LEED® for Commercial Interiors 2009

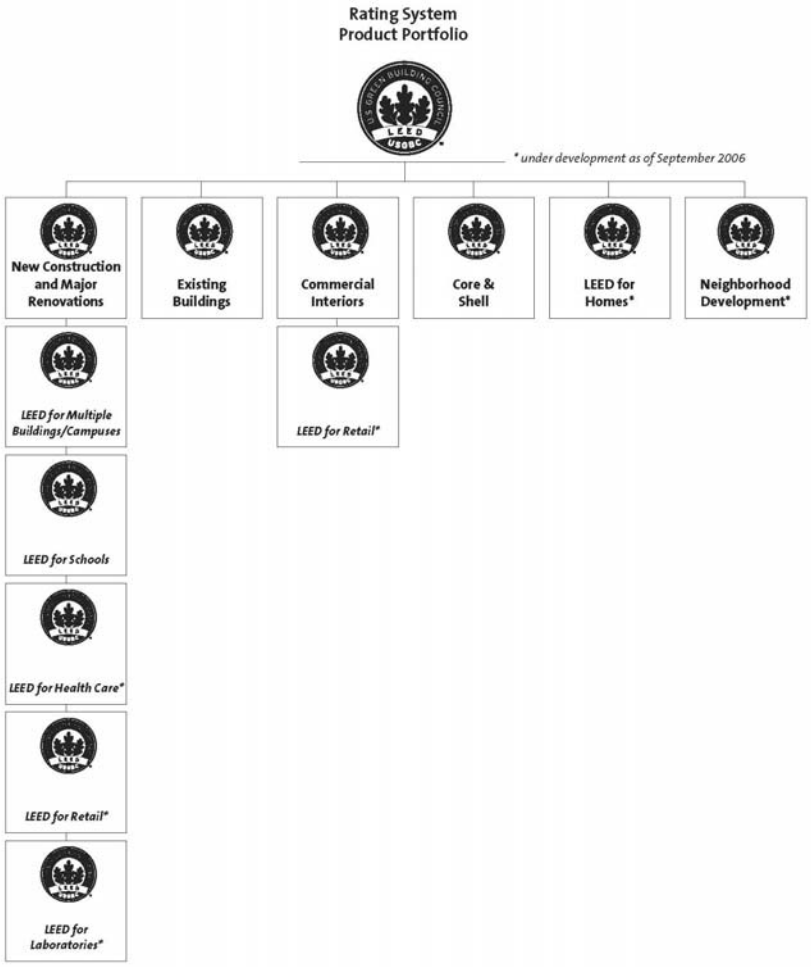
For 1st Public Comment

Leadership in Energy and Environmental Design (LEED®)

Buildings fundamentally impact people's lives and the health of the planet. In the United States, buildings use one-third of our total energy, two-thirds of our electricity, one-eighth of our water, and transform land that provides valuable ecological resources. Since the LEED Green Building Rating System for New Construction was first published in 1999, it has been helping professionals across the country to improve the quality of our buildings and their impact on the environment.

As the green building sector grows exponentially, more and more building professionals, owners, and operators are seeing the benefits of green building and LEED certification. Green design not only makes a positive impact on public health and the environment, it also reduces operating costs, enhances building and organizational marketability, potentially increases occupant productivity, and helps create a sustainable community. LEED fits into this market by providing rating systems that are voluntary, consensus-based, market-driven, based on accepted energy and environmental principles, and they strike a balance between established practices and emerging concepts.

The LEED rating systems are developed by USGBC committees, in adherence with USGBC policies and procedures guiding the development and maintenance of rating systems. LEED for Commercial Interiors is only possible due to the generous volunteer efforts of many individuals, and has been in development for over 4 years. This rating system was approved by member ballot during October 2004 after considering input from the public during two comment periods. LEED for Commercial Interiors is one of a growing portfolio of rating system products serving specific market sectors.


Rating System
Product Portfolio
* under development as of September 2006
New Construction and Major Renovations
Existing Buildings
Commercial Interiors
Core & Shell
LEED for Homes*
Neighborhood Development*
LEED for Multiple Buildings/Campuses
LEED for Retail*
LEED for Schools
LEED for Health Care*
LEED for Retail*
LEED for Laboratories*

LEED for Commercial Interiors

The LEED for Commercial Interiors Rating System is applicable to tenant improvements of new or existing office space.

Why Certify?

While LEED Rating Systems can be useful just as tools for building professionals, there are many reasons why LEED project certification can be an asset:

- Be recognized for your commitment to environmental issues in your community, your organization (including stockholders), and your industry;
- Receive third party validation of achievement;
- Qualify for a growing array of state & local government initiatives;
- Receive marketing exposure through USGBC Web site, Greenbuild conference, case studies, and media announcements.

Certification Process

Project teams interested in obtaining LEED certification for their project must first register online. Registration during early phases of the project will ensure maximum potential for certification. The LEED Web site, www.leedbuilding.org, contains important details about the certification review process, schedule and fees. The applicant project must satisfactorily document achievement of all the prerequisites and a minimum number of points. See the LEED for Commercial Interiors project checklist for the number of points required to achieve LEED for Commercial Interiors rating levels.

Additional LEED Resources

Visit the LEED Web site for available tools and support, such as the LEED for Commercial Interiors Reference Guide (essential for all LEED for Commercial Interiors project teams), technical support via Credit Interpretations, and training workshops.

Disclaimer and Notices

hereafter have a right to assert against such parties as a result of your use of, or reliance on, the LEED for Commercial Interiors Green Building Rating System.

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LEED for Commercial Interiors Project Checklist

Sustainable Sites

21 Possible Points

SSc1	Site Selection	5
	Select a LEED Certified Building (5 points)	
	Or locate the tenant space in a building with the following characteristics:	
	A. Brownfield Redevelopment (1 point)	
	B. Stormwater Management: Rate and Quantity (1 point)	
	C. Stormwater Management: Treatment (1 point)	
	D. Heat Island Reduction, Non-Roof (1 point)	
	E. Heat Island Reduction, Roof (1 point)	
	F. Light Pollution Reduction (1 point)	
	G. Water Efficient Irrigation: Reduce by 50% (2 points)	
	H. Water Efficient Irrigation: No Potable Use or No Irrigation (2 points in addition to prior requirement)	
	I. Innovative Wastewater Technologies (2 points)	
	J. Water Use Reduction: 30% Reduction (1 point)	
	K. Onsite Renewable Energy (2 points)	
	L. Other Quantifiable Environmental Performance (1 point)	
SSc2	Development Density and Community Connectivity	6
SSc3.1	Alternative Transportation, Public Transportation Access	6
SSc3.2	Alternative Transportation, Bicycle Storage & Changing Rooms	2
SSc3.3	Alternative Transportation, Parking Availability	2

Water Efficiency

11 Possible Points

WEp1	Water Use Reduction, 20% Reduction	Required
WEc1.1	Water Use Reduction, 30% Reduction	6
WEc1.2	Water Use Reduction, 40% Reduction	5

Energy & Atmosphere

12 Possible Points

EAp1	Fundamental Commissioning	Required
EAp2	Minimum Energy Performance	Required
EAp3	CFC Reduction in HVAC&R Equipment	Required
EAc1.1	Optimize Energy Performance, Lighting Power	1-7
EAc1.2	Optimize Energy Performance, Lighting Controls	1
EAc1.3	Optimize Energy Performance, HVAC	5-10
EAc1.4	Optimize Energy Performance, Equipment and Appliances	2-4

EAc2	Enhanced Commissioning	5	Deleted: 1
EAc3	Energy Use, Measurement & Payment Accountability	2-5	Deleted: 2
EAc4	Green Power	5	Deleted: 1

Materials & Resources

14 Possible

Points		
MRp1	Storage and Collection of Recyclables	Required
MRc1.1	Tenant Space, Long Term Commitment	1
MRc1.2	Building Reuse, Maintain 40% of Interior Non-Structural Components	1
MRc1.3	Building Reuse, Maintain 60% of Interior Non-Structural Components	1
MRc2.1	Construction Waste Management, Divert 50% From Disposal	1
MRc2.2	Construction Waste Management, Divert 75% From Disposal	1
MRc3.1	Resource Reuse, 5%	1
MRc3.2	Resource Reuse, 10%	1
MRc3.3	Resource Reuse, 30% Furniture and Furnishings	1
MRc4.1	Recycled Content, 10% (post-consumer + 1/2 pre-consumer)	1
MRc4.2	Recycled Content, 20% (post-consumer + 1/2 pre-consumer)	1
MRc5.1	Regional Materials, 20% Manufactured Regionally	1
MRc5.2	Regional Materials, 10% Extracted and Manufactured Regionally	1
MRc6	Rapidly Renewable Materials	1
MRc7	Certified Wood	1

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Indoor Environmental Quality

17 Possible

Points		
EQp1	Minimum IAQ Performance	Required
EQp2	Environmental Tobacco Smoke (ETS) Control	Required
EQc1	Outdoor Air Delivery Monitoring	1
EQc2	Increased Ventilation	1
EQc3.1	Construction IAQ Management Plan, During Construction	1
EQc3.2	Construction IAQ Management Plan, Before Occupancy	1

EQc4.1	Low-Emitting Materials, Adhesives and Sealants	1
EQc4.2	Low-Emitting Materials, Paints and Coatings	1
EQc4.3	Low-Emitting Materials, Flooring Systems	1
EQc4.4	Low-Emitting Materials, Composite Wood and Agrifiber Products	1
EQc4.5	Low-Emitting Materials, Systems Furniture and Seating	1
EQc5	Indoor Chemical and Pollutant Source Control	1
EQc6.1	Controllability of Systems, Lighting	1
EQc6.2	Controllability of Systems, Thermal Comfort	1
EQc7.1	Thermal Comfort, Design	1
EQc7.2	Thermal Comfort, Verification	1
EQc8.1	Daylight and Views, Daylight 75% of Spaces	1
EQc8.2	Daylight and Views, Daylight 90% of Spaces	1
EQc8.3	Daylight and Views, Views for 90% of Seated Spaces	1

Deleted: Carpet

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Deleted: Adhesives

Deleted: Temperature and Ventilation

Deleted: Compliance

Deleted: Monitoring

Innovation & Design Process

6 Possible Points

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IDc1.1	Innovation in Design	1
IDc1.2	Innovation in Design	1
IDc1.3	Innovation in Design	1
IDc1.4	Innovation in Design	1
IDc1.5	Innovation in Design	1
IDc2	LEED Accredited Professional	1

Regional Bonus Credits

4 Possible Points

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Rc1.1	Region Specific Enfironmental Priority	1
Rc1.2	Region Specific Enfironmental Priority	1
Rc1.3	Region Specific Enfironmental Priority	1
Rc1.4	Region Specific Enfironmental Priority	1

Project Totals

Possible Points 110

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Certified	40-49 Points
Silver	50-59 Points
Gold	60-79 Points
Platinum	80-110 Points

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SS	WE	EA	MR	EQ	ID
Credit 1					

Site Selection

5 points may be earned for locating the tenant space in a LEED Credited Building,

OR

up to a total of 5 points may be earned in 1/2-point increments if the building in which the tenant space is located meets any of the stated requirements. Two 1/2 points are needed to earn 1 point; no rounding up is permitted. In the case of exceptional performance (for example, exceeding stated thresholds) an additional 1/2 point may be achieved; however, no single requirement may earn more than 1 point. The requirements below have been gathered from other LEED Rating Systems, and are elaborated on in the LEED for Commercial Interiors Reference Guide.

Intent

Encourage tenants to select buildings with best practices systems and employed green strategies

Requirements

- Select a LEED Certified Building

OR

- Locate the tenant space in a building that has in place two or more of the following characteristics at time of submittal:

Option A. Brownfield Redevelopment: (1 point)

A building developed on a site documented as contaminated (by means of an ASTM E1903-97 Phase II Environmental Site Assessment or a local Voluntary Cleanup Program)

OR

A building on a site that has been classified as a brownfield by a local, state or federal government agency. Effective remediation of site contamination must have been completed.

Option B. Stormwater Design: Quantity Control: (1 point)

A building that prior to its development had:
Less than or equal to 50% imperviousness and has implemented a stormwater management plan that equals or is less than the pre-developed 1.5 year, 24 hour rate and quantity discharge.

OR

If greater than 50% imperviousness, has implemented a stormwater management plan that reduced pre-developed 1.5 year, 24 hour rate and quantity discharge by 25% of the annual stormwater load falling on the site. (This is based on actual local rainfall unless the actual exceeds the 10-year annual average local rainfall—then use the 10-year annual average.) This mitigation can be through a variety of measures including perviousness of site, stormwater retention ponds, capture of rainwater for reuse or other measures.

Option C. Stormwater Design: Quality Control (1 point)

A building that has in place site stormwater treatment systems designed to remove 80% of the average annual site area total suspended solids (TSS) and 40% of the average annual site area total phosphorous (TP).

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Deleted: Management: Treatment:

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These values are based on the average annual loadings from all storms less than or equal to the 2-year/24-hour storm. The building must implement and maintain Best Manage- ment Practices (BMPs) outlined in Chapter 4, Part 2 (Urban Runoff), of the United States Environmental Protection Agency's Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, January 1993 (Document No. EPA 840B92002) or the local government's BMP document, whichever is more stringent.

Option D. Heat Island Effect., Non-Roof: (1 point)

A building that provides shade (or will have within 5 years of landscape installation) and/or uses light-colored/high-albedo materials with a Solar Reflectance Index (SRI) of at least 30, and/or open grid pavement, that individually or in total equals at least 30% of the site's non-roof impervious surfaces, which include parking areas, walkways, plazas, fire lanes, etc.,

OR

Has placed a minimum of 50% of parking spaces underground or covered by structured parking,

OR

Used an open-grid pavement system (less than 50% impervious) for 50% of the parking lot area.

Option E. Heat Island Effect, Roof: (1 point)

A building with roofing having a Solar Reflectance Index (SRI) greater than or equal to the value in Table 1 for a minimum of 75% of the roof surface;

Table 1.

Roof Type	Slope	SRI
Low-Sloped Roof	**≤ 2:12**	**78**
Steep-Sloped Roof	**> 2:12**	**29**

OR

A building that has installed a "green" (vegetated) roof for at least 50% of the roof area.

OR

A building having in combination high SRI roofs and vegetated roofs that satisfy the following area requirement:

Total Roof Area ≤ [(Area of SRI Roof x 1.33) + (Area of vegetated roof x 2)]

Option F. Light Pollution Reduction: (1 point)

A building that meets or provides lower light levels and uniformity ratios than those recommended by the Illuminating Engineering Society of North America (IESNA) *Recommended Practice Manual: Lighting for Exterior Environments* (RP-33-99). The building must have designed the exterior lighting such that all exterior luminaires with more than 1,000 initial lamp lumens are shielded and all luminaires with more than 3,500 initial lamp lumens meet the Full Cutoff IESNA Classification. The maximum candela value of all interior lighting shall fall within the property. Any luminaire within a distance of 2.5 times its mounting height from the property boundary shall have shielding such that no light from that luminaire crosses the property boundary.

