Indoor Plumbing Fixture and Fitting Efficiency	Reqd
Cr1	Water Performance Measurement – metering, submetering	1-2
Cr2	Additional Indoor Plumbing Fixture and Fitting Efficiency , 10%, 15%, 20%, 25%, 30% reductions	1-5
Cr3	Water Efficient Landscaping - Reduce Potable Water Use by 50%, 62.5%, 75%, 87.5%, 100%	1-5
Cr4	Cooling Tower Water Management - Chemical Management, Non-Potable Water Source Use	1-2



LEED O+M - Energy & Atmosphere - 35 Points

P1	Energy Efficiency Best Management Practices - Planning, Documentation, and Opportunity Assessment	Reqd
P2	Minimum Energy Efficiency Performance – ENERGY STAR 69	Reqd
P3	Fundamental Refrigerant Management	Reqd
Cr1	Optimize Energy Efficiency Performance	1-18
Cr2	Existing Building Commissioning - Investigation and Analysis, Implementation, Ongoing Commissioning	2-6
Cr3	Performance Measurement - Building Automation System, System-Level Metering 40%, 80%	1-3
Cr4	Renewable Energy - On-site 3, 4.5, 6, 7.5, 9, 12% Off-site 25, 37.5, 50, 62.5, 75, 100%	1-6
Cr5	Enhanced Refrigerant Management	1
Cr6	Emissions Reduction Reporting	1

LEED O+M - Materials & Resources - 10 Points

P1	Sustainable Purchasing Policy	Reqd
P2	Solid Waste Management Policy	Reqd
Cr1	Sustainable Purchasing - Ongoing Consumables, 40%	1
Cr2	Sustainable Purchasing - Durable Goods: electric, furniture	1-2
Cr3	Sustainable Purchasing - Facility Alterations and Additions	1
Cr4	Sustainable Purchasing - Reduced Mercury in Lamps	1
Cr5	Sustainable Purchasing - Food	1
Cr6	Solid Waste Management - Waste Stream Audit	1
Cr7	Solid Waste Management - Ongoing Consumables, 50%	1
Cr8	Solid Waste Management - Durable Goods	1
Cr9	Solid Waste Management - Facility Alterations & Additions	1

LEED O+M - Indoor Environ. Quality - 15 Pts

P1	Minimum Indoor Air Quality Performance	Reqd
P2	Environmental Tobacco Smoke (ETS) Control	Reqd
P3	Green Cleaning Policy	Reqd
Cr1	IAQ Best Management Practices IAQ Management Program Outdoor Air Delivery Monitoring Increased Ventilation Reduce Particulates in Air Distribution IAQ Management for Facility Alterations and Additions	5
Cr2	Occupant Comfort Occupant Survey, Controllability of Lighting Systems, Thermal Comfort Monitoring, Daylight and Views	4
Cr3	Green Cleaning High Performance Cleaning Program Custodial Effectiveness Assessment Purchase of Sustainable Cleaning Products and Materials Sustainable Cleaning Equipment Indoor Chemical and Pollutant Source Control Indoor Integrated Pest Management	6

LEED O+M - Innovation in Operations - 6 Pts

Cr1	Innovation in Operations	4
Cr2	LEED® Accredited Professional	1
Cr3	Documenting Sustainable Building Cost Impacts	1

LEED O+M – Regional Priority - 4 of 6 Pts avail.

Cr. 1.1	Regional Priority Credit: Region Defined	1
Cr. 1.2	Regional Priority Credit: Region Defined	1
Cr. 1.3	Regional Priority Credit: Region Defined	1
Cr. 1.4	Regional Priority Credit: Region Defined	1
Cr. 1.5	Regional Priority Credit: Region Defined	1
Cr. 1.6	Regional Priority Credit: Region Defined	1

LEED O+M Tools, Resources & References

- 112 page USGBC O+M Rating System at: www.usgbc.org/ShowFile.aspx?DocumentID=5545
- Interactive LEED O+M Checklist at: www.usgbc.org/ShowFile.aspx?DocumentID=5722
- LEED AP+ O+M Candidate Handbook www.gbci.org/ShowFile.aspx?DocumentID=3572
- DGS Best Practices Manual for Existing Buildings
 - www.green.ca.gov/GreenBuildings/BBBTManual.htm
 - Based on LEED-EB v2.0 including policies & practices

LEED Interior Design & Construction (ID+C)

Recognizes Individual Tenants

- Can certify individual tenant spaces, suites, etc.

