

Appendix C: What's New in 2.2?

This section was adapted from the article, *LEED 2.2 vs. 2.1 – What's the difference?*, Colorado Building Green, USGBC Colorado Chapter newsletter, Nov-Dec 2005, authored by Ambient Energy, Inc. with permission. Refer to Colorado Building Green's monthly "LEED Update" article series for additional information. www.usgbc.org/chapters/colorado

Beginning in January 2006, all new LEED-NC projects will register under version 2.2 (v2.2). Overall, LEED-NC version 2.2 is an improvement over the previous LEED-NC versions. It benefits from experience with numerous certified and registered projects, credit interpretation rulings, volunteer LEED committees working diligently to improve each category, and an effort to streamline the LEED process. The changes will increase the cost of securing some credits. This section offers a cursory overview of some of the more conspicuous changes. Please refer to the rating system and Reference Guide for complete details.

Logistical Changes

How does the launch of v2.2 change the logistics for LEED projects? The key factors are highlighted as follows:

- **LEED-Online:** In November 2005, USGBC announced that LEED was going 'paperless'. LEED projects can now submit 100 percent of their documentation online in an easy-to-use interface featuring Adobe LiveCycle technology. Via LEED-Online, project team members to upload credit templates, track Credit Interpretation Requests (CIRs), manage key project details, contact customer service, and communicate with reviewers throughout the design and construction reviews. *Projects registered under earlier LEED-NC versions can also use the LEED-Online feature.*
- **Timing:** v2.2 and associated Reference Guide were officially launched in November 2005. Projects registered in November or December 2005 had the option of choosing v2.1 or v2.2. After December 31, 2005, all projects will be registered under v2.2.
- **LEED AP Exam:** The LEED Accreditation Exam will change sometime in mid-2006. So if you plan to take the test in 2006, check on if this switch has been made. If not, study the v2.1 reference guide, in addition to v2.2.
- **Earlier versions still valid:** All registered LEED-NC v2.0 and/or v2.1 projects will still be able to apply for certification using

the standard in place at the time of project registration.

- **No mix and match:** Unlike the transition from v2.0 to v2.1, in this revision, projects will not be able to mix different versions of credits within one submittal.
- **Optional switch to v2.2:** If you are currently registered for v2.0 or v2.1, and you determine that v2.2 would work better for your project, you can switch entirely to v2.2 with no additional registration cost.
- **Two-phase review:** Instead of having a single review at the end of the project, v2.2 provides a design review and a construction review. This change should make it easier for projects to manage the tracking and submittals for credits that are completed during the design phase.
- **Certification fees:** The fee structure has changed to match the two-phase review, and the fees have increased. The total certification fees for both reviews for members are:
 - \$1,750 for projects less than 50,000 square feet
 - \$3.5 cents per square foot for projects from 50,000 to 500,000 square feet, and
 - \$17,500 for projects over 500,000 square feet.

Credit Changes

What are the main difference between v2.1 and v2.2? Some credits have major revisions, some have minor revisions, and a few have no revisions. This section provides the official summary of major changes from USGBC, as well as information about additional changes from the USGBC Colorado Chapter.

USGBC reports that nearly every credit has been altered in some way; refer to the USGBC LEED-NC v2.2 Reference Guide for details about individual credits. The following page presents the information in the Fact Sheet issued by the USGBC to summarize the transition from v2.1 to v2.2. Following this is a list of additional changes published by the USGBC Colorado Chapter.

USGBC Official List of Major Credit Changes from v2.1 to v2.2

Alternative compliance paths have been added for the following credits:

- *SSc2 Development Density and Community Connectivity*
- *SSc4.3 Alternative Transportation: low-Emitting and Fuel-Efficient Vehicles*
- *SSc4.4 Alternative Transportation: Parking Capacity*
- *SSc6.1 Stormwater Design: Quality Control*
- *EAc6 Green Power*