Option G. Water Efficient Landscaping: Reduce by 50%: (2 points)

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Deleted: Irrigation

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SS	WE	EA	MR	EQ	ID
Credit 1					

A building that employs high-efficiency irrigation technology, OR uses captured rain or recycled site water to reduce potable water consumption for irrigation by 50% over conventional means.

Option H. Water Efficient Irrigation: No Potable Use or No Irrigation: (2 points in addition to prior requirement)

A building that uses only captured rain or recycled site water to eliminate all potable water use for site irrigation (except for initial watering to establish plants), OR does not have permanent landscaping irrigation systems.

Option I. Innovative Wastewater Technologies: (2 points)

A building that reduces the use of municipally provided potable water for building sewage conveyance by a minimum of 50%, OR treats 100% of wastewater on-site to tertiary standards.

Option J. Water Use Reduction: 30% Reduction: (1 point)

A building that meets the 20% reduction in water use requirement for the entire building and has an ongoing plan to require future occupants to comply.

Option K. Onsite Renewable Energy: (up to 2 points)

A building that supplies at least 5% of the building's total energy use (expressed as a fraction of annual energy cost) through the use of on-site renewable energy systems.

Table 2.

On-site Renewable Energy as Percent of Total	Points
5%	2

Option L. Other Quantifiable Environmental Performance: (1 point)

A building that had in place at time of selection other quantifiable environmental performance, for which the requirements may be found in other LEED rating systems.

Potential Technologies & Strategies

During the building selection process, give preference to those properties employing the highest and best green building strategies.

Option A: During the site selection process, give preference to brownfield sites. Identify tax incentives and property cost savings. Coordinate site development plans with remediation activity, as appropriate.

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<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect, interior designer, building owner, engineer or other responsible party, declaring compliance with each claimed requirement based on the applicable standards as defined in the applicable LEED Green Building Rating System.¶

SS	WE	EA	MR	EQ	ID
Credit 2					

Development Density and Community Connectivity

6 points

Intent

Channel development to urban areas with existing infrastructure, protect greenfields and preserve habitat and natural resources.

Requirements

- Select space in a building that is located in an established, walkable community with a minimum density of 60,000 square feet per acre net (two-story downtown development),

OR

- Select space in a building that is located within ½ mile of a residential zone or neighborhood (with an average density of 10 units per acre net AND AND within 1/2 mile of at least 10 Basic Services AND with pedestrian access between the building and the services. The tenant space under review cannot be considered as 1 of the 10 basic services. No more than 2 of the 10 services required may be anticipated (at least 8 must be existing and operational). In addition, the anticipated services must be documented by lease agreements or other appropriate documentation to demonstrate that these other services will be operational in the locations indicated within one year of occupation of the applicant's project.

AND

- Basic Services include but are not limited to:

  1) Bank; 2) Place of Worship; 3) Convenience Grocery; 4) Day Care; 5) Cleaners; 6) Fire Station; 7) Beauty; 8) Hardware; 9) Laundry; 10) Library; 11) Medical/Dental; 12) Senior Care Facility; 13) Park; 14) Pharmacy; 15) Post Office; 16) Restaurant; 17) School; 18) Supermarket; 19) Theater; 20) Community Center, 21) Fitness Center, 22) Museum.

Proximity is determined by drawing a 1/2 mile radius around the main building entrance on a site map and counting the services within that radius.

Greenfield developments and projects that do not use existing infrastructure are not eligible.

Potential Technologies & Strategies

During the site selection process, give preference to urban sites with pedestrian access to a variety of services.

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Deleted: The building has pedestrian access to at least 10 of the basic services below within ½ mile:

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Deleted: Hair Care

Deleted: Commercial Office

Deleted: and other recognized services evaluated on their merit

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<#>Provide the LEED for Commercial Interiors Letter Template, signed by the civil engineer, architect or other responsible party, declaring that the project has met the credit requirement. '
¶
<#>Provide density calculations for the building and surrounding area with an area plan, highlighting the building location. ¶
¶
OR¶
¶
<#>Provide an area plan highlighting the building location, the residential zone or neighborhood, and 10 or more of the basic services located within ½ mile of the project space (inclusive of the building selected).¶

SS	WE	EA	MR	EQ	ID
Credit 3.1					

Alternative Transportation, Public Transportation Access

6 points

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Intent

Reduce pollution and land development impacts from automobile use.

Requirements

- Tenant to select building within ½ mile walking distance of an existing – or planned and funded - commuter rail, light rail (measured from the building entrance)

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  OR

- Within ¼ mile walking distance of one or more of two or more public or campus bus lines usable by tenant occupants (measured from the building entrance).

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<#>Provide the LEED for Commercial Interiors Letter Template, signed by an appropriate party, declaring that the building in which the project is located is within required proximity to mass transit.¶
¶
<#>Provide an area drawing or transit map highlighting the building location and the fixed rail stations and bus lines, and indicate the distances between them. Include a scale bar for distance measurement.¶

Potential Technologies & Strategies

Perform a transportation survey of potential tenant occupants to identify transportation needs. Choose a building near mass transit.

SS	WE	EA	MR	EQ	ID
Credit 3.2					

Alternative Transportation, Bicycle Storage & Changing Rooms

2 points

Intent

Reduce pollution and land development impacts from automobile use.

Requirements

- Provide secure bicycle storage, with convenient changing/shower facilities (within 200 yards of the building) for 5% or more of tenant occupants measured at peak periods), AND, provide shower and changing facilities in the building, or within 200 yards of a building entrance, for 0.5% of Full-Time Equivalent (FTE) occupants..

Potential Technologies & Strategies

Select a building with transportation amenities such as bicycle racks and showering /changing facilities or add them as part of the tenant fit-out.

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<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect, interior designer or other responsible party, declaring the distance to the cycle storage and showers from the building entrance, showing the number of regular tenant occupants and demonstrating that more than 5% of occupants have provision.¶

SS	WE	EA	MR	EQ	ID
Credit 3.3					

Alternative Transportation, Parking Availability

2 points

Intent

Reduce pollution and land development impacts from single occupancy vehicle use.

Requirements

- Case A: For projects occupying less than 75% of gross building square footage:

  Parking spaces provided to tenant shall not exceed minimum number required by local zoning regulations.

  AND

  Priority parking for carpools or van pools will be provided for 5% or more of tenant occupants.

  OR

  No parking will be provided or subsidized for tenant occupants.

- Case B: For projects occupying 75% or over of gross building square footage:

  Parking capacity will not exceed minimum local zoning requirements.

  AND

  Priority parking for carpools or vanpools will be provided capable of serving 5% of the building occupants.

  OR

  No new parking will be added for rehabilitation projects.

  AND

  Preferred parking for carpools or vanpools will be provided capable of serving 5% of the building occupants.

Potential Technologies & Strategies

Select a building with minimized car parking capacity and include limited parking inclusions in the lease.

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<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect, interior designer or other responsible party, stating any relevant section of local zoning regulation defining parking requirements for tenant's occupancy group and zone and priority parking accommodations.¶
¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect, interior designer or other responsible party, showing the section of the tenant's lease that indicates parking guarantees accommodations.¶

Water Efficiency

SS	WE	EA	MR	EQ	ID
Prerequisite 1					

WE Prerequisite 1: Water Use Reduction: 20% Reduction Required

Intent

Increase water efficiency within tenant space to reduce the burden on municipal water supply and wastewater systems.

Requirements

For the tenant scope of work, employ strategies that in aggregate use 20% less water than the water use baseline calculated for the tenant space (not including irrigation). The baseline shall meet the requirements of the Energy Policy Act of 1992 and subsequent rulings by the Department of Energy, requirements of the Energy Policy Act of 2005, and the plumbing code requirements as stated in the 2006 editions of the Uniform Plumbing Code or International Plumbing Code as to fixture performance. Calculations are based on estimated occupant usage and shall include only the following fixtures and fixture fittings (as applicable to the building): water closets, urinals, lavatory faucets, showers, kitchen sink faucets and pre-rinse spray valves.

Potential Technologies & Strategies

WaterSense-certified fixtures and fixture fittings should be used where available. Use high-efficiency fixtures (water closets and urinals) and dry fixtures such as composting toilet systems to reduce the potable water demand. Consider use of alternate on-site sources of water, such as rainwater, stormwater, and air conditioner condensate, and greywater for non-potable applications such as toilet and urinal flushing, as approved by the manufacturer, and custodial uses.

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SS	WE	EA	MR	EQ	ID
Credit 3.3					

Water Use Reduction, 30% Reduction

6 points

Further increase water efficiency within tenant spaces to reduce the burden on municipal water supply and wastewater systems.

Requirements

For the tenant scope of work, employ strategies that in aggregate use 30% less water than the water use baseline calculated for the tenant spaces (not including irrigation). The baseline shall meet the requirements of the Energy Policy Act of 1992 and subsequent rulings by the Department of Energy, requirements of the Energy Policy Act of 2005, and the plumbing code requirements as stated in the 2006 editions of the Uniform Plumbing Code or International Plumbing Code as to fixture performance. Calculations are based on estimated occupant usage and shall include only the following fixtures and fixture fittings (as applicable to the tenant spaces): water closets, urinals, lavatory faucets, showers, kitchen sink faucets and pre-rinse spray valves.

Potential Technologies & Strategies

WaterSense-certified fixtures and fixture fittings should be used where available. Use high-efficiency fixtures (water closets and urinals) and dry fixtures such as composting toilet systems to reduce the potable water demand. Consider use of alternate on-site sources of water, such as rainwater, stormwater, and air conditioner condensate, and greywater for non-potable applications such as toilet and urinal flushing, as approved by the manufacturer, and custodial uses.

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Maximize water efficiency within tenant spaces to reduce the burden on municipal water supply and wastewater systems.¶
¶
Requirements¶
<#>Based on tenant occupancy requirements, employ strategies that in aggregate use 20% less water than the water use baseline calculated for the tenant space (not including irrigation) after meeting Energy Policy Act of 1992 fixture performance requirements.¶
¶
Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the MEP Engineer or other responsible party, declaring that the project uses 20% less water, based on the tenant occupancy requirements, than the baseline fixture performance requirements of the Energy Policy Act of 1992. ¶
¶
<#>Provide the spreadsheet calculation demonstrating that the water-consuming fixtures identified for the stated occupancy and use of the tenant reduce occupancy-based potable water consumption by 20% compared to baseline conditions.¶
¶
Potential Technologies & Strategies¶
Estimate the potable water needs for the tenant space. Use high-efficiency fixtures such as composting toilet systems and non-water using urinals, and occupant sensors to reduce the potable water demand.¶

Water Efficiency

SS	WE	EA	MR	EQ	ID
Prerequisite 1					

Water Use Reduction, 40% Reduction

5 point in addition to WE 1.1

Intent

Maximize water efficiency within tenant spaces to reduce the burden on municipal water supply and wastewater systems.

Requirements

For the tenant scope of work, employ strategies that in aggregate use 40% less water than the water use baseline calculated for the tenant spaces (not including irrigation). The baseline shall meet the requirements of the Energy Policy Act of 1992 and subsequent rulings by the Department of Energy, requirements of the Energy Policy Act of 2005, and the plumbing code requirements as stated in the 2006 editions of the Uniform Plumbing Code or International Plumbing Code as to fixture performance. Calculations are based on estimated occupant usage and shall include only the following fixtures and fixture fittings (as applicable to the tenant spaces): water closets, urinals, lavatory faucets, showers, kitchen sink faucets and pre-rinse spray valves.

Potential Technologies & Strategies

WaterSense-certified fixtures and fixture fittings should be used where available. Use high-efficiency fixtures (water closets and urinals) and dry fixtures such as composting toilet systems to reduce the potable water demand. Consider use of alternate on-site sources of water, such as rainwater, stormwater, and air conditioner condensate, and greywater for non-potable applications such as toilet and urinal flushing, as approved by the manufacturer, and custodial uses.

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Deleted: <#>Based on tenant occupancy requirements, employ strategies that in aggregate use 30% less water than the water use baseline calculated for the tenant space (not including irrigation) after meeting Energy Policy Act of 1992 fixture performance requirements.¶

¶

Submittals¶

<#>Provide the LEED for Commercial Interiors Letter Template, signed by the MEP Engineer or other responsible party, declaring that the project uses 30% less water, based on the tenant occupancy requirements, than the baseline fixture performance requirements of the Energy Policy Act of 1992. ¶

¶

<#>Provide the spreadsheet calculation demonstrating that the water-consuming fixtures identified for the stated occupancy and use of the tenant reduce occupancy-based potable water consumption by 30% compared to baseline conditions.¶

¶

Potential Technologies & Strategies¶

Estimate the potable water needs for the tenant space. Use high-efficiency fixtures such as composting toilets and non-water using urinals, and occupant sensors to reduce the potable water demand.¶

Energy & Atmosphere

SS	WE	EA	MR	EQ	ID
Prerequisite 1					

Fundamental Commissioning of the Building Energy Systems

Required

Intent

Verify that the project's energy-related systems are installed, calibrated and perform according to the owner's project requirements, basis of design, and construction documents.

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Benefits of Commissioning

Benefits of commissioning include reduced energy use, lower operating costs, reduced contractor callbacks, better building documentation, improved occupant productivity, and verification that the systems perform in accordance with the owner's project requirements.

Requirements

The following commissioning process activities shall be completed by the commissioning team:

1. Designate an individual as the Commissioning Authority to lead the commissioning process activities. This individual should not be directly responsible for project design or construction management.
    - 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 gross square feet, the CxA may include qualified persons on the design or construction teams who have the required experience.
- The Owner shall document the Owner's Project Requirements (OPR). The design team shall develop the Basis of Design (BOD). The CxA shall review these documents for clarity and completeness. The Owner and design team shall be responsible for updates to their respective documents.
- Develop and incorporate commissioning requirements into the construction documents.
- Develop and implement a commissioning plan.
- Verify the installation and performance of the systems to be commissioned.
- Complete a summary commissioning report.

Commissioned Systems:

The energy-related systems to be included in the commissioning process activities include as a minimum:

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

Deleted: <#>Clearly document the owner's project requirements and the basis of design for the building's energy-related systems. Updates to these documents shall be made during design and construction by the design team. ¶
<#>Develop and incorporate commissioning requirements into the construction documents. ¶
<#>Develop and utilize a commissioning plan.¶
<#>Verify that the installation and performance of energy consuming systems meet the owner's project requirements and basis of design.¶
<#>Complete a commissioning report. ¶

SS	WE	EA	MR	EQ	ID
Prerequisite 1					

Potential Technologies & Strategies

Engage a Commissioning Authority prior to the start of design. Determine the owner's program and initial design intent. Develop and maintain a commissioning plan for use during design and construction. Incorporate commissioning requirements in bid documents. Assemble the commissioning team, and prior to occupancy verify the performance of energy consuming systems. Complete the commissioning reports with recommendations prior to acceptance of the HVAC systems.