Intended to Companion w/ LEED BD+C (CS)

Fewer Site Credits

Covers Additional Interior Building Elements

- Lighting
- Equipment & Appliances
- Finishes, furniture
- Daylight

LEED ID+C

LEED ID+C 2009: 110 total points

Certified: 40-49 points, **Silver:** 50-59 points, **Gold:** 60-79 points, **Platinum:** 80+ points

LEED-CI v2.0: 57 total points

Certified: 20-26 points, **Silver:** 27-31 points, **Gold:** 32-41 points, **Platinum:** 42+ points

LEED ID+C - Sustainable Sites - 21 Points

Cr. 1	Site Selection: Select a LEED Certified Building OR Locate tenant space in bldg. with characteristics:	5 or up to 5
A	Brownfield Redevelopment	1
B	Stormwater Design: Quantity Control	1
C	Stormwater Design: Quality Control	1
D	Heat Island Effect: Non-Roof	1
E	Heat-Island Effect: Roof	1
F	Light Pollution Reduction	1
G	Water Effic. Landscaping: Reduce by 50%	2
H	Water Effic. Landscaping: No Potable Use or No Irrig.	2
I	Innovative Wastewater Technologies	2
J	Water Use Reduction: 30% Reduction	1
K	Onsite Renewable Energy	2
L	Other Quantifiable Environmental Performance	1
Cr. 2	Devel. Density & Community Connectivity	6
Cr. 3.1	Alt. Transportation, Public Transportation Access	6
Cr. 3.2	Alt. Transportation, Bicycle Storage & Changing Rooms	2
Cr. 3.3	Alt. Transportation, Parking Availability	2

LEED ID+C – Water Efficiency - 11 Points

P1	Water Use Reduction, 20% Reduction – in tenant scope of work	Req'd
Cr 3	Water Use Reduction	6-11
	30% Reduction	6
	35% Reduction	8
	40% Reduction	11

LEED ID+C – Energy Efficiency - 37 Points

P1	Fund. Commissioning of the Building Energy Systems	Reqd
P2	Minimum Energy Performance	Reqd
P3	Fundamental Refrigerant Management	Reqd
Cr. 1.1	Optimize Energy Performance: Lighting Power - Reduce lighting power density below the standard 15, 20, 25, 30, 35%	1 to 5
Cr. 1.2	Optimize Energy Performance: Lighting Controls	1 to 3
	Opt. A: Daylight respons. controls within 15 ft. of windows	1
	Opt. B: Daylight responsive controls for 50% of load	1
	Opt. C: Occupancy sensors for 75% of load	1
Cr. 1.3	Optimize Energy Performance: HVAC	
	Opt. A: Equipment Efficiency and Zoning & Controls	5 to 10
	Opt. B: Reduce Design Energy Cost – 15, 30%	5 to 10
Cr. 1.4	Optimize Energy Performance: Equip. and Appl.	1 to 4
	70, 77, 84, 90% of ENERGY STAR eligible equip. rated	
Cr. 2	Enhanced Commissioning	5
Cr. 3	Measurement & Verification	2 to 5
	Install Sub-Metering Equipment	2
	Tenant Pays for Energy	3
	-OR- Energy Use, Measurement & Payment Accountability	5
Cr. 4	Green Power	5

LEED ID+C – Mat'l's & Resources - 14 Pts

P1	Storage & Collection of Recyclables	Reqd
Cr. 1.1	Tenant Space Long Term Commitment	1
Cr. 1.2	Building Reuse, Maint. 40% of Int. Non-Struct. Comp.	1
Cr. 1.3	Building Reuse, Maint. 60% of Int. Non-Struct. Comp.	1
Cr. 2.1	Construction Waste Management, Divert 50% From Disposal	1
Cr. 2.2	Construction Waste Management, Divert 75% From Disposal	1
Cr. 3.1	Materials Reuse, 5%	1
Cr. 3.2	Materials Reuse, 10%	1
Cr. 3.3	Materials Reuse, 30% Furniture and Furnishings	1
Cr. 4.1	Recycled Content, 10%	1
Cr. 4.2	Recycled Content, 20%	1
Cr. 5.1	Regional Materials, 20% Manufactured Regionally	1
Cr. 5.2	Regional Materials, 10% Extracted and Manuf'd Regionally	1
Cr. 6	Rapidly Renewable Materials	1
Cr. 7	Certified Wood	1