LEED-NC Credit	Description of Change
Sustainable Sites	
<i>SSc5.2 Site Development: Maximize Open Space</i>	Open space definition has been refined to address both urban and suburban settings
<i>SSc6.2 Stormwater Design: Quality Control</i>	Stormwater control systems must be capable of treating 90% of runoff and removing 80% of total suspended solids. System performance information on phosphorous removal is no longer required.
<i>SSc7.2 Heat Island Effect: Roof</i>	New performance metric (Solar Reflectance Index)
<i>SSc8 Light Pollution Reduction</i>	Requirements for control of interior lighting to prevent spillover and restructuring of the exterior lighting requirement
Water Efficiency	
<i>WEc1.2 Water Efficient Landscaping</i>	Use of municipally provided non-potable water is acceptable for credit compliance
Energy and Atmosphere	
<i>EAp1 and EAc3 commissioning credits</i>	Major clarifications were made to the credit to standardize LEED Commissioning Scope of Work
<i>EAp2 and EAc1 energy performance credits</i>	Updated Referenced Standard (ASHRAE Standard 90.1-2004), new energy modeling protocol, two new prescriptive compliance paths
<i>EAc4 Enhanced Refrigerant Management</i>	Credit is now based on refrigerant management methodology established in TSAC refrigerant report
Materials and Resources	
<i>MRC4 Recycled Content</i>	Updated Referenced Standard (ISO 14201)
<i>MRC5.1 Regional Materials</i>	New requirements on what constitutes “regional”
Indoor Environmental Quality	
<i>EQ Prerequisite 1 Minimum IAQ Performance</i>	Updated Referenced Standard (ASHRAE Standard 90.1-2004)
<i>EQc2 Increased Ventilation</i>	Credit basis has been changed from ventilation effectiveness to provision of higher than code minimum ventilation
<i>EQc3.2 Construction IAQ Management Plan: Before Occupancy</i>	Clarification on building flush-out procedures provided. New IAQ testing protocol has been established. Requirement for installation of MERV 13 filters has been moved to EQc5

USGBC Official List of Major Credit Changes from v2.1 to v2.2 (continued)

<i>EQc4.3 Low-Emitting Materials: Carpet Systems</i>	Updated, enhanced Referenced Standard (Green Label Plus)
<i>EQc4.4 Low-Emitting Materials: Composite wood & Agrifiber Products</i>	Revised definition of composite wood. Laminating adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies shall contain no added urea-formaldehyde resins
<i>EQc5 Indoor Chemical & Pollutant Source Control</i>	Provision of properly sized and maintained walk off mats is now acceptable. Mechanically ventilated buildings must have MERV 13 or higher filtration media.
<i>EQc6 Controllability of Systems</i>	Re-structured credit basis: EQc6.1 lighting, EQc6.2 thermal controls based on ASHRAE 55-2004
<i>EQc7 Thermal Comfort</i>	EQ7.1 and EQ7.2 have an updated Referenced Standard (ASHRAE 55-2004). EQc7.2 now requires a survey method for verification.
<i>EQ8.1 Daylight & Views: Daylight 75% of Spaces</i>	Credit can be achieved by three compliance paths: calculation of glazing factor; daylight simulation; or direct measurement of daylighting performance in completed building

Source: USGBC LEED-NC Version 2.2 Fact Sheet

Website: https://www.usgbc.org/FileHandling/show_general_file.asp?DocumentID=1100

Additional Credit Changes noted by USGBC Colorado Chapter from v2.1 to v2.2

LEED-NC Credit	Description of Change
Sustainable Sites	
<i>SS Prerequisite 1 Construction Activity Pollution Prevention</i>	References Phase I and Phase II of the National Pollutant Discharge Elimination System (NPDES) program instead of EPA Storm Water Management for Construction Activities, Chapter 3.
<i>SSc2 Development Density and Community Connectivity</i>	Added an alternative method to calculation of development density based on proximity to basic services. The changes make it easier to achieve the credit.
<i>SSc4.2 Alt Transportation – Bicycle Storage and Changing Rooms</i>	Changing and shower requirements changed to 0.5 full time equivalent (FTE) employees.
<i>SSc4.3 Alt Transportation – Low Emitting and Fuel Efficient Vehicles</i>	Changed to reserve parking for low-emitting, fuel-efficient, or alternative fuel vehicles. Low emitting and fuel-efficient are defined as vehicles that are classified as Zero Emission Vehicles or have achieved a green score of 40 or more by ACEEE annual vehicle rating guide (see www.greencar.com)
<i>SSc4.4 Alt Transportation – Parking Capacity</i>	Differentiation between type of project and parking provided.
<i>SSc5.1 Site Development – Protect or Restore Habitat</i>	Defines native and adapted vegetation.
<i>SSc6.1 Stormwater Design – Quantity and Quality Control</i>	Defines more exactly the requirements for stormwater management. Focuses only on reducing total suspended solids (TSS).
<i>SSc7.1 Heat Island Effect – Non-Roof</i>	Sets goal of 50% shade and/or light colored paving and/or open grid paving. Defines paving by Solar Reflectance Index (SRI) or 50% parking spaces underground or covered.
<i>SSc8 Light Pollution</i>	Changes requirements to include both indoor lighting and outdoor lighting. Exterior lighting is based on type of space (rural, urban, etc.). Interior lighting needs controls when building is unoccupied to turn lights off.
Water Efficiency	
<i>WEc2 Innovative Wastewater Technology</i>	Reduced requirement for treating wastewater from 100% to 50%.
Energy and Atmosphere	
<i>EAp1 Fundamental Commissioning of the Building Energy Systems</i>	For projects over 50,000 ft ² the commissioning agent should be independent of the project’s design and construction teams, though they may be employees of the firms providing those services. For projects under 50,000 the commissioning agent can include qualified persons on the design or construction teams who have the required experience.
<i>EAc1 Optimize Energy Performance</i>	ASHRAE Standard 90.1-2004 Appendix G methodology is used to define the base case and the design case, which is a similar but more complicated than the Energy Cost Budget method used in the 1999 version to document compliance. Percentage of energy savings required reduced since it is a more stringent energy code. For example, the maximum allowable lighting power density for offices is 1.0 compared to 1.3 watts per SF in the 1999 version. The prescriptive method of the ASHRAE Advanced Energy Design Guide for Small Office Buildings can be used to show compliance for office buildings less than 20,000 sf or the Advanced Buildings Benchmark can be utilized to show compliance. Since the prerequisite ASHRAE Standard 90.1-2004 sets a tougher standard, less of a percentage reduction is required in order to score LEED points: 1 point for 10.5% less and a point for each 3.5% beyond that up to 10 points for a 42% reduction. For renovating existing buildings it is 1 point for 3.5% less and up to 10 points for 35% less than ASHRAE Standard 90.1-2004.