Owners are encouraged to seek out 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 and 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

Owners are encouraged to consider including water-using systems, building envelope systems, and other systems in the scope of the commissioning plan as appropriate. The building envelope is an important component of a facility which impacts energy consumption, occupant comfort and indoor air quality. While it is not required to be commissioned by LEED, an owner can receive significant financial savings and reduced risk of poor indoor air quality by including building envelope commissioning.

Though the commissioning process should start as early in the design process as possible, it is allowable to engage a Cx agent to execute fundamental commissioning after construction has begun.

Deleted: Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the Commissioning Authority and tenant confirming that the commissioning requirements for the project's energy-related systems have been successfully executed or will be provided under existing contract(s).¶
<#>Provide a narrative and diagrams indicating how the HVAC system works, what portions are shared with other tenants in the building, what was included in the project scope of work, and if improvements were made in conjunction with the project by others to any common building systems supplying the tenant area. ¶

SS	WE	EA	MR	EQ	ID
Prerequisite 2					

Minimum Energy Performance
Required

Intent
Establish the minimum level of energy efficiency for the tenant space systems.

Requirements
Design portions of the building as covered by the tenant's scope of work to comply with 90.1-2007, complete three of the following:

- the mandatory provisions (Sections 5.4, 6.4, 7.4, 8.4, 9.4 and 10.4) of ASHRAE/IESNA Standard 90.1-2007 (without amendments); and
- the prescriptive requirements (Sections 5.5, 6.5, 7.5 and 9.5) or performance requirements (Section 11) of ASHRAE/IESNA Standard 90.1-2007, (without amendments).
- Earn at least 2 points under EA credit 1

California Title 24 2001 has been deemed to be more stringent than ASHRAE 90.1-2007 for LEED purposes. No demonstration of equivalency is required for project teams implementing Title 24 2001. However, the use of California Title 24 is only valid for projects located in California.

Potential Technologies & Strategies
Design the systems impacted in the tenant's scope of work to maximize energy performance. Use a computer simulation model to assess the energy performance and identify the most cost effective energy measures. Quantify energy performance as compared to the baseline building.

If a local code has demonstrated quantitative and textual equivalence following, at a minimum, the U.S. Department of Energy standard process for commercial energy code determination, then it may be used to satisfy this prerequisite in lieu of ASHRAE 90.1-2007. Details on the DOE process for commercial energy code determination can be found at www.energycodes.gov/implement/determinations_com.stm.

Deleted: ASHRAE/IESNA Standard

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Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the licensed professional engineer, architect or other responsible party, stating that the tenant space complies with ASHRAE/IESNA 90.1-200490.1-200790.1-2007 or local energy codes, whichever is more stringent. If local energy codes were applied, demonstrate that the local energy code is more stringent than ASHRAE/IESNA 90.1-200490.1-200790.1-2007.¶
¶

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SS	WE	EA	MR	EQ	ID
Prerequisite 3					

Fundamental Refrigerant Management

Required

Intent

Reduce stratospheric ozone depletion.

Requirements

Zero use of CFC-based refrigerants in tenant HVAC&R systems when within the scope of work. The intent of the prerequisite is to encourage projects to locate in buildings that have no CFC-based refrigerants or to influence the building owner to use such systems to reduce ozone depletion.

Potential Technologies & Strategies

When reusing existing HVAC systems, conduct an inventory to identify equipment that uses CFC refrigerants and replace or retrofit these systems with non-CFC refrigerants. For new installations, specify new HVAC equipment that uses no CFC refrigerants.

Deleted: CFC Reduction in HVAC&R Equipment

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<#>Provide the LEED for Commercial Interiors Letter Template, signed by a professional engineer or other responsible party, declaring that there are no CFCs in HVAC&R systems that have been installed or renovated within the LEED for Commercial Interiors project scope.¶

SS	WE	EA	MR	EQ	ID
Credit 1.1					

Optimize Energy Performance, Lighting Power

1 – 7 points

Intent

Achieve increasing levels of energy conservation beyond the referenced standard to reduce environmental impacts associated with excessive energy use.

Requirements

Reduce connected lighting power density below that allowed by ASHRAE/IESNA Standard 90.1-2007* using either the Space-by-Space Method or by applying the whole building lighting power allowance to the entire tenant space.

Option A. Reduce lighting power density to 15% below the standard (1 point)

OR

Option B. Reduce lighting power density to 25% below the standard, (4 points)

OR

Option C. Reduce lighting power density to 35% below the standard. (7 points)

Potential Technologies & Strategies

Design the connected lighting power to maximize energy performance. If the project warrants, consider a computer simulation model to assess the performance and identify the most cost-effective energy efficiency measures.

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*When the USGBC membership approved the LEED for Commercial Interiors Rating System in October, 2004, ASHRAE/IENSA 90.1-2001 (with all addenda) was the referenced standard. Because it is considered to set the same requirements as ANSI/ASHRAE/IENSA 90.1-
2004, the new version was positioned to supercede the earlier edition. This change and potentially others are noted by Errata, and available from www.usgbc.org.
In this Reference Guide for LEED for Commercial Interiors Version 2.0, all references to specific sections come from 90.1-2007.

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Deleted: (2 points under EAc1 mandatory for all projects registered after June 26, 2007)

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Deleted: NOTE: All projects registered after June 26th, 2007 are required to achieve at least two (2) points under EAc1. LEED for Homes and LEED for Neighborhood Development projects are exempt from this requirement. LEED for Commercial Interiors projects may earn 2 points from achieving any combination of the 4 sub-credits under EAc1.¶

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<#>Provide the LEED for Commercial Interiors Letter Template, signed by the professional engineer or other responsible party, stating that the lighting power density is reduced below ASHRAE requirements consistent with the level of credit being sought. Complete the Lighting Compliance Documentation provided in the ASHRAE/IESNA Standard 90.1 User's Manual. Provide a separate calculation that shows the percentage reduction in lighting power.¶

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SS	WE	EA	MR	EQ	ID
Credit 1.2					

Optimize Energy Performance, Lighting Controls

1 point

Deleted: (2 points under EAc1 mandatory for all projects registered after June 26, 2007)

Intent

Achieve increasing levels of energy conservation beyond the prerequisite standard to reduce environmental impacts associated with excessive energy use.

Requirements

Install daylight responsive controls in all regularly occupied spaces within 15 feet of windows and under skylights.

Deleted: NOTE: All projects registered after June 26th, 2007 are required to achieve at least two (2) points under EAc1. LEED for Homes and LEED for Neighborhood Development projects are exempt from this requirement. LEED for Commercial Interiors projects may earn 2 points from achieving any combination of the 4 sub-credits under EAc1.¶

Potential Technologies & Strategies

Design the lighting controls to maximize energy performance.

Deleted: **Submittals**¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the professional engineer or other responsible party, stating that lighting controls were installed consistent with the credit requirement.¶
¶
AND¶
¶
<#>Provide a narrative describing the lighting controls that have been incorporated in the tenant space design. Include a plan of lighting control zones showing each control device and lighting equipment controlled. Provide a schedule of lighting controls showing model, type and other characteristics.¶

SS	WE	EA	MR	EQ	ID
Credit 1.3					

Optimize Energy Performance, HVAC

5 – 10 points

Intent

Achieve increasing levels of energy conservation beyond the prerequisite standard to reduce environmental impacts associated with excessive energy use.

Requirement

OPTION A

Implement one or both of the following strategies:

- Equipment Efficiency: (5 points)
  Install HVAC systems which comply with the efficiency requirements outlined in the New Buildings Institute, Inc.'s publication "Advanced Buildings: Energy Benchmark for High Performance Buildings (E-Benchmark)" prescriptive criteria for mechanical equipment efficiency requirements, sections 2.4 (less ASHRAE standard 55), 2.5, and 2.6.

- Appropriate Zoning and Controls: (5 point)
  Zone tenant fit out of spaces to meet the following requirements:
  - Every Solar Exposure must have a separate control zone
  - Interior spaces must be separately zoned
  - Private offices and specialty occupancies (conference rooms, kitchens, etc.) must have active controls capable of sensing space use and modulating HVAC system in response to space demand

OPTION B

Reduce design energy cost compared to the energy cost budget for regulated energy components described in the requirements of ASHRAE/IESNA Standard 90.1-2007.

- Demonstrate that HVAC system component performance criteria used for tenant space are 15% better than a system that is in minimum compliance with ASHRAE/IESNA Standard 90.1-2007. (5 point)

OR

- Demonstrate that HVAC system component performance criteria used for tenant space are 30% better than a system that is in minimum compliance with ASHRAE/IESNA Standard 90.1-2007. (10 points)

Potential Technologies & Strategies

Design the HVAC system components to maximize energy performance. Review compliance options for EA Credit 1.3 and determine the most appropriate approach. Option A provides a more prescriptive approach to recognizing energy-efficient HVAC design, while Option B is performance based.

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<#>Option A:¶
Provide the LEED for Commercial Interiors Letter Template, signed by a licensed professional engineer or architect, stating that the strategy employed meets the credit requirements.¶
¶
Provide a narrative description of the HVAC system serving the tenant space as well as a description of the building level system. Plans and specifications should have an HVAC equipment schedule and plans showing the equipment within the space. Demonstrate in the narrative and plans submitted that the installed HVAC systems comply with the requirements of the credit.¶
¶
OR¶
¶
<#>Option B¶
Provide the LEED for Commercial Interiors Letter Template, signed by the licensed professional engineer or architect, stating that the HVAC system energy consumption is 15% or 30% (depending on credit taken) lower than a budget or baseline case system defined in ASHRAE/IESNA Standard

Deleted: 90.1-2004

Deleted: 90.1-200790.1-2007*, Section 11 or Appendix G.¶
¶
Provide a completed copy of the Energy Cost Budget (ECB) Compliance Form. Provide a narrative description of the HVAC system serving the Tenant space as well as a description of the building level system. Plans and specifications should have an HVAC equipment schedule and plans showing the equipment within the space.¶

SS	WE	EA	MR	EQ	ID
Credit 1.4					

Optimize Energy Performance, Equipment & Appliances

2 – 4 points

Intent

Achieve increasing levels of energy conservation beyond the prerequisite standard to reduce environmental impacts associated with excessive energy use.

Requirements

For all ENERGYSTAR® eligible equipment and appliances installed in the project, including appliances, office equipment, electronics, and commercial food service equipment (but excluding HVAC, lighting, and building envelope products):

- 70%, by rated-power, of ENERGYSTAR eligible equipment and appliances shall be ENERGYSTARrated (2 point);

OR

- 90%, by rated-power, of ENERGY STAR eligible equipment and appliances shall be ENERGYSTAR-rated (4 points).

Potential Technologies & Strategies

Select energy-efficient equipment and appliances, as qualified by the EPA's ENERGYSTAR Program (www.energystar.gov).

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Deleted: NOTE: All projects registered after June 26th, 2007 are required to achieve at least two (2) points under EAc1. LEED for Homes and LEED for Neighborhood Development projects are exempt from this requirement. LEED for Commercial Interiors projects may earn 2 points from achieving any combination of the 4 sub-credits under EAc1.¶

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Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the responsible party, declaring that EnergyStar-eligible equipment and appliances are EnergyStar-rated and yield the indicated percentage of the total, determined by rated-power.¶
¶
<#>Provide a narrative describing the equipment and appliances that will be installed in the project. Complete the schedule of equipment listing the types and quantity of equipment and appliances to be installed in the project along with the rated-power (or rated fuel input for commercial cooking equipment) of each type of EnergyStar eligible equipment and appliance. Indicate which equipment and appliances are EnergyStar-rated. Indicate the overall percentage of equipment and appliances, based on rated electrical power (as well as rated fuel input for commercial cooking equipment), that is EnergyStar-rated.¶

SS	WE	EA	MR	EQ	ID
Credit 2					

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Enhanced Commissioning

5 points

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Intent

Verify and ensure that the tenant space is designed, constructed and calibrated to operate as intended.

Requirements

Implement, or have a contract in place to implement, the following additional commissioning process activities in addition to the requirements of EA Prerequisite 1:

1. Prior to the start of the construction documents phase, designate an independent Commissioning Authority (CxA) to lead, review, and oversee the completion of all commissioning process activities. The CxA shall, at a minimum, perform Tasks 2, 3 and 6. Other team members may perform Tasks 4 and 5.
    a. The CxA shall have documented commissioning authority experience in at least two building projects.
    b. The individual serving as the CxA shall be—
        i. independent of the work of design and construction;
        ii. not an employee of the design firm, though they may be contracted through them;
        iii. not an employee of, or contracted through, a contractor or construction manager holding construction contracts; and
        iv. (can be) a qualified employee or consultant of the Owner.
    c. The CxA shall report results, findings and recommendations directly to the Owner.
    d. This requirement has no deviation for project size.
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 the information required for re-commissioning the tenant space's energy related systems.
5. Verify that the requirements for training operating personnel and building occupants are completed. Have a contract in place to review tenant space operation with O&M staff and occupants including a plan for resolution of outstanding commissioning-related issues 8 to 10 months after final acceptance.
6. 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.
7. The LEED consultant may act as the 3rd party CxA only if they are providing no sustainable design or construction guidance or oversight. The LEED consultant can also be the independent CxA if their contract is held entirely by the owner.

8. For projects smaller than 50,000 gross square feet, the CxA may include qualified persons on the design or construction teams who have the required experience.

Potential 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.

Engage a Commissioning Authority that is an independent third party. In addition to the strategies discussed in EA Prerequisite 1, Fundamental Commissioning, the Commissioning Authority must review the design of all energy-related systems prior to the completion of design development. The Commissioning Authority is also responsible for a review of contractor submittals for all energy-related systems and for the development or review of a re-commissioning plan for the energy-related systems.

Though the commissioning process should start as early in the design process as possible, it is allowable to engage a Cx agent to conduct the design review required by EAc3 after construction has started, so long as the project team agrees to implement any requested changes both to the documents and to construction that may have already occurred.