LEED ID+C – Indoor Env. Quality - 17 Pts

P 1	Minimum IAQ Performance	Reqd
P 2	Environmental Tobacco Smoke (ETS) Control	Reqd
Cr. 1	Outdoor Air Delivery Monitoring	1
Cr. 2	Increased Ventilation	1
Cr. 3.1	Construction IAQ Management Plan, During Construction	1
Cr. 3.2	Construction IAQ Management Plan, Before Occupancy	1
Cr. 4.1	Low-Emitting Materials, Adhesives & Sealants	1
Cr. 4.2	Low-Emitting Materials, Paints & Coatings	1
Cr. 4.3	Low-Emitting Materials, Flooring Systems	1
Cr. 4.4	Low-Emitting Materials, Composite Wood & Agrifiber Products	1
Cr. 4.5	Low-Emitting Materials, Systems Furniture and Seating	1
Cr. 5	Indoor Chemical & Pollutant Source Control	1
Cr. 6.1	Controllability of Systems, Lighting	1
Cr. 6.2	Controllability of Systems, Thermal Comfort	1
Cr. 7.1	Thermal Comfort, Design	1
Cr. 7.2	Thermal Comfort, Verification	1
Cr. 8.1	Daylight & Views, Daylight 75% of Spaces	1
Cr. 8.2	Daylight & Views, Daylight for 90% of Spaces	1
Cr. 8.3	Daylight & Views, Views for 90% of Seated Spaces	1

LEED ID+C – Innov. in Operations - 6 Pts

Credit 1.1	Innovation or Exemplary Performance	1
Credit 1.2	Innovation or Exemplary Performance	1
Credit 1.3	Innovation or Exemplary Performance	1
Credit 1.4	Innovation	1
Credit 1.5	Innovation	1
Credit 2	LEED® Accredited Professional	1

LEED ID+C – Regional Priority - 4 of 6 Pts

Credit 1.1	Regional Priority Credit: Region Defined	1
Credit 1.2	Regional Priority Credit: Region Defined	1
Credit 1.3	Regional Priority Credit: Region Defined	1
Credit 1.4	Regional Priority Credit: Region Defined	1
Credit 1.4	Regional Priority Credit: Region Defined	1
Credit 1.4	Regional Priority Credit: Region Defined	1

LEED ID+C Tools, Resources & References

- 88 page USGBC ID+C Rating System at: www.usgbc.org/ShowFile.aspx?DocumentID=5543
- Interactive LEED ID+C Checklist at: www.usgbc.org/ShowFile.aspx?DocumentID=5723
- LEED AP+ ID+C Candidate Handbook
 - Available Summer 2009
 - see: www.gbci.org/DisplayPage.aspx?CMSPageID=87
- v3.0 exam available Aug/Sept. 2009

LEED for Homes

Current version 2008

- >200 certified in California
- >3,000 registered in California

LEED-H: 136 total points

Certified: 45-59 points, **Silver:** 60-74 points, **Gold:** 75-89 points, **Platinum:** 90+ points

Includes additional credit categories:

- Location & Linkages (LL)
- Homeowner Awareness (HA)

Includes onsite inspection by HERS rater

LEED for Homes - Fees

	Single-Family Housing		Multi-Family Housing		Volume Pricing project specific
	Regist.	Certif.	Regist.	Certif.	
USGBC Member	\$150	\$225	\$450	\$0.035/sq. ft.	Contact Provider For info
Non-Member	\$225	\$300	\$600	\$0.045/sq. ft.	

- LEED for Homes requires completion of on-site inspections prior to certification.
- Additional Provider and Green Rater verification costs apply and are based on market prices.