Additional Credit Changes noted by USGBC Colorado Chapter from v2.1 to v2.2 (continued)

<i>EAc2 On-Site Renewable Energy</i>	Required percentage of annual energy use from on-site renewable energy is reduced. Also, the requirements have been revised to allow solar thermal systems to contribute to this credit. The years 2006 and 2007 are the years to design, install, and purchase solar due to incentives from utilities in Colorado and Federal tax credits! Additional guidance on calculations and definitions is provided in the Reference Guide.
<i>EAc4 Enhanced Refrigerant Management</i>	The credit provides a complicated formula to balance a refrigerants lifetime ozone depletion potential against the lifetime global warming potential. Allows a credit if no refrigerant is utilized.
<i>EAc5 Measurement and Verification</i>	Only Option B (energy conservation measure isolation) or Option D (calibrated simulation) of the International Measurement and Verification Protocol (IPMVP) can be utilized to determine compliance of one year of post-occupancy data.
<i>EAc6 Green Power</i>	Requirements reduced to 35% of total annual electricity usage, but this does include plug loads.
Materials and Resources	
<i>MRc4 Recycled Content</i>	Credit requirements increased from 5% and 10% to 10% and 20% for one and two credits, respectively. Does not include mechanical and electrical equipment. Furniture may be counted if consistently counted with rest of credits.
<i>MRc5 Regional Materials, Extracted, Processed, and Manufactured Regionally</i>	Simplifies to 10% and 20% for one and two credits, respectively, for products extracted, processed, and manufactured locally.
<i>MRc6 Rapidly Renewable Materials</i>	Reduced requirement from 5% to 2.5% of building material cost.
<i>MRc7 Certified Wood</i>	Removes the requirement for temporary construction applications of wood.
Indoor Environmental Quality	
<i>EQc1 Outdoor Air Delivery Monitoring</i>	Requirement that only densely populated areas need carbon dioxide sensors and the rest need outdoor air measurement devices. Sensor must be in occupied space 3-6 feet from the floor, rather than in the return air duct.
<i>EQc2 Increased Ventilation</i>	Requires 30% more outside air ventilation than ASHRAE 62-2004. Keep in mind that in Colorado's climate there will be an energy penalty for bringing in more air than necessary. However, studies have found that this may increase indoor air quality, depending on the location of the building. If pursuing this option, heat recovery would be recommended.
<i>EQc3.2 Construction IAQ Management Plan: Before Occupancy</i>	Rather than a 2 week flush out with 100% outside air, LEED v2.2 requires 14,000 cubic feet of flush-out air per square foot of building space. The new credit allows the space to be occupied after 3,500 cf of flush-out, but only if the ventilation is maintained at 0.30 cfm/sf. OR, the credit may be met by monitoring which many may opt for considering the cost of keeping the finished building unoccupied for the 32 days (at 0.3 cfm/sf) it would take to circulate 14,000 cf/sf and the cost of conditioning that quantity of outside air to the required 60 F minimum and 60% relative humidity maximum.

Source: USGBC Colorado Building Green (Nov-Dec 2005), author Ambient Energy, Inc

Website: www.usgbc.org/chapters/colorado/docs/pdf/CBG-Nov-Dec2005.pdf