Deleted: In addition to the Fundamental Commissioning prerequisite, implement or have a contract in place to implement the following additional commissioning process activities: ¶

1. . Designate an individual as the Commissioning Authority, independent of the firms represented on the design and construction team, to lead the commissioning design review activities prior to the end of Design Development.¶

<#>Conduct a review of the tenant space's energy-related systems contractor submittals.¶

<#>Develop a single manual that contains the information required for re-commissioning the tenant space's energy related systems.¶

<#>Verify that the requirements for training operating personnel and tenant space occupants are completed. Have a contract in place to review tenant space operation with O&M staff and occupants including a plan for resolution of outstanding commissioning-related issues 8 to 10 months after final acceptance. ¶

Deleted: Submittals¶

<#>Provide the LEED for Commercial Interiors Letter Template, signed by the owner and independent Commissioning Authority, confirming that the required enhanced commissioning process requirements 1 and 2 have been successfully executed and that a contract for completing requirements 3 and 4 is in place.¶

SS	WE	EA	MR	EQ	ID
Credit 3					

Measurement & Verification

2 -5 points

Deleted: Energy Use, Measurement & Payment Accountability

Intent

Provide for the ongoing accountability and optimization of tenant energy and water consumption performance over time.

Requirements

- CASE A: For those projects with an area that constitute less than 75% of the total building area:
  - Install sub-metering equipment to measure and record energy uses within the tenant space. (2 point.)
  - Negotiate a lease where energy costs are paid by the tenant and not included in the base rent. (3 point)

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OR

- CASE B: For those projects with an area that constitutes 75% or more of the total building area, install continuous metering equipment for the following end-uses: (5 points)
  - Lighting systems and controls
  - Constant and variable motor loads
  - Variable frequency drive (VFD) operation
  - Chiller efficiency at variable loads (kW/ton)
  - Cooling load
  - Air and water economizer and heat recovery cycles
  - Air distribution static pressures and ventilation air volumes
  - Boiler efficiencies
  - Building-related process energy systems and equipment
  - Indoor water riser and outdoor irrigation systems

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- Develop a Measurement & Verification plan that incorporates the monitoring information from the above end-uses and is consistent with Option B, C or D of the 2001 *International Performance Measurement & Verification Protocol (IPMVP) Volume I: Concepts and Options for Determining Energy and Water Savings.*

Deleted: Submittals¶
<#>For projects with an area that constitutes less than 75% of the total building area, provide the LEED for Commercial Interiors Letter Template, signed by a licensed engineer or other responsible party, describing the metering equipment installed for each end use, and/or indicating that energy costs are paid by the tenant and not included in the base rent, which must be confirmed by providing a copy of the applicable portion of the lease.¶
¶
OR¶
¶
<#>For projects with an area that constitutes 75% or more of the total building area, provide the LEED for Commercial Interiors Letter Template, signed by a licensed engineer or other responsible party, indicating that metering equipment has been installed for each end-use and declaring the option to be followed under IPMVP, 2001 version, plus provide a copy of the M&V plan following IPMVP, 2001 version, including an executive summary.¶
¶

Potential Technologies & Strategies

For projects with an area that constitutes less than 75% of the total building area, tenant space is sub-metered and has a direct pay clause in their lease for energy actually used instead of on a square foot basis. For projects with an area that constitutes 75% or more of the total building area, model the energy and water systems to predict savings. Design the project with equipment to measure energy and water performance. Draft a Measurement & Verification Plan to apply during building operations that compares predicted savings to those actually achieved in the field.

SS	WE	EA	MR	EQ	ID
Credit 4					

Green Power

5 points

Intent

Encourage the development and use of grid-source, renewable energy technologies on a net zero pollution basis.

Requirements

Provide at least 50% of the tenant's electricity from renewable sources by engaging in at least a two-year renewable energy contract. Renewable sources are as defined by the Center for Resource Solutions (CRS) Green-e products certification requirements. Green power may be procured from a Green-e certified power marketer, a Green-e accredited utility program, or through Green-e Tradable Renewable Certificates, or from a supply that meets the Green-e Renewable Power definition.

Note - All purchases of green power shall be based on the quantity of energy consumed, not the cost.

Potential Technologies & Strategies

Determine the energy needs of the tenant space and investigate opportunities to engage in a green power contract with the local utility. Green power is derived from solar, wind, geothermal, biomass or low-impact hydro sources. Green power may be procured from a Green-e certified power marketer, a Green-e accredited utility program, through Green-e certified Tradable Renewable Certificates, or from a supply that meets the Green-e renewable power definition. Visit www.green-e.org for details about the Green-e program.

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Provide the LEED for Commercial Interiors Letter Template, signed by the owner or other responsible party, documenting that the supplied power is equal to 50% of the project's energy consumption and the sources meet the Green-e definition of renewable energy. Provide a copy of the two-year electric utility purchase contract for power generated from renewable sources.¶

Deleted: Estimate

Materials & Resources

SS	WE	EA	MR	EQ	ID
Prerequisite 1					

Storage & Collection of Recyclables

Required

Intent

Facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills.

Requirements

Provide an easily accessible dedicated area or areas that serves the tenant space for the collection and storage of materials for recycling including (at a minimum) paper, corrugated cardboard, glass, plastics and metals. An area should also be dedicated to collection and storage of plant-based landscaping debris (trimmings), unless the site has no landscaping

Potential Technologies & Strategies

Designate an area for recyclable collection and storage that is appropriately sized and located in a convenient area. Identify local waste handlers and buyers for glass, plastic, office paper, newspaper, card board and organic wastes. Instruct occupants on building recycling procedures. Instruct occupants on the recycling procedures. Consider employing cardboard balers, aluminum can crushers, recycling chutes and other waste management strategies to further enhance the recycling program.

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<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect or owner, declaring that the area dedicated to recycling is easily accessible and accommodates the tenant's recycling needs. Provide a plan showing the area(s) dedicated to recycled material collection and storage, or provide a letter from landlord outlining the building's recycling program.¶

Deleted: technologies

SS	WE	EA	MR	EQ	ID
Credit 1.1					

Tenant Space, Long-Term Commitment

1 point

Intent

Encourage choices that will conserve resources, reduce waste and reduce the environmental impacts of tenancy as they relate to materials, manufacturing and transport.

Requirements

Occupant commits to remain in the same location for not less than 10 years.

Potential Technologies & Strategies

Suggest negotiations resulting in longer leases or ownership.

Deleted: Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the building owner or other responsible party, declaring that the building occupant either owns its space or has signed a lease for at least 10 years.¶

SS	WE	EA	MR	EQ	ID
Credit 1.2					

Building Reuse, Maintain 40% of Interior Non-Structural Components

1 point

Intent

Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

Requirements

Maintain at least 40% by area of the existing non-shell, non-structure components (walls, flooring and ceilings).

Potential Technologies & Strategies

Identify during the selection and design of the tenant space the potential to maintain as many of the existing interior elements as possible. Remove elements that pose contamination risk to occupants and update outdated components. Quantify the extent of reuse.

Deleted: Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect, interior designer, owner or other responsible party, listing the retained elements and declaring that the credit requirements have been met.¶

SS	WE	EA	MR	EQ	ID
Credit 1.3					

Building Reuse, Maintain 60% of Interior Non-Structural Components

1 point in addition to MR 1.2

Intent

Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

Requirements

Maintain at least 60% by area of the existing non-shell, non-structure components (walls, flooring and ceiling systems).

Potential Technologies & Strategies

Identify during the selection and design of the tenant space the potential to maintain as many of the existing interior elements as possible. Remove elements that pose contamination risk to occupants and update outdated components. Quantify the extent of reuse.

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Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect, interior designer, owner or other responsible party, listing the retained elements and declaring that the credit requirements have been met.¶

SS	WE	EA	MR	EQ	ID
Credit 2.1					

Construction Waste Management, **Divert 50% From Disposal**

1 point

Intent

Divert construction, demolition packaging, and land clearing debris from disposal in landfills and incinerators. Redirect recyclable recovered resources back to the manufacturing process. Redirect reusable materials to appropriate sites.

Requirements

Recycle and/or salvage at least 50% of non-hazardous construction and demolition debris. Develop and implement a construction waste management plan that, at a minimum, identifies the materials to be diverted from disposal and whether the materials will be sorted on-site or comingled. Excavated soil does not contribute to this credit. Calculations can be done by weight or volume, but must be consistent throughout.

Potential Technologies & Strategies

Establish goals for diversion from disposal in landfills and incinerators and adopt a construction waste management plan to achieve these goals. Consider recycling cardboard, metal, brick, concrete, plastic, clean wood, glass, gypsum wallboard, carpet and insulation. Construction debris processed into a recycled content commodity which has an open market value – e.g. Wood Derived Fuel (WDF), alternative daily cover material, etc. – may be applied to the construction waste calculation. Designate a specific area(s) on the construction site for segregated or commingled collection of recyclable materials, and track recycling efforts throughout the construction process. Identify construction haulers and recyclers to handle the designated materials, and seek verification that the diverted materials are recycled or salvaged, as intended. Note that diversion may include donation of materials to charitable organizations and salvage of materials on site. For commercial interior projects the recycling rate for the landlord's demolition activity (before delivery to the tenant) can contribute to the project's MRc2 calculations if the team so chooses.

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Deleted: Develop and implement a construction waste management plan, quantifying material diversion goals.

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<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect, interior designer, owner or other responsible party, tabulating the total waste material, quantities diverted and the means by which diverted, and declaring that the above requirements have been met.¶

Deleted: such as Habitat for Humanity®.¶

SS	WE	EA	MR	EQ	ID
Credit 2.2					

Construction Waste Management, Divert 75% From Disposal

1 point in addition to MR 2.1

Intent

Divert construction, demolition, and packaging and land-clearing debris from disposal in landfills and incinerators. Redirect recyclable recovered resources back to the manufacturing process. Redirect reusable materials to appropriate sites.

Requirements

Recycle and/or salvage an additional 25% beyond MR Credit 2.1 (75% total) of non-hazardous construction and demolition debris. Excavated soil does not contribute to this credit. Develop and implement a waste management plan, quantifying material diversion goals. Calculation may be done by weight or volume, but must be consistent throughout.

Submittals

- Provide the LEED for Commercial Interiors Letter Template, signed by the architect, interior designer, owner or other responsible party, tabulating the total waste material, quantities diverted and the means by which diverted, and declaring that the above requirements have been met.

Potential Technologies & Strategies

Establish goals for landfill diversion and adopt a construction waste management plan to achieve these goals. Consider recycling cardboard, metal, brick, concrete, plastic, clean wood, glass, gypsum wallboard, carpet and insulation. Construction debris processed into a recycled content commodity which has an open market value – e.g. Wood Derived Fuel (WDF), alternative daily cover material, etc. – may be applied to the construction waste calculation. Designate a specific area on the construction site for recycling and track recycling efforts throughout the construction process. Identify construction haulers and recyclers to handle the designated materials. Note that salvage may include donation of materials to charitable organizations and salvage of materials on-site. The recycling rate for the landlord's demolition activity (before delivery to the tenant) can contribute to the project's MRc2 calculations if the team so chooses.

Deleted: Landfill

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Deleted: Recycle and/or salvage at least 75% of construction, demolition and packaging debris.

Deleted: such as Habitat for Humanity®.¶

SS	WE	EA	MR	EQ	ID
Credit 3.1					

Materials Reuse, 5%

1 point

Intent

Reuse building materials and products in order to reduce demand for virgin materials and to reduce waste, thereby reducing impacts associated with the extraction and processing of virgin resources.

Requirements

Use salvaged, refurbished or reused materials for at least 5% of building (construction) materials, excluding furniture and furnishings.

Potential Technologies & Strategies

Identify opportunities to incorporate salvaged materials into project design and research potential material suppliers. Consider salvaged materials such as beams and posts, flooring, paneling, doors and frames, cabinetry, brick and decorative items.

Deleted: Resource

Deleted: Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect, interior designer, owner or other responsible party, declaring that the credit requirements have been met and listing each material or product used to meet the credit. Include details demonstrating that the project incorporates the required percentage of reused materials and products, showing their costs and the total cost of all materials for the project.¶

SS	WE	EA	MR	EQ	ID
Credit 3.2					

Materials Reuse, 10%

1 point in addition to MR 3.1

Deleted: Resource

Intent

Reuse building materials and products in order to reduce demand for virgin materials and to reduce waste, thereby reducing impacts associated with the extraction and processing of virgin resources.

Requirements

Use salvaged, refurbished or reused materials for at least 10% of building (construction) materials, excluding furniture and furnishings.

Potential Technologies & Strategies

Identify opportunities to incorporate salvaged materials into project design and research potential material suppliers. Consider salvaged materials such as beams and posts, flooring, paneling, doors and frames, cabinetry, brick and decorative items.

Deleted: Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect, interior designer, owner or other responsible party, declaring that the credit requirements have been met and listing each material or product used to meet the credit. Include details demonstrating that the project incorporates the required percentage of reused materials and products and showing their costs and the total cost of materials for the project.¶

SS	WE	EA	MR	EQ	ID
Credit 3.3					

Material Reuse, 30% Furniture and Furnishings

1 point

Intent

Reuse building products and materials in order to reduce demand for virgin materials and reduce waste, thereby reducing impacts associated with the extraction and processing of virgin resources.

Requirements

Use salvaged, refurbished or used furniture and furnishings for 30% of the total furniture and furnishings budget.

Potential Technologies & Strategies

Identify opportunities to salvage and reuse furniture into project design and research potential material suppliers. Consider salvaging and reusing systems furniture and furnishings such as case pieces, seating, filing systems, decorative lighting and accessories.

Deleted: Resource

Deleted: ¶
Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect, interior designer, owner or other responsible party, declaring that the credit requirements have been met. ¶
¶
<#>Provide a listing of the reused furniture and furnishings with their replacement value and documentation for the value of the balance of new furniture and furnishings.¶

SS	WE	EA	MR	EQ	ID
Credit 4.1					

Recycled Content, 10% (post-consumer + 1/2 pre-consumer)

1 point

Intent

Increase demand for building products that incorporate recycled content materials, therefore reducing impacts resulting from extraction and processing of virgin materials.

Requirements

Use materials, including furniture and furnishings, with recycled content such that the sum of post-consumer recycled content plus one-half of the post-industrial content constitutes at least 10% of the total value of the materials in the project.

The value of the recycled content portion of a material or furnishing shall be determined by dividing the weight of recycled content in the item by the total weight of all material in the item, then multiplying the resulting percentage by the total cost ($) of the item.

Mechanical and electrical components shall not be included in this calculation. Recycled content materials shall be defined in accordance with the Federal Trade Commission document, *Guides for the Use of Environmental Marketing Claims, 16 CFR 260.7 (e),* available at www.ftc.gov/bcp/grnrule/guides980427.htm.

Deleted: Plumbing products however may be included.

Potential Technologies & Strategies

Establish a project goal for recycled content materials and identify material suppliers that can achieve this goal. During construction, ensure that the specified recycled content materials are installed and quantify the total percentage of recycled content materials installed.

Deleted: Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect, owner or other responsible party, declaring that the above requirements have been met and listing the recycled content products used. Include details demonstrating that the project incorporates the required percentage of recycled content materials and products and showing their cost and percentage(s) of post-consumer and/or post-industrial content, and the total cost of all materials for the project (excluding mechanical and electrical equipment). ¶

SS	WE	EA	MR	EQ	ID
Credit 4.2					

Recycled Content, 20% (post-consumer + 1/2 pre-consumer)

1 point in addition to MR 4.1

Intent

Increase demand for building products that have incorporated recycled content material, thereby reducing the impacts resulting from extraction and processing of virgin materials.