LEED for Homes (LEED-H)

Includes key prerequisites:

- Durability Plan
- Erosion Controls
- No Invasive Plants
- Energy Star Home – 15%+ above Title 24
- Framing Waste Factor not over 10%
- Combustion Venting
- Outdoor Air Ventilation
- Education for the Owner/Occupant

Administered in CA by Davis Energy Group

- LEED@davisenergy.com (530) 732-1100 ext. 21
- www.davisenergy.com

LEED for Homes - Tools, Resources & References

- 123 page LEED for Homes v2008 Rating System at: www.usgbc.org/ShowFile.aspx?DocumentID=3638
- Interactive LEED for Homes v2008 Checklist at: www.usgbc.org/ShowFile.aspx?DocumentID=3658
- LEED AP+ Homes Candidate Handbook www.gbci.org/ShowFile.aspx?DocumentID=3633

LEED for Neighborhood Development LEED-ND

LEED Pilot Rating System

- Expected to officially launch 2009

Integrates Smart Growth, Urbanism and Green Building into one Standard

- Collaboration with Congress for New Urbanism & Natural Resources Defense Council
- 106 total points available in Pilot

Certifies Entire Neighborhoods & Communities

- 238 Registered Pilot Projects already
- Up to 12K acres in size

<https://www.usgbc.org/ShowFile.aspx?DocumentID=2960>

LEED for Neighborhood Development LEED-ND

New Credit Categories

- Smart Location & Linkage
- Neighborhood Pattern & Design
- Green Construction & Technology
- Innovation & Design Process



LEED for Neighborhood Development LEED-ND

LEED-ND Pilot: 106 total points

Certified: 40-49 points, **Silver:** 50-59 points,
Gold: 60-79 points, **Platinum:** 80+ points

Tools, Resources & References

- 112 page USGBC ND (draft) Rating System at:
- www.usgbc.org/ShowFile.aspx?DocumentID=5742
- Interactive LEED ND (draft) Checklist at:
- www.usgbc.org/ShowFile.aspx?DocumentID=5745

LEED Rating Systems Under Development

LEED for Retail Pilot

- Pilot rating system on USGBC website will be launched in LEED 2009 format

LEED for Healthcare Pilot

- Draft rating system on USGBC website in public comment period
- (Replacing Green Guide for Health Care)

Laboratories

- Aligning with Labs21

Multi-family Residential

LEED Portfolio Program

- Currently in Pilot Phase
 - DGS in Pilot Program
- Applies to LEED O&M and LEED BD&C
- Prototype credits may apply
- Volume certification may be available
 - Up to 50% discounted certification fees
- May be available to large organizations in late 2009

LEED-AP+ Exam

Exam – see www.gbci.org

- 2 part exam – depending on where starting from
 1. LEED Associate Exam
 2. LEED AP+ Specialty Exam
- 2 hrs for each exam (4 hours if combined)
 - + 10 min. pre-test tutorial & 10 min. post-test survey
- Arrive early, bring 2 forms of ID
- Relax, but move quickly
 - Check off best guess, accept ones you are sure of
 - Revisit remaining questions & eliminate worst options

Register for Exam

- Set up free USGBC User Profile on www.usgbc.org or www.gbci.org
 - Instructions given in class #1 slides

LEED Exam Types & Fees

Exam	Eligibility	Applic Fee	Exam #1 LEED Associate	Exam #2 LEED AP+ Specialty	
1	LEED Associate Only	a) LEED Project b) Education -or- c) Work related	\$50	\$150 member / \$200 nm	NA
2	LEED-AP+ Spec. First Time	LEED Project Experience Required	\$100	\$300 member / \$450 non-member	
3	Already LEED-AP Upgrading to LEED-AP + Spec.		\$100	NA	\$150 member / \$250 nm
	Exam format		2 hrs. - 100 questions	2 hrs. - 100 questions	

LEED Green Associate Exam #1

Application - \$50 non-refundable fee (valid for 1 year)

- \$100 if combined for LEED-AP+ specialty exam #2

Eligibility - Submit letter from company on letterhead attesting to meeting eligibility requirement (3 options)

- 750 words max., dated & signed by supv, client, PM, teacher
- 1. LEED-registered project involvement
 - Name project, dates & affirmation of involvement
- 2. Employment related to environ. or green building industry
 - Explain company relationship, dates & affirmation of employment
- 3. Education in green building principals program
 - Course title & description, confirm enrollment & date
- Agree to disciplinary policy & credential maintenance
 - 15 cont. ed (CE) hours/2 years + \$50 renewal fee every 2 yrs.

Exam Registration Fees

- \$150 for USGBC members / \$200 for non-members
- 3 exam tries max. per 12 month applic. period

LEED Green Associate Exam #1 (cont.)

Questions – 100 multiple choice questions – 2 hours

- Plus 10 min. tutorial before start & 10 min. exit survey
- Grading Scores 125-200 (170 passes exam)

Exam Content

1. Synergistic opportunities & LEED application process
2. Project site factors
3. Water management
4. Project systems and energy impacts
5. Acquisition, install. & mgmt of project materials
6. Stakeholder involvement in innovation
7. Project surroundings and public outreach

Candidate Handbook

- 25 pages of process, study guide and sample questions
- www.gbci.org/ShowFile.aspx?DocumentID=3571

LEED AP+ BD&C Specialty Exam #2

Application - \$100 non-refundable fee (valid for 1 year)

- Same fee includes LEED Green Assoc., if combined

Eligibility - Submit letter 1,500 words max from company on letterhead attesting to meeting eligibility requirements

- Authored, dated & signed by supervisor, client, or PM (card)
- 1. LEED-registered project experience within 3 prior years
 - Name and/or project ID, dates & affirmation of involvement
 - Summarize & confirm applicants involvement
- Agree to disciplinary policy & credential maintenance
 - 30 cont. ed (CE) hours/2 years + \$50 renewal fee every 2 yrs.

Exam Registration Fees

- \$300 for USGBC members / \$450 nm if first accreditation
- \$150 for members / \$250 nm if upgrading from LEED-AP
- 3 exam tries max. per 12 month application period

LEED AP+ BD&C Specialty Exam #2 (cont.)

Questions – 100 multiple choice questions – 2 hours

- Plus 10 min. tutorial before start & 10 min. exit survey
- Scored 125-200 (170 passes exam)

Exam Content

1. Synergistic opportunities & LEED application process
2. Project site factors
3. Water management
4. Project systems and energy impacts
5. Acquisition, install. & mgmt of project materials
6. Stakeholder involvement in innovation
7. Project surroundings and public outreach

Candidate Handbook

- 25 pages of process, study guide and sample questions
- www.gbci.org/ShowFile.aspx?DocumentID=3572

LEED Accreditations – www.gbci.org

1. LEED Green Associate
2. LEED AP+ Specialty
 - LEED AP+ BD&C Specialty – Avail. Aug/Sep. 2009
 - LEED AP+ ID&C Specialty – Avail. Aug/Sep. 2009
 - LEED AP+ O&M Specialty – Avail. May 2009
 - LEED AP+ Homes Specialty – Avail. June 2009
 - LEED AP+ Neighborhood Development – Avail. 2010
3. LEED Fellow - TBD

Legacy LEED-AP

- LEED-AP's prior to July 1, 2009
- No renewal fee nor maintenance required
- Continues to earn ID credit 2 - LEED-AP
- Upgrade to Specialty is optional

LEED Exam Prep. Resources

Resources

- USGBC - www.usgbc.org/LEED
- www.gbci.org
 - LEED AP Candidate Handbooks
 - Download Exam Specifications & Sample Questions
 - Register to take LEED-AP+ BD+C Exam after late Summer 2009
- www.areforum.org/forums/forum12
 - Daily forum with immediate feedback & suggestions from those taking LEED-AP exam
 - Follows current LEED testing
- UC Davis Extension – LEED BD&C Online Course
 - http://extension.ucdavis.edu/unit/business_and_management/courses/description/?type=A&unit=BM&SectionID=143620&prqlist=CNM
 - Available Sept. 2009

Next Session: Mock LEED-AP+ BD&C Exam

Monday, July 13th 9:00 AM – 3:00 PM

- 9:00 AM Instructions for exam
- 9:10 AM Part 1 – 2 hr. Mock LEED Assoc. exam
- 11:10 AM Part 1 Mock exam ends
- Wait in atrium after finishing
 - Complete evaluation form
- 11:10 AM Return to auditorium, grade Part 1 exam
- 11:30 AM Break for lunch
- 12:00 PM Part 2 – 2 hr. Mock LEED AP + BD&C exam
- 2:00 PM Part 2 Mock exam ends – grade Part 2 exam
- You will get to keep your copy of exam
- Turn in Answer Sheet @ conclusion

Final LEED-AP Exam Prep. Advice

1. Don't procrastinate taking LEED-AP+ Exam
 - BD+C available Aug/Sept. 2009
2. I am always a resource, email me
3. Please let me know when you become accredited (daniel.burgoyne@dgs.ca.gov)
4. Participate in USGBC & chapter events
 - <http://www.usgbc-ncc.org/> (Northern California Chapter)
 - Sacramento Branch has events in Sacramento