Requirements

Use materials, including furniture and Furnishings, with recycled content such that the sum of post-consumer recycled content plus ½ (one-half) of the pre-consumer content constitutes at least 20% of the total value of the materials in the project.

The value of the recycled content portion of a material shall be determined by dividing the weight of recycled content in the item by the total weight of all material in the item, then multiplying the resulting percentage by the total cost ($) of the item.

Mechanical and electrical components shall not be included in this calculation. Recycled content materials shall be defined in accordance with the Federal Trade Commission document, *Guides for the Use of Environmental Marketing Claims, 16 CFR 260.7 (e),* available at www.ftc.gov/bcp/grnrule/guides980427.htm.

Deleted: Plumbing products however may be included.

Potential Technologies & Strategies

Establish a project goal for recycled content materials and identify material suppliers that can achieve this goal. During construction, ensure that the specified recycled content materials are installed and quantify the total percentage of recycled content materials installed.

Deleted: Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect, owner or other responsible party, declaring that the above requirements have been met and listing the recycled content products used. Include details demonstrating that the project incorporates the required percentage of recycled content materials and products and showing their cost and percentage(s) of post-consumer and/or pre-consumer content, and the total cost of all materials for the project (excluding mechanical and electrical equipment).¶

SS	WE	EA	MR	EQ	ID
Credit 5.1					

Regional Materials, 20% Manufactured Regionally

1 point

Intent

Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the regional economy and reducing the environmental impacts resulting from transportation.

Requirements

Use a minimum of 20% of the combined value of construction and Division 12 (Furniture) materials and products that are manufactured regionally within a radius of 500 miles.

Manufacturing refers to the final assembly of components into the building product that is furnished and installed by the tradesmen. For example, if the hardware comes from Dallas, Texas, the lumber from Vancouver, British Columbia, and the joist is assembled in Kent, Washington, then the location of the final assembly is Kent, Washington.

Potential Technologies & Strategies

Establish a project goal for locally sourced materials and identify materials and material suppliers that can achieve this goal. During construction, ensure that the specified local materials are installed and quantify the total percentage of local materials installed.

Deleted: Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect, interior designer, owner or other responsible party, declaring that the credit requirements have been met. Include calculations demonstrating that the project incorporates the required percentage of regional materials/products and showing their cost, percentage of regional components, distance from project to manufacturer, and the total cost of all materials for the project.¶

SS	WE	EA	MR	EQ	ID
Credit 5.2					

Regional Materials, 10% Extracted and Manufactured Regionally

1 Point

Intent

Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the regional economy and reducing the environmental impacts resulting from transportation.

Requirements

In addition to the requirements of MR 5.1, use a minimum of 10% of the combined value of construction and Division 12 (Furniture) materials and products extracted, harvested or recovered, as well as manufactured, within 500 miles of the project.

Potential Technologies & Strategies

Establish a project goal for locally sourced materials and identify materials and material suppliers that can achieve this goal. During construction, ensure that the specified local materials are installed and quantify the total percentage of local materials installed.

Deleted: ¶
Submittals¶
<#>Provide the LEED Letter Template, signed by the architect, interior designer, owner or other responsible party, declaring that the credit requirements have been met. Include calculations demonstrating that the project incorporates the required percentage of regionally extracted and manufactured materials/products and showing their cost, percentage of regional components, distance from project to the points of extraction and manufacture, and the total cost of all materials for the project.¶

SS	WE	EA	MR	EQ	ID
Credit 6					

Rapidly Renewable Materials
1 point

Intent
Reduce the use and depletion of finite raw materials and long-cycle renewable materials by replacing them with rapidly renewable materials.

Requirements
Use rapidly renewable construction and Division 12 (Furniture and Furnishings) materials and products, made from plants that are typically harvested within a 10-year or shorter cycle, for 5% of the total value ($) of all materials and products used in the project

Potential Technologies & Strategies
Establish a project goal for rapidly renewable materials and identify materials and suppliers that can achieve this goal. Consider materials such as bamboo flooring, wool carpets, straw board, cotton batt insulation, linoleum flooring, poplar OSB, sun flower seed board, wheatgrass cabinetry and others. During construction, ensure that the specified rapidly renewable materials are installed.

Deleted: Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect, interior designer, owner or other responsible party, declaring that the credit requirements have been met. Include calculations demonstrating that the project incorporates the required percentage of rapidly renewable products. Show their cost and percentage of rapidly renewable components, and the total cost of all materials for the project. ¶

SS	WE	EA	MR	EQ	ID
Credit 7					

Certified Wood
1 point

Intent
Encourage environmentally responsible forest management.

Requirements
When using new wood-based products and materials, use a minimum of 50% (based on cost) that are certified in accordance with the Forest Stewardship Council's Principles and Criteria. Division 12 (Furniture) material value is included in the determination of the certified wood content.

Potential Technologies & Strategies
Establish a project goal for FSC-certified wood products and identify suppliers that can achieve this goal. During construction, ensure that the FSC-certified wood products are installed and quantify the total percentage of FSC-certified wood products installed.

Deleted: Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect, interior designer, owner or other responsible party, declaring that the credit requirements have been met and listing the FSC-certified materials and products used. Include calculations demonstrating that the project incorporates the required percentage of FSC-certified materials/products and their cost together with the total cost of all materials for the project. For each material/product used to meet these requirements, provide the vendor's or manufacturer's Forest Stewardship Council chain-of-custody certificate number.¶

Indoor Environmental Quality

SS	WE	EA	MR	EQ	ID
Prerequisite 1					

Minimum IAQ Performance
Required

Intent
Establish minimum indoor air quality (IAQ) performance to enhance indoor air quality in the occupant space, thus contributing to the comfort and well-being of the occupants.

Requirements
Meet the minimum requirements of the voluntary consensus standard ASHRAE 62-2004, Ventilation for Acceptable Indoor Air Quality Mechanical ventilation systems shall perform according to the Ventilation Rate Procedure.

Naturally ventilated buildings must comply with ASHRAE 62-2004 Section 5.1.

Modify or maintain existing building outside-air (OA) ventilation distribution system to supply at least the outdoor air ventilation rate required by ASHRAE Standard 62-20014.

If the project cannot meet the outside air requirements of ASHRAE 62.1-2007 (all other requirements must be met), it must document the space and system constraints that make it not possible, and complete an engineering assessment of the system's maximum cubic feet per minute (CFM) capability towards meeting the requirements of ASHRAE 62.1-2007, and achieve those levels, with an absolute minimum of 10 CFM per person.

Deleted: 62.1-2004

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Potential Technologies & Strategies
Design the HVAC system to meet the ventilation requirements of Sections 4, 5, 6 and 7 of the referenced standard. Identify potential IAQ problems on the site.

Deleted: Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the responsible design professional, declaring that the project is fully compliant with Sections 4, 5, 6 and 7 of ASHRAE 62-2004 and all accepted Addenda. Provide a summary of calculations used to determine outdoor air ventilation rates, documenting all assumptions including occupancy type, occupant density and multiple zone analysis.¶
¶
<#>For existing buildings that can not meet the ASHRAE 62-2004 minimum requirements, the engineer must certify in a letter that they have in hand and will deliver to the client: photographs/specs or cut-sheet of mechanical equipment as-built Mechanical plans; or single line drawings as-builts of all space constrained aspects in system (e.g., vertical riser/horizontal chase space).¶

SS	WE	EA	MR	EQ	ID
Prerequisite 2					

Environmental Tobacco Smoke (ETS) Control
Required

Intent
Prevent or minimize exposure of tenant space occupants, indoor surfaces and systems to Environmental Tobacco Smoke (ETS).

Requirements
If the building has a zero lot line condition, or cannot meet the 25 foot requirement, prohibit smoking on the property and minimize exposure of non-smokers to ETS by on of the following options:

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Option A: Locating tenant space in a building that prohibits smoking by all occupants and users and Smoking must be prohibited within 25 feet away from entries, outdoor air intakes and operable windows.OR

Deleted: maintains any exterior designated smoking areas at least 25 feet away from entries, outdoor air intakes and operable windows

OR

Option B: In buildings where smoking is permitted, confirming that smoking is prohibited in the portions of the tenant space not designated as a smoking space, in all other building areas served by the same HVAC system, and the common areas used by tenant's occupants, and that there is no migration of ETS by either mechanical or natural ventilation from other areas of the building.

AND

If the tenant's occupants are permitted to smoke, providing one or more designated smoking rooms designed to effectively contain, capture and remove ETS from the building. At a minimum, each smoking room must be directly exhausted to the outdoors with no recirculation of ETS-containing air to the nonsmoking area of a building, enclosed with impermeable deck-to-deck partitions and operated at a negative pressure compared to surrounding spaces of at least an average of 5 PA (0.02 inches of water gauge) and with a minimum of 1 PA (0.004 inches of water gauge) when the doors to the smoking room are closed.

Performance of the smoking rooms differential air pressure shall be verified by conducting 15 minutes of measurement, with a minimum of one measurement every 10 seconds, of the differential pressure in the smoking room with respect to each adjacent area and in each adjacent vertical chase with the doors to the smoking rooms closed. The testing will be conducted with each space configured for worst case conditions of transport of air from the smoking rooms to adjacent spaces.

OR

Option C: For multi-unit residential buildings, minimize uncontrolled pathways for ETS transfer between individual residential units by sealing penetrations in walls, ceilings, and floors in the residential units, and by sealing vertical chases adjacent to the units. In addition, all doors in the residential units leading to common hallways shall be weather-stripped to minimize air leakage into the hallway. Acceptable sealing of residential units shall be demonstrated by a blower door test conducted in accordance with ANSI/ASTM-779-99, Standard Test Method for Determining Air Leakage Rate By Fan Pressurization,

AND

SS	WE	EA	MR	EQ	ID
Prerequisite 2					

Use the progressive sampling methodology defined in Chapter 7 (Home Energy Rating Systems (HERS) Required Verification And Diagnostic Testing) of the California Low Rise Residential Alternative Calculation Method Approval Manual, found at (www.energy.ca.gov/title24_1998_standards/residential_acm/CHAPTER07.pdf**)**. Residential units must demonstrate less than 1.25 square inches leakage area per 100 square feet of enclosure area (i.e., sum of all wall, ceiling and floor areas).

Potential Technologies & Strategies

Prohibit smoking in the building or provide negative pressure smoking rooms. For residential buildings, a third option is to provide very tight construction to minimize ETS transfer among dwelling units.

Deleted: ¶
Submittals¶
<#>Option A: Provide the LEED for Commercial Interiors Letter Template, signed by the tenant or responsible party, declaring that the building will be operated under a policy prohibiting smoking, and the exterior designated smoking areas are at least 25 feet away from entries and operable windows.¶
¶
OR¶
¶
<#>Option B: Provide the LEED for Commercial Interiors Letter Template, signed by the tenant or responsible party, declaring and demonstrating that smoking is prohibited in that portion of the tenant space not designated as a smoking space and all other areas of the building serviced by the same HVAC system, plus common areas used by tenant occupants. If the tenant's occupants are permitted to smoke, declare and demonstrate that designated smoking rooms met the design criteria described in the credit requirements and performance has been verified using the method described in the credit requirements.¶
¶
OR¶
¶
<#>Option C: Provide the LEED for Commercial Interiors Letter Template, signed by the tenant or responsible party, declaring and demonstrating that the credit requirements for ETS transfer between individual residential units have been satisfied.¶

SS	WE	EA	MR	EQ	ID
Credit 1					

Outdoor Air Delivery Monitoring
1 point

Intent
Provide capacity for ventilation system monitoring to help sustain long-term occupant comfort and well-being.

Requirements
Install permanent monitoring systems that provide feedback on ventilation system performance to ensure that ventilation systems maintain design minimum ventilation requirements. Configure all monitoring equipment to generate an alarm when the conditions vary by 10% or more from setpoint, via either a building automation system alarm to the building operator or via a visual or audible alert to the building occupants.
All densely occupied spaces must include CO2 sensors. If the AHU predominantly serves densely occupied spaces, outdoor airflow measurement at the AHU is not required. If the AHU predominantly serves non-densely occupied spaces, outdoor airflow measurement at the AHU is required, in addition to CO2 sensors in the densely occupied spaces:

FOR MECHANICALLY VENTILATED SPACES

- Monitor carbon dioxide concentrations within all densely occupied spaces (those with a design occupant density greater than or equal to 25 people per 1000 sq.ft.). CO2 monitoring locations shall be between 3 feet and 6 feet above the floor.

Install permanent monitoring systems that provide feedback on ventilation system performance to ensure that ventilation systems maintain design minimum ventilation requirements. Configure all monitoring equipment to generate an alarm when the conditions vary by 10% or more from setpoint, via either a building automation system alarm to the building operator or via a visual or audible alert to the building occupants.

All densely occupied spaces must include CO2 sensors. If the AHU predominantly serves densely occupied spaces, outdoor airflow measurement at the AHU is not required. If the AHU predominantly serves non-densely occupied spaces, outdoor airflow measurement at the AHU is required, in addition to CO2 sensors in the densely occupied spaces:

FOR MECHANICALLY VENTILATED SPACES

- Monitor carbon dioxide concentrations within all densely occupied spaces (those with a design occupant density greater than or equal to 25 people per 1000 sq.ft.). CO_2 monitoring locations shall be between 3 feet and 6 feet above the floor.
- For each mechanical ventilation system serving non-densely occupied spaces, provide a direct outdoor airflow measurement device capable of measuring the minimum outdoor airflow rate with an accuracy of plus or minus 15% of the design minimum outdoor air rate, as defined by ASHRAE 62.1-2007.

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FOR NATURALLY VENTILATED SPACES

- Monitor CO_2 concentrations within all naturally ventilated spaces. CO_2 monitoring shall be located within the room between 3 feet and 6 feet above the floor. One CO_2 sensor may be used to represent multiple spaces if the natural ventilation design uses passive stack(s) or other means to induce airflow through those spaces equally and simultaneously without intervention by building occupants.
- Note - The credit is specifically intended to address issues with ventilation in environments where a fixed amount of minimum outside air is provided through a specific incoming path."

SS	WE	EA	MR	EQ	ID
Prerequisite 2					

And the following to requirements "Densely occupied areas are not exempted from the CO2 monitor requirement.

- FOR NATURALLY VENTILATED SPACES
- Monitor CO2 concentrations within all naturally ventilated spaces. CO2 monitoring shall be located within the room between 3 feet and 6 feet above the floor. One CO2 sensor may be used to represent multiple spaces if the natural ventilation design uses passive stack(s) or other means to induce airflow through those spaces equally and simultaneously without intervention by building occupants.
- Note - The credit is specifically intended to address issues with ventilation in environments where a fixed amount of minimum outside air is provided through a specific incoming path." And the following to requirements "Densely occupied areas are not exempted from the CO2 monitor requirement.

Potential Technologies & Strategies

To ensure that sensors can reliably indicate that ventilation systems are operating as designed:

- CO_2 sensors shall be located within the breathing zone of the room as defined in ASHRAE Standard 62.1-2007.
- CO_2 sensors shall be certified by the manufacturer to have an accuracy of no less than 75 ppm, factory calibrated or calibrated at start-up, and certified by the manufacturer to require calibration no more frequently than once every 5 years.
- Required CO_2 sensors and outdoor airflow monitors shall be configured to generate an alarm if the indicated outdoor airflow rate drops more than 15% below the minimum outdoor air rate required by Standard 62.1 (see EQ Prerequisite 1) in one of the following ways:
  - A building automation system alarm visible to the system operator/engineer
  - An alarm that is clearly visible to or audible by occupants.
  - CO_2 sensors may also be used for demand controlled ventilation provided the control strategy complies with ASHRAE Standard 62.1-2007 (see EQ Prerequisite 1), including maintaining the area-based component of the design ventilation rate.
- Space CO_2 alarms and demand controlled ventilation setpoints shall be based on the differential corresponding to the ventilation rates prescribed in ASHRAE Standard 62.1 plus the outdoor air CO_2 concentration, which shall be determined by one of the following:
  - Outdoor CO_2 concentration shall be assumed to be 400 ppm without any direct measurement; or
  - Outdoor CO_2 concentration shall be dynamically measured using a CO_2 sensor located near the position of the outdoor air intake.

Audible feedback to the occupants, who in turn know to inform the building's engineer, is a satisfactory means of meeting this aspect of the credit requirement for both the densely occupied areas and the other areas with mechanical ventilation systems

Deleted: Install permanent monitoring and alarm systems that provide feedback on ventilation system performance to ensure that ventilation systems maintain design minimum ventilation requirements in a form that affords operational adjustments:¶
¶
For mechanical ventilation systems that predominantly serve densely occupied spaces (those with a design occupant density greater than or equal to 25 people per 1000 sq. ft), install a CO_2 sensor within each densely occupied space.¶
¶
For all other mechanical ventilation systems, provide an outdoor airflow measurement device capable of measuring the minimum outdoor airflow rate at all expected system operating conditions within 15% of the design minimum outdoor air rate.¶
¶
For natural ventilation systems, install a CO_2 sensor within each naturally ventilated space.¶

Deleted: Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the responsible design professional, declaring and summarizing the installation, operational design and controls/zones for the carbon dioxide or outdoor airflow monitoring system.¶

Deleted: 62.1-2004

Deleted: 62.1-2004

SS	WE	EA	MR	EQ	ID
Credit 2					

Increased Ventilation
1 point

Intent
Provide additional air ventilation to improve indoor air quality for improved occupant comfort, well-being and productivity.

Requirements
For mechanically ventilated spaces:

Increase breathing zone outdoor air ventilation rates to all occupied spaces by at least 30% above the minimum rates required by ASHRAE 62.1-2007 as determined by EQ Prerequisite 1.

Deleted: 62.1-2004

For naturally ventilated spaces:

Design natural ventilation systems for occupied spaces to meet the recommendations set forth in the Carbon Trust "Good Practice Guide 237" [1998]. Determine that natural ventilation is an effective strategy for the project by following the flow diagram process shown in Figure 1.18 of the CIBSE (The Chartered Institution of Building Services Engineers) "Applications Manual 10: 2005, Natural ventilation in non-domestic buildings."

And either of the following;

- Use diagrams and calculations to show that the design of the natural ventilation systems meets the recommendations set forth in the CIBSE "Applications Manual 10: 2005, Natural ventilation in non-domestic buildings."

OR

- Use a macroscopic, multi-zone, analytic model to predict that room-by-room airflows will effectively naturally ventilate at least 90% of occupied spaces.

62.1-2007

Potential Technologies & Strategies
For Mechanically Ventilated Spaces: Design ventilation systems to provide breathing zone ventilation rates at least 30% larger than the minimum rates prescribed by the referenced standard.

For Naturally Ventilated Spaces: Follow the eight design steps described in Carbon Trust "Good Practice Guide 237"—1) Develop design requirements, 2) Plan airflow paths, 3) Identify building uses and features that might require special attention, 4) Determine ventilation requirements, 5) Estimate external driving pressures, 6) Select types of ventilation devices, 7) Size ventilation devices, 8) Analyze the design. Some of the public domain software packages available to analytically predict room-by-room airflows include but are not limited to NIST's CONTAM, Multizone Modeling Soft ware, along with LoopDA, Natural Ventilation Sizing Tool.

Deleted: Submittals¶
For mechanical ventilation systems, provide the LEED for Commercial Interiors Letter Templates, signed by the mechanical engineer or other responsible party, declaring that the outdoor air ventilation rates at the breathing zone of all occupied spaces are at least 30% above the minimum rates required by ASHRAE

Deleted: 62.1-2004

Deleted: , and provide the calculations demonstrating that design breathing zone ventilation rates exceed the minimum rates required by Standard 62.1 by at least 30%.¶
¶
<#>For natural ventilation systems, provide the LEED for Commercial Interiors Letter Templates, signed by the mechanical engineer or other responsible party, declaring that the project meets the natural ventilation requirements of the credit. Provide documentation that natural ventilation is an effective strategy for the project and follows the design recommendations established by CIBSE. Provide either of the following: diagrams and calculations based on CIBSE AM 10, or diagrams and calculations based on results provided by a multi-zone analytical model.¶

SS	WE	EA	MR	EQ	ID
Credit 3.1					

Construction IAQ Management Plan, During Construction

1 point

Intent

Reduce indoor air quality problems resulting from the construction/renovation process in order to help sustain the comfort and well-being of construction workers and building occupants.

Deleted: Prevent

Requirements

Develop and implement an Indoor Air Quality (IAQ) Management Plan for the construction and pre-occupancy phases of the tenant space as follows:

During construction meet or exceed the recommended Design Approaches of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guideline for Occupied Buildings Under Construction, 1995, Chapter 3.

Protect stored on-site and installed absorptive materials from moisture damage.

If air handlers must be used during construction, filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 must be used at each return air grill, as determined by ASHRAE 52.2-1999.

Replace all filtration media immediately prior to occupancy. Coordinate with EQ Credits 3.2 and 5, installing only a single set of final filtration media.

Deleted: ¶
Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the general contractor or responsible party, declaring that a Construction IAQ Management Plan has been developed and implemented, and listing each air filter used during and at the end of construction. Include the MERV value, manufacturer name and model number.¶
¶
AND EITHER¶
¶
<#>Provide 18 photographs—six photographs taken on three different occasions during construction—along with identification of the SMACNA approach featured by each photograph, in order to show consistent adherence to the credit requirements.¶
OR¶
<#>Declare the five Design Approaches of SMACNA IAQ Guideline for Occupied Buildings under Construction, 1995, Chapter 3, which were used during building construction. Include a brief listing of some of the important design approaches employed.¶

Potential Technologies & Strategies

Adopt an IAQ management plan that minimizes the exposure of absorptive materials to moisture and airborne contaminants and that protects the HVAC system during construction. Sequence the installation of absorptive materials, such as insulation, carpeting, ceiling tile and gypsum wall board, to avoid contamination. Coordinate with Indoor Environmental Quality Credits 3.2 and 5 to determine the appropriate specifications and schedules for filtration media.

Deleted: ¶

SS	WE	EA	MR	EQ	ID
Credit 3.2					

Construction IAQ Management Plan, Before Occupancy

1 point

Intent

Reduce indoor air quality problems resulting from the construction/renovation process, to sustain long-term worker and occupant comfort and well-being.

Requirement

Develop and implement an Indoor Air Quality (IAQ) Management Plan for the preoccupancy phases as follows:

OPTION A: Flush-out procedure:
After construction ends and with all interior finishes installed, as described in the CI Reference Guide, install new filtration media and flush-out the building by supplying a total air volume of 14,000 cu.ft. of outdoor air per sq.ft. of floor area while maintaining an internal temperature of at least 60°F and, where mechanical cooling is operated, relative humidity no higher than 60%. The space may only be occupied following delivery of a minimum of 3,500 cu.ft. of outdoor air sq. ft. of floor area to the space, and provided the space is ventilated at minimum rate of 0.30 cfm/sq.ft. of outside air or the design minimum outside air rate, whichever is greater, a minimum of three hours prior to occupancy and during occupancy, until the total of 14,000 cu.ft./sq.ft. of outside air has been delivered to the space.
Note: All finishes must be installed prior to flush-out.

OR

OPTION B Air Testing:
Conduct baseline IAQ testing, after construction ends and prior to occupancy, using testing protocols consistent with the U.S. Environmental Protection Agency "Compendium of Methods for the Determination of Air Pollutants in Indoor Air" and as additionally detailed in the CI Reference Guide.

Deleted: IAQ test procedure

Demonstrate that the contaminants' concentration levels listed below are not exceeded:

Contaminate	Maximum Concentration
Formaldehyde	**50 parts per billion**
Particulates (PM10)	**50 micrograms per cubic meter**
Total Volatile Organic Compounds (TVOC)	**500 micrograms per cubic meter**
*** 4-Phenylcyclohexene (4-PCH)**	**6.5 micrograms per cubic meter**
Carbon Monoxide (CO)	**9 part per million and no greater than 2 parts per million above outdoor levels**

* This test is only required only if carpets and fabrics with Styrene Butadiene (SB) latex backing material are installed as part of the base building systems.

For each sampling point where the maximum concentration limits are exceeded based on the table above, conduct additional flush- out with outside air and retest the specific parameter(s) that were exceeded to indicate the requirements are achieved. Repeat procedure until all requirements have been met. When retesting non-complying building areas, take samples from the same locations as in the first test.

The air sample testing shall be conducted as follows:

- All measurements shall be conducted prior to occupancy, but during normal occupied hours, and with the building ventilation system starting at the normal daily start time and operated at the minimum outside air flow rate for the occupied mode throughout the duration of the air testing.

- The building shall have all interior finishes installed, including but not limited to millwork, doors, paint, carpet and acoustic tiles. Non-fixed furnishings such as workstations and partitions are required to be in place for the testing.
- The number of sampling locations will vary depending upon the size of the building and number of ventilation systems. For each portion of the building served by a separate ventilation system, the number of sampling points shall not be less than one per 25,000 sq.ft., or for each contiguous floor area, whichever is larger, and include areas with the least ventilation and greatest presumed source strength.
- Air samples shall be collected between 6 feet and 6 feet from the floor to represent the breathing zone of occupants and over a minimum 4 hour period.

Potential Technologies & Strategies

Prior to occupancy, perform two-week flush-out or test for contaminant levels in the tenant space.

For IAQ testing, consider using a recognized measurement protocol such as the EPA "Compendium of Methods for the Determination of Air Pollutants in Indoor Air." If alternative testing protocols are used, provide justification that the measured test results meet the intent of the EPA testing methods.

Copies of the IAQ testing results should describe the contaminant sampling and analytical methods, the locations and duration of contaminant samples, the field sampling log sheets and laboratory analytical data, and the methods and results utilized to determine that the ventilation system was started at the normal daily start time and operated at the minimum outside air flow rate for the occupied mode through the duration of the air testing.

The intent of this credit is to eliminate indoor air quality problems that occur as a result of construction. Architectural finishes used in tenant build-outs constitute a significant source of air pollutants, and must be addressed in order to qualify for this credit.

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Submittals¶
OPTION A:¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect, interior designer or engineer, describing flush-out procedures and dates. Provide calculations to demonstrate that the required total air volumes and minimum ventilation volumes and rates have been delivered.¶
¶
OR¶
¶
OPTION B:¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the environmental consusltant or other responsible party, indicating that the air quality testing procedure has been conducted and that all areas tested do not exceed the maximum allowable concentration limits.¶
¶
<#>Provide a copy of the IAQ testing results that includes documentation of the results and identifying the EPA testing method used. If alternative testing protocols are used, provide documentation and rationale justifying that the measured results meet the intent of the EPA testing methods. ¶

SS	WE	EA	MR	EQ	ID
Credit 4.1					

Low-Emitting Materials, Adhesives and Sealants

1 point

Intent

Reduce the quantity of indoor air contaminants that are odorous, potentially irritating and/or harmful to the comfort and well-being of installers and occupants.

Requirements

All materials listed below that are used in the building interior, (i.e., inside of the exterior moisture barrier) must not exceed the following requirements:

- Adhesives, Sealants and Sealant Primers: South Coast Air Quality Management District (SCAQMD) Rule #1168 requirements in effect on January 1, 2005, and rule amendment dated January 7, 2005.

Aerosol Adhesives: Green Seal Standard GC-36 requirements in effect on October 19, 2000.
Note - Use of VOC budgets is an alternative compliance path that allows for specialty applications for which there is no low VOC product option.

Potential Technologies & Strategies

Specify Low-VOC materials in construction documents. Ensure that VOC limits are clearly stated in each section of the specifications where adhesives and sealants are addressed. Common products to evaluate include: general construction adhesives, flooring adhesives, fire-stopping sealants, caulking, duct sealants, plumbing adhesives, and cove base adhesives. Review product cut sheets, MSD sheets, signed attestations or other official literature from the manufacturer clearly identifying the VOC contents or compliance with referenced standards.

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<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect, interior designer or other responsible party, listing the adhesives, sealants, sealant primers and aerosol adhesives used in the building and declaring that they meet the noted requirements. For each product in the listing, state the VOC level, the applicable standard, the classification of material and the VOC limit.¶

SS	WE	EA	MR	EQ	ID
Credit 4.2					

Low-Emitting Materials, Paints and Coatings

1 point

Intent

Reduce the quantity of indoor air contaminants that are odorous, potentially irritating and/or harmful to the comfort and well-being of installers and occupants.

Requirements

Paints and coatings used on the interior of the building (defined as inside of the weatherproofing system and applied on-site) shall comply with the following criteria:

- Architectural paints, coatings and primers applied to interior walls and ceilings: Do not exceed the VOC content limits established in Green Seal Standard GS-11, Paints, First Edition, May 20, 1993 – update standard.
  - Flats: 50 g/L
  - Non-Flats: 150 g/L
- Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates: Do not exceed the VOC content limit of 250 g/L established in Green Seal Standard GC-03, Anti-Corrosive Paints, Second Edition, January 7, 1997.
- Clear wood finishes, floor coatings, stains, and shellacs applied to interior elements: Do not exceed the VOC content limits established in South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004.
  - Clear wood finishes: varnish 350 g/L; lacquer 550 g/L
  - Floor coatings: 100 g/L
  - Sealers: waterproofing sealers 250 g/L; sanding sealers 275 g/L; all other sealers 200 g/L
  - Shellacs: Clear 730 g/L; pigmented 550 g/L
  - Stains: 250 g/L

Note - Use of VOC budgets is an alternative compliance path that allows for specialty applications for which there is no low VOC product option.

Potential Technologies & Strategies

Specify Low-VOC paints and coatings in construction documents. Ensure that VOC limits are clearly stated in each section where paints and coatings are addressed. Track the VOC content of all interior paints and coatings during construction.

Deleted: Interior paints and coating applied on-site must meet the limitations and restrictions concerning chemical components set by the following standards:¶
¶
Topcoat Paints: Green Seal Standard GS-11, Paints, First Edition, May 20, 1993.¶
¶
Anti-Corrosive and Anti-Rust Paints: Green Seal Standard GS-03, Anti-Corrosive Paints, Second Edition, January 7, 1997. For applications on ferrous metal substrates.¶
¶
All other Architectural Coatings, Primers and Undercoats: South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004.¶

Deleted: Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect, interior designer or other responsible party, listing all the interior paints and coatings used in the building that are addressed by the referenced standards. State that they comply with the current VOC and chemical component limits and the chemical component restrictions of each standard. For each product in the listing, state the VOC level, the applicable standard, the classification of material and the VOC limit.¶

SS	WE	EA	MR	EQ	ID
Credit 4.3					

Low-Emitting Materials, Flooring Systems

1 point

Intent

Reduce the quantity of indoor air contaminants that are odorous, potentially irritating and/or harmful to the comfort and well-being of installers and occupants.

Requirements

All flooring must comply with the following as applicable to the project scope:All carpet installed in the building interior shall meet the testing and product requirements of the Carpet and Rug Institute's Green Label Plus program.

All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label program. This credit is only available to projects where carpet is installed.

All carpet adhesive shall meet the requirements of EQ Credit 4.1: VOC limit of 50 g/L.

AND

All of the hard surface flooring must be certified as compliant with the FloorScore standard (current as of the date of this Rating System, or more stringent version) by an independent third-party. Flooring products covered by FloorScore include vinyl, linoleum, laminate flooring, wood flooring, ceramic flooring, rubber flooring, wall base, and associated sundries.

An alternative compliance path using FloorScore is acceptable for credit achievement according to the following stipulations. 100% of the non-carpet finished flooring must be FloorScore-certified, and it must comprise, at minimum, at least 25% of the finished floor area. Potential examples of unfinished flooring include floors in mechanical rooms, electrical rooms, and elevator service rooms

AND

Concrete, wood, bamboo, and cork floor finishes such as sealer, stain and finish must meet the requirements of South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004. VOC limits are listed below.

- Clear wood finishes: varnish 350 g/L; lacquer 550 g/L
- Floor coatings: 100 g/L
- Sealers: waterproofing sealers 250 g/L; sanding sealers 275 g/L; all other sealers 200 g/L
- Shellacs: Clear 730 g/L; pigmented 550 g/L
- Stains: 250 g/L

AND

Tile setting adhesives and grout must meet South Coast Air Quality Management District (SCAQMD) Rule #1168. VOC limits are listed below and correspond to an effective date of July 1, 2005 and rule amendment date of January 7, 2005.

- Ceramic tile adhesive: 65 g/L
- Grout and mortar: 250 g/L

OR

Deleted: Carpet

Deleted: Carpet systems must meet or exceed the Carpet and Rug Institute's Green Label Plus testing and product requirements. (Green Label Plus does not address backer or adhesive.) Carpet pad must meet or exceed CRI Green Label testing and product requirements. Carpet adhesive must meet the requirements of Credit 4.1 ¶
¶
Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect, interior designer or other responsible party, listing all the carpet systems used in the tenant space and stating that they meet or exceed the Carpet and Rug Institute's Green Label Plus testing and product requirements.¶

All flooring products will meet the testing and product requirements of the California Department of Health Services Standard Practice for The Testing Of Volatile Organic Emissions From Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.

Potential Technologies & Strategies

are either certified under the Green Label Plus program or for which testing has been done by qualified independent laboratories in accordance with the appropriate requirements.

The Green Label Plus program for carpets and its associated VOC emission criteria in micrograms per square meter per hour, along with information on testing method and sample collection developed by the Carpet & Rug Institute (CRI) in coordination with California's Sustainable Building Task Force and the California Department of Health Services (DHS), are described in Section 9, Acceptable Emissions Testing for Carpet, DHS Standard Practice CA/DHS/EHLB/R-174, dated 07/15/04. This document is available at: www.dhs.ca.gov/ps/deodc/ehlb/iaq/VOCS/Section01350_7_15_2004_FINAL_PLUS_ADDENDUM-2004-01.pdf. (also published as Section 01350 Section 9 [dated 2004] by the Collaborative for High Performance Schools [www.chps.net]).

FloorScore is a voluntary, independent certification program that tests and certifies hard surface flooring and associated products for compliance with criteria adopted in California for indoor air emissions of Volatile Organic Compounds (VOCs) with potential health effects. The program uses a small-scale chamber test protocol and incorporates VOC emissions criteria developed by the California Department of Health Services, which are widely known as Section 1350.

As part of certification, third party certifier, Scientific Certification Systems (SCS), (1) works with the manufacturer to identify the appropriate samples for testing; (2) reviews VOC emission test reports generated by independent testing laboratories for individual candidate products; (3) determines if the test results meet the California Section 1350 requirements for individual VOCs of concern; and (4) periodically inspects manufacturing plants to review product formulas, processing, and quality control in order to define the permitted use of the FloorScore seal.

Deleted: Specify Low-VOC carpet products and systems in construction documents. Provide product cut sheets, MSD sheets, signed attestations or other official literature from the manufacturer clearly identifying the affected products meet these requirements. Ensure that requirements are clearly stated in each section of the specifications where these materials are addressed. ¶

SS	WE	EA	MR	EQ	ID
Credit 4.3					

Low-Emitting Materials, Composite Wood and Laminate Agrifiber Products

1 point

Intent

Reduce the quantity of indoor air contaminants that are odorous, potentially irritating and/or harmful to the comfort and well-being of installers and occupants.

Requirements

. Composite wood and agrifiber products used on the interior of the building (defined as inside of the weatherproofing system) shall contain no added urea-formaldehyde resins. Laminate adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies shall contain no added urea-formaldehyde resins.

Composite wood and agrifiber products are defined as: particleboard, medium density fiberboard (MDF), plywood, wheatboard, strawboard, panel substrates and door cores. Materials considered fit-out, furniture, and equipment (FF&E) are not considered base building elements and are not included.

Products covered by EQ Credit 4.5, Low-Emitting Materials, System Furniture and Seating shall be excluded from these requirements.

Potential Technologies & Strategies

Specify wood and agrifiber products that contain no added urea-formaldehyde resins. Specify laminating adhesives for field and shop applied assemblies, including adhesives and veneers that contain no urea-formaldehyde. Review product cut sheets, MSD sheets, signed attestations or other official literature from the manufacturer.

Deleted: Adhesives

Deleted: Composite wood and agrifiber products, including core materials, must contain no added urea-formaldehyde resins. Laminate Adhesives used to fabricate on-site and shop applied assemblies containing these laminate adhesives must contain no urea-formaldehyde.

Deleted: Submittals¶

<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect, interior designer or responsible party, listing all the composite wood products used in the tenant space and stating that they contain no added urea-formaldehyde resins and listing all the laminating adhesives used in the tenant space and stating that they contain no urea-formaldehyde.¶

¶

<#>Provide documentation that all core and laminate adhesive products used on the project contained no added urea-formaldehyde.¶

SS	WE	EA	MR	EQ	ID
Credit 4.5					

Low-Emitting Materials, Systems Furniture and Seating

1 point

Intent

Reduce the quantity of indoor air contaminants that are odorous, potentially irritating and/or harmful to the comfort and well-being of installers and occupants.

Requirements

All systems furniture and seating* introduced into the project space that has been manufactured, refurbished or refinished within one year prior to occupancy must meet one of the requirements below.

Option A: Greenguard Indoor Air Quality Certified

OR

Option B: Calculated indoor air concentrations that are less than or equal to those established in Table 1 for furniture systems and seating determined by a procedure based on the U.S. Environmental Protection Agency's Environmental Technology Verification (ETV) Large Chamber Test Protocol for Measuring Emissions of VOCs and Aldehydes (September 1999) testing protocol conducted in an independent air quality testing laboratory.

Table 1. Indoor Air Concentrations

Chemical Contaminant	Emission Limits Systems Furniture	Emission Limits Seating
TVOC	**0.5 mg/m^3**	**0.25 mg/m^3**
Formaldehyde	**50 parts per billion**	**25 parts per billion**
Total Aldehydes	**100 parts per billion**	**50 parts per billion**
4 – Phenylcyclohexene (4-PCH)	**0.0065 mg/m^3**	**0.00325 mg/m^3**

Systems furniture is defined as either a panel-based workstation comprised of modular interconnecting panels, hang-on components and drawer/filing components or a freestanding grouping of furniture items and their components that have been designed to work in concert.

Seating is defined as task and guest chairs used with systems furniture.

*Furniture other than systems furniture and task and guest chairs used with systems furniture is defined as occasional furniture and is excluded from the credit requirements.

Salvaged and used furniture that is more than one year old at time of occupancy is excluded from the credit requirements.

Calculated indoor air concentrations that are less than or equal to those established in Table 1* for furniture systems and seating determined by a procedure based on BIFMA M7.1-2005 and X7.1-2005 testing protocol conducted in an independent third party air quality testing laboratory. The requirement in section 5 of BIFMA standard X7.1-2005 is waived for LEED purposes. Section 5 requires that laboratories used to perform the emissions testing and/or provide analytical results shall be independently accredited to ISO/IEC 17025, "General requirements for the competence of testing and calibration laboratories.

Potential Technologies & Strategies

Specify Low-VOC materials in construction documents. Ensure that VOC limits are clearly stated in each section where furniture assemblies are addressed.

Deleted: Submittals¶

<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect, interior designer or other responsible party, declaring that all systems furniture and seating covered by this credit is included in a listing that states the manufacturer and product line, item description, period of manufacture, form of compliance and the period for which the item is U.S. Environmental Protection Agency's Environmental Technology verification (ETV) Large Chamber Test Protocol for Measuring Emissions of VOCs and Aldehydes (September 1999).¶

¶

<#>For Greenguard Air Quality Certified systems furniture and seating, provide a copy of the product certification, complete with the start and end dates of certification. The period covered must have begun before and extend through the actual manufacturing dates of the product used on the project.¶

¶

<#>For systems furniture and seating tested using a procedure based on the U.S. EPA ETV protocol, provide details of the procedure, and the emission factors from the large-chamber testing of the systems furniture, showing the calculations used in determining the emission limits, complete with the air exchange rate, demonstrating that emissions limits have not exceeded those shown in Table 1. Test results and supporting calculations must be dated and signed by an officer of the independent laboratory where the testing was conducted. Test results must represent the manufacturing practices employed for the product used on the project. Tests must have been completed before the start of manufacturing but no earlier than 24 months prior to the last manufacturing date.¶

¶

SS	WE	EA	MR	EQ	ID
Credit 5					

Indoor Chemical and Pollutant Source Control

1 point

Intent

Minimize exposure of building occupants to potentially hazardous particulates, biological contaminants and chemical pollutants that adversely impact air and water quality.

Requirements

Design to minimize and control pollutant or biological contaminant entry into the tenant space and later cross-contamination of regularly occupied areas:

Employ permanent entryway systems (such as grills or grates) to capture dirt, particulates, etc. from entering the building at all high-volume exterior entryways within the tenant area.

AND

Where hazardous gasses or chemicals may be present or used (including housekeeping and laundry areas and copying and printing rooms), exhaust each space sufficiently to create negative pressure with respect to adjacent spaces with the doors to the room closed. For each of these spaces, provide self-closing doors and deck to deck partitions or a hard lid ceiling. The exhaust rate shall be at least 0.50 cfm/sq.ft., with no air re-circulation. The pressure differential with the surrounding spaces shall be at least 5 Pa (0.02 inches of water gauge) on average and 1 Pa (0.004 inches of water) at a minimum when the doors to the rooms are closed.

AND

Provide containment drains plumbed for appropriate disposal of hazardous liquid wastes in spaces where water and chemical concentrate mixing occurs for maintenance, or laboratory purposes.

AND

In mechanically ventilated buildings, provide regularly occupied areas of the tenant space with new air filtration media prior to occupancy that provides a Minimum Efficiency Reporting Value (MERV) of 13 or better. Filtration should be applied to process both return and outside air that is to be delivered as supply air.

Potential Technologies & Strategies

Design separate exhaust and plumbing systems for rooms with contaminants to achieve physical isolation from the rest of the building. Where appropriate, install permanent architectural entryway systems such as grills or grates to prevent occupant-borne contaminants from entering the space.

Deleted: provide segregated areas with deck-to-deck partitions with separate outside exhausting at a rate of at least 0.5 cu. ft per minute per square foot, no air recirculation and operated at a negative pressure compared with the surrounding spaces of at least an average of 5 PA (0.02 inches of water gauge) and with a minimum of 1 PA (0.004 inches of water gauge) when the doors to the rooms are closed.¶

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<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect, interior designer or other responsible party, declaring that:¶

¶

<#>Permanent entryway systems (such as grilles or grates) to capture dirt, particulates, etc. are provided at all high-volume exterior entryways within the tenant area.¶

¶

<#>Chemical use areas and copy rooms have been physically separated with deck-to-deck partitions; independent exhaust ventilation has been installed at the required exhaust rate and negative pressure differential.¶

¶

<#>Drains in facility cleaning and maintenance areas within the tenant space are plumbed for environmentally appropriate disposal of hazardous liquid wastes.¶

¶

<#>Filters used meet the MERV requirements with new media installed prior to occupancy. Provide a listing of each filter installed including the MERV value, manufacturer name and model number.¶

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SS	WE	EA	MR	EQ	ID
Credit 6.1					

Controllability of Systems, Lighting

1 point

Intent

Provide a high level of lighting system control for individual occupants, and specific groups in multi-occupant spaces (e.g., classrooms and conference areas), to promote the productivity, comfort and well-being of tenant space occupants.

Requirements

Provide individal lighting controls for 90% (minimium) of the tenant space occupants, to enable adjustments to suit individual task needs and preferences,

AND

Provide lighting system controllability for all shared multi-occupant spaces to enable lighting adjustment that meets group needs and preferences

Potential Technologies & Strategies

Design the tenant space with occupant controls for lighting. Strategies to consider include lighting controls and task lighting.

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<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect or other responsible party, demonstrating and declaring that the required lighting controls are provided.¶

SS	WE	EA	MR	EQ	ID
Credit 6.2					

Controllability of Systems, Thermal Comfort

1 point

Intent

Provide a high level of thermal comfort system control for individual occupants, and specific groups in multi-occupant spaces (e.g., classrooms and conference areas), to promote the productivity, comfort and well-being of tenant space occupants.

Requirements

Provide thermal and ventilation controls for 50% (minimum) of the tenant occupants to enable adjustment to suit individual needs and preferences. Operable windows may be used in lieu of individual controls for occupants near windows (20 feet inside of and 10 feet to either side of the operable part of the window), and where the operable windows meet the requirements of ASHRAE Standard 62-2004 Section 5.1 Natural Ventilation.

AND

Provide comfort system controls for all shared multi-occupant spaces to enable adjustments to suit group needs and preferences.

Conditions for thermal comfort are described in ASHRAE Standard 55-2004 to include the primary factors of air temperature, radiant temperature, air speed and humidity. Comfort system control for the purposes of this credit is defined as the provision of control over at least one of these primary factors in the occupant's local environment.

Potential Technologies & Strategies

Design the tenant space with occupant controls for airflow and temperature. Naturally ventilated spaces must include strategies for control of temperature and ventilation.

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AND¶
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All shared-multi-occupant spaces where transient groups must share controls. ¶

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<#>Provide the LEED for Commercial Interiors Letter Template, signed by the architect or other responsible party, demonstrating and declaring that the required ventilation and temperature controls are provided.¶

SS	WE	EA	MR	EQ	ID
Credit 7.1					

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Thermal Comfort, Design

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1 point

Intent

Provide a thermally comfortable environment that supports the productivity and well-being of tenant space occupants.

Requirements

Comply with ASHRAE Standard 55-2004, Thermal Comfort Conditions for Human Occupancy.

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<#>Provide the LEED for Commercial Interiors Letter Template, signed by the engineer or responsible party, declaring that the project complies with ASHRAE Standard 55-2004. Include documentation of compliance according to ASHRAE Standard 55-2004, Section 6.1.1, Documentation.¶

Potential Technologies & Strategies

Establish comfort criteria per the standard, and design the tenant space envelope and HVAC system to maintain these comfort ranges.

SS	WE	EA	MR	EQ	ID
Credit 7.2					

Thermal Comfort, Verification

1 point in addition to EQ 7.1

Intent

Provide for the assessment of building thermal comfort over time.

Requirements

Provide a permanent monitoring system and process for corrective action to ensure performance to the desired comfort criteria as determined by EQ Credit 7.1, Thermal Comfort, Design.

Agree to implement a thermal comfort survey of building occupants within a period of six to 18 months after occupancy. This survey should collect anonymous responses about thermal comfort in the building including an assessment of overall satisfaction with thermal performance and identification of thermal comfort-related problems. Agree to develop a plan for corrective action if the survey results indicate that more than 20% of occupants are dissatisfied with thermal comfort in the building. This plan should include measurement of relevant environmental variables in problem areas in accordance with ASHRAE Standard 55-2004.

Thermal Comfort: Verification, is contingent on the successful completion and award of the credit -Thermal Comfort: Design.

Potential Technologies & Strategies

ASHRAE Standard 55-2004 Paragraph 7 Evaluation of the Thermal Environment provides guidance on measurement of building performance parameters and two methods for validating performance: (a) Survey Occupants and (b) Analyze Environment Variables. The permanent monitoring system required here may apply either approach—survey or technical system—where the process or system is integrated into the standard operating processes of the building.

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Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the engineer or other responsible party, that identifies the comfort criteria, strategy for ensuring performance to the comfort criteria, description of the permanent monitoring system implemented, and process for corrective action.¶

SS	WE	EA	MR	EQ	ID
Credit 8.1					

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Daylight and Views, Daylight 75% of Spaces

1 point

Intent

Provide the occupants with a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the tenant space.

Requirements

OPTION 1 — CALCULATION

Achieve a minimum glazing factor of 2% in a minimum of 75% of all regularly occupied areas. The glazing factor is calculated as follows:

$$\text{Glazing Factor} = \frac{\text{Window Area [SF]}}{\text{Floor Area [SF]}} \times \text{Window Geometry Factor} \times \frac{\text{Actual } T_{vis}}{\text{Minimum } T_{vis}} \times \text{Window Height Factor}$$

OR

OPTION 2 — SIMULATION

Demonstrate, through computer simulation, that a minimum daylight illumination level of 25 footcandles has been achieved in a minimum of 75% of all regularly occupied areas. Modeling must demonstrate 25 horizontal footcandles under clear sky conditions, at noon, on the equinox, at 30 inches above the floor.

OR

OPTION 3 — MEASUREMENT

Demonstrate, through records of indoor light measurements, that a minimum daylight illumination level of 25 footcandles has been achieved in at least 75% of all regularly occupied areas. Measurements must be taken on a 10-foot grid for all occupied spaces and must be recorded on building floor plans. Measurements must be taken under clear sky conditions, at 30" above the floor, on or about solar noon on the equinox.

OR

OPTION 4

Any of the above calculation methods may be combined to document the minimum daylight illumination in at least 75% of all regularly occupied spaces. The different methods used in each space must be clearly recorded on at minimum a 10' grid on all building plans.

In all cases, only the square footage associated with the portions of rooms or spaces meeting the minimum illumination requirements can be applied towards the 75% of total area calculation required to qualify for this credit.

SS	WE	EA	MR	EQ	ID
Credit 8.2					

In all cases, provide daylight redirection and/or glare control devices to avoid high-contrast situations that could impede visual tasks. Exceptions for areas where tasks would be hindered by the use of daylight will be considered on their merits.

Exceptions for areas where tasks would be hindered by the use of daylight will be considered on their merits.

Exceptions for areas where tasks would be hindered by the use of daylight will be considered on their merits.

Potential Technologies & Strategies

Design the space to maximize interior daylighting and view opportunities. Strategies to consider include lower partition heights, interior shading devices, interior glazing and photo-integrated light sensors. Predict daylight factors via manual calculations or model daylighting strategies with a physical or computer model to assess footcandle levels and daylight factors achieved. Modeling must demonstrate 25 horizontal footcandles under clear sky conditions, at noon, on the equinox, at 30 inches above the floor. Any portion of a room achieving the requirements can qualify for this credit.

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¶
Achieve a minimum Daylight Factor of 2% (excluding all direct sunlight penetrations) ¶
¶
OR ¶
¶
Using a computer simulation model, achieve at least 25 footcandles.¶
¶
AND¶
¶
Provide daylight redirection and/or glare control devices to ensure daylight effectiveness. ¶

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Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the responsible party, indicating the required daylighting is accomplished in at least 75% of the regularly occupied areas. ¶
¶
<#>Provide area calculations that define the daylight zones and provide a summary of daylight factor prediction calculations through manual methods or a summary of computer simulations illustrating that the footcandle levels have been achieved.¶

SS	WE	EA	MR	EQ	ID
Credit 8.3					

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Daylight and Views, Daylight 90% of Spaces

1 point

Intent

Provide the occupants with a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the tenant space.

Requirements

OPTION 1 — CALCULATION

Achieve a minimum glazing factor of 2% in a minimum of 90% of all regularly occupied areas. The glazing factor is calculated as follows:

$$\text{Glazing Factor} = \frac{\text{Window Area [SF]}}{\text{Floor Area [SF]}} \times \text{Window Geometry Factor} \times \frac{\text{Actual } T_{vis}}{\text{Minimum } T_{vis}} \times \text{Window Height Factor}$$

OR

OPTION 2 — SIMULATION

Demonstrate, through computer simulation, that a minimum daylight illumination level of 25 footcandles has been achieved in a minimum of 90% of all regularly occupied areas. Modeling must demonstrate 25 horizontal footcandles under clear sky conditions, at noon, on the equinox, at 30 inches above the floor.

OR

OPTION 3 — MEASUREMENT

Demonstrate, through records of indoor light measurements, that a minimum daylight illumination level of 25 footcandles has been achieved in at least 90% of all regularly occupied areas. Measurements must be taken on a 10-foot grid for all occupied spaces and must be recorded on building floor plans. Measurements must be taken under clear sky conditions, at 30" above the floor, on or about solar noon on the equinox.

OR

OPTION 4

Any of the above calculation methods may be combined to document the minimum daylight illumination in at least 90% of all regularly occupied spaces. The different methods used in each space must be clearly recorded on at minimum a 10' grid on all building plans.

In all cases, only the square footage associated with the portions of rooms or spaces meeting the minimum illumination requirements can be applied towards the 90% of total area calculation required to qualify for this credit.

SS	WE	EA	MR	EQ	ID
Credit 8.2					

In all cases, provide daylight redirection and/or glare control devices to avoid high-contrast situations that could impede visual tasks. Exceptions for areas where tasks would be hindered by the use of daylight will be considered on their merits.

Exceptions for areas where tasks would be hindered by the use of daylight will be considered on their merits.

Potential Technologies & Strategies

Design the space to maximize interior daylighting and view opportunities. Strategies to consider include lower partition heights, interior shading devices, interior glazing and photo-integrated light sensors. Predict daylight factors via manual calculations or model daylighting strategies with a physical or computer model to assess footcandle levels and daylight factors achieved. Modeling must demonstrate 25 horizontal footcandles under clear sky conditions, at noon, on the equinox, at 30 inches above the floor. Any portion of a room achieving the requirements can qualify for this credit.

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Deleted: For at least 90% of all regularly occupied areas:¶
¶
Achieve a minimum Daylight Factor of 2% (excluding all direct sunlight penetrations) ¶
¶
OR ¶
¶
Using a computer simulation model, achieve at least 25 footcandles.¶
¶
AND¶
¶
Provide daylight redirection and/or glare control devices to ensure daylight effectiveness. ¶
¶
Exceptions for areas where tasks would be hindered by the use of daylight will be considered on their merits. ¶
¶
Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template, signed by the responsible party, indicating the required daylighting is accomplished in at least 90% of the regularly occupied areas. ¶
¶
<#>Provide area calculations that define the daylight zones and provide a summary of daylight factor prediction calculations through manual methods or a summary of computer simulations illustrating that the footcandle levels have been achieved.¶

SS	WE	EA	MR	EQ	ID
Credit 8.3					

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Daylight and Views, Views for 90% of Seated Spaces

1 point

Intent

Provide the occupants with a connection between indoor spaces and the outdoor environment through the introduction of daylight and views into the regularly occupied areas of the tenant space.

Requirements

Achieve direct line of sight to the outdoor environment (vision glazing between 2'-6" and 7'-6") for building occupants in 90% of all regularly occupied areas. Determine the area with direct line of sight by totaling the regularly occupied square footage that meets the following criteria:

- In plan view, the area is within sight lines drawn from perimeter vision glazing.
- In section view, a direct sight line can be drawn from a point 42 in. above the floor to perimeter vision glazing.

Line of sight may be drawn through interior glazing. For private offices, the entire square footage of the office can be counted if 75% or more of the area has direct line of sight to perimeter vision glazing. If less than 75% of the area has direct line of sight then only the area with the direct line of sight will be counted towards meeting the credit requirement not the whole office area. For multi-occupant spaces, the actual square footage with direct line of sight to perimeter vision glazing is counted.

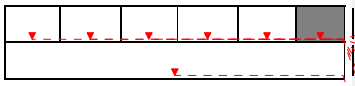
NC/CI RETAIL: Examples of regularly occupied retail stations and areas include but are not limited to the following: restaurant seating, service desks, transaction counters, individual staff offices and shared offices.

CS: The core and shell design needs to develop a feasible tenant layout(s) per the default occupancy counts (or some other justifiable occupancy count) that can be used in the analysis of this credit.

Potential Technologies & Strategies

Design the space to maximize view opportunities. Strategies to consider include lower partition heights and interior glazing.

Deleted: Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template and calculations signed by the architect, interior designer or other responsible party describing, demonstrating and declaring that the building occupants in 90% of regularly occupied areas will have direct lines of site to perimeter glazing. ¶
¶
<#>Provide floor plans and representative sections highlighting the areas with direct line of sight and showing interior partitions and perimeter windows with respect to the view at 42 in. above the floor. ¶
¶



Innovation in Design

1 – 5 points

Intent

Provide design teams and projects the opportunity to be awarded points for exceptional performance above the requirements set by the LEED Green Building Rating System and/or innovative performance in Green Building categories not specifically addressed by the LEED Green Building Rating System.

Requirements

Credit 1.1 (1 point) Identify the **intent** of the proposed innovation credit, the proposed **requirements** for compliance, the proposed **submittals** to demonstrate compliance, and the **design approach** (strategies) that might be used to meet the requirements.

Credit 1.2 (1 point) Same as Credit 1.1

Credit 1.3 (1 point) Same as Credit 1.1

Credit 1.4 (1 point) Same as Credit 1.1

Credit 1.5 (1 point) Same as Credit 1.1

Potential Technologies & Strategies

Substantially exceed a LEED performance credit such as energy performance or water efficiency. Apply strategies or measures that are not covered by LEED such as acoustic performance, education of occupants, community development or lifecycle analysis of material choices.

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Deleted: Credit 1.1 – 1.54

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Deleted: Submittals¶
<#>Provide the proposal(s) within the LEED for Commercial Interiors Letter template (including intent, requirements, submittals and possible approach {strategies}) with relevant evidence of performance achieved.¶

SS	WE	EA	MR	EQ	ID
Credit 2					

LEED Accredited Professional

1 point

Intent

Support and encourage the design integration required by a LEED Green Building project and streamline the application and certification process.

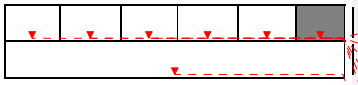
Requirement

At least one principal participant in the project team has successfully completed the LEED Accredited Professional exam.

Potential Technologies & Strategies

Attending a LEED Accredited Professional Training Workshop is recommended but not required. Study the LEED Reference Guide. Successfully pass the LEED accreditation exam.

Deleted: Submittals¶
<#>Provide the LEED for Commercial Interiors Letter Template stating the LEED Accredited Professional's name, title, company and contact information. Include a copy of this person's LEED Accredited Professional Certificate.¶



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Regional Bonus Credit

RB Credit 1–1.4: Regional Bonus Credit
1–4 Points

Intent

To provide design teams and projects the opportunity to be awarded points for achievement of existing LEED credits that deliver regionally important benefit which has been deemed, by the regional authority, to have benefit above the point value set by the LEED Green Building Rating System.

Requirements

Credit 1.1 (1 point) Achieve one of the six (6) credits that has been identified as regionally important by the regional authority where the LEED project is located

Credit 1.2 (1 point) Same as Credit 1.1

Credit 1.3 (1 point) Same as Credit 1.1

Credit 1.4 (1 point) Same as Credit 1.1

Potential Technologies & Strategies

Pursue credits that have been deemed regionally important by the regional authority.